



**REPORT TO CORE AREA LIQUID WASTE MANAGEMENT COMMITTEE
MEETING OF WEDNESDAY 22 JULY 2009**

**SUBJECT SAANICH EAST-NORTH OAK BAY SITING AND COMMUNITY ENGAGEMENT
PROCESS – CORE AREA WASTEWATER TREATMENT PROGRAM**

PURPOSE

To present the Core Area Liquid Waste Management Committee (CALWMC) information on the Saanich East-North Oak Bay (SENOB) siting and community engagement process that includes: the public consultation summary report; a comparative environmental and social review; the triple bottom line analysis of candidate sites; alternative treatment sites; and, the First Nations update for the area.

BACKGROUND

At the meeting of 02 June 2009 the CALWMC approved a series of recommendations which provided direction to Capital Regional District (CRD) staff and consultants to conduct siting of a treatment facility in the SENOB area.

Public Consultation Summary Report (Appendix A)

On 08 April 2009 the CALWMC endorsed the community engagement framework for the wastewater treatment program. The supporting 'pillars' of this framework included a series of engagements with the SENOB community on siting a treatment plant in that area. Appendix A summarizes public feedback from the series of open houses and neighbourhood siting workshops.

Comparative Environmental and Social Review (Appendix B)

In 2008 the CALWMC authorized preparation of an environmental and social review (ESR) of the sites under consideration for treatment facilities. In the SENOB area, three candidate sites were identified through analysis by a scientific geographic information system (GIS). This analysis identified lands with the fewest constraints for siting a treatment facility. The three sites under study are Finnerty-Arbutus, University of Victoria fields, and Cedar Hill corner. The information in the ESR will support the CALWMC site selection decision and aid in design of the treatment and ancillary facilities on the preferred site.

Triple Bottom Line Analysis of Candidate Sites in SENOB (Appendix C)

The triple bottom line analysis assesses and compares the environmental, social/community and economic performance of the three candidate sites for wastewater treatment in the SENOB area. The public and the CALWMC have indicated that environmental, social and economic factors should be given equal weight in the triple bottom line analysis.

Alternative Treatment Facility Sites Suggested by the Public (Appendix D)

During the recent community events associated with the SENOB siting process, participating members of the public identified alternative sites for consideration; sites were identified through completion of survey forms distributed at the open houses and during group discussions at the workshops.

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Most of these sites were already identified and reviewed during the initial site selection process. Preliminary investigations have been conducted on the other, previously unstudied sites. Further investigation is recommended only for sites where construction and operation is technically feasible, and that offer potential advantages over the three current candidate sites.

First Nations Engagement Chart Update (Appendix E)

The province retains overall responsibility for consultation with First Nations, including outlining which First Nations need to be engaged and to what extent. The CRD is taking responsibility for making sure First Nations are well informed about the project, have real opportunities to provide input, and can see how that input is being used, where practical, in the design and construction of the project.

SUMMARY

Reports on the SENOB siting and community engagement process are presented to the CALWMC for information. A special committee meeting is scheduled for 12 August 2009 to provide opportunity for the public to comment directly to the CALWMC regarding SENOB siting. Recommendation of a preferred site on which to perform a detailed environmental impact review will be submitted to the CALWMC on 26 August 2009. This schedule permits completion of the necessary work by year-end, in accordance with the directive from the Minister of Environment.

Dwayne Kalynchuk, PEng
Project Director, Core Area Wastewater Treatment

COMMENTS

DK:jta
Attachments: 5



Public Consultation Summary Report
Saanich East-North Oak Bay
Wastewater Treatment Facility Siting
Core Area Wastewater Treatment Project

July 22nd, 2009 - J. Loveys
Core Area Liquid Waste Management Committee



Public Consultation Summary Report

Saanich East-North Oak Bay Wastewater Treatment Facility Siting

Core Area Wastewater Treatment Project

This report serves as a summary of the key findings of the public consultation program for siting a treatment facility in the Saanich East-North Oak Bay catchment area. This report is not to be considered definitive or statistically valid in terms of reflecting the entire Saanich East-North Oak Bay community's views and opinions.

About the Wastewater Treatment Project

In 2006 the provincial Minister of Environment stipulated that the Capital Regional District (CRD) amend the Liquid Waste Management Plan to include the provision of secondary wastewater treatment. By December 31, 2009 the CRD is responsible for reporting the regional decisions on how this will be accomplished and that those decisions must be in accordance with the Canada-wide Strategy for the Management of Municipal Wastewater Effluent.

On June 2, 2009, the CALWMC endorsed a series of recommendations which provided direction to CRD staff and consultants to conduct siting for a treatment facility in Saanich East-North Oak Bay.

The structure of the report:

- Overview
- Public Engagement Program
- Neighbourhood Based Open Houses and Workshops for Saanich East-North Oak Bay Treatment Facility
- Key Challenges and Opportunities Expressed
- Neighbourhood Siting Workshops Summary
- Comment Form Summary
- Online Public Queries Summary
- Recommendations for Enhanced Communications and Public Engagement
- Supporting Documents



Overview

The Core Area Liquid Waste Management Committee's (CALWMC) decision of June 2, 2009 provides the direction and context for the public consultation for siting a secondary treatment facility in the Saanich East-North Oak Bay area.



In all cases of exemplary public participation, integrating public input to key decision making points is a requirement. Therefore, the timelines endorsed by the CALWMC continue to form the timelines for the over arching public engagement framework. Staff used a variety of techniques – various communication tools and methods, open houses for information sharing followed by a series of workshops to gather input – all of which to build inclusive and meaningful consultation experiences for the public. The information contained in this report was collected and analysed from 117 comment forms, 3 recorded workshop discussions, 41 online inquiries and 81 questions posed during the 3 workshop question and answer periods.

With the conclusion of the public consultation, it would be fair and representative of the public's input received to highlight to the CALWMC that no one site over another site received a higher degree of community support and agreement, either CRD identified or community identified. However, consistent themes and issues were heard regarding the placement of a facility on a particular site, the design/fit of that facility and issues around mitigation; these themes relate to all three of the CRD candidate sites.

Public Engagement Program

At the April 2, 2009 CALWMC meeting, the following Public Engagement Framework was endorsed. The Fourth Pillar – Step 1 of the framework relates specifically to this report.

Pillar 1 Educational and Information (March/April 2009)

Objective:

- Outreach and education to raise community awareness and gain a common understanding of issues

Pillar 2 Community Dialogues (April/May 2009)

Objective:

- To facilitate community 'conversations' where the community identifies and develops their triple bottom line (economic, social and environmental) principles

Pillar 3 Community Validations (May 2009)

Objective:

- The results on all the community dialogues and activities were therefore reported back to the community and confirmed the one set of triple bottom line principles prior to it being given to CALWMC on May 27, 2009.

Pillar 4 Neighbourhood Based Workshops – Step 1 (June/July 2009)

The fourth pillar has two distinct steps in the process: Step 1 is addressing the facility site selection process and Step 2 is addressing mitigation, design and fit for the facility. Step 2 is tentatively scheduled to take place in fall 2009 for the Saanich East-North Oak Bay area.





Objectives:

- The Community Triple Bottom Line Principles will be applied through interactive and hands on exercises to create a genuine environment of discussions among residents and to build some degree of agreement on how to move forward on the issues.
- For the community to gain a better understanding of the work CRD staff has already undertaken around the known sites.
- For CRD staff to listen and gain a better understanding of community concerns.
- For CRD staff to gather and respectfully record community input (challenges and opportunities) on the various sites for consideration by the CALWMC.
- For the community and the CRD to better understand and apply the siting criteria developed in 2007.
- For the CALWMC to have transparency surrounding information and decisions.
- Finally, for the community to have an awareness of the diversity of opinions and concerns that people have and hopefully move towards a degree of community agreement on a site.

Neighbourhood Based Open Houses and Workshops for Saanich East-North Oak Bay Treatment Facility

Open Houses:

Generally speaking, open houses are a common tool which is utilized in public processes to provide the public with balanced objective information to assist them in understanding the problems, alternatives, opportunities and/or solutions, and as such, are often used by the CRD and member municipalities. Questionnaires and comment forms are often incorporated as a method of gathering public concerns on an issue.

With the wastewater project and siting of a treatment facility in Saanich East-North Oak Bay, three open houses were held which were attended by a total of 376 residents. The local residents association requested the location of the June 17, 2009 open house.

June 16, 2009 held at Gordon Head United Church from 3pm to 8pm 90 residents attended
June 17, 2009 held at Cadboro Bay Unity Church from 3pm to 8pm 192 residents attended
June 19, 2009 held at Emmanuel Baptist Church from 3pm to 8pm..... 94 residents attended

Residents were made aware of the June 22 Neighbourhood Workshop, the next step in the public process, and encouraged to register and participate throughout the duration of the open houses. (Appendix 5).

Neighbourhood Siting Workshops:

Public processes that use a deliberative dialogues technique such as a workshop, is focused on bringing

people together as a group to make choices about difficult and complex public issues where there is a high likelihood of people being polarized on the issue. The objective of these workshops was to gather public input – issues/concerns and opportunities – for the three candidate sites identified by the CRD and to look for some common ground for action. There was also an opportunity for the public to identify other potential sites that they felt should also be considered in the environmental and social review process being conducted by CRD consultants, Westland Resources Group.



Three Neighbourhood Based Siting Workshops were held:

June 22 and July 7 at the Queenswood Centre and July 9 at Emmanuel Baptist Church.

Total number of different registered participants	326
Total number of different participants who attended	246
Total number of different participants who attended the additional question and answer sessions	128
Total number of different participants who attended the siting discussion sessions	118

Early in the process, CRD staff contacted community partners, identified by the local residents associations, and sent them information and an invitation to participate in the public process.

The following community partners received an invitation:

- Arbutus Grove Children’s Centre
- Arbutus Middle School
- Cadboro Bay Business Improvement Association
- Cadboro Bay United Church
- Cordova Bay Today Online
- Frank Hobbs Elementary School
- Goward House Society
- Queen Alexandra Centre for Children’s Health
- Queenswood Centre
- St. George’s Anglican Church
- The Sister’s of St. Ann’s
- UVic Child Care Services



Within the University of Victoria, the following departments received an invitation:

- Campus Planning and Sustainability
- Child Care Services
- External Relations
- Facility Management
- Government Relations



The following residents’ organizations received an invitation:

- Cadboro Bay Residents Association
- Community Association of Oak Bay
- Cordova Bay Association
- Friends of Glencoe Cove
- Friends of Mount Doug Park
- Gordon Head Residents’ Association
- Gordon Point Estates Residents Association
- Mount Tolmie Community Association
- North Henderson Residents’ Association





Each siting workshop was designed and facilitated using a consistent format in order to provide all participants with the same information and opportunities. This provided a transparent means to ensure that all participants input was gathered in the same manner.

Each workshop began with a 45 minute technical presentation provided by CRD staff and consultants (Appendix 6). Following the technical presentation participants were given the opportunity to either remain and ask questions of the technical team from the floor or participate in facilitated siting discussions. A report back session from the facilitated siting discussions was an integral component of each of the workshops. The primary objective of the report back was for participants to hear the main points recorded in each of the groups for transparency and awareness, as well as for CRD staff and consultants to listen for key themes.

At each of the workshops, the timelines for key CALWMC decisions to be made, along with other opportunities for the public to provide input was highlighted and encouraged.

An invitation was accepted by the identified representatives of the Cadboro Bay and Gordon Head Residents' Associations to observe the workshops and public process.



Key Challenges and Opportunities Expressed

The following challenges, which relate to any site selected, were heard repeatedly and are in no order of priority:



- Concerns were heard over the need for treatment; both in terms of not supporting a science based approach and the need for a Saanich East-North Oak Bay treatment facility
- Repeated concerns were expressed regarding the potential for financial impacts to property values, the increased traffic and ongoing noise and odours from a treatment facility
- Concerns over the lack of written confirmation for funding from the province and federal levels of government
- The University of Victoria's (UVic) lack of participation in the public process and a need for transparency of decisions between the CRD and UVic

The following opportunities, which relate to any site selected, were heard repeatedly and are in no order of priority:

- A need to move forward with secondary treatment in the core area and continue with public processes to ensure good decisions are made
- The desire and opportunity for a partnership with UVic for heat and energy recovery - a desire to act locally regarding sustainable initiatives
- A strong desire for more public input into the placement and design of a treatment facility once a site is selected
- An opportunity to integrate the treatment facility into the natural landscape and have an environmentally friendly public amenity

Neighbourhood Siting Workshops Summary

Residents' issues, concerns and opportunities for each of the three CRD sites were captured and recorded using the framework of the community developed triple bottom line principles.

Environmental	Social	Economic
<p>Ensure Environmental Best Practices</p> <p>Protect and Reduce Long Term Environmental Impact</p> <p>Demonstrate “Green” Leadership</p>	<p>Equity and Pride</p> <p>Awareness and Education</p> <p>Respect for the Community Character</p>	<p>Value and Performance</p> <p>Accountable and Responsible</p> <p>A Long Term Economic Plan</p>
<p>Concerns / Issues:</p> <ul style="list-style-type: none"> the additional piping that is required in order for the site to be the treatment facility <p>Opportunities:</p> <ul style="list-style-type: none"> heat recovery for the university facilities near an existing main transportation route for construction and ongoing access already an open disturbed site minimal environmental impact as the site is not considered a sensitive ecosystem design and placement could include berms to shield the facility 	<p>Concerns / Issues:</p> <ul style="list-style-type: none"> close to residential area and utilized as a community recreational space for many including dog owners and cyclists proximity and density of nearby homeowners impacts and possibly restricts pedestrian and cycling access to UVic <p>Opportunities:</p> <ul style="list-style-type: none"> leaving a social amenities legacy, for example, a public facility on top of a treatment facility underground connections to the university for ongoing academic extensions and program development connections for public education programs 	<p>Concerns / Issues:</p> <ul style="list-style-type: none"> the cost of purchasing the site concern over the additional cost to pump to another site impacts to property values <p>Opportunities:</p> <ul style="list-style-type: none"> possible sources of funds from heat recovery for either UVic or CRD

Environmental	Social	Economic
<p>Ensure Environmental Best Practices</p> <p>Protect and Reduce Long Term Environmental Impact</p> <p>Demonstrate “Green” Leadership</p>	<p>Equity and Pride</p> <p>Awareness and Education</p> <p>Respect for the Community Character</p>	<p>Value and Performance</p> <p>Accountable and Responsible</p> <p>A Long Term Economic Plan</p>
<p>Concerns / Issues:</p> <ul style="list-style-type: none"> • significant ecological impact and loss of the urban forest / green space / wildlife • the loss of years of community involvement in the removal of invasive species • concerns of the existence of a fault line <p>Opportunities:</p> <ul style="list-style-type: none"> • an ability to protect the remaining portions of the site as an urban forest and green space which reduces the carbon footprint • a natural buffer and screening of facility already exists • opportunity to address the existing odour concerns 	<p>Concerns / Issues:</p> <ul style="list-style-type: none"> • proximity to daycares and schools, impacts by traffic to the safety and overall health of the children • loss of social and recreational community space • expressed concern over the future of the site if not chosen for treatment facility <p>Opportunities:</p> <ul style="list-style-type: none"> • to utilize remaining portion for enjoyment and recreation • leaving a social amenities legacy, for example, a public facility and the treatment facility underground 	<p>Concerns / Issues:</p> <ul style="list-style-type: none"> • impacts to property values <p>Opportunities:</p> <ul style="list-style-type: none"> • felt to be the least cost option as the site is already CRD owned as well, for the future capital and operating costs required • limiting the costs to taxpayers as location and geography assists naturally (gravity flow) • existing infrastructure is in place and can reduce further costs



Environmental	Social	Economic
<p>Ensure Environmental Best Practices</p> <p>Protect and Reduce Long Term Environmental Impact</p> <p>Demonstrate “Green” Leadership</p>	<p>Equity and Pride</p> <p>Awareness and Education</p> <p>Respect for the Community Character</p>	<p>Value and Performance</p> <p>Accountable and Responsible</p> <p>A Long Term Economic Plan</p>
<p>Concerns / Issues:</p> <ul style="list-style-type: none"> • potential ecological impacts to nearby Mystic Vale • concern of additional piping required for the site • impacts on wildlife <p>Opportunities:</p> <ul style="list-style-type: none"> • site is considered already disturbed - minimal environmental impact • proximity to university for resource recovery • considered to have a natural buffer to screen the facility 	<p>Concerns / Issues:</p> <ul style="list-style-type: none"> • loss of social and recreational community space • loss of space for UVic and future expansions • proximity of UVic housing and homeowners <p>Opportunities:</p> <ul style="list-style-type: none"> • connections to university for ongoing academic extensions and program development • connections for public education programs 	<p>Concerns / Issues:</p> <ul style="list-style-type: none"> • impacts to property values • seen as the most expensive site • additional costs for mitigation, design and fit <p>Opportunities:</p> <ul style="list-style-type: none"> • potential cost recovery for water and heat at nearby golf courses and UVic

Throughout the open houses and siting workshops, residents were asked if other sites should also be considered in the siting process. Any site that was identified was forwarded to CRD consultants, Westland Resources Group, for consideration in the environmental and social review process.



In addition to alternative sites identified below, a theme which was continually heard in relation to the Finnerty-Arbutus site. Residents felt the treatment facility should be placed on the Saanich-owned Arbutus property and not the CRD-owned property. This site is considered already environmentally disturbed and holds less ecological value. In addition, the community has not invested their time and energy into the removal of invasive species on the Saanich-owned property such as they have on the CRD-owned property. There were some residents who expressed that in the mid 1970's the Saanich-owned property was designated for a future treatment facility.

The following alternative sites for a treatment facility were identified:

Offshore island	Shoreline properties
Queen Alexandra fields	UVic entrance
McKenzie frontage at UVic	UVic - Parking Lot 1
Cadboro Bay Gyro Park	Haro Road – the right of way
Henderson Golf Course	Henderson Recreation Centre
Uplands School	Uplands Golf Course
Houlihan Park	Uplands Park
Queenswood – Arbutus	

Comment Form Summary

Appendix 3 contains a copy of the Open House Comment Form and subsequent Summary Report which was available online and at the three open houses. Six open ended questions were asked and responses are organized by question and source. A total of 117 comment forms were completed by residents. CRD consultants, Westland Resources Group, found the information useful to complete the required environmental and social review.

Online Public Queries Summary

Appendix 4 contains the summary of the 41 emails received between May15-July 13, 2009.

Recommendations for Enhanced Communications and Public Engagement

Throughout the course of the siting public process some recommendations were heard consistently and are supported by CRD staff as they will enhance the community engagement process and provide a more meaningful way for the public to influence decisions.

- 1) Enhance Communication Tools: The need for a widely distributed and directly mailed to individual household newsletter produced on a regular basis. There clearly needs to be regular information dissemination occurring so residents and stakeholders have the most up-to-date project status and can effectively participate in future public process. As stated in the public report of May 27, 2009, it is obvious that many residents in the core area are not informed or engaged. The complexities of this project, combined with various levels of information and intentional spreading of misinformation by lobby groups, are all significant hurdles in executing good public processes.
- 2) Future Public Engagement Processes: The need to incorporate a variety of inclusive public engagement methods and techniques so that residents may choose how they wish to participate. Public involvement will be limited to only the very vocal and already engaged population if only large forums and the internet are used to gather public input.



Supporting Documents

Appendix 1 – Advertisement for Open Houses and Neighbourhood Siting Workshop

Appendix 2 – Saanich East-North Oak Bay Site Selection Brochure and Siting Report

Appendix 3 – Open House Comment Form and Summary

Appendix 4 – Online Public Queries Summary

Appendix 5 – Handout at the Open Houses regarding the Neighbourhood Workshops

Appendix 6 – Technical Presentation for Neighbourhood Workshops

Appendix 7 – Questions Incorporated into the Technical Presentation from the Cadboro Bay Residents Association

Appendix 7 – Additional Questions Asked at Open Houses and Workshops

Appendix 1 - Supporting Documents

Advertisement for Open Houses and Neighbourhood Siting Workshop



Capital Regional District



Notice of Open Houses & Neighbourhood Workshop Wastewater Treatment Project **Saanich East & North Oak Bay Site Selection Process**

The Capital Regional District is moving forward with wastewater treatment in the region. On June 2, 2009, the Core Area Liquid Waste Management Committee endorsed a distributed wastewater treatment plan which includes a treatment facility to be located in Saanich East & North Oak Bay.

Two open houses have been scheduled to provide the public with opportunities to speak with project staff and learn more about the wastewater treatment project, site selection, criteria and process for Saanich East & North Oak Bay.

Following the open houses, a neighbourhood workshop will take place to provide a forum for input and feedback on potential facility sites in Saanich East & North Oak Bay. The workshop will include presentations and small group facilitated discussions to ensure everyone is able to participate and provide input into the neighbourhood site selection process.

The Saanich East & North Oak Bay neighbourhood consultation sessions will take place on the following dates and times:

Open Houses

Tuesday, June 16
3-8pm (drop in)
Gordon Head United Church
4201 Tyndall Avenue, Gordon Head

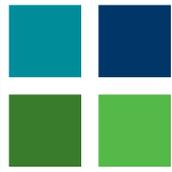
Wednesday, June 17
3-8pm (drop in)
Cadboro Bay United Church
2625 Arbutus Road, Cadboro Bay

Friday, June 19
3-8pm (drop in)
Emmanuel Baptist Church
Gymnasium
2121 Cedar Hill Cross Road

Neighbourhood Workshop*

Monday, June 22
6:30-9pm
Queenswood Centre
2494 Arbutus Road, Cadboro Bay

*To ensure everyone can be accommodated at the neighbourhood workshop, we ask that you please pre-register online at www.wastewatermadeclear.ca/register or call **250.360.3001**.



Appendix 2 - Supporting Documents
**Saanich East-North Oak Bay Wastewater Treatment Site
Selection Brochure and Siting Report**

W A S T E W A T E R T R E A T M E N T M A D E C L E A R



Core Area Wastewater Treatment Project

Saanich East North Oak Bay

Wastewater Treatment Site Selection



Making a difference...together



The Capital Regional District is working toward providing cost effective, innovative and environmentally responsible wastewater treatment to residents in the Core Area.

This project will see the upgrading of treatment practices to account for the demands of our increasing population. At every step of the way, we will be employing a triple bottom line analysis, considering the social, environmental and economic impacts of treatment options. In this way, we will ensure that the CRD's wastewater treatment project is sustainable, affordable and environmentally sound.

The Distributed Treatment Strategy

The CRD is pursuing a strategy of building several "distributed facilities" in the region's core area. Wastewater treatment will be combined with recovery of energy and water, which can be used near each facility. The provincial government is encouraging such resource reuse in municipal wastewater facilities.

The Need for More Treatment

Currently, wastewater from the Core Area municipalities passes through fine screens before being discharged into deep water in the Strait of Juan de Fuca. Discharge of effluent is regulated by the British Columbia Ministry of Environment. In 2006, the Minister of Environment determined that higher levels of wastewater treatment are required in the Capital Region. Treatment will reduce discharge of organic matter, metals, and other material into the ocean, and will meet new federal wastewater quality requirements. The CRD will join neighbouring jurisdictions in having advanced wastewater treatment.



Appendix 2 - Supporting Documents

Saanich East-North Oak Bay Wastewater Treatment Site Selection Brochure and Siting Report

SAANICH EAST-NORTH OAK BAY

Candidate Sites

Selecting candidate sites for Saanich East-North Oak Bay involved assessment of the area using detailed siting criteria. The CRD assessed environmental and community conditions to identify possible sites. These conditions included: archaeological, land use compatibility, geotechnical suitability, energy conservation potential, ecological suitability and water reuse and energy recovery potential.

Six maps were produced by applying the criteria to the study area. The maps are available for viewing on the wastewater website: www.wastewatermadeclear.ca

What was included and excluded when selecting candidate sites?

In identifying areas for further investigation, a decision was made to exclude:

- Parcels smaller than 1.5 hectares
- Areas developed for housing
- Areas already occupied by institutional structures (buildings on the UVic and Queen Alexandra grounds)
- Areas used for school playgrounds

Narrowing the Field

After meeting with representatives of the Queen Alexandra Foundation and UVic, portions of two high-potential areas were removed from further consideration; these areas were slated for other uses. The resulting candidate sites are shown on the following map and will be subject to an Environmental and Social review, conducted by the CRD's consultants.

The University of Victoria Fields Site



ESTIMATED CAPITAL COSTS: \$146.1 MILLION
ESTIMATED OPERATING COSTS: \$2.4 MILLION

Site Considerations

- Native vegetation has been cleared from the site
- Forcemain and gravity main routes follow road rights-of-way and have little ecological value
- Recovered energy and water could be used at nearby UVic facilities
- Location is on a designated truck route, reducing construction traffic effects
- High capital and operational costs due to pump station, longer forcemains and gravity mains
- A pump station would be required at Finnerty-Arbutus, increasing overall facility footprint
- Adjacent to housing and visible to the community
- Proposed tennis courts and grass practice field would be displaced
- Construction would obstruct pedestrian and bike paths



Finnerty-Arbutus Site

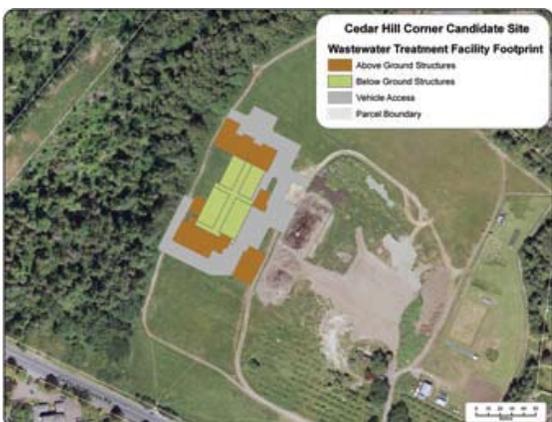


ESTIMATED CAPITAL COSTS: \$126.4 MILLION
 ESTIMATED OPERATING COSTS: \$2.1 MILLION PER YEAR

Site Considerations

- Adjacent to East Coast Interceptor sewer trunk
- Requires shortest gravity main
- Allows buffers between facility and residential areas
- Vegetation would visually screen facility from residential properties
- Recovered energy and water could be used at institutions within 1km of site
- Residents value the site as open space; informal recreation occurs on site
- Loss of wildlife habitat
- Not adjacent to designated truck route
- Construction would require clearing of second growth forest
- Increased tree windthrow hazard following clearing

Cedar Hill Corner Site



ESTIMATED CAPITAL COSTS: \$149.1 MILLION
 ESTIMATED OPERATING COSTS: \$2.5 MILLION PER YEAR

Site Considerations

- Native vegetation has been cleared from the site
- Large parcel allows for buffers between facility and adjacent homes
- Recovered energy and water could be used at UVic facilities and for irrigation at the nearby golf course
- Site access provided by an arterial road
- Higher capital and operational costs due to pump station, longer forcemains and gravity mains
- Reduced area for public dog walking
- Limited visual screening to east and south
- Sewer right-of-way would be cleared through Upper Hobbs Creek Drainage, a sensitive old forest habitat
- Increased tree windthrow hazard near right-of-way



Appendix 2 - Supporting Documents

Saanich East-North Oak Bay Wastewater Treatment Site Selection Brochure and Siting Report

Next Steps



Community Engagement

Neighbourhood consultation in Saanich East-North Oak Bay will occur in two steps. Step 1 (June) will involve the selection of a site; Step 2 (Fall 2009) will focus on the specific issues related to the site, including refining siting and design, and mitigation.

Saanich East-North Oak Bay Open Houses & Neighbourhood Workshop

The open house sessions will provide information on potential treatment facility locations in the Saanich East-North Oak Bay area. Display boards and handouts will present information about the wastewater treatment system and the need for a facility in Saanich East-North Oak Bay. You can learn the results of studies conducted and ask questions of the CRD staff and consultants. This information will also be available on the wastewater website.

The workshop will provide a forum for residents to share their views and help the CRD obtain input on the candidate sites. Community input will be recorded by staff and comments will be collected for a staff report. Public comments that are specific to environmental and social topics will be summarized for inclusion in the Environmental and Social Review assessment and report to the Core Area Liquid Waste Management Committee.

The Decision Process

After the Saanich East-North Oak Bay open houses and neighbourhood workshop, the CRD will review public comments. Additional research will be conducted if necessary.

Environmental & Social Review

The results will support the completion of an Environmental and Social Review (ESR) for the Saanich East-North Oak Bay facility. The ESR examines physical,

cultural, biological and community effects of the proposed wastewater facilities. The results of this assessment, when combined with a triple bottom line analysis, will help the Core Area Liquid Waste Management Committee (CALWMC) determine how to move forward with wastewater treatment.

Environmental Impact Study

Once a site is selected, a provincially mandated Environmental Impact Study (EIS) will be conducted. The Ministry of Environment uses the EIS as part of its review of the CRD's Liquid Waste Management Plan amendment that would include a facility in Saanich East-North Oak Bay.

The ESR and the EIS will ensure that the potential project effects will be fully examined. CALWMC will make the final decision as to where the Saanich East-North Oak Bay facility should be located. Construction is expected to begin in 2010.

Everybody Has a Say

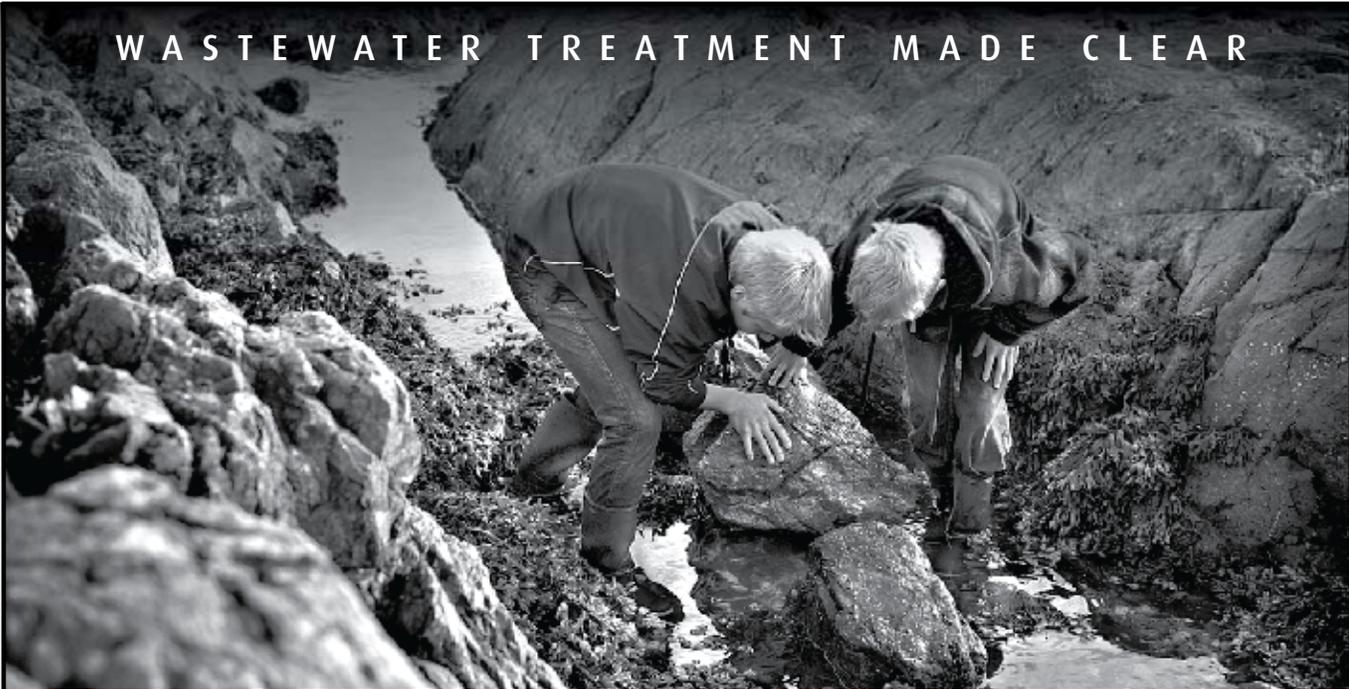
Please speak with CRD staff, fill out a comment form, attend the neighbourhood workshop or submit comments online at www.wastewatermadeclear.ca.

The Neighbourhood Workshop for Saanich East-North Oak Bay will take place **June 22 from 6:30 – 9 pm** at **Queenswood Centre, 2494 Arbutus Road, Cadboro Bay**.

To ensure everyone can be accommodated at the neighbourhood workshop, we ask that you please pre-register online at www.wastewatermadeclear.ca or by calling **250.360.3001**.



W A S T E W A T E R T R E A T M E N T M A D E C L E A R



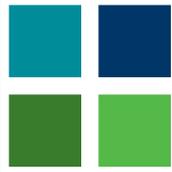
Core Area Wastewater Treatment Project

Saanich East North Oak Bay

Wastewater Treatment Site Selection



Making a difference...together



Appendix 2 - Supporting Documents

Saanich East-North Oak Bay Wastewater Treatment Site Selection Brochure and Siting Report



SAANICH EAST– NORTH OAK BAY WASTEWATER TREATMENT PLANT SITING REPORT MAY 2009

1.0 INTRODUCTION

In the course of the public consultations the question has been raised, Why not eliminate the Saanich East–North Oak Bay (SENOB) wastewater treatment plant (WWTP) as part of the wastewater management strategy? This report responds to this question by providing background to the decision to construct a secondary wastewater treatment plant at this location and discussing the reasons why this decision is still valid.

The initial phase of planning carried out in spring 2007 evaluated five options for regional wastewater management. Two of the options (Options 2-1 and 3-1) included a secondary treatment plant in the SENOB area. In the other three options, wastewater from the Saanich East sewerage area was transported by the interceptor system to a plant located either at Clover Point, Macaulay Point or on the west shore. The Core Area Liquid Waste Management Committee (CALWMC) and ultimately, the Capital Regional District (CRD) Board adopted a distributed wastewater management strategy that combines the elements of Options 2-1 and 3-1. This includes a SENOB secondary wastewater treatment plant, employing liquid stream treatment with discharge out of a new marine outfall at Finnerty Cove.

The advantages of this distributed or hybrid treatment approach is three-fold. First, it reduces the size of the downstream “central” plant, as the upstream decentralized plants reduce the flows reaching the plant. Second, by strategically locating upstream plants, this approach creates local opportunities for water reuse and heat recovery from the wastewater. Third, by reducing the existing wastewater flows in the lower portions of the sewerage system, capacity is freed up to handle a greater portion of the wet weather flow, greatly reducing the frequency and volumes of the current sanitary sewer overflows. The real innovation of this strategy is the flexibility it will provide the CRD in future decades. The CRD will no longer need to build the attenuation tanks and larger pipes in the ground to transport the wastewater long distances to a central treatment plant site. The CRD will no longer need to continually expand the central plant to handle higher wastewater flows due to growth – the decentralized plants will handle the growth in the outlying communities.

The original cost estimate for a SENOB plant, including the outfall and land purchase, was approximately \$80 million in 2007 dollars. The more recent estimate, conducted as part of the three-option evaluation, is \$150 million. The increase was due to an additional allowance for the land and marine portions of the outfall, as well as for architectural, site development and odour/noise management at the plant. A review of the costs by the Peer Review Team concluded that the allowances may be too conservative, so the final estimate may fall into the \$100-120 million range.

2.0 CATCHMENT AREA AND EXISTING INFRASTRUCTURE

The Saanich East catchment area (see Figure 1.1) for the proposed SENOB wastewater treatment plant is approximately 1000 hectares and is generally located east of Mount Douglas and north of Cedar Hill Cross Road. The catchment area encompasses the University of Victoria and the proposed WWTP will receive sewage flows from Ten Mile Point.

The existing collection system infrastructure (see Figure 1.1) in the catchment area is owned and operated by the District of Saanich. The infrastructure is comprised of predominantly gravity

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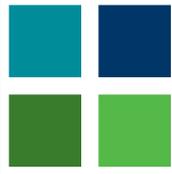


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SAANICH EAST SEWER INFRASTRUCTURE
FIGURE 1.1





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sewers with a few localized pump stations and forcemains. The CRD East Coast Interceptor (ECI) sewer system begins at the Arbutus Flume which is located near the intersection of Haro Road and Arbutus Road. The sewage flows from the Saanich East catchment area enter the CRD trunk sewer at the Arbutus Flume. The current average dry weather flow (ADWF) at this location, with the addition of Ten Mile Point sewage, is approximately 10 million litres per day (Ml/day).

3.0 EXISTING POPULATION AND POPULATION PROJECTIONS

The 2005 equivalent population proposed to be served by a SENOB WWTP is estimated at 35,600. The equivalent population is estimated to increase by 80% by year 2065 for a total of approximately 63,400. The increase in equivalent population is anticipated to occur through infill redevelopment and contribution from new businesses.

4.0 CURRENT LIQUID WASTE MANAGEMENT PLAN (LWMP) REQUIREMENTS

The ECI has the capacity to convey the current ADWF, however, during rainfall events, there are times when the peak wet weather flows (PWWF) in the ECI exceeds the conveyance capacity. The current approved LWMP requires the CRD to address the sewage overflows that occur from Finnerty Cove to McMicking Point during certain times of the year. The current LWMP calls for the installation of attenuation tanks to handle the PWWF and reduce the frequency of the sewage overflows.

The proposed attenuation tanks associated with the existing LWMP and separating the combined sewers in Oak Bay are required to reduce the frequency of sewage overflows.

5.0 ALTERNATIVE TO ATTENUATION TANKS

In addition to providing wastewater treatment, a SENOB WWTP would serve the same purpose as the attenuation tanks described above. That is, the proposed WWTP would intercept flow before it enters the ECI and alleviate the problem of excess flow downstream. The CRD's consultant has identified three potential locations for a SENOB WWTP as shown on Figure 5.1.

One of the proposed sites is at the Finnerty-Arbutus location. The other two sites in the vicinity of the University of Victoria will require conveyance infrastructure (i.e., pump station and forcemain) to "move" the sewage from the Arbutus Flume location on Arbutus Road to each of these two sites. In addition, the outfall piping would also be required to convey the effluent from the WWTP sites back to the Arbutus Flume location and then out to the ocean via a new outfall pipe.

The additional capital cost to use the two sites near the University of Victoria is estimated at approximately \$20 million. The timing of construction and operation for the WWTP would be the same for all three sites. There would be no residuals from the WWTP other than the effluent and the solids. The solids are proposed to be reintroduced into the conveyance system for removal and treatment at the central biosolids management facility downstream.

6.0 SIZE OF ULTIMATE FACILITIES AT FINNERTY – ARBUTUS

The size of facilities required at the Finnerty-Arbutus site varies with the option selected. The attenuation tank option will require an area of approximately 0.64 ha (see Figure 6.1). A pump station will be required at the Finnerty-Arbutus site with a wastewater treatment as part of the two University of Victoria site options. The pump station would occupy an area of approximately 0.16 ha (see Figure 6.2). A wastewater treatment plant at the Finnerty-Arbutus site would occupy an area of approximately 0.79 ha (see Figure 6.3).



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Saanich East-North Oak Bay Wastewater Treatment Site Selection Brochure and Siting Report



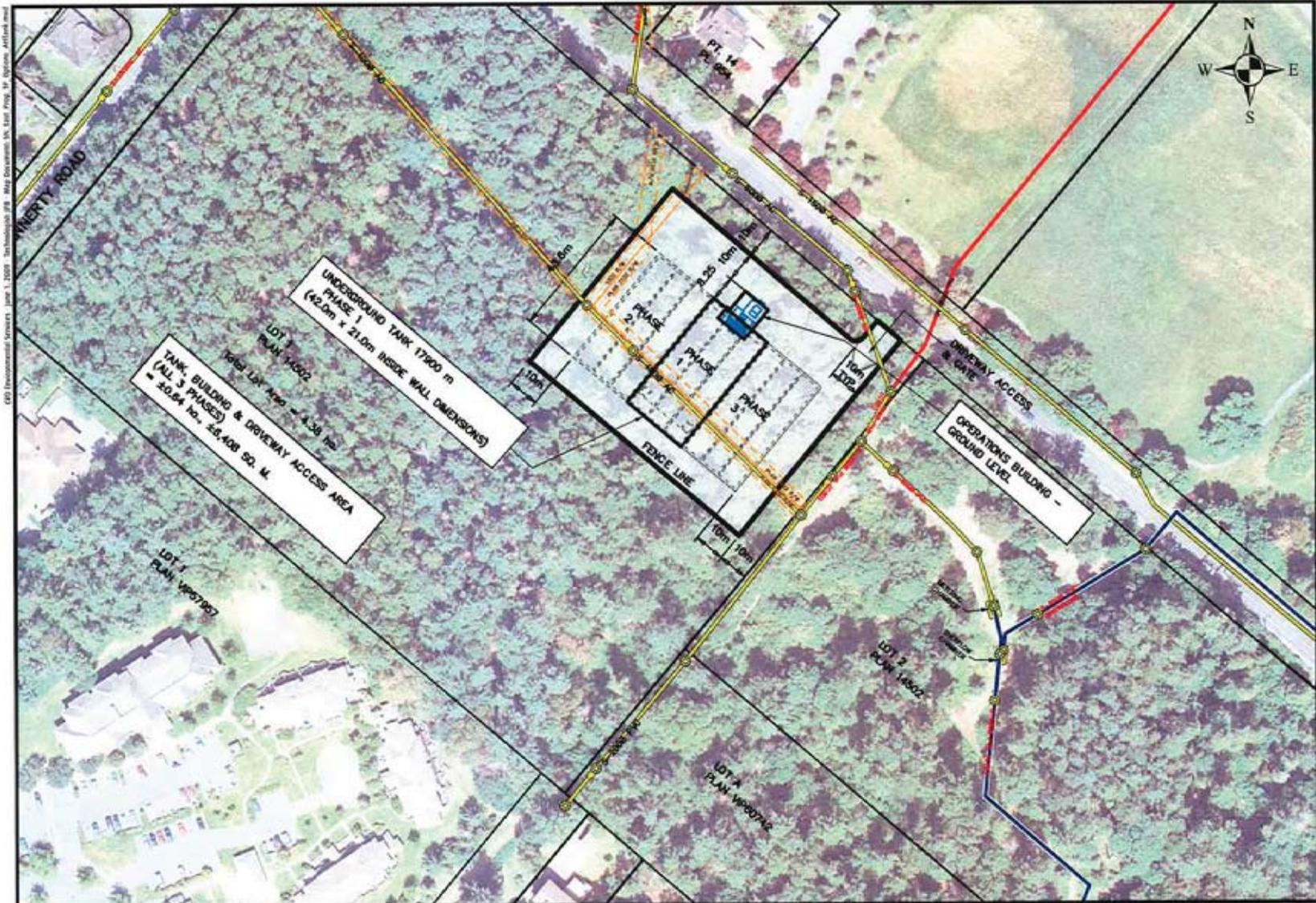
POTENTIAL WASTE WATER TREATMENT PLANT SITES

FIGURE 5.1





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 Saanich East-North Oak Bay Wastewater Treatment Site
 Selection Brochure and Siting Report



CRD Environmental Services - June 1, 2009 - Technology 2/8 - Map Document for EIA/PEP, V. Approval - Affiliated

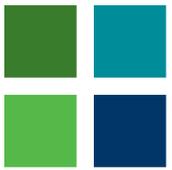
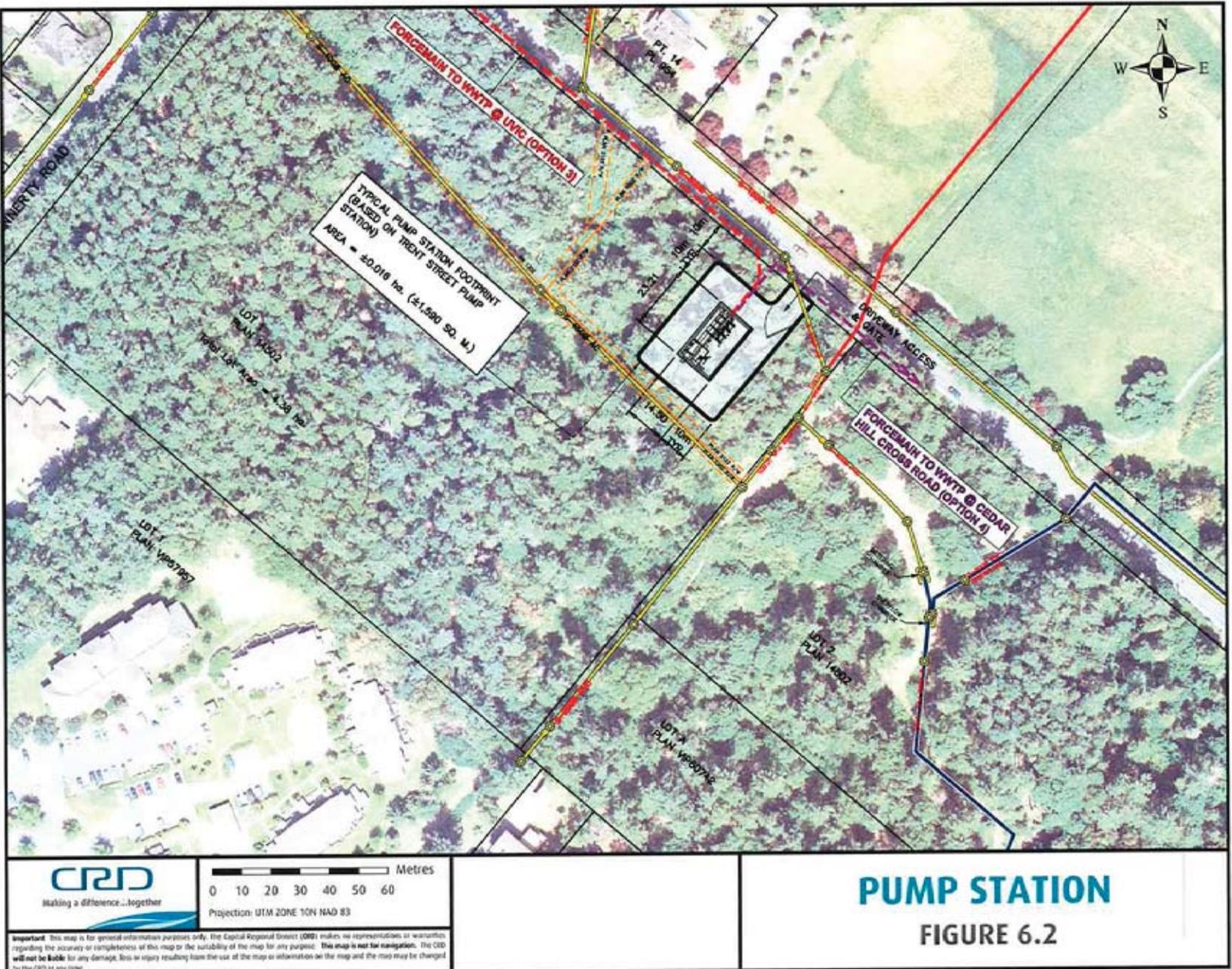
CRD
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0 10 20 30 40 50 60 Metres
 Projection: UTM ZONE 10N NAD 83

Important: This map is for general information purposes only. The Capital Regional District (CRD) makes no representations or warranties regarding the accuracy or completeness of this map or the suitability of the map for any purpose. This map is not for navigation. The CRD will not be liable for any damage, loss or injury resulting from the use of the map or information on the map and the map may be changed by the CRD at any time.

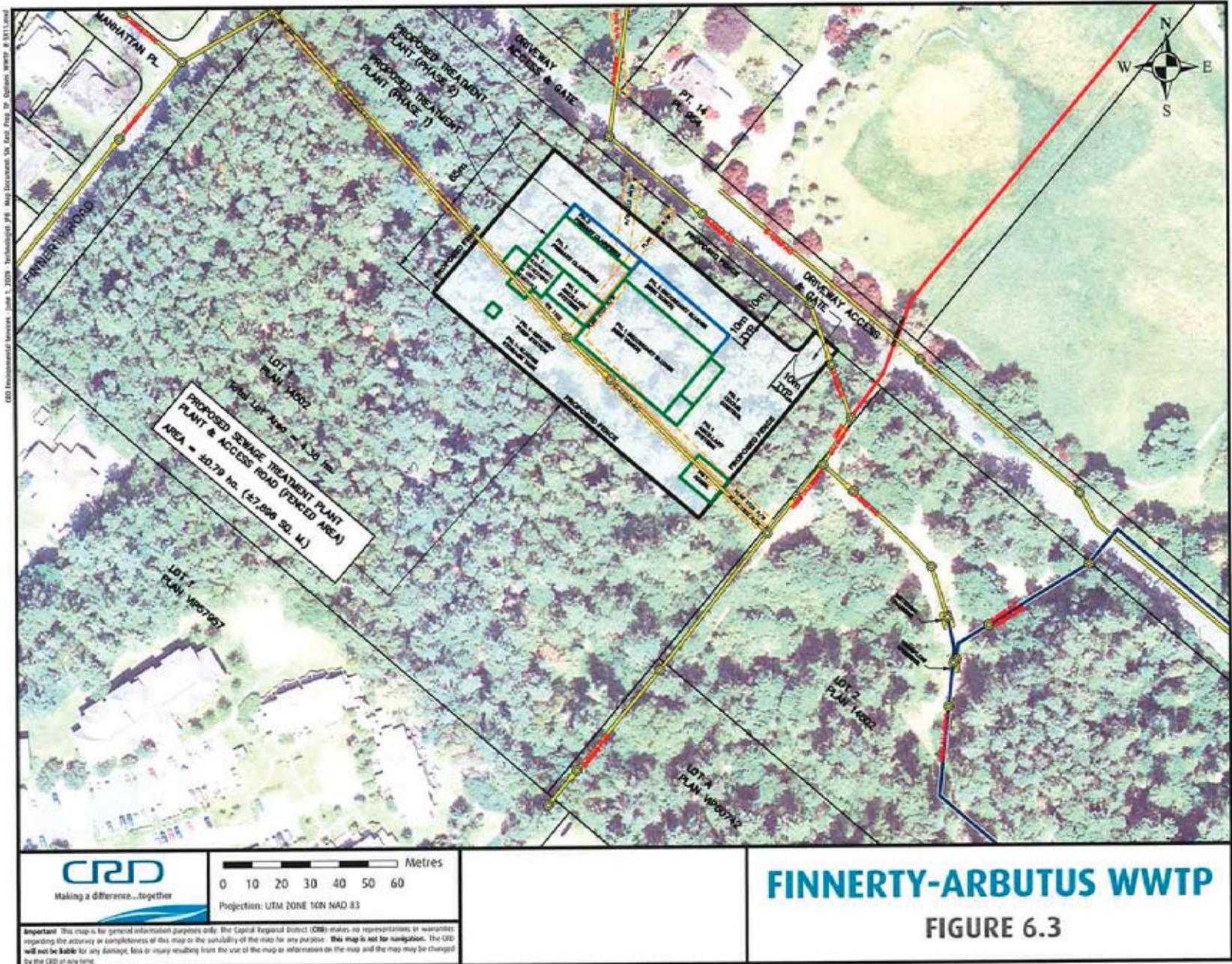
ATTENUATION TANK
FIGURE 6.1

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 Saanich East-North Oak Bay Wastewater Treatment Site
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7.0 REASONS FOR A WWTP

A WWTP in the SENOB area offers a number of benefits to the overall collection, conveyance and treatment system for the core area wastewater treatment program:

- Reduces the frequency of overflows from the sewerage system
- Eliminates the attenuation tanks and related infrastructure requirements
- Eliminates pumping Saanich East sewage flows at Currie pump station and the proposed clover point pump station
- May reduce the size of infrastructure to convey sewage from Clover Point to McLoughlin
- Reduces the size of the WWTP at McLoughlin
- Provides resource recovery opportunities for the University of Victoria

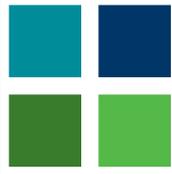
8.0 SUMMARY OF COSTS

The following provides a summary of the capital costs for the various options.

TABLE 8.1
SUMMARY OF CAPITAL COSTS (2008 \$s X 1 MILLION)

Option	WWTP	Outfall	Conveyance	Downstream ECI Upgrades	Total
Attenuation Tanks	80.0*	-	-	45.5	125.5
WWTP at Finnerty - Arbutus	110.0	14.0	-	2.4	126.4
WWTP at University of Victoria	110.0	16.0	17.7	2.4	146.1
WWTP at Cedar Hill X Road	110.0	16.7	20	2.4	149.1

*Represents capital costs to provide treatment capacity at McLoughlin



Core Area Wastewater Treatment Project

Wastewater Facility Siting in Saenich East-North Oak Bay

Open House Comment Form

Having examined the display panels that explain the wastewater facility siting process, please share your views on the following questions.

Please review the site selection criteria on the back page. Is the site selection criteria appropriate? Are there other factors that should be considered in selecting a site?

Do you have any comments on the candidate sites?



In addition to the points presented on the display boards, what other effects of facility construction and operation should be considered?

Are there any other sites that you think would be suitable for treatment facilities?

The proposed sewer mains and outfalls are shown by the orange lines on the candidate site maps. Do you have comments on the routes of these proposed facilities?



The following six criteria were used to find sites suitable for a wastewater treatment facility in Saanich East-North Oak Bay.

Archaeology and heritage features

Areas that avoid archaeological and heritage features

Ecological suitability

Areas where facilities would avoid adverse effects on sensitive or important habitat

Energy conservation potential

Areas where gravity is used rather than pumps to transport wastewater and effluent, thereby conserving energy

Geotechnical suitability

Suitability of the surficial material, seismic and liquefaction risk, and site drainage and stability for facility construction and operation

Land use compatibility

Compatibility of existing and planned land uses with treatment facility operations

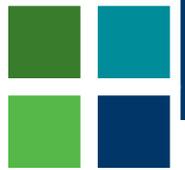
Water reuse and energy recovery potential

Proximity to areas where opportunities exist for reuse of reclaimed water and recovered energy

After the foregoing criteria were applied to the study area in Saanich East-North Oak Bay, the following areas were excluded from further consideration:

- Parcels smaller than 1.5 ha
- Areas developed for housing
- Areas already occupied by institutional structures (buildings on the UVic and Queen Alexandra grounds)
- Areas used for school playgrounds

www.wastewatermadeclear.ca



Open House Comment Form Responses

1. Is the site selection criteria appropriate? Are there other factors that should be considered in selecting a site?

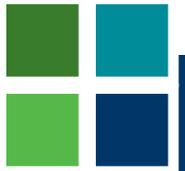
Gordon Head Open House – June 16, 2009

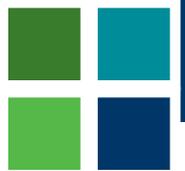
	Must there be a site in Saanich East and North Oak Bay! Can it be avoided and still achieve the necessary?
	Property value impact, access road for trucking
	Criteria are good
	Honestly don't know.
	Well defined.
	Well defined
	Major factor to consider – if water re-use is not possible or refused by potential users, where will the water effluent be discharged? Currents in the area are very poor at flushing the area – potential for effluent to stay in the catchment waters. Proposed outfall is not in deep flowing waters, as it is off Clover Point now.
	Sure.
	Cost should be taken into account, as well as impact on neighbors. The cost of the project should be shown in terms of \$ per average house per year.
	# of sites for CRD (total) prefer 1.
	I think these criteria are appropriate.
	The criteria are appropriate!
	Ecological suitability criterion needs a second look. Many of the big trees near the Cedar Hill area are covered in ivy and may not recover. This may alter the impact of this criterion in the overall picture. I think the other side of the Mystic Vale on the old composting area should be considered as a site.
	Yes.
	Site selection is criteria appropriate, yes. Other factors – none that I can think of.
	Yes. Other factors would be cost which for some tax payers will be a primary issue.
	At best all the selected sites are poor compromises. The Haro Woods site is prone to subsidence being on a bog. The other sites are much more suitable. Not that any of them are appropriate.

Cadboro Bay Open House – June 17, 2009

	Yes they are. However the fact that 2 of the sites are on civic property mean that they will have to be purchased or leased. This immediately biases the selection process in favor of Haro Woods as additional cost will be politically unacceptable. In turn, this makes the criteria used redundant.
	Criteria are appropriate.
	Areas adjacent to housing/residential areas are probably unsuitable
	Existing environmental stresses that will be compounded by this additional facility in the area (this comment continued in next section)
	Views of the residents in the vicinity of the site; a survey of residents should be conducted for each proposed site. I notice, for example, that the site consideration info for one site refers to “residents value the site as open space; informal recreation occurs on site”. This is also true of the site that is closest to any residence, yet isn't included in the considerations for that site.
	Should do study in frequency of usage by the public, numbers of people using the site; number of people impacted by the development of such a site.

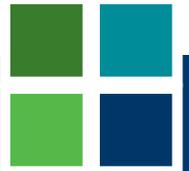
Construction on any site will take a long time. Trucks and traffic is very annoying to residents.
The time taken to build is a much more significant factor than considered here and deserves more serious consideration.
Not appropriate.
Why has the CRD failed to represent the interests of Victoria inhabitants by not opposing this unnecessary and very expensive scheme?
Is it correct that the scheme will add 20-100 % to the local property taxes for no towards buy it.
Am concerned about how the facility could pump waste from the Cedar Hill Cross Road site through Mystic Vale to get to the road access. Would it use a bridge? Go under Hobbs Creek? Also, the additional cost of pumping uphill to the site and then second pipes downhill.
The whole premise of this project is fundamentally flawed. This is a big expense for a non-existent problem. There is very little science to support this boondoggle.
University of Victoria field's site appears to be the best – least impact on neighbourhood.
Some energy and water could be used at UVic
Less homes and child care in immediate vicinity
I prefer University of Victoria Cedar Hill corner site because it has no impact on schools and hospital.
No. The 2 University of Victoria sites are more compatible/appropriate as they are of institutional use not residential and have no natural beauty. UVic could also best benefit from potential energy and waste water use.
The Finnerty-Arbutus site is an area of natural beauty in keeping with the forested coastal area of Saanich East. This is not a site for such a facility.
One criteria that should be taken into account – least damage to a natural beauty site. No one in their right mind would put a facility such as proposed in a beautiful wooded area!
Do not put this in Haro Woods
Why have the scientists been ignored? It is prohibitive cost wise to recover water from a sewage treatment plant.
Do not put it in Haro Woods. Beside a daycare centre, preschool, elementary school, senior centre, children's hospital and Catholic Church retreat centre. These existing sites need to be respected.
Yes
The process is fine. Any more criteria or alternatives would simply confuse the issue.
I am in favor of building a modern sewage treatment facility.
Criteria are fine. First decision should be what is the long term energy recovery going to be? On this criterion, Haro Woods is not appropriate. McKenzie site may be. Another site amongst UVic residences makes sense for heat recovery.
Is there a functional link between water/waste/heat recovery/reuse and requiring UVic to plug in.
Haro Woods is a special site. Do not destroy it for our future generation. It has much wildlife.
Cedar Hill Cross site has the biggest cleared area hence with some landscape, offers the lowest impact on the neighbourhood.
McColl Field has other commercial properties, like the fire hall and the gas station and the Ruby Club.
Cost, noise, traffic
Finnerty-Arbutus appears to be least undesirable site.
Consider all ways to 'disguise' building whatever site used.
The triple bottom line approach is appropriate however, not enough weight is being given to the ecological importance of the mature forest (Haro Woods).
Why was the focus so narrow? (physical boundaries)
Environmental benefit cannot come via environmental loss. Eradicating Haro Woods to clean up Georgia Strait is not a benefit when other

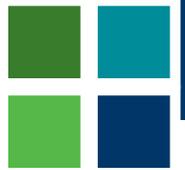




options exist.
I think the criteria are quite good.
Pumping energy conservation not a significant ecological suitability for more important factor when you consider last remaining forest of Haro Woods.
Where is public use and forest features measured?
School playgrounds could be appropriate if most facilities underground and as small as possible.
No, your criteria are reasonable but they should have different weights. Cost is not everything. Aesthetics is important, not just a property values but the look and feel of a neighbourhood. You are proposing an industrial facility for a quiet, green residential neighbourhood (Finnerty-Arbutus)
Assessment of what comprises the immediate neighbors (houses, schools, institutional structures with a definition of what immediate means in this context (ex 100 meters – 500 meters, etc.)
The weighting of the current use of each site has not been adequately considered.
How many people per day recreate at the Cedar Hill Corner site? How many at the Fields site? How many at Arbutus?
Have all sewage treatment options been considered? Have we been consulted on treatment options? NO!
Site selection criteria was done in order to provide best use of open spaces – close to ocean, previous sites – open land, available for purchase, etc. However, certain criteria not considered was the desires of the community to maintain a large parcel of secondary woodland – and choose open land without trees instead.
1 hectare 100m x 100m – Arbutus Road.
Character of the neighbourhood – impact on appearance of neighbourhood – property values – Finnerty site is too close to elementary school, 3 preschools – impact of construction traffic on schools and neighbourhood – loss of Haro Woods as recreational area – increased traffic – loss of wildlife habitat
Haro Woods is one of the last wooded areas inside Victoria. It would be a shame to see this wild life habitat removed. This is also too close to several day cares and Frank Hobbs school.
Would the property value be lower because if this construction of a waste management site?
The criteria that has not been included in the criteria is the impact on community including environmental impact and reduction of residential property values. Other criteria being considered are reasonable but certainly require adequate balancing with the impact on the community – the cheapest cost is not likely the best!
Yes
Haro Woods fine IF the wooded area left remains standing.
I support a UVic treatment site. There is heavy use at the University. There is an opportunity to capture and use energy to heat/light institutional buildings. UVic grounds and playing fields could be irrigated with the treated water. The sites at UVic are already cleared of natural vegetation – especially trees!
Impact on immediate neighbors? Traffic flow, increases, disruption? Acceptability of even sporadic occasional foul odours (smell)?
Social and environmental poorly documented – distance from schools, daycares and housing – Haro Woods is a very sensitive ecosystem
Use of alternative energy. Use of heat recovery option already methane gas will be produced. What about creating a solar farm on the site?
The question that has yet to be thoroughly addressed is, do we really need sewage treatment at all?
Criteria are both appropriate and comprehensive.
Why not select a site which is NOT a nature sanctuary! Maybe look at an already industrialized area? Maybe think that people living in this neighbourhood chose it because it is treed, pastoral, quiet, a wildlife haven.

	No – Oak Bay dog walker’s field – Saanich side – 2 options there and CRD shoes the incorrect one. Put Haro Road right of way where old Oak Bay compost site used to be (250 x 40m)
	It looks that your team considered well.
	Seems to have been with thought through.
	Proximity to residences (existing) – Full cost/benefit analysis for each potential site – Potential health hazards – Full odour control/elimination.
	Looks like thorough process has been done to select candidate sites.
	Most appropriate site (QA property – north of Arbutus) not available using present criteria – Why choose across road as potential site and destroy second growth forest? East end of property appears a better choice – some dumping years ago – top-soil stripped off, etc – noise of machinery and odour?
	Yes IF we do NO WWTP – are there alternative sites for the tanks? – Other than Haro Woods – and IF we do elect for WWTP away from Haro Woods – are there alternative sites for the pump station?
	Yes
	I am really concerned that CRD is considering the Haro Woods site. Why would we consider in this day and age disturbing second growth forest and this ecological sensitive area. For this reason alone, despite the fact that CRD lease all.
	Potential for Nimby’s!
	UVic sites not appropriate due to waste of money and energy. McCoy - High density housing and close to schools meaning higher damage costs should a leak occur. UVic losing future expansion area.
Oak Bay Open House – June 19, 2009	
	Site selections seem appropriate pending further environmental assessment.
	Sub-soils for seismic activity as it varies in area.
	Looking at your own criteria, the Haro Woods site is both extremely inappropriate and harmful to our community. The area already has a ‘heritage’ quality to it as a neighbourhood park, buffer, and natural sanctuary. You are ram-rodging a highly unpopular and in the end flawed project without full funding or due diligence. Do you know there is a seismic fault under Haro Woods!!
	A key criteria that has not been included in the criteria is: Impact on community including environmental impact and reduction of residential property values. Other criteria being considered are reasonable but certainly require adequate balancing with the impact on the community – the cheapest cost is not likely the best.
	Needs large buffers between site and residential with least removal of forest.
	Storm drain treatment re: outfall. Why not fix the inadequate pipe/sewer in Oak Bay? Where did the minister’s mandate actually come from? What there a precipitating event? Are storage tankers for wet weather flows the same const as treatment facility? Odour control? Malfunction? How long to fix?
Website	
	Taxpayers have not been told how much their tax bills will rise and for how long. We need a referendum to approve the costs.
	Yes, whether we should be engaged in this process in the first place.
	Proximity to residences. This is important for three reasons: McCoy Field: 1. People would have to live practically on a construction site, for many months, 2. Property values – would you want to buy a home right next to a sewage treatment plant?, 3. Lack of guarantee about long term effects (traffic noise, possible odour, plant noise).
	Before we discuss site selection, we need to know if we have got the overall design right. Will the proposed design deliver the most environmental, economic and social benefits, at an acceptable cost to the taxpayer? If not, what are the benefits and costs of alternative





	designs?
	Sewage treatment plant does not belong in a residential area.
	The major consideration in my mind is that of the environmental issues – 2. Mystic Vale area would seem good as long as the plant was placed away from Mystic Vale and definitely not go across it at any location. I use the dog park often during the week and think there would still be enough room to be able to have the plant but it should not have an impact on Mystic Vale – so on another side.
	This appears to be a rushed process – UVic neighbourhoods unaware of this site proposal – noxious odours are a concern as we live on Crestview - Long term land use has not been evident by UVic (designs appeared quickly – unsafe) without safety factors being considered. This proposal does not fit with strong planning for educational purposes.
	If the University of Victoria Cedar Hill corner site is chosen – do not put a pipe through the Mystic Vale. It would cut through the intrinsic beautiful forested area. Go around it.
	As far as this plan is concerned criteria for the sites is appropriate. I question the choice of the CRD to go ahead with this unimaginative plan.
	CRD Finnerty-Arbutus site might be best. Being closer to where it is needed and at a lower cost.
	No. The institutional land should be included.
	We have been following this process since its beginning. The criteria on the reverse are not the criteria to determine if this should proceed. The initiative is for the wrong reasons.
	No.
	Why are the 2 UVic sites even included in this process? They are both dedicated to post secondary expansion and UVic has very little land to build upon in the future.
	Procurement to me issue of great importance. Question: Will you hold a forum similar to this one on the procurement process? 2. Will you look at municipal control and ownership of the end product of treatment and not negotiate this away to an offshore or private company to save on design/build part of this resource?
	Yes
	No
	Yes, broadly
	Adjacent residential areas that will be affected.
	Fine.
	No!! It is not good to destroy the integrity of Haro Woods with the sewage plant. Just a pump station (smell), No to using dog walker field – better for urban agriculture and recreation. No to UVIC field's site – green space to restore and too close to residents.
	Cost has been considered – what it will impact habilitation – need for areas surrounding Victoria – my own skepticism is that the costs would be as stated or will be balloon till we as taxpayers are greatly burdened.
	It seems silly that the CRD would even consider putting a treatment plant in the Haro Woods when there is an alternate site only blocks away at Houlihan Park. This park is a year round weed farm and will never actually be used as a park. It is on a sloped piece of land and could probably be designed to be largely covered over.
	Whichever site chosen will upset someone, the CRD should choose the most cost effective site. Taxpayers will be paying for this project for many years to come.
	Easy access to main roads, to minimize disruption of neighbourhoods during construction and when the plant is in use, and solid material is being removed, presumably by truck.
	It is a relief that the CRD is looking at other alternatives other than using Haro Woods as a treatment facility. Most residents in our area are

	<p>very concerned about the damage to this unique area, and the negative impact on our community. Under the CRD vision statement is the phrase “a region driven by a love for the natural world, where natural beauty is preserved, development is environmentally friendly” Using this site would be contradictory, as this is one of the Cadboro Bay’s only natural parks left. Residents in our area are not interested in some phony idea of restitution, as proposed in today’s Times Colonist. Most would agree that this area is not an appropriate site to use for such purposes, when other sites mentioned near UVic and many other possible sites will have no real impact or damage. All residents, that I have spoken to, and who live in this area, are living with anger that this would be considered. This is one of the only clean areas and buffer zones left for Cadboro Bay and Gordon Head area. This park is already surrounded with housing development and our University. This is one of the very few parks left for citizens to use and enjoy. Using this area as an industrial site is very foolish, and will likely lead to much resistance and anger by many persons living in Cadboro Bay and area. This could turn a positive move towards treating sewerage into an ugly battle and media event for the liberal party, Saanich Council and Capital Regional District. Destroying one of the only natural parks left in this area is not a bright move and counterproductive to environmental concerns. There is no turning back once this park area is destroyed. I am certain that most members will resist such a thoughtless act, and do what is in their power to stop this plan. This would be a terrible legacy for many and a serious black eye for Saanich/Cadboro Bay. We do hope that his area will stay as a park, and that an appropriate site is selected. It is time to use common sense and do what is right for Gordon Head/Cadboro Bay.</p>
2. Do you have any comments on the candidate sites?	
Gordon Head Open House – June 16, 2009	
	I had hoped that at the Open House I would be able to make a clear choice. However, each of the 3 sites has problems and concerns. None is suitable.
	All have impact concerns, costs are a factor
	I like that you chose 3 sites not 6 or 2. 2 closest to UVic make sense to me as UVic should be involved and lead in waste and recycling, not be a museum.
	The one near Queen Alexandra looks like it could work.
	I think all three sites selected make sense, given that a site in Gordon Head is required.
	Heavy truck access should be considered – only UVic field’s site is currently on designated truck route.
	The Arbutus Road site appears to be the practical choice.
	No.
	UVic Cedar Hill corner site – we need the dog park. If this site is chosen, please leave access to Mystic Vale for dog lovers. Also, leave room to let the dogs romp and play in a large circle. It is already fenced in the centre and therefore is a large chunk of land for romping has been taken away.
	My preference is <u>against</u> Cedar Hill corner site. I’d prefer the UVic fields site. With Mystic Vale so close to the UVic C. Hill one, it’s a very big concern to have the plant there – also I walk my dog at this site, one of the few areas in the area where I can him run free. I’m concerned about the connection of Mystic Vale to the site as well. Perhaps have access for dog path by moving site.
	All of the sites will be opposed by the neighbours.
	Would not like to see any of these sites become primary sewage treatment areas.
	Cedar Hill Cross Road Or and Cadboro Bay Road. Uplands system of sewer be reviewed. Storm water in separate pipe.
	The 2 UVic sites seem less suitable because of the need to pump uphill and associated costs. Tree removal for pipes would be problematic at the Cedar Hill corner site.
	Finnerty-Arbutus site would cause the biggest impact on the environment – loss of trees, shrubs, wildlife habitat. We need these green





	areas. Cedar Hill corner site has less impact on trees unless pipes leaving plant impact too heavily on bordering woods. UVic fields has no trees to remove but loss of field?
	I'd prefer 1) UVic Fields site or 2) UVic Cedar Hill Corner Site. 1) Buildings and vehicle access can always be screened from housing, roads etc., by planting trees and hedges. 2) This area is already cleared and still leaves plenty of room for dogs and UVic playing fields. Trees/hedges can be planted to screen buildings.
	The UVic fields site is too close to established communities and the construction will have a big impact on community via McCoy road. The Arbutus Road site is too far from UVic for effect heat and water recovery.
	Finnerty – Arbutus appears best, based on the presentation.
	No.
	It seems that having gravity supply main doesn't reduce operating cost by much. Force main supply seems to add to capital cost.
	The UVic – Cedar Hill Corner site would involve clearing a sensitive habitat which should be avoided. The UVic fields site would impact bike paths, trails during construction but they could be temporarily re-routed.
	None of the sites are appropriate.
	Cadboro Bay Open House – June 17, 2009
	I understand that the only site that is in the control of the CRD is the Finnerty site. Doesn't that mean the treatment plant siting is a foregone conclusion?
	I favor one of the UVic sites as urban forest is a rare and diminishing resource. UVic has potentially a great deal to gain from this project and should be actively involved in the site selection which it is not. It is waiting to realize its strongest negotiating position. As a publicly funded institution benefitting from a public project, this is not right. It is time for UVic to turn as green as many of its prominent employees advocate.
	Finnerty-Arbutus appears most logical given cost, complexity and potential for visual screening. The Cedar Hill site has been used by hundreds of people 365 days/year for over 3 decades. It is a tremendous resource for people and their pets throughout the region. Facilitating a safe environment for active healthy living. I am not in favor of it being broken up in this way.
	I am concerned about the UVic fields site proposal on McKenzie. I have come to realize over many years, that the university traffic, lights and noise from the stadium, nearby fire hall, nearby sports club and continual late-night partying by students in rental units in the area make sleep a challenge. I'm told that the wastewater facility will not cause any ground vibration or background noise, but admit to being very cynical.
	The Haro Woods site makes the most sense – least visible – least used – broadens park space available to the public – could be done in consultation with community and develops naturalizes the space.
	The plant is supposed to be odour free. However breaks downs do occur and the effect or repairer traffic and noise as well as odour should be considered. Haro Woods does not fare well. Not as windy as other sites and therefore more lingering odours.
	I would suggest the least impact on the local community would be Cedar Hill corner site. Least impact visually, furthest distance from residents and closest to institution.
	Have always felt the QA property should be first choice as it is not near residences and would not need pumps. What happens when the electricity goes off in Victoria's wind storms? I think Mystic Vale is a more important park than Haro Woods.
	They are all in residential, school, university, daycare, etc. areas inconsistent to this kind of construction. Which institutions would use recovered water and energy 1 km from Finnerty/Arbutus site?
	Both the rugby field (university fields) and the dog walk park (Cedar Hill corners) are heavily used area, the Finnerty site less so.
	UVic/Cedar Hill site is widely used all year round and provides natural volume to golf course across the road. Not a good choice. UVic field's site okay except if it may limit University development for its primary function = education over time. Finnerty site = best.
	I don't think the Arbutus road site is appropriate. Taking out trees decreases the habitat for the deer. So much as disappeared.

	The University of Victoria fields site would be more suitable. It has already been cleared of vegetation and is on a major trucking route. There would be no need to destroy secondary growth forest or sensitive habitat or use up much loved and fast disappearing public space – natural habitat for birds and wildlife. Wastewater treatment facility buildings would blend in with more utilitarian university buildings of UVic and would have less impact on the surrounding community.
	Finnerty-Arbutus site least suitable due to proximity to a choice residential site. UVic field's site probably best due to proximity to a major arterial road for sludge removal and site already cleared and any recovered energy could be sold at favorable rates to the university.
	I am begging you to listen!!
	It should be put in an industrial area. Of the three sites the Velox is the best because big buildings are already there. Shame on you to think about cutting trees down to do this. Shame on you.
	The QA site seems the logical site (even if they don't want to sell) for the public good. Facilities underground as much as possible and with green playing field roof. Heat energy recovery to UVic facility.
	Haro Woods or some of the UVic locations are perfect.
	One super-facility at the Colwood gravel pit makes the most sense. All CRD planning has shown increased development to the west of the city.
	Either McKenzie or Cedar Hill sites are preferred. Retain Arbutus woods. Is the McKenzie site large enough? Or do you really need to displace Wallace field. UVic needs more playing fields and these could be at Cedar Hill site.
	Do not like the UVic field on McKenzie. Prefer the Cedar Hill Cross Road.
	Absolutely not at Haro Woods. The site is majestic and should be preserved for future generations. Approach various level of government and the public for funds and we'll contribute. The Cedar Hill Cross Road site is ideal for UVic will be able to use recovered energy and Uplands Golf Club can use the water.
	Very opposed to the Haro Woods site. That green belt is very important to us who live in Queenswood area for that wonderful green ambiance. Very frustrated that any plants need to be built in Saanich East. We feel that the UVic fields site would blend into other institutional building and not take up or interfere with valuable green space.
	Look appropriate
	Preferences from information provided. 1. Finnerty-Arbutus, UVic Cedar Hill, 3. UVic field's site.
	The Cedar Hill corner site seems most appropriate. Haro Woods is too precious.
	Finnerty Arbutus cash savings not worth enviro. loss. 2 x UVic sites much better, especially since whole Saanich East/North Oak Bay location seems predicated on UVic use of water and heat. If not, why build in this area?
	Personally I lean toward the Cedar Hill corner site.
	Only real site is the dog field at UVic. The other two don't fit so well. Residents can buyout CRD for Haro Woods purchase costs. Unbelievable that the last forested are in Saanich East would be on a shortlist.
	I strongly oppose Finnerty/Arbutus. Those woods are invaluable wildlife habitat, and treasured by the neighbourhood. Pick a site where habitat doesn't have to be destroyed on such a large scale. Save the trees!
	In my opinion use 'Compost Road' just to the west of the dog walking field on Cedar Hill Cross Road. Offers another site that should be considered.
	Keeping the treatment facility away from and screened from residential areas is a must. With that in mind, the Arbutus site is the only one that fits criteria. However, what about the area directly to the west of then Cedar Hill site where the Haro Road easement is? This is very secluded – Henderson Rec could use the irrigation. A few trees may be sacrificed but it seems like a logical location although not 1-5 hectares in size.





	The comments seem weighted to make the Haro Woods site seem like the best option.
	Prefer the UVic / Cedar Hill corner site pumping previously station already exists, area is used as compost dumping, plenty of land available for potential expansion. A fourth consideration – Compost Road.
	UVic Cedar Hill corner site – would the dog walker area be preserved? If UVic Cedar Hill site is chosen will Cadboro Bay Beach remain clean and swimmable? Is there anyone site that would survive an earthquake better than another?
	Since it seems UVic has made no commitment of its property and has plans for the area why even bother to consider that as a site. Seems to be just a diversion.
	Aesthetic – the site has to be attractive – gardens – low profile buildings – attractive fences – no chain link. UVic – Cedar Hill site – I would prefer to see the site more in the middle of field – away from Mystic Vale. Why does the sewer right of way have to go through Upper Hobbs Creek Drainage? It would take more pipe but have the pip go around Mystic Vale – out to Cedar Hill Cross Road and back in at the clear space (Haro Road).
	If we must have this the UVic site probably has the least impact.
	The UVic site would be a better choice than Haro Woods.
	The WWTP at Cedar Hill Cross Road has the largest site available of the three sites shown. It provides the greatest opportunity to minimize environmental impacts on the community and at the same time provide adequate land for additional technology development. This site would provide the greatest buffer between the facility and adjacent homes.
	Cedar Hill Cross Road preferred. It is on a large field and with proper (tall) landscaping would not appear as a large industrial building.
	Why has a small, well financed and apparently well connected lobby already precluded the preferred location at Haro Woods?
	Cedar Hill Cross Road is the only viable site.
	Haro Woods – The drawing and show buildings clearly visible from the road would it be possible to set them further back. UVic fields – It is very close to the fire station. Mount Douglas School and the University. UVic Cedar Hill Cross Roads – This could be a vast improvement and seems the best site. Already smells. Dogs could still run.
	I think the one site in Colwood for the entire region makes the most sense. Then there is only one plant to build, maintain and upgrade. As well, the gravel pit has no homes which will be affected by the plant, vehicles, etc.
	All would be acceptable. To limit the carbon footprint over the lifetime of the project, you need to select the site that is cheapest to construct and operate. I believe that's the Arbutus/Finnerty site.
	I do believe that Cedar Hill Cross is large enough, already compromised (gravel piles, landfills, no trees....and therefore an environmentally less destructive site.
	Do not sell off Haro Woods – keep as community park, Saanich owned portion. If you must put in Haro Woods (it has already been disturbed)
	Finnerty-Arbutus site impact (initially) is visually shocking – if it does have to be on this gorgeous piece of wood, then another more natural scheme should be planned for the <i>seattle</i> photograph was much easier on the eye and appropriate. I have concerns if the Finnerty-Arbutus site is NOT chose, the land must be protected for woodland and not sold to developers.
	All things considered Haro Woods seems the best.
	Haro Woods is cheapest, therefore best.
	Haro Woods should not be cleared to build sewage treatment facilities. Why not build a full-treatment plant at Clover Point? Sewage is already discharged there. Build underground and expand the point seaward if necessary. Plan a park and vegetation etc on top of the treatment plant.
	Surprised that the Finnerty Site seems to be in the forest. Surprised that the UVIC fields are in such an open area. Surprised that Cedar Hill

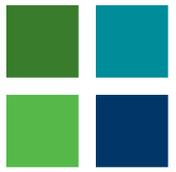
Cross Road site is right on the edge of Hobbs Creek - could it be moved to center of fields?
Cedar Hill Cross Road seems best - Arbutus site (east end) – 2nd - McKenzie site – 3 rd – housing close to site.
Haro is one unit largely undisturbed. Can we keep it that way? Or IF it will be used for other than its present use – might as well build the WWTP at Haro.
Finnerty-Arbutus would be best site.
This was all our land. The Province bought the property. This was Crown land in 1950's and given to QA for \$1.00! How can QA refuse to co-operate to build on their open space?
No. They all have their plusses and minuses.
All beautiful areas – all communities equally outraged. UVic sites not had much time to prepare arguments and express disapprovalment. Haro woods was never a public woods. Signs state it is a private property and no trespassing.
Oak Bay Open House – June 19, 2009
Are the economical and practical choices final or are there alternatives?
Best spot - #1 University of Victoria field's site. Plus a tree buffer for the residents nearby.
After examining the sites displayed for suitability – the Haro Rd site is the one with less impact on residential areas and less environmental impact.
Do not pick University of Victoria Cedar Hill corner or Finnerty-Arbutus sites. Please protect the forests. We need to keep these pockets of forests for future generations to enjoy. The University of Victoria field's site makes the most sense for recovery of water to be used at the University.
University of Victoria field's site would not be suitable for a waste water facility. There are no buffer zones and the facility would be bordered on three sides with residential areas and two large town house complexes. Further, McCoy Road is extremely busy all year, literally thousands of students from the University and surrounding areas, plus pedestrians, use this short narrow road for biking, running and walking. Trucks on McCoy Road would create a real hazard.
The Cedar Hill Road site is an environmentally sensitive area. The Mystic Woods and springs should be protected. Traffic is already a problem near UVic entrance and Cadboro Bay Road.
The University of Victoria Cedar Hill corner site is absolutely unacceptable. This is a high use recreation area for the public. Also the probability of diminished property values in the area is highly undesirable.
University of Victoria Cedar Hill Cross Road corner site is absolutely unacceptable. Possibility of depreciation of property values is highly undesirable. This is property used by many seniors walking their dogs. Very recommendable for health.
The Finnerty-Arbutus site has too much loss in habitat and urban forest to be a candidate for this use. Cedar Hill site least invasive.
It has not been determined there is a need for this. There is insufficient scientific evidence. The cost is yet undetermined. The value is yet undetermined.
I like Haro Woods site. (prefer)
The UVIC lands are not suitable by any criterion (both sites). CRD owns the Finnerty-Arbutus site and it is the most suitable by CRD selection process and common sense logic.
Environmental impact is significant cost differences seem to have been considered so I am not overly concerned about the different sites having different merit.
It seems most logical to use the Arbutus Road site. Future energy, operating costs should be a very important consideration.
No
Arbutus Road – potential concerns re: UVic students, increase of ?, UVIC next to residential – needs property stations at Finnerty, Cedar Hill





	Cross Road – degraded site – needs more pipes
	I am strongly opposed to the proposed site on Cedar Hill Cross Road. Its proximity to a precious natural resource like Mystic Vale is appalling and should never have been considered.
	Finnerty-Arbutus site is much more preferred.
	None of the three are suitable.
	I would choose the site on Arbutus as it a) costs less, b) less infrastructure c) less energy spent for use. The Mystic Vale area is more ecologically sensitive and not feasible in my mind.
	Yes, your selection process and even this form are a sham. Why? You are forcefully promoting Harrow Woods because it is politically expedient and because you pre-purchased a site there. The other two sites are not fully explored in your presentation. You do not even know whether UVic will sell, and, at what price. How dare you lie to us when you have no contracts?
	The WWTP @ Cedar Hill Cross Road has the largest site available of the three sites shown, it provides the greatest opportunity to minimize environmental impacts on the community and at the same time provide adequate land for additional technology development. This site would provide the greatest buffer between the facility and adjacent homes.
	The only vaguely suitable one is the UVic Cedar Hill corner site.
	Has UVic agreed to be the recipient of the energy benefice? How much would they be charged for this energy they are supposed to want? Why did the CRD spend \$600,000 on the SETEC report and then ignore the findings that they did not recommend secondary treatment?
	Website
	Scrap this site and treat everything at one big central plant. UVic will not pay for the recovered water and heat.
	Listing the “loss of a dog-walking area” as a detriment to selection of the Cedar Hill Road corner site, is downright silly. This use is not officially sanctioned, and its inclusion as a “loss” trivializes the bona fide detriments listed for other sites.
	It is sixteen steps from my carport to the field (McCoy) that you are suggesting as a possible site for the sewage treatment centre. I’ve heard that residents in Cadboro Bay don’t want it because of the trees in Haro Woods. But in our location there are people – residents live in very close proximity to the site on three sides. A fellow resident said that surely people would be considered before trees. I wonder – and I hope so. As long as it does not depend on the loudest lobby group?
	If we have the overall design right, either of the University of Victoria sites may be acceptable.
	Haro Site is obviously the cheapest and most logical provided that this pitiful town is stuck with the miserable infrastructure that was built pie by piece with no rational urban planning in place.
	We live at xxxx Vista Bay Road, and object to the Plant being built on the UVic site. In addition, please have someone with the appropriate authority e-mail us confirming that the consulting engineers have warranted that there will be no smell or noise coming from the Plant. No matter where it is located the affected residents will look to the engineers and the municipality for that warrant, and resulting damages if there is smell or noise. We look forward to hearing back, and our e-mail is: xxxx.Thank you.
	Haro Woods is the last site that should be considered in the area. It is an environmental jewel which should be left intact.
	How did the two additional sites located on university land come to be added to the Haro Woods site? Why is the university taking such a direct interest in the selection of the sites? Is there truth to the rumor that by placing the treatment site on the Cedar Hill Road site that the CRD would trade the Haro Woods land to the University? The CRD is not being open about the selection process and the residents are increasingly upset and disillusioned by the lack of consultation.
	If the dog walkers field is chosen for a sewage treatment plant location (best option in my opinion) then rather than piping the sewage from a pumping station in the Haro Wood’s why not use the existing east coast interceptor pipe and put a pumping station near Cadboro Bay to pump the sewage up to the dog walkers field thus removing the need for one in the Haro Woods. Then build a new outfall pipe for the

	treated sewage near Cattle Point.
	The CRD should have gone thru this public forum before they spent 6 million dollars on the purchase of Haro Woods. However Haro Woods appears to be the logical site with the pumping station going there anyway along with the excess cost and operating expenses of putting it elsewhere.
	See comment section below.
	The site near Queenswood is the least satisfactory from the above point of view.
	The other potential sites would be more suitable than destroying the Haro Woods area. There are three day care facilities next to the Haro Woods, and elementary school and middle school.





3.	In addition to the points presented on the display boards, what other effects of facility construction and operation should be considered?
Gordon Head Open House – June 16, 2009	
	Cost recovery to the maximum i.e., to offset the costs as much as possible, no matter what choice.
	Visual appeal – using buffers, utilize wastewater for water features to buffer sound, dust.
	Dust, sound, access – sound-trucking, screenings, potential spills from trucks.
	Should be showing how the resident will be charged for capital and operating costs. Must include this if you want to win people over.
	No other points. Community amenity i.e. More than one use and benefit would be good. Place to visit and recycling of waste.
	Consider the contiguous ecosystems and plan to keep them wild-restored if necessary.
	I think the methods for putting in the required sewer lines were under represented on the boards. Blasting especially should be a source of concern.
	Keep the facility hidden if possible.
	LEED, green building is required. The CRD has to continue to lead by example and make this building a LEED building.
	Should fit into the area e.g. With the trees and woods, etc. Should be aesthetically pleasing. Access to be able to walk around the building rather than have to walk into it and then turn around and go back the same way. No cement fences or cheap siding or plastic.
	Aesthetic pleasing to area with attention in making it meet with environment and area. No cement (like a factory) or ugly plastic (siding) but to blend in with environment. Like lots of trees, perhaps a fountain and an area that you can walk around site. Even fencing to blend in, not have it stand out.
	Impact on property tax with and without federal/provincial cost sharing.
	Noise, particularly during construction but maybe during operation
	Less paved areas when possible. Planting native trees to screen two field sites if chosen.
	I appreciate the fact you've considered using end products from screenings as an energy resource AND within 1km of the plant. This would help mitigate the extra expense of pumping instead of using gravity.
	Traffic impacts through neighbourhood both during construction and operation. Environmental impact (natural areas and wildfire).
	Saanich's roads in Gordon Head. Those that will be routes for truck traffic? Some rebuilding may be necessary to extend their life and keep future maintenance down.
	Building up to standards so that in the event of a power outage from earthquakes we avoid the problem that Halifax encountered.
	Information about the amount of road work required.
Cadboro Bay Open House – June 17, 2009	
	Odour noise and visibility are the biggest factors. What guaranties are there that these won't be an issue? Information provided is vague.
	Odour will occur during facility maintenance. How often will that be? Also when mechanical malfunction occurs, how likely? As well, is that it states that "noise will be limited". That is very vague. What are the decibel levels and during what hours?
	The infrastructure requirements need greater prominence. The details on option – I think will make or break a site's acceptability.
	Increased visual screening from surrounding roads, homes, etc.
	How much power could be generated? How much noise and vibration produced? How much money per household and neighbourhood would be saved by the property owners?
	Construction time and noise at site as well as for new piping.
	Security for wildlife.

	In today's building climate I feel that the contractors do consider all environmentally important pieces of land and are held to do so.
	Disruption during construction process to functioning of schools, daycares, etc. the decision of increasingly scare public money to little positive effect.
	Trucking of solid waste to landfill and how does this improve our environment?
	You have consistently ignored comparing the proposed systems effects with our current system. You have failed to demonstrate any need for change.
	Cost – How much per household? Vehicle traffic to/from site for maintenance/construction and other activities.
	Facility and pipes should be earthquake proof.
	Construction of the facility should be earthquake proof
	No offsite parking.
	Fastest and most economic construction methods should be used.
	Give residents there the benefit of energy recovery. Community disruption UVic is not a benign force in our neighbourhood. If UVIC wants energy recovery site the plant is the centre of UVIC.
	Disruption to traffic and neighbourhood during construction.
	Longer term environmental cost v/s short term capitalization of project. Trees cutting at Haro won't have regrown by time plant needs to be rebuilt.
	Defusing potential neighbor complaints re property values, etc.
	Timelines planned over next decades.
	The display boards do not present the whole pictures. They do not indicate areas of land disturbance that will be caused by related resource outputs transportations as of if required repairs to the existing outfall.
	Compensation for neighboring homeowners when their property values decrease due to proximity of treatment facility? This absolutely needs to be factored in the overall budget of the facility.
	As mentioned on prior page, the area easement set for Haro Rd between Cedar Hill Cross Rd and the parking lot at UVic. The outfall route passes through here anyway, it is completely screened and a logical place.
	Odour from site to environs.
	Noise, smell, parking – maintenance of facility – wildlife preservation.
	Concerns about odours.
	Station facilities should be designed to be as attractive as possible in all respects – buildings, landscaping, fences, etc.
	Display boards as part of the construction site office with a live video of comparable sites that will be used in the Saanich East-North Oak Bay site would be desirable. Reference in the video of what will be accomplished for the environment and the improved water quality at a reasonable cost. What about the tourist update on what Victoria is doing towards improving water quality?
	Appearance and noise.
	Impact on pedestrian and bike traffic to and from UVic and Mount Douglas High School on McCoy. Forcing this traffic onto adjacent private strata property.
	Disruption to wildlife, school traffic.
	What are the trucking routes? Time of construction? Would trucks operate at night (planes don't)?
	Access Roads – Finnerty site should be accessed from Arbutus Road to minimize risks to Finnerty Road users (pedestrians, cyclists, school children, UVic students and wheelchair). Please leave considerable buffers of forest between the plant and any homes (a thick enough buffer of trees so they won't blow over). The Finnerty site should be situated where the existing infrastructure exists – as shown on your





	model.
	We live close to the new CRD pumping station on Trent Street. I have no concerns about construction based on past experience. CRD's contractor was professional and sensitive – and that's what I expect will happen here too.
	Impact on a quiet neighbourhood. There will be traffic in a area of schools. Noise, dirt of construction. Devaluation of residents' properties.
	Traffic, smell, property value, taxes
	None
	Do not cut down existing trees/forest to build a treatment plant. Consider the objections of the residents who will need to live in the proximity of this treatment plant. Nobody wants this in their neighbourhood.
	Concerned about the pipelines crossing Hobbs Creek. This area has been re-habited. Just the installation of these pipes would cause destruction and I have further concerns about future damage to the creek area if there is leakage.
	Should be underground as much as possible – noise proofing – odour capture.
	The buildings themselves can be industrial in looks – that's a mistake – these areas are all residential. The exterior architecture needs to be an eye pleaser – not a piece of industrial insult hidden by a screen. Those who live near, work near, play near should enjoy it.
	I firmly believe that morally if CRD were not to opt for Haro Woods, that the land should be protected and returned to the Province as green space, not to be sold for housing.
	Heavy Construction trucks may upset some sensitive neighbors during the construction period.
	UVic/McCoy field ideal for green living as we are walking distance to schools (which have traffic parking problems), shops and bus routes. Field used regularly for walking to schools and UVic. The area of McKenzie and McCoy is extremely high density population and would affect the most people – it's a sin.
	Oak Bay Open House - June 19, 2009
	Facility construction seems appropriate but artist's drawings are less than elegant. More emphasis on architectural design or better landscaping would put a more positive spin on the sites.
	Sludge. What is the volume @ 2016 @ 2030 @ 2045? Are there backup systems in case of failure? The carbon imprint to dispose of the final product.
	Cost might be in darker type so everyone can see it. Construction contractor should be well screened and questioned regarding cost – no over runs without large penalties.
	Haro Road proposal would blend in behind the forest as unnoticeable. UVic would be an eyesore.
	Minimize the amount of sludge. Is sludge on land less polluting than sludge in water? Deal with the heavy metals, pharmaceuticals with source control plants.
	Please reconsider this whole project. Spending all this money on something that will not provide any health benefits. It may be more beneficial to fund programs that have a much greater environmental and social benefit.
	There are no comparative data. What other locations with the same conditions have done this? At what cost? What effect?
	The property assessment challenges that residents will surely make where real estate values negatively impact them. With this in mind the most expensive site in this regard would be Cedar Hill Corner; the least would be the Finnerty-Arbutus site.
	Contracts should go to local workers/companies as much as possible. What happens to septic fields now being operated? When will storm sewers be separated? Will you develop capacity for future needs?
	Noise (operational). Proximity to residential area.
	No
	Need Lidar survey of seismic faults like for Brightwater plant near Seattle. Need to consider that benefits of sewage treatments are much

	less than environmental costs of these sites in Saanich East /North Oak Bay. Also, outfall into Finnerty Cove area is bad.
	Smell? Potential dangers to the community. The seismic fault under Harrow Woods. Loss of property value. Due compensation. Guarantees I writing to the above. Responsibility. Real renderings.
	Display boards as part of the construction site office with a live video of comparable sites that will be used in the Saanich East North Oak Bay site would be desirable. Reference in the video of what will be accomplished for the environment and the improved water quality at a reasonable cost. What about the tourist update on what Victoria is doing towards improving water quality?
	Noise – at any level more than present is not wanted. Why not consider berming treatment to lower silt/pollution and noise and light pollution? Is the fed and prov. Funding going to be maintained as verbally agreed to (although all ministries in BC are now cutting back most projects, especially new ones.)
Website	
	Construction noise – having to clear cut big trees and remove their roots. Noise from big trucks as they leave the site – they have to go uphill along Arbutus, stop at a stop sign and they start climbing again along Finnerty. This could have quite an impact on people living along this route and especially on the UVic daycare center.
	The greater good and population affected. Obviously this facility will smell (go down to Oak Bay Windsor Park: on some days it's terrible). It should be situated where it will affect as few people as possible. The University of Victoria serves 18,000 students, therefore it should be as far from UVic as possible, taking into account prevailing winds. Haro Woods would therefore be the logical choice.
	How long will it take to build the plant? How long will it take to put in the pipes underneath the roads?
	Noise and odour.
	This project should cause as little disruption as possible to the neighbourhood. If the UVic McCoy site is chosen, it will cause major disruption to hundreds of residents. There are two multiple family townhome complexes, as well as several streets of single family homes adjacent to this site. My pleasant little patio garden is just steps from where the construction site would be. Come see! xxxx in Village Park Estates. Also, McCoy is used very extensively as a pedestrian/bike path connecting Gordon Head to UVic. This is an important access corridor that should not be disrupted.
	What design has the greatest energy return on investment?
	Noise and odour management. Solids removal methods and effects on the neighbourhood (trucking)? Are you serious?
	Sightlines, noise, smell, sludge removal and overall impact on the environment and neighbouring property values.
	The concerns of the residents and neighbours of the facility.
	Noise and odours.
	The serious negative social implications of those citizens who live near Haro Woods.

4.	Are there other sites that you think would be suitable for treatment facilities?
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	Sadly, I would choose the QA site if it were possible to just move all the mental health, child, youth etc., services elsewhere. (Except of course for the boggy section on the QA site).
	Build an off shore island
	Not my expertise.
	I honestly don't know. This is such a complex issue that I don't have the time to consider it at the depth it requires.
	A modern facility in Gordon Head is sensible.

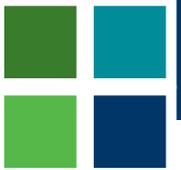




	One treatment facility near Macauley point seems to make more sense, in order to have liquid portion dispersed effectively, as it is today.
	No.
	Separate storm from sewage treatment. Pump sewage longer distance to rural areas for processing. Leave storm as-is.
	Not in the area under consideration.
	Have you considered an underground facility in front of the legislative buildings? Are there anymore schools slated for closing. How about using these grounds for pumping stations, etc.?
	No.
	No.
	None that I can see.
	No, I think the likeliest potential sites have been identified.
	The Michael Williams house in 10 mile point. Why in Gordon Head at all? Can't you just fix the rainy season overflow?
	Cadboro Bay Open House – June 17, 2009
	Why Saanich East / North Oak Bay? This sort of facility is best suited to a site zoned as light industrial.
	If the property site is not publicly owned this seems like a non questions. Is there political will to purchase any privately owned site. However serious comparative analysis and addition to the 3 sites. 1. Corner of Gordon Head Rd and McKenzie on UVic property, 2. Queen Alexandra property, north of Haro Woods, on north side of Arbutus.
	Windsor Park – Legislative Assembly – Uplands Park
	Actively we should be using the current solution and building on its strengths – Closed environment of Juan de Fuca allows for easy elimination of sewage.
	Some locations in the west shore area – preferably in industrial / commercial locations, i.e., away from residential areas as no one really wants' any sewage facilities in their neighbourhood.
	None I want to suggest.
	Gravel Pit – Colwood - I single facility with lots of room for expansion.
	Yes! One central one at the Colwood gravel pit. Or at UVic where it will blend in more with other campus buildings.
	As a taxpayer I feel that the best site is out at the Metchosin gravel pit for one treatment plant for the CRD. In the end it's the ongoing maintenance costs and it would be cheaper for everyone to maintain one plant instead of four.
	There are many but I think having the treatment places proximate to residential areas is GOOD. It will remind people daily of the needs to do what they can to reduce the need for such facilities.
	I don't know.
	Uplands School off Henderson Road – the old compost site at UVic off Cedar Hill Cross – Gyro Park – Arbutus Middle school field – Area at Hobbs School and Goward House behind Arbutus Daycare.
	Compost Road off Cedar Hill Cross Road as mentioned before. Repositioning of the Arbutus – Finnerty site to presently disturbed Saanich owned part of Haro Woods – which is less treed and has already as unmade access road to existing facilities.
	No treatment at all. None of the proposed sites seem to average above 50% total fit.
	4 th consideration – Compost Road – area near UVic dog walking area.
	In regard to Cedar Hill corner site I think the location should be in the centre where now there is just a big pile of dirt.
	The three sites presented offer a favorable siting for the University of Victoria to participate in reuse of filtered effluent for process water and or heating of the physical plant. This use of the heat in the treated wastewater stream could result in significant heat energy saving.

	The open fields north of Arbutus at the QA hospital.
	Large vacant field beside Pearkes/QA
	?
	Those two islands – Chatham and Discovery
	I thought the quarry over in Colwood the better choice for one large facility. The land is underdeveloped, has been mined, there would be no disturbance to wildlife. There is not much open land in Gordon Head-Cadboro Bay which is why we need to preserve what is left – not build on it.
	Have you looked at any of the Queen Alexandra developed sites in the area instead of ripping up woodland? I believe anything is preferable to using woodland. The impact on the local wildlife would be devastating whether used for sewage treatment, housing, etc.
	No
	Build at Clover Point and build it underground. Expand the point seaward, if necessary, and plant a park, etc above the ground to hide the treatment plant.
	I trust the experts have done their work.
	Don't know how many decibels any of these installations will produce, steadily, intermittently, or in surges. No matter how quiet these things are you will need a noise attenuation device, probably a fence. Might as well plan for it in your design, and in your estimate.
	Not enough familiarity with possible alternative sites.
	I hope all sites have been considered by professionals. If there are other sites with less population I hope they would have been used.
	Oak Bay Open House – June 19, 2009
	Would it be feasible to put the facility in a big hole? Using the above ground surface as a playing field.
	Somewhere where it doesn't impact the environment – trees, canyons, critters, etc.
	Haro Road is the best according to your criteria. The color coded images in your glossy charts point this out! Mystic Vale is an ecologically sensitive area – does not meet your criteria as being a suitable site.
	Treatment should be based on a system around the principles of source control rather than sewage treatment as planned.
	The Haro Road right of way off of Cedar Hill Road.
	Too many unknowns. Do not rush this in an attempt to secure monies from other levels of government.
	No
	There two other sites on Arbutus Road that are deforested and are grass fields.
	The park called "Haynes" – empty track west of Gordon Head Road?
	No
	No
	Yes. The best site is on UVic MacKinnon building parking lot – Use That!! Further from residents, no trees destroyed, no seismic fault. If UVic get sewage energy, they should give up the bad parking lots.
	Yes. The site above Harrow Woods on the SW part of UVic's property. Less traffic, not used, will not disrupt neighbourhoods or cause the loss of property values. Yes, a little more expensive, but a better investment in the future.
	The three sites presented offer a favourable siting for the University of Victoria to participate in reuse of filtered effluent for process water and/or heating of the physical plant. This use of heat in the treated wastewater stream could result in significant heat energy saving.
	Why is Macauley Point touted as the other site when DND hasn't actually agreed to that? Also, the other 2 (mentioned) UVic sites.
	Website
	Former compost site located across from the Henderson recreation center.





	The grass field in front of the QA is ideal. Pipes go up Finnerty and Haro. Better still, scrap this plant and pump everything to a central plant for processing.
	I am not aware of other sites. Of the three sites you've proposed, the Haro Road site seems to make most sense. It is certainly the most cost effective. 20 million dollars in additional costs certainly seems significant to me. It will cause the least disruption to residents – very important. Also, lots trees will remain for the neighbourhood to enjoy.
	None.
	Yes, one central site in an industrial area (or vacant DOD land).
	Yes. Houlihan park. It will never be a park. Right today, it is a vacant field of weeds which spread onto adjoining properties for blocks around. You would be improving the situation significantly by locating a treatment plant there.
	The field across from Haro Woods owned by QA
	Yes. The obvious best location for the Saanich area is the empty field on Arbutus Road next to the baseball diamond, on the QA Solarium property. Instead, QA sells the Haro Woods property to the CRD so that the QA is not viewed negatively for developing Haro Woods. QES should have been forced to sell the preferred treatment site.
	None at all. I am convinced by the science which shows that all this is unnecessary, and indeed may well be environmentally harmful.
	Any area other than around Haro Woods.

5. The proposed sewer mains and outfalls are shown by the orange lines on the candidate site maps. Do you have comments on the routes of these proposed facilities?
Gordon Head Open House – June 16, 2009
Finnerty-Arbutus makes the most sense for the mains.
Please coordinate with other work so that we get maximum benefits from work and doesn't make street work followed by repeat street work – coordinate.
My understanding is that most of them already exist. If new lines or roadwork is part of the project. The storm water must be managed i.e. infiltrated into the bio-swale arrangement. Ditto with the storm water collected on the facility.
Definitely. I <u>strongly</u> disagree with spending so much money only to dump water <u>still</u> including heavy metals into a body of water that cannot disperse the flow as effective as our current system – how redundant! Not to mention the effect on our local wildlife, many eagle pairs fishing off the coast of the effluent catchment. Tertiary treatment <u>must</u> be the goal here, if anything. Otherwise route liquid effluent out to current site.
Again, the Arbutus Road site is the obvious choice for the orange lined sewer lines.
No.
Use more source control programs, clean up storm water, leachate for Hartland Landfill. Oak Bay, Victoria, Esquimalt OHD pipe to be repaired. Cost \$330,000,000, not \$2.1 billion.
Arbutus site has shorter runs which is good. As I commented previously, the Cedar Hill Corner pipes would cause a lot of disruption in the Upper Hobbs Creek area, possibly almost as much in total are as the treatment plant? If this is also old growth, sounds like a bad idea.
It appears the present pipeline is only small diameter, so no doubt these would be a need to lay larger pipes anyway.
Routes are okay. Perhaps a shorter route to the Cedar Hill site might come from Cadboro Bay via Cadboro Bay Rd/Cedar Hill Cross Road. It would avoid pumping from Cadboro Bay/10 mile point.
The Arbutus/Finnerty site would require less mains. Less damage on the ground and more economical.
No.
Just the need to avoid disturbing Haro Woods, or the forest at the Finnerty-Arbutus site.
No site is 100% appropriate, no site shown is perfect.
Cadboro Bay Open House – June 17, 2009
The pipelines should not go through Mystic Vale – Mystic Vale has been protected it is on a fault line, there is a natural stream running through, aboriginal significance, i.e., the water was used for enhancing fertility.
I would like all these lines, etc. to be on public land. No easements. In the middle of 10 Mile Point the top of a sewer is a great footpath.
As stated I have concerns re crossing Hobbs Creek in Mystic Vale.
No
Ensure that construction adheres to all bylaws (Tree Preservation Bylaw) and that no exemptions be allowed.
Sewer mains should be along roads in order to be easily maintained and replaced.
As long as the chosen routes are adhered to, and the pipes remain underground.
Not significant – shorter problem. Much less impact than the Canada Line in Vancouver.
No
Avoid crossing Mystic Vale to the field's by using Cedar Hill Cross Road as the crossing.
Yes. Take the path of least disturbance to private homes and give the existing outfall likely needs work. Seriously consider the more direct new outfall illustrated.



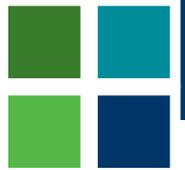


	Least impact to neighbors.
	Cedar Hill corner site piping should not go through Mystic Vale.
	The advantages of the distributed model for treatment is supported to minimize costs of sewer mains and collection costs as well as reducing the flows in the sewage system. As the approach creates viable opportunities highlighted in Note #2 Page 1 by locating the facility and Cedar Hill Cross Road, the site is supported using the hybrid treatment approach.
	Outfall piping for increased volumes of treated sewage, flowing into Haro Strait does not seem healthier for our ocean.
	Yes. Do the pipes have to go through Hobbs Creek. Could they not go out to Cedar Hill Cross Road and then enter back into the right of way through UVic??
	If we elect Cedar Hill X WWTP – go around Mystic Vale – not through, and not over!
	There should be no disruption to Hobbs Creek. It has a very sensitive ecosystem. So do not like location of planned site in Cedar Hill Cross Road site. What happens in earthquake, leakage into creek. The lines for sewage in and out must not go through Hobbs Creek.
	No. they appear good choices.
	All I have to go on at home are the tiny aerial maps in the brochure. Can't make out the details.
	I hope all have been designed with professional consideration. I am not an expert on sewer lines.
	Oak Bay Open House – June 19, 2009
	No
	Beware OK low lying sewer and storm drains in south Oak Bay – they are also old.
	To route the UVic inflow outflow over Mystic Vale lacks common sense. To route through an environmentally sensitive area that is protected as Endowment Lands for the enjoyment of the surrounding community is offensive.
	Reduce run off by use of settlement ponds, catchment basins and porous paving surfaces to reduce rain runoff and overflows.
	By cost factor alone the Finnerty-Arbutus site is best. It is illogical and offensive to consider a site that would impact Mystic Vale.
	Will you separate water – product so 'grey' water can be used to water lawns, etc.?
	Is the outfall long enough to get good tidal flows and no/limited back flow into Arbutus Cove.
	No.
	The University of Victoria field's site would obstruct pedestrian and bike paths – a key concern.
	Using MacKinnon building parking lot still good for the sewer mains.
	Yes. The outflow pipes should not go through neighborhoods as this will engineer acrimony and costly lawsuits. Better to run your outflows along the northern boundary of Queen Alexandra as you already have proposed your <i>meager</i> pipe going through their property.
	The advantages of the distributed model for treatment is supported to minimize costs of sewer mains and collection costs as well as reducing the flows in the sewerage system. As the approach creates viable opportunities highlighted in Note #2 Page 1 by locating the facility @ Cedar Hill Cross Road the site is supported using the hybrid treatment approach.
	A line through QA would appease the neighbours already site around the edges of QA property. We request that the outfalls in GH and Oak Bay be shunted into the treatment mains as well.
	Website
	Yes. Why do the three sites all show a new pressurized sewer on Rowley Road? Why not put it on Haro and through the school yard – that way is shorter, hence cheaper.
	No
	The entire CRD sewer infrastructure is primitive by civilized world standards. Please compare this to any European city. Massive

	infrastructure was put in place over 100 years ago over there. As density increases this patchwork of pitiful infrastructure in CRD will become inadequate and is a major deterrent to efficient urban development. Long live the car and suburban sprawl!!
	I can only wonder what net benefit(s) this massive project will have on our community, but no-one seems to know if it will have any benefits.
	Using Haro Woods would be a mistake.
	The existing sewage mains need considerable work to stop overflows during wet weather. This would be a useful thing to do, instead of wasting money on unnecessary and perhaps harmful projects.

6.	Do you have any other comments?
	Gordon Head Open House – June 16, 2009
	I just wish that none of this is happening. What a dilemma.
	Concerns include: effect of construction on residential neighborhood, impact on property value, impact on environmental quality in neighborhoods (adjacent), noise, smells, off-gassing, dust, and visuals. Would prefer most economical least disruptive, most accessible and most hidden and least visible option. Access on McCoy-pedestrians and cyclists, safety concerns. Trucks and vehicles using McCoy – access from McCoy to Gordon Head rd is difficult due to oncoming traffic.
	Landscape to hide or enhance treatment facility. Possible water feature. Community space inside and out.
	Finnerty Road belongs to CRD already. Capital costs are the least of the 3 sites – approximately \$25 million less. Operating costs are \$400,000 less/yr. The other sites are not purchased yet. That is \$149.1 or \$146.1 – that will be spent if we buy them. Makes economic sense to use the Finnerty site.
	Get on with this. Taxes need to be put to use now and treat the oceans with respect. Monitor waste flow from various areas and tax proportional to quantity produced – more waste = more taxes as we do with electricity and water. Get UVic to be a partner and leader.
	The storm water aspect is very important to me.
	The Finnerty-Arbutus site is already owned by the CRD. Least cost to operate and least cost expenditures.
	The Finnerty-Arbutus site is already owned by CRD. The least costly to operate of the three preferred sites. Shortest gravity main. Makes sense to go with this site. Least costly to operate.
	The infiltration problems need to be fixed. Treating rainwater is inefficient and a poor use of funds. I'm strongly opposed to P3 for public utilities. Access to capital, operating costs and financial risks will all be paid for anyway by taxpayers. CRD should own and operate these facilities. CRD needs to start NOW to design the environmental monitoring program for the outfall. It'll take a year to develop the hypotheses for monitoring and it will be very helpful if two years of pre-operational data can be collected in a way that parallels the expected post-operation monitoring. The opportunity to recover heat, energy and water is about the only positive effect of this treatment program. I'd like to learn more about the local and regional benefits and beneficiaries.
	Glad to see the inclusion of treatment for storm sewers – this should be a priority as many pollutants (auto oils, cleaners, etc) find their way into storm sewers and hence onto local beaches in times of heavy rain.
	The facility should be built in such a way as to minimize both noise and odour.
	This must be an eco/environmentally friendly building. At least self contained. So sky lights to cut down on the electricity, etc.
	Is this a political move? 2010 coming and all? Has the local land consultant been consulted and have the VIHA staff that deal with water and sewage issues been consulted and listened to? Do they believe that we need a treatment plant. It seems that the jury is out on this one.
	Is this really needed and necessary? I'd like to see the site – if required – at UVic field's. It's not as close to houses and will have less





	impact in my opinion to the environment. Have you spoken with VHA? The specialists of land use and water testing? Perhaps they need to have a say and be consulted. They are the experts.
	The terms of reference for the Environmental Impact Statement should include project justification. This should address the benefits to the marine environment and human health compared to the existing treatment system. It should estimate the number of years before additional sewage treatment is actually needed to avoid problems in the marine environment. There should also be a benefit-cost analysis as part of the project justification. This should take into account the negative environmental impacts of the proposed sewage treatment project. It is not sufficient to say the Minister of Environment issued a directive. There needs to be a scientific and economic justification for the project.
	It would be a benefit to the home owner to understand what the annual cost increase to home taxes will be (per \$1000). I think of Greater Victoria as a small municipality. I believe the CRD should expand the scope of these sessions to present a vision for Greater Victoria and not be limited to Saanich East-North Oak Bay (funding should be based on an all-or-none approach). What will be the impact if other municipalities do not carry through with their mandate? If my taxes increase and other municipalities taxes do not, my resale value of my house will drop. Thank you for the opportunity to comment.
	I give credit to CRD to have such a nice exhibition. I would not comment on other parts of this form because I do not feel I know enough. However, I believe the whole project should take more time to come up with the BEST solution.
	Overall, in terms of suitability the Finnerty-Arbutus site seems to meet the criteria best. It is unfortunate that the forest there will be impacted, however the following factors somewhat mitigate this. 1) It is only second growth, not old growth, and already considerably impacted by invasive species. 2) There are management issues, particularly around its informal use by mountain bikes. As part of the site development there could be a resolution of this by a) designating part of the site as a legal bike area, with some monitoring. OR b) increasing the maintenance and supervision of the area and enforcing no biking. 3) Hopefully all of the site not occupied by the actual plant will remain as park in some form and there people will still be able to walk their dogs, etc.
	Sludge? "Waste biological sludge to sewer for downstream treatment and re-use." Very little explanation of this end product.
	Of the 3 choices, the Cedar Hill site offers the only realistic choice for energy and water recovery at UVIC. The monumental cost needs to factor this recover-reuse into the analysis.
	Science seems to indicate that we don't need this at all.
	Conveyance. What happened to the land cost at Finnerty-Arbutus? It was acquired. On revised, I see you mean conveyance infrastructure not land conveyance.
	There are three major concerns of adjacent land owners: 1) Appearance – care must be taken to ensure the plant is more attractive than surrounding properties. 2) Smell/Noise – design and operation must fully address these issues. 3) Traffic – trucks, large machinery are not welcome in residential area.
	Because of provincial mandate one site will likely have to be approved. I live in Victoria and the site of a plant at Clover Point won't likely deter people going there to take in the view.
	Got any nice windmills to tilt at? This whole thing is a fiasco? Does the secondary treatment deal with flushed medicines or heavy metals? The sludge isn't suitable for anything other than landfill or dumping into the ocean. The extracted energy is more expensive than from BC Hydro. Using the sludge for anything agricultural will only increase antibiotic resistant diseases.
Cadboro Bay Open House – June 17, 2009	
	Many but time presents as well as adequate information to make a reasonable commentary.
	It is not clear why sites <1.5 ha were excluded – clarification would be appreciated – it would be interesting to see what other sites might work if the size requirement was less.

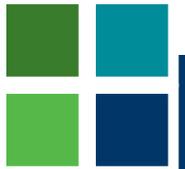
	I have mentioned to a helpful CRD worker that the colored “Analyzing the Area” display boards would be more helpful if the site areas were outlined on them. Re the Cedar Hill Cross Road site: apparently UVic already has plans for future expansion, so am curious why that site is even being considered.
	The dog field’s site just lost a large amount of space fenced off for saving of soil. Why not put the treatment facility under the site if they want it so badly there? However, it is noisy next to Mystic Vale – destroying Mystic Vale already. So many hundreds of people and dogs use this site for exercise, mental health reasons, socializing, etc., next to Mystic Vale. It is unique in Victoria for this reason. There is no other safe place for these groups of people and dogs to go. The Haro Woods is the logical place to put this site. Work with the community to make the space more accessible and more people, help develop trails, exercise areas, washrooms, etc.
	I would like to see commitment to the reuse of water, the extractor use of heat taken from the water going into a plant. I would like to see grey water from the treatment plant made available to nearby properties for irrigation, toilet flushing’s. I would like to see the sludge and water treated to remove non-water chemicals. The bio hazardous stuff can be rendered harmless (I hope). They are closing the show so must go.
	The whole thing stinks! Suspiciously convenient that the costs for Haro Woods is the least expensive.
	Mystic Vale is considered to be historically an important First Nations site and continues to be a sensitive area. I think we are all worried about odour.
	A lot of money has been spent on a fundamentally flawed project. Why is there no public vote on a project of this magnitude? Why hasn’t the current solution been included in cost beneficial analyses? What, in conclusion, is the benefit beyond compliance with an environmental law that is flawed and inappropriate to local environment?
	Secondary sewage treatment is unnecessary; money could be better spent on public transit, etc. Many, many scientists insist that the secondary sewage treatment is not the most cost effective way to improve the marine environment. It would appear to me that the CRD has built a hierarchy dedicated to sewage treatments – their jobs depend on it – so, of course they will defend the process, in spite of scientific evidence sharing that what we are already doing is sufficient. And where is the cost/effective analysis – no data is presented to compare the present to the proposed system. We have nothing in writing from federal and/or provincial governments for funding, only verbal commitments.
	My primary question, “Why is it considered necessary to change our treatment system?” Went unanswered by your information boards. What happens in 2006 that prompted the Minister of Environment to mandate sewage treatment? I would appreciate solid confirmation about our system now compared to the total effects of any proposed system. One striking problem left completely ignored is what will be done with the toxic sludge that remains from treatment? The comparison should I clued costs – environmental, social, financial, of our existing treatment method verses the proposed methods, i.e., trucking costs, construction costs, extra plants to deal with the treatment sludge, containment costs of buying the concentrated waste. I request a referendum on this topic.
	The primary question of need for additional treatment has not been fully explored. It seems that the decision was made by MOE with little public process, but the need for public input to now <i>concentrated</i> on the back end of the decision process. It is a poor process that asks for people to choose from among a suite of options once a decision has been made without public input or real debate on the science.
	I hope there will be a referendum.
	The biggest concern is the enormous cost associated with the project and the perceived cost/benefit. How is the cost per taxpayer to be amortize, i.e., how many years is the payback period going to be. i.e., is the project to be paid back in 10, 20, 30 or more years? The shorter the timeframe the heavier the burden for the taxpayer, who already feel squeezed.
	We must get this project started as soon as possible. It is absolutely disgraceful that the Victoria region while claiming to be eco-conscious dumps sewage into the nearby water, untreated. The CRD must adopt a “thick skin” to counter the inevitable self appointed NIMBY’s.
	It seems premature to be selecting sites when decisions have not been made about what treatments will entail. Growth in CRD is





	<p>expected to be in the western communities. The gravel pit area in Colwood makes sense as the site. Access to McKenzie without disrupting Arbutus neighborhood makes sense if there is to be trucking and 24/7 activity. UVic playing fields are already brightly lit. Please ensure UVic representative at June 22nd meeting.</p>
	<p>Public perception of sewer treatment is – large open tanks of putrid water. If your treatment/recycle system does not feature such tanks it would help if you made it clear – reassure folks that a sewage treatment plant in their neighborhood is not a disaster.</p>
	<p>This is the single biggest project in the greater Victoria area (the capital and surrounding municipalities), yet the information open house in each area consisted of only a few hours (i.e., in Cadboro Bay from 3-8 pm). What are you people trying to hide or pass!! What kind of democracy is this!!</p>
	<p>Other institutional buildings and not take up or interfere with valuable green space. Why the CRD board is prepared to antagonize neighborhoods here, Victoria and Esquimalt is beyond me. One site, preferably industrial would be best for everyone.</p>
	<p>Well prepared information. Personnel explaining information were very good – tactful, patient and able to give excellent information. Reluctantly I can see that the Arbutus site is the most desirable choice.</p>
	<p>The entire project in this region is contingent on a resource program with UVIC. The CRD should be negotiating an MOU with UVic. Residents have a right to know if the waste recovery will be productive and if it will reduce costs – UVic's contribution. CRD has made itself responsible for Haro Woods by purchasing. Now prove that you can be a good steward!</p>
	<p>The bottom line cannot be purely financial. Having the right plant and the right place is more important than minimizing tax burden now and in the future.</p>
	<p>This was well thought out and well presented. Thank you.</p>
	<p>Keep all facilities as small as possible; think outside the old box to achieve this objective. Orient all facilities to fit the site; square doesn't fit all. Have UVic participate in state of the art facility on their lands. Citizens of Cadboro Bay/Gordon Head can buy put CRD costs for their Haro Woods site; apply a 10 year plan to do that. Inconceivable to degrade our last remaining forest. Value of a forest cannot be measured – habitat is critical since not much left; CRD vision statement says “a region driven by a love for the natural world, where natural beauty is preserved...” Have a citizens committee established to bring human concerns forward. Reduced area for dog walking is not a legitimate factor for the UVic site as UVic might do more restrictive development and dog walking doesn't need the whole area anyway. Pumping to UVic site is only 100 feet elevation; not prohibitive. The UVic site is effectively screened by distance to the east and south. Sewer work up to UVic site does not need to impact the old forest habitat at Haro Woods as it can be done carefully. Tree <i>windthrow</i> would be minimal if work done carefully.</p>
	<p>I've said my bit on the front. To cut down Haro Woods for this would be a crime. The Cedar Hill site is the best of the three, but do not touch Mystic Vale. Reroute pipes around it. This sewage treatment is not supported by the science. It is a waste of taxpayer's money! Had to get that off my chest. Save Haro Woods!</p>
	<p>I believe that destroying our GHG clearance where alternatives exist is the wrong decision. Saanich overall has over the past decade lost an enormous amount of canopy, we should be trying to save as much as possible. Neighborhood is not primarily houses/building one people. People live in their neighborhood because of what it is. Some folks like to be close to the action and live downtown, some prefer suburban living. I would say the majority of people in our area enjoy the semi-rural neighborhood and from a local people perspective the loss of tree/focus difference the better and if lived in a wooded area. Move in part or whole into the present Saanich park of Haro Woods which already has sewage facilities. If you are looking for resource recovery I would suggest the Compost Road would have easy access to Cedar Hill Recreation Centre; the 9 hole pitch and put and adjoin gated community and Uplands Golf Course.</p>
	<p>Although the large parcel at the Cedar Hill corner site allows for buffers between the facility and adjacent homes, the wide open space has clear sightlines to home's, prevailing winds will blow from the facility to homes, and affects a highly used recreational area. Does cost really factor? If it does, the Finnerty–Arbutus site is the winner. Financial compensation for decreased property values must be factored.</p>

	If the CRD believes that nice looking facility buildings and some cursory screen will suffice, they are woefully mislead. Property values will decrease if a facility is built nearby. Homeowners must be compensated.
	To whom it may concern – best case scenario is a compromise that would treat our sewage and preserve Haro Woods as an urban park. Does not make sense for a plant to be placed where many second growth trees are removed. I prefer least environmental impact – Cedar Hill /UVic area near the Compost Road.
	Why is the East Saanich/Oak Bay North site to be the first plant to be constructed?
	Sewage treatment plant 600 meters from a pediatric hospital, 2 schools, 1 day care centre, 1 UVic family – Could this be anymore insulting just in terms of children alone?
	Maybe one of the parking lots at UVic could be eliminated and a station built underground. What goes on the surface would be up to UVIC. OR, maybe a plant could go under a yet to be built UVic building.
	Impossible to choose whether or not sites are of any value or not without results of environmental impact assessment and a comprehensive risk analysis and cost/benefit assessment of all alternatives including different methods of treatment and status quo (existing baseline).
	As indicated, the developed plan presented for providing adequate sewage treatment in Saanich East – North Oak Bay should provide adequate treatment with a balance at a practical cost saving technology. It will provide opportunities for local water reuse and heat recovery (most practical). The innovations of this strategy and the apparent flexibility are key components in the design. An opportunity for concerned taxpayers living in the community to view several plants in Washington State may provide important discussion for the design team as they move towards the final design.
	No sewage treatment in the Haro Woods.
	Put in the best quality system that will pay for itself over time. Look long term, not short term. Use the site as a solar farm (especially Cedar Hill Cross Roads). Use the opportunity to make the site more beautiful (especially Cedar Hill Cross Roads). Incorporate biking and walking trails. Sewage treatment is our responsibility. Let's do it scientifically (energy and water creation) and with style (better looking buildings). No PPP please.
	If UVic is going to benefit from recovery of heat, then UVic should fund some of the sewage plants. I think that the Finnerty-Arbutus site has already been chosen as the final site and this exercise you are engaged in, putting forth 2 UVic sites – is just a charade to make it appear to residents displeased with losing Haro Woods that you are making an attempt to find other suitable locations. Please, prove me wrong! Conveniently, you have shown the Finnerty site as the least expensive to construct and maintain, so if economics determine the decision, of course, Finnerty is chosen,
	This is a very helpful exhibit. Applause to those who organized and staffed it. Well Done!
	The mood of the residents is changing. There is bitter resentment about choosing this site (Haro Woods), which is currently used as tranquil escape – for wildlife and for people. Think it would be wise for CRD to wait, watch how Langford's approach to treatment works, and then decide how best to continue. By the time our property taxes have paid for this treatment plan there will be no funds for social and infrastructure needs in Victoria/Saanich. I mean we used to LOVE where we live. Now there is insecurity and anger and contention in our meetings on roads and paths. What makes you think HW is not sensitive or important?
	Treatment and effluent of heavy metals, endocrine disruptor and other nasty materials.
	I have a concern about the loss of effluent water in dry periods. I understand that winter rains often saturate some areas of Victoria, yet I wonder if other areas with very good drainage could be used as natural filtration areas. Also the water would assist in aquifer refilling. Some of the water could be filtered through grass swales or other natural systems. Many of these ideas are being employed in Europe and Portland Oregon. Portland has incorporated many store water recovery systems using grass swales and water gardens. This an important matter to me, so I encourage further study on this. Thank you. Also, I realize treated sewage water would not be appropriate for drinking





	but it could be returned to our aquifers whereas storm water if properly treated could be returned to our water systems. Is this true? If not could it be stored somehow? Underground? To be reused for irrigation, street cleaning, etc.?
	I like the UVic Cedar Hill corner site the best. Minimum impact to residents and wildlife. In the long term, the preservation of Haro Woods and the sale of the woods to a conservation type society must be considered – no matter what. The cost we must look after what is left of our natural world. What a travesty if we cannot preserve woods for the long term – please don't make a judgment based on cost alone.
	Esthetics.
	No full blown cost benefit analysis has been done that says sewage treatment as proposed is necessary and its cost effective. Scientific experts have stated the existing sewage treatment is effective and secondary treatment is not necessary. I have more faith in these experts than I do with politicians. Prepared sewage treatment at \$1.2 billion (estimated) with an average increase of \$700 to my property taxes for unnecessary sewage treatment, is absurd and a waste of money and resources, etc. No person can guarantee that the sewage treatment will not produce horrible odours when the wind is blowing. Local residents near the catchment plant will have to live with their stink, day in and day out, or sell their homes and move. This is absurd. I note the CRD expert said there would be no odour, at the perimeter, on a windless day. There is almost always a wind or breeze in Victoria.
	This process is fundamentally unfair – although it purports to use a triple bottom line assessment, the option of retaining the existing system (the status quo) is not being considered. This is supposed to be a democracy – the local officials and elected municipal / provincial / federal members should represent the will of the people. This isn't happening.
	I appreciate the helpful nature of the CRD staff and representatives. If either the UVic field's or Cedar Hill Cross Road sites are chosen, our concern would be the landscaping around the buildings to camouflage the sites current conceptual drawings do not show.
	Would have preferred several smaller plants with maximum use of heat and energy generated. Waste water should be used on golf courses, parks and university grounds, assuming it is contaminant free.
	Yes. The architecture should be a credit to the community. It should look good to everybody. It's going to be there for a hundred years. We might as well like it, even BRAG about it. This can be achieved with a 5% surcharge in architectural design cost. No extra construction cost, no increased operational cost, just pleasant design. Now, what can be done to lower the large shiny pipe elbows below eye level to get rid of that industrial aspect of the installation.
	If UVic site chosen at Cedar Hill it needs better landscaping to shield from neighboring properties. Same applies to UVic fields.
	I think Cedar Hill Road site should be selected because, the land is already cleared, the site construction would not be very disruptive to the area. Wastewater could be used to irrigate the golf course and UVic field's, etc. Water is a priceless commodity and we must reuse it.
	See attached letter – too long to type in here.
	To sum up: All residents in all the site areas are equally outraged and against the respective locations. Please bear in mind the UVic locations have had very little time to get over the shock. So we need to look at the best use of energy and taxpayer's money. Based on this it is ridiculous to even consider either of the UVic sites. 1. The money saved by using Haro Woods is equivalent to 10 years running costs and there after the running costs are cheaper. 2. Extra land and energy used for pump at Haro if UVic sites are used. 3. CRD already own Haro land no more waste of transaction fees. 4. Trees at Haro Woods have to be cut down any way in fact they make a perfect shield and would guarantee their safety for the future if plant built there. 5. The millions saved by building at Haro woods could be used to compensate immediate residents or buy their homes at market value should they wish to leave – workers could rent these houses and they would be re-sold. Basically if Haro Woods is NOT chosen the Vancouver Island taxpayer should investigate as to the reason and sue for waste of taxpayer's money.
	Oak Bay Open House – June 19, 2009
	Don't let the naysayers deter the project from going through. There are many uses for the sludge and waste water – which we should not be wasted.

	My main concern is the accuracy of the estimate of costs and the ongoing costs. City of Victoria has 100 year old infrastructure – Approx. Oak Bay has 50-80 year old infrastructure – approx. Saanich has 20-60 year old infrastructure – approx. The costs presently attributed to Oak Bay are excessive given that Oak Bay is going to separate its sewer/storm systems that exist.
	Prefer the Finnerty-Arbutus site.
	Why would UVic intend this sewage treatment plant as a location for municipal government? Uplands Estates, Crestview, Vista Bay and Chelsea roads boarder on this park. Real estate values will be affected. Yearly, our neighborhood (UVic) has had very little information, up to this point in time to respond to the proposal. To use this land for educational purposes would be more logical, but still questionable as Mystic Vale and green space is at a premium. Mr. Telford did not know where Vista Bay, Crestview Roads were located. Poorly informed as he was about the surrounding community was disheartening. UVic site is 1. Environmentally sensitive, 2. Stains UVic reputation, 3. Proposed as part of a rushed process, and 4. Not as suitable as Haro Road according to your criteria.
	The cost of the system is overwhelming. Since it has not been scientifically mandated, but is rather a politically motivated project. I am not in favor of the project as it is now planned and would like to see a more innovative team of engineers bring forth some new and less expensive ideas.
	Yes. The pamphlet “Explaining the myths about sewage treatment” seems to indicate quite clearly that this whole project is a waste and must be reconsidered. The whole idea of using toxic sludge to fertilize farms to grow food simply crazy! Please reconsider this whole project!
	The wet weather plants can be resolved by using LID methods and natural treatment of wetland streams ponds. Put the money back into the environment to address this issue.
	Strongly encourage Oak Bay (especially old) and Saanich to get their sewers fixed.
	The two UVic sites should not be in this survey process by virtue of their educational lands designation through the province. Should one of UVic sites be selected the UVic Board of Governors would then be involved in the final decision to place a sewage treatment site in my neighborhood – therefore, the sites should never have been considered. Most people I know and speak to reject completely the Cedar Hill corner site. I think it was entirely unwanted or needed to pit neighborhoods against each other when the CRD owns the best site on/in Haro Woods. Why would UVIC wish to be involved with this site selection?
	Preserving the remainder of the Arbutus Road site is a fair trade off. This assumes that there would only be about one truck per week accessing the site for disposal of screenings.
	Cost distribution – equally distributed between municipalities.
	I feel the Cedar Hill Cross Road would be best site as it is on cleared land already and is away from residential.
	Additional public workshops are needed. Information should be distributed to individual households adjacent to the proposed sites. Notice in the newspaper is inadequate as not everyone subscribes to the paper. Notice should come from Oak Bay municipality or from CRD directly.
	I have tremendous concerns that the human costs of the UVic field’s site have not been given adequate consideration. Why is this site even a ‘candidate’? It is bordered on three sides by residences – on one site by a 72 unit owner occupied townhouse complex. There are several problems with this. 1. Likely negative impact on property value for these owners. Would you buy a home next to this kind of facility? What forms of compensation will be offered? 2. Residents in this area value this space as recreational, just as the other two sites are valued for this purpose. 3. What sorts of guarantees can be provided to residents living near the facility regarding absence of smell, noise and vibrations? A CRD staff person told me that such issues were ironed out near a comparable facility after a year or so of ‘tweaking’. On top of 18 months of construction in people’s back yards (literally). This is an unacceptable disruption of people’s right to live peacefully in their own homes. 4. While the existence of truck routes to access the site during construction may be viewed as a ‘plus’ to planners it is a huge minus for people living in the area. 5. Residents in this area already put up with noise and traffic from UVic, Mount





	Doug high school and the fire hall. It is inequitable to suggest that the additional burden of having this facility built and operating should be placed on residents in the area. And it is unacceptable to suggest that since there are already all these disruptions in place it wasn't really matter to have one more. The UVic field's site should not be selected.
	I generally support the proposals of sites and sites seem appropriate. I believe more emphasis should be placed on the treatment process as many people consider a treatment plant to be large and 'offensive'. The new technologies as described are 'inoffensive'. Concerned over the distribution of costs – it should be equal to all users and in the past Oak Bay have been paying more per household.
	Finnerty-Arbutus site is highly commanded because – far apart from residential areas; low capital cost; and low view – interruptions.
	NIABY – Not In Anybody's Backyard. We need a rigorous environmental impact assessment that will truly evaluate the environmental costs and benefits of additional, land-based sewage treatment. If we impact the integrity of Haro Woods, or dog walker field's – that is a major environmental cost. Thanks for this opportunity! John Newcomb www.rstv.ca
	I think it is rather exciting to be using our waste as resource instead of expending it. More should be done – using heat and grey water is critical.
	Your "Open House" was a propaganda feat of detailed and slick proportions. The public know this because you have staffed honest inclusion and debate (hope I'm wrong), and in the process you have created a hornet's nest of resistance. It appears that you do not care and that the process is rigged (like Fran's recent election), to favour Haro Woods. How can you destroy this sanctuary? How can you proceed without funding? The ? pre-planned <i>obsolescence</i> – You cannot experiment there. There should have been a series of honest, open town hall meetings. There is a whiff of cozy corruption cronyism and a lack of common sense that seems to permeate this process. Please do the right thing and do not go through the Haro Woods. Thank you.
	As indicated above the developed plan presented for providing adequate sewage treatment in Saanich East–North Oak Bay should provide adequate treatment with a balance at a practical cost saving technology. It will provide opportunities for local water reuse and heat recovery (most practical). The innovations of the strategy and the apparent flexibility are key components in the design. An opportunity for concerned taxpayers living in the community to view several plants in Washington State may provide important discussion for the design team as they move towards a final design.
	Since the primary problem here seemed to be the poor Oak Bay sewers and the Jan/Feb rain infusion, why not fix the OB sewers so they don't overflow (needs to be done anyway) and then see just what the new problem is and see if Clover Point can accommodate the bulk of our sewage. As to reclaiming heat/gas/grey water then certainly these should be placed next to the intended users – big facilities like UVic, legislature building, DND sites, hospitals, as many as possible. As the outfalls are still a major source of containments, they should be included in the wastewater treatment. \$2 billion is a lot of money to squander on only a portion of the perceived problem. Considering that it was UVic scientists that decried the need for a secondary sewage treatment, why would they want to pay for wastewater recovery?
	It clearly appears that "Finnerty-Arbutus" site is the most appropriate both from cost and location perspective. It doesn't make much sense to pump wastewater to either of the University sites, greater capital and operating costs. The acquisition of land from the University is an unwarranted additional cost of the project.
	Website
	The neighborhood feels strongly that Haro Woods should not be impacted. Yet you plan a plant or a pump station in its midst. Just abandon this site and process everything centrally.
	I realize that this process has come about because of an edict issued by the provincial Minister of the Environment. However, in following this issue for some years, I have come to understand that land-based secondary treatment is not justifiable scientifically. The marine environment is not harmed by the Clover Point discharge and abatement over the short-to-medium term. Over the long term, growth could be managed by the encouraging self-contained treatment plants for new residential developments such as retrofitting existing office and residential complexes with grey water treatment and reuse systems. In short, we have been heading down the wrong road for reasons of

	politics, perception and to obtain senior government funding. Stop now!!
	We need a base case for comparing the benefits and cost of various options. I suggest the base case be a “design with nature” options, which: - runs on solar energy, the output of one process becomes the input for another, is highly adapted to local circumstances. If residents want a more energy intensive, high tech sewage treatment solution, then they will have to pay for it.
	I just attended the Saanich East Oak Bay Workshop (as a registrant) and was disappointed with the process. The site selection exercise was just that, an exercise. The concerns raised that were essentially political could not be dealt with in its context. These include, why are we treating at all, a major question that is still without real satisfactory answers Other than the stock ones that is it is provincially mandated in place which I understand is not quite true. Furthermore to turn away interested community members from any consultation process is a bad move. I talked to several individuals who were not allowed on the site because their name was not on a registration list. They left of course, but they were not happy! There is a perception in this community that community consultation by the CRD is disingenuous, and while I choose to be more charitable in my assessment, I can see how this perception is fueled. I choose to believe that the intention is there but the deficit is in skill. Anyway, you can and should do better.
	This entire process is a sham. None of the key questions are being asked, much less answered. The community feedback reminds me of the 3 choices: “Do you want your mother shot, poisoned or hung?” The question of her living on is not an option. I did not attend an open house, it was overlooked. Shameful.
	Like many residents, “what’s the point”. The process seems to be just window dressing and the public feel they are left out of the process. What conversations have taken place between the CRD and the University? If the CRD is unwilling to provide answers to this, then what input do the residents and tax payers have?
	I have heard that a new fault line has been discovered in the Haro Woods since you did your original seismic studies. Are you aware of this info? UVic has the information.
	<p>I attended the open house at Emmanuel Baptist Church. I spoke with one of the staff members in detail, but did not have the time to review the display boards. I live in an area of Oak Bay which I understand from the staff member will be served by the facility wherever it is located. Although I don’t personally live close to any of the proposed sites, I have immediate family who lives near the intersection of Cedar Hill Cross and Crestview Road, adjoining the UVic field which could be impacted by the proposed site #3. After discussing the proposed options with staff, my primary concern/interest in the selection of the treatment site is the magnitude of the impact on Haro Woods. This wooded area, although not formally preserved in park status has been important wooded parkland for the residents of Cadboro Bay/Arbutus area for decades. With extensive growth in Gordon Head and the University over the past 30 years, its importance has increased. Once removed there would be no wooded areas which can replace this site. I believe in the need for sewage treatment and believe that it is more than 20 years overdue. Victoria and its associated municipalities cannot continue to discharge untreated waste into the ocean. I would support the facility being located at site 3 although it is close to my family if the result was that there was no impact on Haro Woods. I do not see any advantage in locating the facility at site 2 (other than if it could reduce the impact on Haro Woods) as site 2 is located too close to larger scale residential family developments. As it was explained at the open house, the selection of any of the three sites will result in impacts to Haro Woods, both because of some infrastructure will have to be located there and if a site other than site 1 is chosen, the remainder of the site will have to be sold off to defer costs. I see that any sale of land will result in the removal of the woods and full development of the site. As I understand it, there are three scenarios for Haro Woods:</p> <ol style="list-style-type: none"> 1) No treatment facility at all. As noted above, I do not support a no treatment option. As it was explained, I understand that holding tanks would still be built in Haro Woods to hold storm water/sewage overflow during peak storm events. The tanks, buried, would take up to 1/3 of the site and the remainder of the site would be sold to recoup costs. This option is a no win. Our sewage remains untreated and the woods are still lost.





	<p>2) Treatment facility built at either site 2 or 3. A pumping station would need to be built at the Haro Woods site to send the sewage uphill from the Cadboro Bay region. I understand that the footprint would be about 50% of the full treatment facility or about 1/5 of the site and that the substantially higher costs of the other sites would require the remainder of the property be sold.</p> <p>3) Treatment facility located at Haro Woods. The footprint would take up about 1/3 of the site BUT the remainder of the site would be retained in the wooded form as a buffer between the facility and any other potential land use. The wooded remainder would be available for public use.</p> <p>On the basis of how the proposals were explained at the open house, I have to find that Site 1 is the optimal site for the location of the facility because it retains the majority of the wooded space for use. If this is not the outcome of selecting site 1, then my opinion would likely change. Finally I would like to point out that I was very conscious at the open house that the staff pick was site 1, and the material which we received on leaving focused on this location almost to the exclusion of others (the Appendix B siting report included aerial shots detailing the Haro Woods lot and options, but no such detail for sites 2 and 3)</p>
	<p>This whole business is a fine example of “politics always trumps science”, a sad state of affairs for humanity’s future.</p>
	<p>Turn what should be a park into a park. Destroying this unique area would be devastating to our community and a lasting negative legacy for the Capital Regional District.</p>

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Online Public Queries Summary



This summary is based on 41 emails, sent between May 15-July 13, 2009. The number in the right column indicates the number of emails expressing that particular sentiment. Some emails expressed multiple sentiments, which are captured in the table below. Sentiments expressed in green text are regarding the Finnerty-Arbutus site, sentiments expressed in blue text are general comments and sentiments expressed in black are regarding UVic sites.

Sentiment Expressed	Number of Emails Expressing Sentiment
Haro Woods is inappropriate for industrial site	9
Supports either proposed UVic sites and/or sees them as better opportunity for resource recovery and/or a learning site	7
Concerned of habitat loss and ecological function associated with Haro Woods	5
Want to see Haro Woods preserved as park	5
Concern of risk to nearby residents by Haro Woods (e.g. daycares)	4
Mackenzie site is an appropriate option	3
The Saanich owned section of Haro Woods is more appropriate than the CRD owned section, as it has been compromised by anthropogenic use and invasive species	3
Cedar Hill Cross site is an appropriate option	2
The size of the footprint for the Haro Woods site represented in the schematic drawings at Open Houses not accurate (too small)	2
Concern of property damage from piping out to Haro Strait	1
More impact studies on the Haro Strait proposed outflow are needed	1
Concern of decreased property value	7
Concerned about one or all of: trucking, noise, odour and lighting disruptions	6
Better siting options (than those proposed) exist in SENOB	3
Concern of construction traffic and safety issues associated with it	2
Concern of increased taxes	2
Suggested community benefits design (amphitheatre)	1
TBL assessment procedures need to be clearly stated in public open houses	1
More smaller sites are required to recover resources and be cost neutral	1
Treatment sites should be built on an as-needs basis with new developments	1



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SENOB site should be placed on the large empty space at the end of Pendryn Street in Cadboro Bay	1
The Oak Bay composting site would be a respectable alternative	1
The comparison to the Washington facility is not representative due to different densities of people surrounding the plant	1
Monetary compensation is in order for any residents close to chosen SENOB site	1
Concern of lacking or specific budget for project	1
Concern of unrealistic resource recovery projections	1
Haro Woods should be used, as it is paid for	7
Against siting close to Mystic Vale (too sensitive an area/ecologically valuable old growth forest/endangered species/dangerous engineering)	7
Concern of impacts (aesthetic, air quality, noise etc.) to high density housing adjacent to UVic (Mackenzie) field site	7
All university lands completely inappropriate for sewage treatment (not compatible multiple uses/not what grounds designed for/too expensive infrastructure/cannot afford to lose space)	6
Concern with loss of walking and bike path trails associated with UVic (Mackenzie) field site, and increased danger for green commuters with construction	4
Against Cedar Hill site (more expensive than Finnerty Arbutus site; environmental footprint of additional energy requirements)	3
Want to see continued use of dog walk area if Cedar Hill Cross site selected	1
Concern of over-representation of Haro woods interests, advocated through organized lobbying	1
Concern of lost recreation space associated with use of Mackenzie field site	1

Online Comments

1. In the event that you build a sewage treatment plant in a sylvan area of Saanich, that is away from two-way noise interference, provided it will be odour free, I suggest you incorporate into its external design, an amphitheatre of considerable size, in the style of the ancient Greeks. What a wonderful venue that would be for staging outdoor entertainments and other community events, from April to October. It may sweeten an otherwise bitter pill.
2. I am completely disheartened by the fact the CRD is planning to disrupt and destroy the one and only few pieces of forest in Cadboro Bay. This thoughtless act and destruction will not be fine with those who live near this wonderful site. We as citizens will do what is in our power to stop this destructive and callous act. We will not silently stand by while you foolishly go ahead with this

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criminal act. Like most community members who live near Haro Woods we are very angry at what has taken place, and will do what we can to stop any gang of thugs from destroying our wonderful neighbourhood. We hope that your committee can come to their senses and choose an appropriate site for an industrial treatment site. It is bizarre how our tax money was used by your organization to purchase this site. We do expect that these tax monies (our tax dollars) will be used to keep this site intact and safe from vandalism or destruction. It is a relief that the CRD is looking at other alternatives other than using Haro Woods as a treatment facility. Most residents in our area are very concerned about the damage to this unique area, and the negative impact on our community. This group who live in vicinity are regular taxpaying citizens.

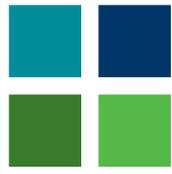
Most would agree that this area is not an appropriate site to use for such purposes, when other sites mentioned as possible sites will have less impact or damage. Of course there are many other more appropriate existing industrial sites that could be used in Saanich. All residents, that I have spoken to, and who live in this area, are livid with anger that this would be considered (silent majority of citizens). This is one of the only clean areas and buffer zones left for Cadboro Bay and Gordon Head. This area clearly needs to stay as a Saanich park and buffer zone for Cadboro Bay citizens to enjoy. This park is already surrounded with housing development and our university. There are a number of daycare facilities and two schools very close to Haro Woods. This is one of the very few parks left for citizens to use and enjoy. Using this area as an industrial site is foolish and will likely lead to much resistance and anger by many persons living in Cadboro Bay and area. This will be damage to the extreme and alter many lives around the Haro Woods community. The CRD could choose an already existing industrial site and not this pristine and unique area.

There is no turning back once this area is tampered with. I am certain that most Cadboro Bay members will resist such a thoughtless act, and do what is in their power to stop this plan.

Most will support using areas mention other than Haro Woods. This would be a terrible legacy for our "Provincial Department of the Environment" and CRD, and a serious black eye for those who live in Cadboro Bay. Not to mention an embarrassment and perpetual reminder to those who made such a careless error of judgment. This would be a terrible legacy.

Please help turn this great area into a park for generations to enjoy. This area is the lungs for both Gordon Head and Cadboro Bay.

3. Great idea with putting a treatment plant on UVic grounds instead of Haro Woods. The idea of using any heat recovery would be a real plus for UVic. Our treatment system would be the envy of many municipalities. Haro woods would be spared and our community would be better off. Haro Woods is such an excellent site for a CRD park. This is one of the only few parks left in this area and well used and enjoyed by everyone living in Cadboro Bay.
4. Why in God's name are we spending 1.2 billion on sewage plants that provide us with no "clear" advantage over what we have today? Grey water as an output is NOT GOOD ENOUGH! That could



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potentially mean 2 lines into each home unless you choose what we do today, flush it into the straits. The output should be drinkable, the energy should be converted into bi products. Jeez, are there any visionaries out there?

On another note, why you would choose 4 plants over one is beyond me! Are 4 plants going to be as scalable as one? And as cost effective? Are you nuts?

Lastly, I've seen the plants in Calgary and there needs to be plenty of room, something that isn't available at the corner of McKenzie and Gordon Head, unless you're building a plant that will be useless to begin with.

5. We are very concerned about the possibility of the sewage treatment plant in Haro Woods area. This is a beautiful wooded area, one of the few left. As well, we live very close to this area, and we are concerned about noise and light pollution in what is a very quiet and peaceful neighborhood.

Further we are concerned about the noise and traffic of trucks shipping away solid wastes.

Finally, if this treatment plan happens in our neighborhood, we will have to pay for it in multiple ways. Firstly, our property values will be decreased. Secondly we will have the increase in noise/traffic/light in the area. Finally we will have an increase in our taxes. All for the very questionable, and largely unproven, benefit of "treated" sewage! Thanks, but no thanks!

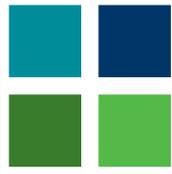
6. Please avoid using the Haro Woods location for sewage treatment. That land should be protected as parkland.

The two proposed UVic locations should be considered instead. Whether the treatment plant ends up in Saanich or Oak Bay, this seems an ideal opportunity to include UVic faculty, staff and students in our community's future.

7. Regarding possible sewage sites in Saanich East, I strongly believe that either of the 2 sites on University of Victoria lands should be considered over the Haro Woods property. Haro Woods should be made officially into parklands and all development within them should be halted forever. As well, I understand that some degree of additional traffic will result from a sewage plant with trucks going in and out carrying sludge material. It makes much more sense to me that this traffic should be kept out of the quiet residential area of Cadboro Bay.
8. Regarding the proposed sewage treatment plant on Mystic Vale. My wife and I are firmly and unequivocally against this idea.
9. While I have no great confidence in the CRD overall planning for sewage treatment, if a treatment plant is needed on UVic territory, I am in favour. I think it is a good site and would not be deterred by those who react NIMBY.



10. Sewage treatment usually produces unpleasant odours. I could not find any information regarding odours and would like further information regarding how smelly fumes will be contained so as not to impact residence in the vicinity of these facilities.
11. The proposed location off McCoy makes no sense, large strata complex immediately beside site will be negatively impacted. Also closing the highly used pathway makes little sense. Please understand that if you have kowtowed to the Haro area's protests, you have set a precedent and mistakenly supported NIMBY-ism.
12. I completely reject the CRD proposal to situate a sewage treatment facility upon the site described as Cedar Hill Cross Road and Crestview Road location. My reasoning is:
 1. Any of the University of Victoria lands proposed for sewage treatment sites, whether bought with our tax monies or if they were gifted to UVIC were never intended as locations for municipal sewage treatment plants.
 2. UVic has raised its profile to become a national/internationally ranked university. Part of the profile of UVic is the beauty of the campus, surrounding lands and its affiliation with international ecological research. I know of no other educational institution in the world that has allowed municipal government to locate their sewage collection and processing on lands dedicated for post secondary learning.
 3. To locate a sewage treatment plant on the Cedar Hill Cross - Crestview Roads site on the edge of the ecological reserve of Mystic Vale is illogical and a dangerous environmental-community resource gamble and a questionable engineering choice. The proposal is offensive to those who live in the surrounding area and to others who enjoy this preserve of natural heritage.
 4. The proposals for sewage treatment plants on UVic lands begs the question: Why is UVic leadership and its Board of Directors working with the CRD in a manner that will stain a hard worked for international reputation and how scarce available lands for future educational facility development can be best-better utilized?
 5. A location of a sewage treatment plant, particularly upon the Cedar Hill Cross and Crestview Roads site, will negatively impact real estate values in the surrounding neighborhoods including those within the Uplands Estates. Is the CRD prepared for an obvious for legal confrontation and is the municipality of Saanich prepared for the loss of revenue as hundreds of homeowners challenge their property tax assessments?
 6. The CRD paid for the Haro Woods (Arbutus Road) site. Why was our tax dollars used for this purchase if not for the development of a sewage treatment plant? Are we to understand that the CRD will be spending more tax dollars on a site that is (a) environmentally sensitive; (b) that stains UVIC's reputation; (c) gives rise to questionable planning practices at UVic and by the CRD; (d) represents significant environmental engineering challenges; (e) devalues homeowners investments and (f) is offensive to the community at large?



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13. ...The triple bottom line analysis process, in particular the requirement of UVic's Board of Governors acceptance, is not outlined clearly in any of the literature or on your open house information boards.

...In my opinion this is not a reasonable process when such significant information is not put out front for community stakeholders.

...Additionally I do not think it proper process that UVic Board of Governors could ultimately hold the final say on whether or not a sewage treatment plant is sited in my neighbourhood. It is probable that UVic Board of Governor members do not relish the thought of being possibly put in this situation.

...The inclusion of the UVic sites in the proposal was totally unnecessary since the lands were dedicated/reserved strictly for post secondary development and expansion in the first place... UVic has the smallest dedicated reserve property of all universities in BC, possibly North America - it can ill afford to give up any acreage.

... So why pit one neighbourhood against another when there really is no choice (even if only on a strictly economic basis) other than the Haro Woods site that CRD already owns?and this is why people see the CRD process as flawed.

14. At the Cadboro Bay workshop, and in the Saanich East North Oak Bay brochure that was handed out, the representation of the site in Haro Woods (AKA "Finnerty-Arbutus") goes nowhere close to showing the impact that the construction will have on that urban forest. For the construction to take place, according to WCB rules, trees must be removed around the area to a distance of twice the tree heights from the perimeter of the construction. This means that trees will need to be cleared to a distance of about 200 feet to the NW, SE and SW of the perimeter of the construction shown. By not illustrating this fact on the Haro Woods forest, the information blatantly misleads the public regarding the impact of the sewage treatment plant there.

The impact of this extensive clearing is further compounded by the fact that, the larger the clearing, the larger the effect of a blow-down will be. Once the area has been cleared, the next south-easterly is guaranteed to take a large number of the remaining stand down. To verify this, examine what happened when the parking lot on the east of Ring Road was expanded around 1995. Immediately after the clearing was done, a winter northeasterly took out 200 trees in the University Woods to the NE of the clearing. It will happen in Haro Woods too. Please, leave it alone and choose a different site.

15. All three Saanich East sited identified depend upon treated waste water being discharged to an outfall in Haro Strait. Of course, this is intended for use only during "high capacity", but as we all know, increasing population will soon define "high capacity" to be "always."

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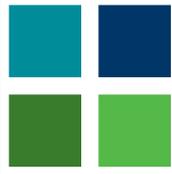


The outfall in Haro Strait does not enjoy the advantages of those in Juan de Fuca. Unless it is run almost to the US border, it will terminate in relatively shallow water, and in an area of tidal back-eddies that rarely allow the area to fully flush. So while the partially-treated sewage will not produce a threat of increased coliform counts, the nitrogen-rich effluent will lead to conditions such as algae bloom and oxygen starvation, both serious threats to marine life, as it accumulates in the area between Gordon Head to the northwest, Ten-Mile Point to the southeast, and Kelp Reef to the northeast.

This information is based upon my many years of sailing in the area and of course, needs to be supported by proper environmental studies. However, the agenda for completing such studies to the level that would lead to an informed decision will not be completed until the decision is made to use one of the three Saanich East sites. At the very least, the results of these studies, and the impact on the environment (including the threatened orca "J" pod) need to be known before a decision to go forward with a Saanich East site is finalized. The CRD needs to back off from these plans until all knowledge of environmental effects is available.

16. I wish to express my extreme disappointment with your proposal to simply use 4 sites at great expense to us unfortunate citizens. I am 75 and supposed to be the one who is losing his memory. It appears that the CRD official, memory is far more defective. Further it appears that you take delight in punishing us lowly citizens by imposing on us a lot of burdensome and unnecessary costs. To refresh your memories. You will recall that two years ago you sponsored a number of workshops at which an engineer Stephen Salton explained that there should be no net costs to John Q. You will recall that he had combined a holiday in Sweden with an exploration of their sewage treatment methodology in words so simple that I, a long retired Social Worker could readily grasp. In essence they used numerous sites, some combined with housing to dispose of their sewage. Because of the recovered electricity, they were able to run part of their transit systems from the sewage.

So instead of that, you want to take us back to Neanderthal times and to burden us with huge tax increases. I had always believed that the lower the levels of government were the more efficient ones, if you will pardon the assignation. In fact this used to be true of the CRD, who sponsored the development many years ago of the Hartland Dump which was envied elsewhere and which pioneered the notion of waste recovery. What has happened since then to the CRD. Stephen Salter has wisely moved on to what he describes as more enlightened communities. I have no business interests to worry about and am between major surgeries so have all the time in the world to tackle problems such as this. I have no wish to become a public pain in the ass, but am perfectly capable of doing so royally. I notice you allow the private sector to operate an upscale harbourfront development to occur with no dependence on our hydro system and operating in a carbon neutral environment. Can't you learn anything or are you too immersed in bureaucratic baffle gab?? As Oak Bay residents we have the benefit a courteous and efficient mayor, who takes the time to visit all new residents and we have municipal service employees who are by and large both courteous and efficient in performing their duties. I worked for many years for the provincial government as a Social Worker and have experienced enough bureaucratic bugging around to last



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two lifetimes. Spare me from any more. What we need is probably in the order of a dozen disposal sites located if necessary in conjunction with new housing. I am sorry Stephen lost to Victoria. I suggest that you might give him a call to see if he is willing to get you on track. He can be reached at home or at Fairallon Consultants. I would be happy to meet with anyone and look forward to a prompt response. If I appear rude it is because I am very disappointed and frustrated.

17. We were unable to attend the information sessions due to work/travel jobs outside of the city. We are hopeful that at the UVic (off leash dog area) site, we will be able to continue using that to exercise/walk our dogs off leash. People come from all over the city to use that area and we are all very grateful to the university for allowing us to use that space. We hope that with the construction going on for this treatment facility, there will still be a way to coexist there without problems.

This is one of the only areas in the city where we can run our dogs off leash and it's been so beneficial to countless people who, as I mentioned, come from other municipalities just to walk their dogs.

18. I was very disappointed at the CRD's Open House at the Cadboro Bay Church on Wednesday. Your maps failed to show a seismic fault running through the Haro Woods, your maps failed to show the buffer zone trees that would also have to be cut down to accommodate your treatment plant thus you are understating the impact on the neighborhood. Why place a treatment plant in one of the last major forests in the CRD. I believe that it should be placed on the large empty space at the end of Pendryn Street in Cadboro Bay. Then the amenities you offer can be used to improve Gyro Park. Alternatively use the large 'doggy' walk area in the vacant UVic property.

Nobody ever asked me if I wanted a sewage plant in the Haro Woods.

19. My main concern is location of the Saanich/Oak Bay treatment plant. My thoughts are that this is an industrial facility with potential odour, noise, and traffic impacts in what is essentially a residential area, Haro Woods. Industrial facilities should be located in industrial areas of the city, not residential neighborhoods. We do not support the location between two schools (Frank Hobbs and Arbutus) and two daycare facilities, and a children's support services centre. We don't agree with the destruction of a large portion of Haro woods to site a treatment plant, which is one of the last natural forest areas in Gordon Head. We are concerned with potential property value impacts as we live about 100 m from the edge of Haro Woods.
20. I tried to get into the June 22nd session at Queenswood house but was told the session was full. I really hope there will be another session as I really want more information on this. Haro Woods is an integral part of our neighbourhood - right next to schools, hospitals, a daycare. Putting a sewage treatment plant in there is totally unacceptable.

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I am really upset that this is even being considered. We pay huge taxes to live in this area and we can't even get sidewalks, and now we have to deal with this? I can't imagine anyone in the area wants it - why is this even being considered?

21. I still have a lot of concerns about this project. I personally feel we would be better served by "as needed" projects where current technology is applied to new developments as they are built. I feel these large sewage treatment plants are costly and the technology they use will be quickly outdated. Smaller reclaiming centers built/treatment/energy recovery systems make more sense as they can occur as developments come along and can reflect our always changing knowledge.

Putting my dislike of the proposed project aside I am disturbed by the character/nature of the proposed sites in my neighbourhood. Green areas are fast disappearing and the proposed locations are a beautiful wooded area, a much used walking area that borders a sensitive land preservation project and homes, and a playing field. I don't see why if we really need this large type of treatment structure that it cannot be placed in an industrial area with pump stations placed at a variety of locations as needed.

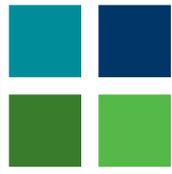
Two of the proposed locations are owned by the university, which has clearly stated that they want no part of the project. I am suspicious that the third location now owned by the municipality is really the property that has already been decided on. This property is in a location with close proximity to three large preschools, an elementary and a middle school. Access into and out of these neighbourhoods is limited partly to preserve the natural appearance of the surroundings and provide habitat for the wildlife. Construction will be very disruptive and dangerous for students walking to school, parents will return to driving students out of concern for their safety and presence with these large vehicles impeding the roadways. This will add to traffic and defeat our 6 years of hard work getting families out of their cars with our walking to school programs.

I strongly feel this project has suffered from a lack of common sense from the start. Decisions have been made and are continuing to be made in isolation. There is a demonstration of a lack of creativity and a lack of willingness to work with the community. I for one will be part of a large vocal outcry if the CRD continues this way and does not stop and rework plans so they recognize their hard work and commitment of our communities to have safer, healthier neighbourhoods and to preserve the natural beauty and well being of the land.

22. I saw a notice at the entrance to Mystic Vale last week stating the proposal about the waste water treatment plant at the Cedar Hill Corner Site.

I understand the need for waste water treatment, but feel that there could be a better place with less of an impact.

Our family has a dog that we walk there every day of the week. The dog walk area and Mystic Vale is an integral part of our lives - it provides a fantastic place for our dog to be off leash and safe,



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interact and play with other dogs; it's a fantastic place for our children to immerse themselves in nature (that's so close to home) and have fun. The Vale and whole open field is a bounty of habitats for many animals that an industrial plant could drastically physically impact, as well as noise-wise, and I can't imagine the construction impact on everything, and on how it will impact the soil and water table quality.

We are concerned about the loss/reduction (and who would want to walk their dog past a treatment plant, even if there is space?) of the dog's off leash area, as well as the impact that a waste water treatment plant will have on the area - Mystic Vale is an old, and should be treated as sacred, parcel of land. The disruption it would cause to all the wildlife would be devastating.

Also, if the dog's space is reduced, there could be secondary problems with a large amount of dogs in a small, confined space with animal, and possibly owner, conflicts.

Also, being able to provide water to the golf course as a 'plus' is a disappointing factor. I know that the golf course must provide a HUGE amount of income to Oak Bay, and they need to water the course regardless, but I think that that is a lousy consideration to putting it at Cedar Hill.

From considering the options of sites listed, it looks like the Mackenzie site would be most practical, and of the most use to UVic as well, and have the least environmental impact. Residentially, the impact may be greater (than Cedar Hill) but with time, a tree barrier could grow and fortify the visual impact.

Respectfully, please consider one more voice against the Cedar Hill Mystic Vale site. Thank you very much for your time.

23. The Victoria fields site raises concerns for me. There is significant foot and bicycle traffic coming from and going to UVic and Mount Doug School along McCoy Road. When those institutions are in full session there is much traffic congestion on Gordon Head Road at 8:15-8:45 AM and again at 3:30 PM. Other traffic is generated from parents taking their children to and from Campus View School.

My other concern is the proximity a housing project on McCoy Road and residential housing on Maria Street. The other two recommended sites seem more appropriate to me.

24. I realize that difficult choices will have to be made in the selection of a location for this facility. In that context, I nevertheless believe that the UVic fields site should not even have been identified as a "candidate site" both because of its proximity to residential housing and because of the other costs associated with it. There are several components to this position:
1. The UVic Fields site is surrounded on three sides by residences. Along one of these sides there is a 72-unit owner-occupied townhouse complex. On another side, there are private backyards - and, on one property, a home - less than 20 meters from the proposed parking lot. The CRD Housing units are directly across from the location of the underground tanks, some of them at a distance of only

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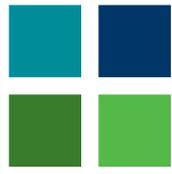
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30 meters. All CRD staff involved in assessing this site and members of the CALWMC who will make the decision regarding location of the facility need to visit the site in person to get a sense of its proximity to nearby residences and give some serious thought to how they would feel if something like this was proposed for the same distance from where they live. This is not an appropriate location for this sort of facility.

2. This site unfairly places a particular burden for this facility on homeowners and residences adjacent to the proposed site. This burden comes in many forms: reduced property values (would you buy a home located next to this type of facility?); enormous disruption during the construction phase, projected to last 18 months. Note that the fact that this site can be accessed via designated truck routes is listed as one of the positive features of this site in the information provided. This is certainly not a positive feature for people who live near the site and who will have to endure the additional traffic generated by the construction and operation of the facility, and yet this does not appear to have been taken into account; no guarantees that there will not be noise, vibration and odor problems caused by the facility once it is operational. And any "guarantees" provided will be completely irrelevant if the facility is built and problems emerge anyway. The facility will not be removed as a result, and nearby residents will have to live with the consequences. A CRD staff person indicated to me that there had, indeed, been this sort of problem - with vibration - near a comparable facility and it took "about a year" to sort it out. Extrapolating to the UVic site, and tacking this on after the construction phase, this would mean 2.5 years of disruption for nearby residents. Would you find it acceptable to have to live with this type of disruption to your home life for this length of time, including the uncertainty that a "fix" would eventually be found? Because of course there are no guarantees about this either. When asked whether there were other examples of such facilities being constructed in similar proximity to residential areas from which specific data on these issues might be available (e.g., strength of odor at various distances) a CRD staff person seemed to think that there really wasn't much of this sort of evidence. What this suggests to me is that there is very little concrete, experience-based information about whether there will be problems for nearby residences from this facility if it is situated on the UVic fields site. So we are left with reassurances based largely on theoretical expectations. I am not reassured, nor are any of my neighbors; loss of valued open and recreational space, although it's interesting that nobody thought to include this on the list of drawbacks for this site presented in the informational material that has been made available. On a bad day, one might suspect that the residents of this area are themselves less valued than those who have mobilized around the potential loss of open space and recreational opportunities at the other two sites - losses which are duly noted in the list of minuses for both the Finnerty-Arbutus and the UVic Cedar Hill site.

3. Residents who live adjacent to the UVic site already put up with noise and traffic generated by a range of civic amenities in the immediate neighborhood, including UVic, Mount Doug High School and the fire hall. It is unfair to ask this particular group of residents to take on, in addition, the burden of having this facility constructed and operating right next to them. And it is unacceptable to suggest that since the quality of life in this area is already compromised by existing civic amenities, one more won't make that much of a difference - I have heard people articulate this view, which reflects an astonishing disregard for taxpaying citizens who live in this area.



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4. In addition to the interests of residents in the area, selecting the UVic fields site would also impose a significant penalty on a much larger group: the many people who live in Gordon Head and further afield who work or study at the UVic and use the path that continues on from McCoy Road to get to campus, either as pedestrians or as cyclists. At present, this is a quieter, safer and more pleasant route than travelling further down Gordon Head route and turning onto McKenzie. The construction phase of the project will presumably close this route off for the duration or, if it remains partially open, render it much less quiet, safe and enjoyable. Once the facility is up and running, the same uncertainties regarding noise and odor identified as problematic for residents, above, will apply also to pedestrians and cyclists using the path. Assuming, that is, that the path will be re-opened at that time - something which is unclear from the diagrams presented. Permanent closure of the path would be an even greater loss.

5. The UVic fields site is directly adjacent to a playing field used for rugby (I'm not sure by whom) and within close proximity to the field next to the Velox clubhouse. I don't play rugby and don't belong to Velox and so can't speak for members of these groups, but I do wonder whether they have been specifically informed that this facility may be constructed so close to their playing fields. On the face of it, this strikes me as a "minus" rather than a "plus" for the UVic fields site.

In summary, then, the combination of these social and environmental costs with the significant financial costs associated with the selection of the UVic Fields site should lead decision-makers to reject it as a possible location for the proposed facility. The triple bottom line here is lose-lose-lose.

25. I have looked at the information regarding the Washington State facility that you mention and have explored its location in relation to neighbouring residences via Google Map. I have two points that I would like to draw to your attention: (1) the fact that there is one facility where residents have not reported problems regarding odour, noise, vibration etc. does not for me constitute sufficient evidence on which to base an assumption that for any comparable facility yet to be built there will be no problems; (2) from what I can gather from Google Map, through a combination of the "street view" and general map functions, there are no residences in as close proximity to this facility as the townhouses and single family dwellings referred to in my comments are to the proposed UVic field site. So the fact that there have been no complaints at this (perhaps otherwise comparable) Washington State site doesn't really tell us anything about the problems that could arise when the proposed facility is as close to residences as would be the case with the UVic fields site. For me, a "comparable site" is one that has residential units (i.e., people's homes) 30 meters from the proposed underground tanks.
26. In regards to the proposal by UVic to offer the McCoy Road location to the CRD for sewage treatment pumping station, I'm very opposed to this as this would devalue our property. Concerned that there could be odour at times. This location is surrounded by residential property with no way of hiding the above ground structures.
27. Would like to attend the 2nd workshop planned for July, as I understand tonight's (June 22) is full. Obvious concern for possible location at end of our street (McCoy), but perhaps more with

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bulldozing urban forest at Haro Wood. Someone's neighborhood will get the plant - but what form(s) of compensation are being contemplated for those within 100, 200, 500 meters of the facility. I think it would be unconscionable to suggest that homeowners will not be impacted in tangible and intangible ways. There will be significant and likely founded concern for property values, perception of neighborhood as well as health. This absolutely must be addressed...some form of monetary compensation package is in order.

28. I attended the meeting on June 22, 2009. I must say I am very concerned funding for this project will leave schools, hospitals, transit and law enforcement underfunded. I have three young children in the public schools. They need better funding. I am not impressed. We intend to put sewage ahead of education.

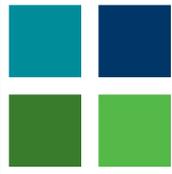
I believe the timing is wrong for this project as there are serious economic hardships coming for this city. The CRD needs to convey this to the provincial and federal government.

Meeting June 22, 2009 : There was no discussion about employment at the sewage plants. Would there be 24 staff? I feel the Haro woods facility would be open to vandalism. We did discuss the old Oak Bay composting site. I feel this site would bring a lot of benefits to the table. The best choice.

We are told there needs to be a pumping station installed in Haro Woods. The CRD needs to conduct a noise level study before anything proceeds. The neighboring area from the Sinclair Ridge to below the Arbutus high school is a very quiet area. This study needs to be conducted in all different seasons. We need a 100% assurance the noise level will not rise, as this would destroy the area.

29. Thank you for hosting the workshop/town hall meeting at Queenswood last evening. I was one of the fortunate ones who knew that registration was recommended so after I made it through 3 layers of security I was in the door. I would like to share my thoughts about the information, meeting and the process.

Kudos for having the meeting. I realize that you are trying to do a good job and that "concerned citizens" can be rowdy and overzealous at times. Having said that I was disappointed with the way that we were intimidated into participating in small groups rather than being allowed to have a more open discussion for at least a part of the meeting. Of course I wanted my input to count and be recorded but I also wanted to hear balanced, thoughtful discussion from others in attendance. I was not ready to implicitly "vote" on a site for the treatment plant when I had so many questions about the project as a whole. Having to choose between the CRD sanctioned small groups and a personal interest in knowing answers to a broader base of questions and the thoughts and comments of others in the meeting left me frustrated and feeling manipulated into a process that I was not comfortable with. Also, the gentleman who answered the CBRA questions by reading from the PowerPoint in a fairly patronizing way, and not encouraging questions etc. did not serve any of us well and certainly did nothing to instill in us a feeling of being valued and listened to.



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I have so many questions: why are we doing this if the science is questionable, why was there no "push back" when the provincial edict came down, what is the likelihood that the community will benefit from recovery and reuse of water, heat, etc. in the near future, is this a nice idea that will be years coming to reality if ever, how can you choose an option for waste water management when you don't even know what the budget will be, why multiple sites rather than one larger site in an area that has not been populated yet - one where community disruption, green space, property values, etc., are not impacted.....i.e., decrease social impact; are we assured that all toxins (not solids but pharmaceuticals, hormones etc.) will be removed, what if we have a problem like Halifax? We are in an earthquake zone and I would imagine our risks for problems would be high; what about improving the logjam in the sewage process in Oak Bay rather than using East Saanich as a treatment area, what will these plants look like, can they be built entirely underground, what noise is likely to be generated by the plant, what do you mean that you will remove the sea life and then replace it after the construction - how is that done exactly, why didn't we get an answer to the question about using Haro Woods and the impact on the environment due to loss of green space and the positive environmental impact of that - we didn't think it was a "political" question, it is a legitimate question about the environment in which we live and the quality of that environment... so many more questions to be answered. Please provide a broader forum for this type of discussion. The managed "workshops" serve a purpose for you but don't provide the type of process that will answer these and other questions. Your website information is fine but it is not accessible to everyone and there are too many reports where issues and discussion is refined down to a few points rather than answering very specific questions.

Anyway, thanks again. Hope you will broaden this input process so we feel valued and not manipulated. I would appreciate it if you would forward this email to the committee making these decisions rather than adding it to yet another report that paraphrases my concerns and makes me a statistic: 1 email, 2% of total etc.

30. I am 77, I have lived at Village Park for 30 years and the thought of a sewage plant next to our complex is extremely distressing. I and all of my neighbors will be dead set against this and will be taking whatever steps necessary to prevent it. Shame on UVic. There has been a sewage plant on Arbutus for years. My townhouse is my only asset and if you think you are going to devalue my property, look out!
31. I live at xxxx Gordon Head Road, in a complex called Village Park, which fronts on Gordon Head Road. There are a total of 72 - 3 bedroom townhouses here, and I have been informed, perhaps erroneously, that it was mentioned at one of your meetings that there are rental units, which is incorrect. All are owned by the residents. It is against our bylaws to have rental units here unless there are some short term extenuating circumstances which would have to be approved by council.

There is an average of four residents per unit which multiplies to 288 people. There are several families with young children here.

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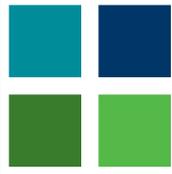
Beside our complex, on the south side, there is a field which is owned by UVic and has been suggested as a sewage facility. There is a path in the field which the residents use to access UVic. This would mean that if the path still existed, residents would walk past this operation and children would be unable to play in the field.

Before we moved here, we lived on Sutton Road, a no-thru street off Haro Road. At the back end of our property were dense woods starting at Haro, fronting on Arbutus and ending at Finnerty. It was known that there was a sewage plant in there, but it was hidden and we never went in there.

Common sense indicates to me that this is a sensible location, being surrounded by trees, it would be invisible, and therefore the most ideal choice. I am unable to imagine UVic wanting such a plant next to us, which would be so prominent on their property and next to their soccer field.

32. I believe that a site adjacent to Arbutus Road is to be preferred for cost and other reasons. In my opinion, the land currently owned by Saanich is the best available site because the wooded area of this site has already been compromised by the access lane and existing sewage activities.
33. We are residents of xxxx Crestview Road. I wish to express my concern regarding the proposal of a sewage treatment plant on the endowment lands bordering on Mystic Vale. The preservation of Mystic Vale as a beautiful and natural setting near the field is a treasure. This eco-sensitive creek that houses indigenous plants and animals needs our stewardship to maintain its viability. As a walking hike for all ages, its preservation is obvious to those who know and love this park. Green space such as the field is rare in a city and clearly calls out for all to speak loudly in its defense. I ask that you consider the alternative sites of McCoy Road and Mackenzie, or the woods near Finnerty and Arbutus Roads. I shall be attending the hearing June 17th.
34. 1) Of the 3 potential sites identified, the 2 on UVic property seem to be the least desirable because of the need for pumping wastewater uphill which adds to the cost and still necessitates a facility near the existing outflow. The sites are either too close to residential areas or risk serious damage to the nearby environment.

2) That leaves Site B: Finnerty-Arbutus site as the most suitable of the 3 even though it means the destruction of old growth forest and the resulting environmental impacts. However, from my viewing of comparable sites in the area, I have to ask why the following sites were not candidates:
(a) First is the property next to the above site, namely that portion of Haro Woods owned by the municipality of Saanich. It was the site of a "chopping plant" when untreated wastewater was emptied out into Haro Strait via the outfall being considered for reuse. There is an area in this property where trees have cleared, it is the closest location to the outfall and is already public land. While I am still opposed to the removal of this woodland area, the absence of this as a potential site is most confusing. Why was it not a candidate site? Why would the CRD prefer to purchase land next door at an additional cost to the taxpayer?



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(b) Second is an area across Arbutus Road, north of the Pearke's Clinic. This land is already cleared, unused and is also close to the existing outfall. The plant would be near the clinic but why is that a problem? It is removed from any residential areas. There would need to be some visual barrier planted although personally I believe a structure can be built that is not that unattractive such as the pumping station in Gyro Park. This land may be owned by the Queen Alexandra Foundation but they have given the CRD an option to purchase other land so why should this be different?

(c) Third is an area at the north-east corner of Arbutus and Queenswood. Although farther than the above 2 sites from the outfall, there are no elevation concerns. It is also a piece of land that is clear and unused. This site is closer to residential areas and may also require a visual buffer. The land is owned by the Sisters of St. Anne but they may be receptive to a sale as they could be "asset rich and income poor".

(d) Lastly is the open field in Gyro Park adjacent to the East Coast Interceptor Pumping Station. If the plan is to discharge treated wastewater into the Haro outfall, that pump could be used to pump treated water back to the Haro Woods area to the outfall pipe. This is land owned by the public (Saanich), it is open and mostly unused. The site is close to a residential area and may need visual and noise buffering.

Obviously a lot of work and evaluation has gone into the study of candidate sites but here are 4 that would seem to me to be as suitable as the 3 proposed and even preferable to the 2 UVic sites. Can other sites such as these be considered at this point in the process? Where they were considered and rejected? If so, why? Most curious is why the site of the old "chopping plant" was not a candidate. An explanation is needed.

35. As the co-owner and resident of the house that the Gordon Head Ratepayers was founded in I would like the residents association to lodge a complaint regarding the choice of McCoy Road as one of the locations for the future sewage screening plant. In my opinion to even consider this location as an option does not make any sense. The CRD should consider the sheer volume of students that walk past this location daily. They should check out the number of families in the area many that spend time in the field that is being considered. There is a dozen houses that are so close if you threw a rock from their backyards you could hit the proposed building site. Forget the fact that our property value will drop and think about the proximity to an international sporting facility and the kind of picture that will show the world.
36. I was just looking at the plans for the sewage treatment plant online. I am shocked that you would even consider cutting down trees in a beautiful green space like Haro Woods. The other 2 options (particularly UVic) seem to make more sense as they are on land that has already been developed. Saanich always likes to portray itself as a green borough....perhaps it is now time to walk the walk along with talking the talk.
37. I have noticed a lot of participation from the community for potential Saanich East-North Oak Bay waste treatment candidate sites. I have yet to note any input from Camosun Landsdowne campus or University of Victoria. Camosun and UVic contribute major waste for potential plant from

Appendix 4 - Supporting Documents

Online Public Queries Summary



September to June than community in that period. At the same time flows to the potential waste plant will be seasonal high compounded by waste contributed by over 20,000 students. Is it fair to let the community have treatment plant in their backyard? There is so much open space around UVic, it is logical to locate the plant in the open area where there will be least impact on the community. One of the options for location with least impact on community will be the University of Victoria Cedar Hill Corner Site, where Oak Bay municipality used to operate on land for composting. This site is well surrounded by greenery and sludge can conveniently transported by road. I am looking forward for your comment as well as any input from the two colleges.

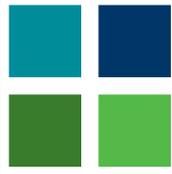
38. Speaking with neighbours and others in the immediate community, it is clear that the last two days of CRD representatives attempting to influence people to support the use of the Haro Woods in your open "open house" format has truly been a transparent failure.

Most folks, once they did a gut check, realized that the other two proposed sites are not really under serious consideration. It appears to the public that the Haro Woods is an expedient, politically motivated decision that is both highly flawed and not well thought out.

Where is the due diligence, and the guarantee of complete funding (in writing) before you desecrate this precious site? Honestly, how can you offer the other two sites as alternatives, one of which the community would support, when UVic has not even entered into any contractual agreements with the CRD to sell? That's a little like saying; "Here, marry my daughter" when there's either no fore knowledge or the bride's consent. Is this then just another cynical variant of the age-old shotgun marriage? This type of sophistry does not engender either community trust or promote the reputation of the CRD.

In fact, using the Haro Woods breaks many of your own well-stated guidelines. The area has been a recreational spot for the neighbourhood and a nature sanctuary for a long time. A seismic fault line runs directly through it. You will destroy one of the last natural gifts we have here, disrupt the neighbourhood and cause the loss of property values, and most likely engender a slew of lawsuits in the process.

Is there not a better way? It is not too late to do the "right thing" for future generations by preserving that land, and by involving the public in a more meaningful way than simply offering paternalistic and glitzy "open houses." If I was open-minded before seeing this performance, I am now dead set against the destruction of the Haro Woods. The current proposed sites for outflow piping will affect property values and disrupt well-established neighbourhoods. There is also the likelihood that potential ecological and environmental damage will result from what again appears to be poor and expedient planning by the CRD -- without any written guarantees of how you would face the consequences of your own actions and compensate those who are affected.



Appendix 4 - Supporting Documents

Online Public Queries Summary

With such a lack of transparency, and without any really well researched alternative choices, no wonder the public is both so concerned and angry. Would you yourselves sanction and support such a pre-crafted agenda in your own backyards?

What about alternative sites?

39. I am a Cadboro Bay resident and feel Haro Woods should be protected to the greatest extent possible. However, having attended the July 7 meeting, I feel the Cedar Hill Cross Road site is unacceptable because of the risk of pipeline construction through Mystic Vale. That leaves the UVic fields site, but at the meeting there was strong resistance from the immediate neighbours to that site. In light of this, and because Haro Woods is costed as the cheapest alternative, I feel it is highly likely that this site will be chosen. Should this be the case, I would strongly urge that as a quid pro quo to local residents, the remaining areas of Haro Woods not actually part of the waste treatment plant footprint should be designated protected as urban forest in perpetuity, including the parcels owned by Saanich and UVic. I feel that UVic as a major producer of sewage in this area should dedicate its portion of the Haro Woods as its contribution to the overall project; and that Saanich might well be receptive to a parks designation. Moreover, if the 3 parcels could be secured, it may be possible to site the facility on areas of the woods that are already somewhat degraded but may not currently be part of the CRD parcel.
40. I am a student at UVic and recently became aware of the locations the CRD is considering for the sewage treatment plant. I have not been following the story as closely as I would like and didn't realize the locations they were considering. I tried to go to one of the information sessions but it would not work with my schedule. I am sure A LOT of students are in a similar position with being unaware of the updates and unable to get involved.

To me, none of the choices seem ideal, but I think McCoy field is the best option because it seems like the least impact on ecosystems and land that is being used or would like to be used better by the university for recreation activities and outdoor space (like Haro woods and CVJI lands). I don't really like the idea of it being right on campus (behind McKinnon--as an alternative) due to smell, noise, etc. and would rather have the new athletics facility there and the sewage treatment plant further off campus. /I think that UVic should be polling and talking to the UVic students more since it sounds like they are ultimately going to be impacted by the location. It seems like the CRD is trying to go behind our backs and make the decisions while majority of students are out of town for the summer.

I don't feel like this issue has been properly explained or talked about on campus, where it will probably have the greatest impact.



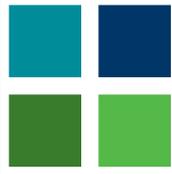
41. The Strata Council of xxxx xxxx wishes to express its strong objectives to the option of siting of the proposed Wastewater Treatment Plant on the University of Victoria lands on Cedar Hill Cross Road.

The grounds for our objectives to building a WTP on Cedar Hill Cross Road are as follows:

- 1) **Economic.** The documents prepared by CRD indicate that the capital cost of constructing the WTP on this site is over \$20 million dollars more expensive than the Arbutus Road site. The Cedar Hill Cross Road site is also the highest site under consideration and therefore the annual pumping and operating costs will be the greatest. In addition, the cost of acquiring this site from the University will be substantial.
- 2) **Environmental.** The significant annual energy requirements to pump sewage up to the Cedar Hill Cross Road site directly contradicts the CRD objective to conserve energy and reduce its “environmental footprint.”
- 3) **Land Use Conflicts.** Existing single family housing; higher density residential housing, such as Uplands Estates; and the University itself are all adjacent land uses which are inconsistent with the industrial land use implied by the proposed WTO.

Of the three sites under construction, the site on Arbutus Road has a lower elevation, closer proximity to the proposed outfall site, cheaper development and operating costs, and less existing land use conflicts. In addition the land involved is owned by CRD.

Thank you for providing this opportunity to voice our position on this important matter.



Appendix 5 - Supporting Documents

Handout at the Open Houses regarding the Neighbourhood Workshops



Neighbourhood Workshop

Wastewater Treatment Project

Saanich East & North Oak Bay Site Selection Process

The Capital Regional District is working toward providing cost effective, innovative and environmentally wastewater treatment to residents in the Core Area. On June 2, 2009, the Core Area Liquid Waste Management Committee (CALWMC) endorsed a distributed wastewater treatment plan which includes a treatment facility to be located in Saanich East & North Oak Bay.

A neighbourhood workshop has been scheduled on **Monday, June 22** to provide a forum for input and feedback on potential facility sites in Saanich East & North Oak Bay. The objectives of the neighbourhood workshop are to provide an opportunity for:

- The community to gain a better understanding of the work CRD staff has already undertaken around the known sites.
- CRD staff to listen and gain better understanding of community concerns.
- CRD staff to gather and respectfully record community input (challenges and opportunities) on the various sites for consideration by the CALWMC.
- The community and the CRD to better understand and apply the siting criteria that was developed in 2007.
- The CALWMC to have transparency surrounding information and decisions.
- The community to have: an awareness of the diversity of opinions and concerns that people have and hopefully move towards a degree of community agreement on a site.

Appendix 5 - Supporting Documents
**Handout at the Open Houses regarding the
Neighbourhood Workshops**



Neighbourhood Workshop*

The workshop has been designed to ensure everyone is able to participate and provide input into the site selection process. The workshop will include: presentations from staff, a short question and answer period, small group facilitated discussions and reporting back and closing comments.

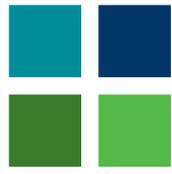
Monday, June 22

6:30 – 9 pm

Queenswood Centre

2494 Arbutus Road, Cadboro Bay

*To ensure everyone can be accommodated at the neighbourhood workshop, we ask that you please pre-register at the open houses, online at www.wastewatermadeclear.ca or call 250.360.3001. Thank you.



Neighbourhood Workshop Saanich East - North Oak Bay

Monday, June 22, 2009

Tuesday, July 7, 2009

Thursday, July 9, 2009

CRD
Making a difference...together

Agenda

CRD
Making a difference...together

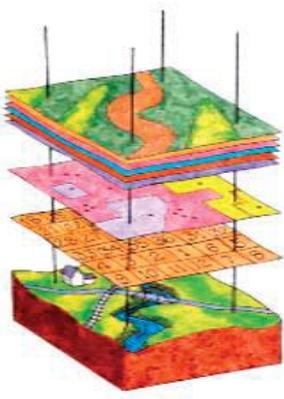
- Technical Presentation
- Question and Answer
- Siting Discussions
- Report Back



SITE SELECTION PROCESS

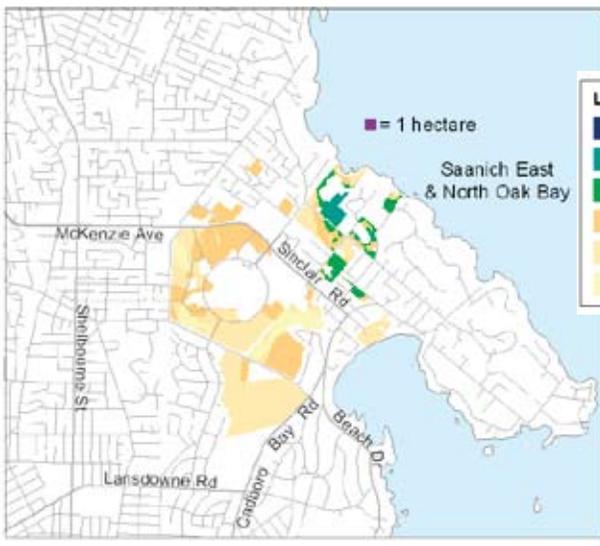
CRD
 Making a difference...together

- Develop selection criteria
 - Involve committees, public, and First Nations
- Collect data and produced maps
- Perform GIS analysis
 - 17,000 polygons
 - each with 30 attributes
- Apply weights to criteria
- Select candidate sites
- Discuss sites with owners



TOTAL SITE SUITABILITY RATING

CRD
 Making a difference...together



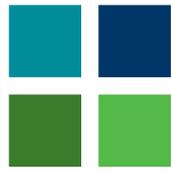
■ = 1 hectare

Saanich East & North Oak Bay

McKenzie Ave
 Sheilburne St
 Lansdowne Rd
 Cadboro Bay Rd
 Sinclair Rd
 Beach Dr

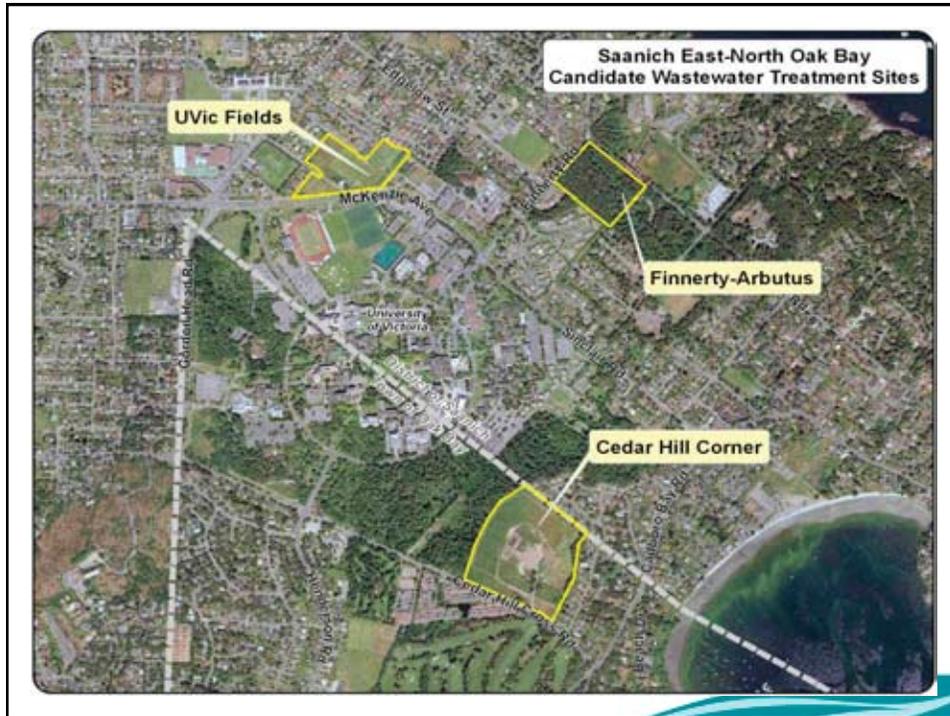
Land Use, Biology, Arch, Geotech, Energy & Reuse	
90 - 100 Best	= Total Adjusted Score
80 - 90	
70 - 80	
60 - 70	
40 - 60	
0 - 40 Worst	

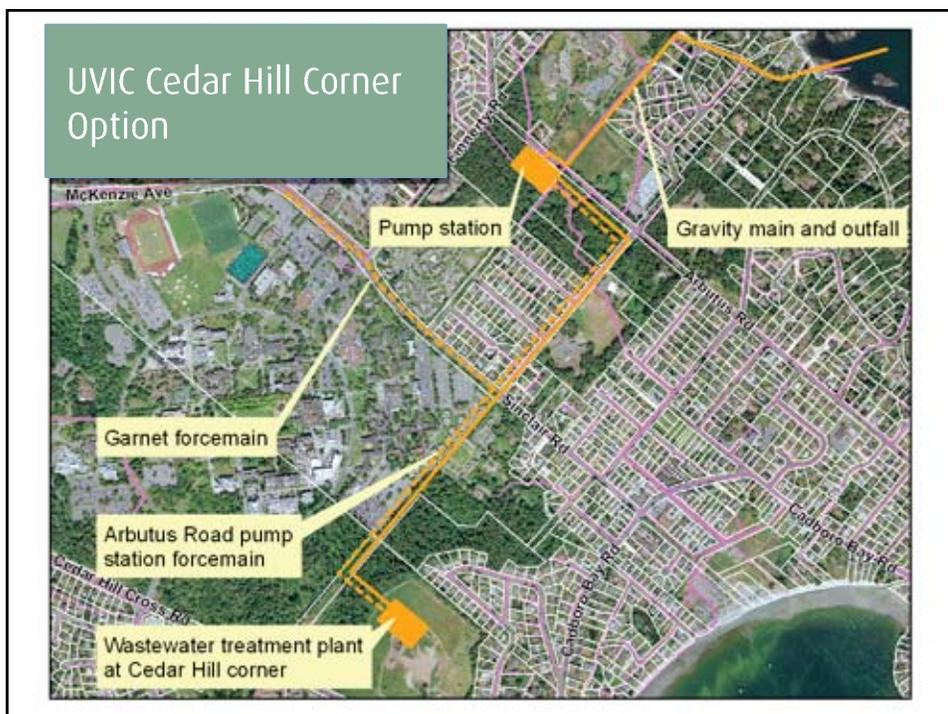
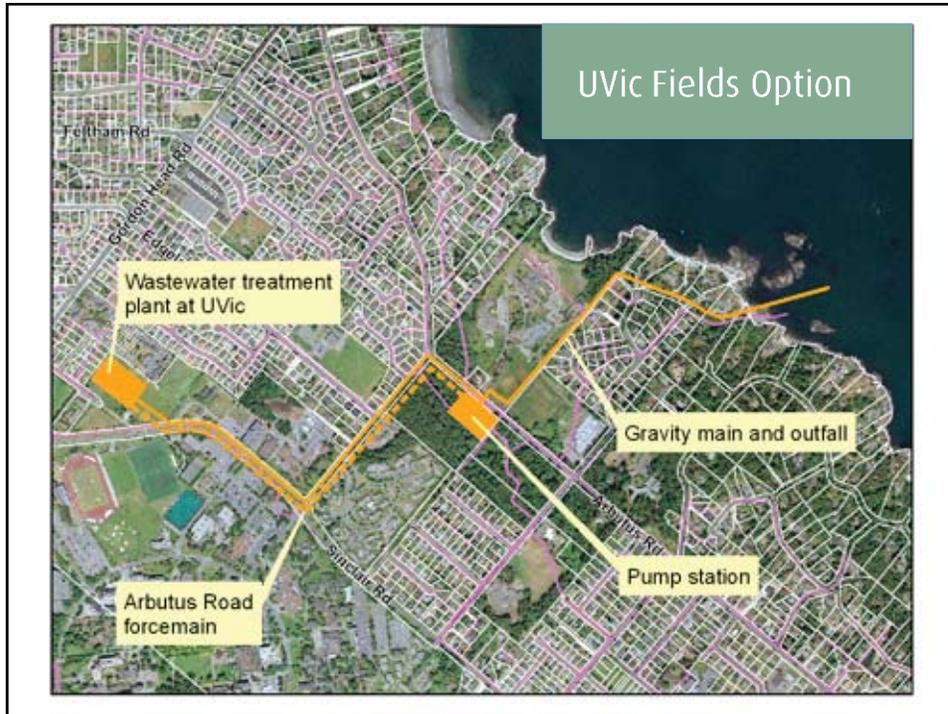
WESTLAND

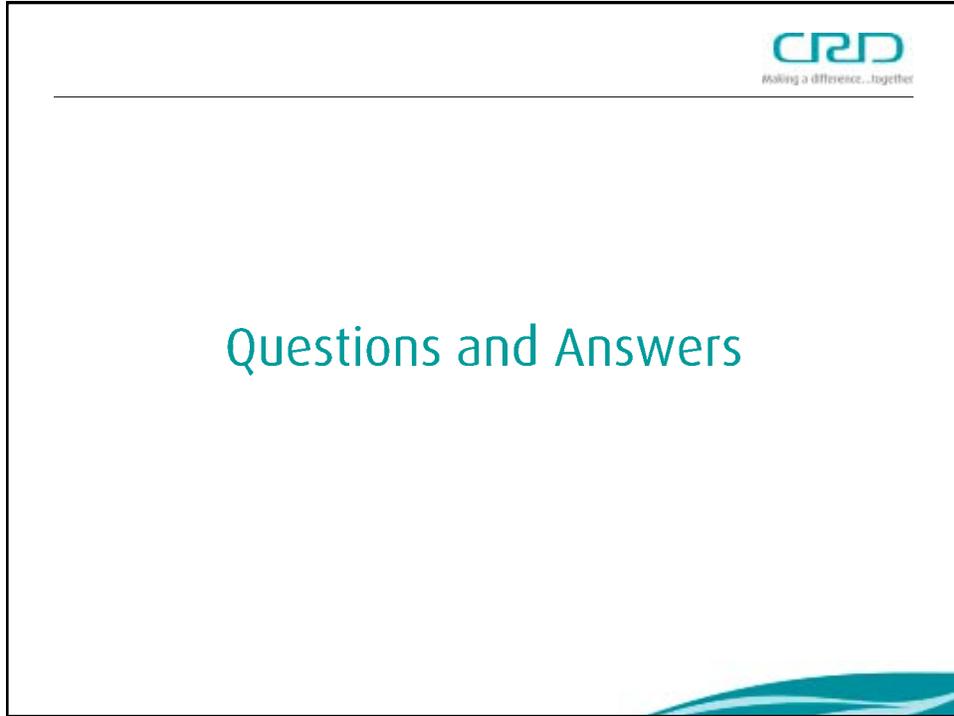
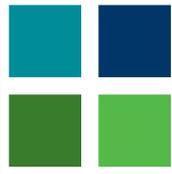


Appendix 6 - Supporting Documents

Technical Presentation for Neighbourhood Workshops









FUNDING

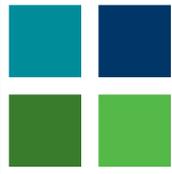


- No funding secured in writing.
- Verbal commitments from provincial and federal governments to each provide one-third funding.
- Federal government considers this project to be of 'national significance'.
- Agreement in place for planning phase sharing one third each of \$10 million.

HOMEOWNER COSTS



- Original per-household cost estimate was developed in 2008 based on a project cost estimate of \$1.2 billion.
- Apportioned cost was based on flow from each municipality and ranged between \$200 and \$700 per year per household for 20 to 25 year period. Further work with municipalities being done.



Appendix 6 - Supporting Documents

Technical Presentation for Neighbourhood Workshops

WHY SAANICH EAST - NORTH OAK BAY ?



- Reduces the frequency of sewage overflows.
- Eliminates the need for attenuation tanks and related infrastructure.
- Eliminates pumping Saanich East flows at Currie pump station and proposed Clover Point pump station.
- Will reduce size of infrastructure to convey sewage from Clover Point to Macaulay/McLoughlin.
- Reduces the size of Macaulay/McLoughlin wastewater treatment plant (WWTP).
- Provides resource recovery opportunities at UVic.

Several Sites



- A total of three sites in SENOB are being considered.



PUBLIC INPUT

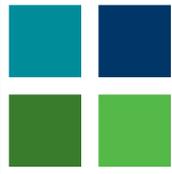


- Three open houses and two workshops will provide the opportunity for the public to learn about the options and provide feedback for to the Core Area Liquid Waste Management Committee (CALWMC).
- Future public consultation will give the public an opportunity to provide input on design and mitigation features.

CONSTRUCTION DISTURBANCES



- Land
 - WWTP may require clearing of trees (depending on site selection) and excavations up to 6 metres deep.
 - Linear infrastructure, if needed, will require excavations up to 3 metres deep generally along existing road right-of-ways.
 - Disturbed areas will be reinstated.
- Seabed
 - Excavation on the foreshore if existing outfall needs replacing.
 - Survey of sea life along proposed outfall alignment.
 - Removal and reinstatement of sea life as determined by regulators.
 - Concrete weights to hold outfall in place.



Appendix 6 - Supporting Documents

Technical Presentation for Neighbourhood Workshops

ZERO ODOURS



- Clarifiers and aeration tanks will be covered and below ground
- Latest technologies for odour control will be implemented
- No specified odours at property lines

ENHANCEMENT INITIATIVES



- CALWMC will be making a decision on provision of community benefit to neighborhoods that host WWTP facilities.
- The current initiatives do not involve compensation for loss of property value, however in the expropriation act there is a provision that states that if loss can be demonstrated at time of sale, the provider of service is responsible.



TBL Weighting

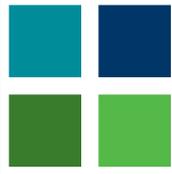


- The community dialogue and validation process identified the public value to treat social, economic and environmental considerations equally.

Construction and Facility Impact



- Once a site is selected, Environmental Impact Assessments will be undertaken to identify potential impacts which require mitigation.
- There should be no impact on nearby facilities during either construction or operation.



Appendix 6 - Supporting Documents

Technical Presentation for Neighbourhood Workshops

Sludge Trucks

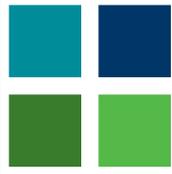


- This will be a “liquid only” treatment site. The sludge will be placed back in the pipeline for treatment elsewhere.
- Screenings will be trucked out in sealed containers, 1 truck per week.

Questions Incorporated into the Technical Presentation from the Cadboro Bay Residents Association



1. Why is a Saanich East facility required in the system?
2. Why are any changes required to the existing Saanich East system? What specific improvements to the existing infrastructure would be required if the Saanich East plant is not implemented?
3. What area precisely comprises the “upstream sewage area” that has been taken into consideration to determine future capacity of a Saanich East plant? What percentage of flow rate increase is predicted over future years?
4. Do the answers to the above 3 questions warrant requirement for a facility in Saanich East? Is desirability for a Saanich East treatment plant in its self justification enough for the high costs involved to the community?
5. If the primary justification for a Saanich East plant rests on potential resource recovery benefits, what are the main benefits to the overall system and who are the direct beneficiaries?
6. What additional infrastructure or support facilities would be required to serve a Saanich East plant?
7. Without a Saanich East facility, would the Core Area waste water management system become non-functional?
8. Why are any changes required to the existing Saanich East system? What specific improvements to the existing infrastructure would be required if a Saanich East plant is not implemented?
9. Has either option (or both options) for a full fledged Integrated Resource Management System or for a 10 facility system been fully explored?



Appendix 8 - Supporting Documents

Additional Questions Asked at Open Houses and Workshops

June 17, 2009 – Open House

Questions recorded on accessible Question Board

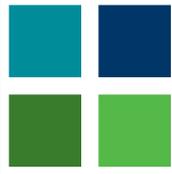
1. If this folly of a sewage treatment scheme goes ahead, what will be the number of truckloads of sludge per day, or per week from any given site?
2. Can the CRD set up a model showing the course of what goes down our drains to the outfall and with plants/fish in clear silos and how they are affected?
3. Will you have an event such as this around procurement. This is great – thanks.
4. Is there assurance that the sludge will be stowed or disposed of so that in future metals can be extracted? Under no circumstances should it be used on fields growing food.
5. The need for the treatment project has not been made to my satisfaction. Our leaders need to resist the provincial order. The rest is secondary.
6. Comment: Please have representation from UVIC at the workshop!
7. Yes, why are the scientists being ignored. I understand from my engineer husband that this type of sewage treatment is not the answer!! Who has made the decision and how political is it?
8. A large section of Cadboro Bay is not currently connected to sewers (e.g. all of the Queenswood area). The neighborhood plan does not call for installing sewers in this area? Will that change? If not, is it fair that the neighbourhood should have to take on the plant (which clearly no one wants in their neighbourhood).
9. Being that this is provincially mandated, where are the politicians (CRD, municipal and of course, provincial)?
10. Is there going to be a referendum (especially regarding who pays)?
11. What is the point of sewage treatment when the storm sewers in Oak Bay and Fairfield are the primary contributors to the problem?
12. Have you undertaken a statistical analysis to determine how many people will lose their homes as a result of taxes levied?
13. Have you undertaken a comprehensive longitudinal study, taking into account other nations such as Europe in order to determine ideas?

Appendix 8 - Supporting Documents

Additional Questions Asked at Open Houses and Workshops



14. How deep do local authorities believe regular taxpayers' pockets are?
15. Why are the scientists being ignored. This needs to take time!! Why the rush in pushing this through?
16. I endorse the above. Why is the project even in existence? Why are our local politicians so spineless?
17. What about the sick kids at Queen Alexander? How will the construction and facility affect their health and treatment?
18. Where is UVIC in all of this (rep)?
19. If you have a pump station in Haro Woods anyway why screw up two sites?
20. Do we really need this to make others (tourists) happy?
21. There is very little "public" land available for solitude in Gordon Head. A shame to use what is left this way. A nature reserve is needed, not concrete.
22. What about our property values? Will you pay the difference? What disasters – manmade or otherwise – will you be responsible. Look what happened in Halifax.
23. Can the effluent water and storm water be returned to underground aquifers? I realize our winters are very wet, but can we save this water along with wastewater for future use instead of dumping it in the ocean? Look into grass, swales and water gardens as possible solutions too. I'd like this answered, it's a good question.
24. What about the "stink"?
25. Couldn't we spend \$1-2 billion in a more productive manner?
26. Being that the final decision will consider public input, financial and environmental factors, how will the weighting of the final decision occur i.e. will public input be given equal or higher consideration or will it be weighted towards \$ and the environment?
27. Where is the rationale in spending \$5 to generate \$1 of revenue as stated in the peer review study? Where will the rest of the \$ come from?
28. Sewage treatment step by step over 10 years. Please explain to people that: (a) P3s are impossible – so please ease this fear; (b) money will be spread e.g. 120 mil per year. Please governments stop confusing citizens.



Appendix 8 - Supporting Documents

Additional Questions Asked at Open Houses and Workshops

29. The \$600,000 SETEC report states on page 94 “that other policies would provide a greater return per dollar of expenditures” !! Why has the CRD CALWMC not produced a list of such policies for consideration by the public?

June 22, 2009 – Neighbourhood Workshop

Questions asked in Queenswood Chapel of CRD staff/consultant

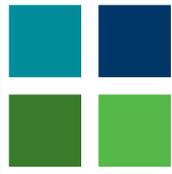
1. Why would a site be chosen near any residential sites rather than on industrial location? Not in our backyard.
2. Heritage building on McCoy – is it to remain on site or be removed from the site?
3. CRD owns Finnerty property – is UVIC amicable to having treatment site on their locations?
4. Queen Alexander school? How have you assessed how this might affect a child on Queen Alexander (autism especially)? Are you prepared to help assist residents if they are forced to move?
5. Is the criteria published where the public can access it? Is this the only solution to meet the criteria? What process is in place to allow a rezoning to industrial – the CRD was able to bypass this process.
6. We are doing sewage treatment for environmental benefits. Finnerty property - Haro Woods: How can tearing down a forest bring a net environmental benefit? Where is the analysis?
7. How are we identifying the site locations (names)(geographic)?
8. Think about middle of Haro Woods – keep very large trees on edge to not impact on residents.
9. RE: Question #6 not answered. Why?
10. Criteria was given different weights e.g. land use rated high. Need to show rating criteria too.
11. (Steven Salter) Under which criteria does traffic fall under. Cost in Sweden neutral as they used a dozen sites, vacuumed sewage from local sites. Why are we not considering his presentation (current cost astronomical).
12. What is your process of weighting public opinion in this process and will it have any impact on the recommendations? How is public opinion being quantified?

Appendix 8 - Supporting Documents

Additional Questions Asked at Open Houses and Workshops



13. Disparity between public criteria for selection versus committee. It may not give weight to the social aspect.
14. Article in Globe and Mail: capturing phosphorous which is being currently mined. Is it possible to capture it to produce future revenue to help reduce the cost to the taxpayer?
15. Social, economic and environmental being weighted equally? How did you come up with capital costs when you don't have ownership of two sites? You are simply making the best of a bad situation the public should have been able to speak as a group (divide and conquer). What are your comments on the capital costs? How can you legitimize the costs?
16. Scientists: If we decide it isn't a good idea, where is our forum to speak against it? (It's being shoved down our throats, problem doesn't exist.)
17. If the university decided to negate the other two sites will Haro Woods site go ahead or will there be a referendum?
18. Information is mixed up so no one knows what is going on. Need to differentiate between important and non important outflow going to the ocean. Haro Woods is a 3 stage treatment plan – smoke screen – why is it not clearly addressed how much storm water from Oak Bay is part of the problem? Capacity of peak flow.
19. 2006 CTAC environmental report. Have the triggers been exceeded since then?
20. We live in an earthquake area. What happens if there is an earthquake in the area to the methane gas?
21. If we have no storm drains why do we have screenings?
22. Do we know if the UVic sites are available?
23. Re: estimated capital costs – only one is owned by CRD. If one UVIC site is chosen the CRD may sell part of Haro Woods they now own. Have you shifted the sale to the cost of the other option site costs?
24. Haro: Integrated as a pumping station if another site is located why has it been integrated if the plan is to sell it if a UVIC site is chosen? Has it been committed for a pump facility?
25. Taxes \$200-\$700 – what was this based on?
26. Did the CRD ever challenge the government's mandate to put in a treatment plant?



Appendix 8 - Supporting Documents

Additional Questions Asked at Open Houses and Workshops

27. Various neighbourhoods have different levels of sophistication. Many people don't have internet. Did you do a leaflet drop? If not, are you considering doing so. How is addressed in communications. Who is your communications expert.
28. Have you considered the Cedar Hill area dog walk or university area used for composting?
29. Is the water going into the ocean contain the same chemicals or pollution as the water that is currently going into the ocean?
30. Is there plans to reuse the water from the waste in some other form (i.e. irrigation)?
31. Does the tax burden include all the project costs other than land (main, construction, etc.)?

July 7, 2009 – Neighbourhood Workshop

Questions asked in Emmanuel Baptist Church Sanctuary of CRD staff/consultant

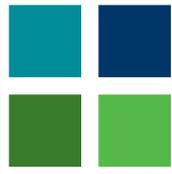
1. What problem are we trying to solve? (The province has mandated us to treat, but what is the problem?)
2. Is quality of environment (land, sea) going to benefit from this process? Will you be investigating benefits?
3. Endocrine disruptors compounds and pharmaceuticals – what is effectiveness and efficiencies of removing these items with current technology?
4. Conventional secondary treatment produces downstream issues in effluent. Are we being lead down the path?
5. Were the three sites identified prior to the purchase of Haro Woods?
6. What, if any, arrangements to purchase sites from UVIC?
7. Concern that there is a slant toward the property that has already been purchased.
8. June 19 open house questions would be posted on website but not yet. When will it be posted on website?
9. Residents on sewage were mailed information May 2007. What about people not along the sewage lines? (i.e. on septic)

Appendix 8 - Supporting Documents

Additional Questions Asked at Open Houses and Workshops



10. Councillor Brownoff issued a statement in the paper that UVIC has not considered siting. Resident is concerned that they (UVIC) are not supporting a high tech sewer treatment plant and he finds that a concern and a worry.
11. Predictions for planning say 100% increase in dry weather flow by 2065. Where did that number come from? Population predictions? Size of plant is directly related to planning predictions?
12. Is it possible that the plant will increase in size over time?
13. Do the predictions account for using water more efficiently/effectively?
14. Size of plant is a concern. Can parking and office space be minimized to reduce the overall footprint?
15. The technology is available to produce drinking water from sewage. Was this considered?
16. Population growth in Saanich – 80% by 2065. What is growth rate in Oak Bay?
17. Costs projected over 20-25 years. What is population growth in that timeframe?
18. Is costing based on today's population?
19. What is projected enrolment in 2035 at UVIC? Was this considered?
20. First phase treatment will be Saanich-Oak Bay siting. Does CRD Feel that this is the priority?
21. \$1.2 billion. Certain assumptions on technologies must have been made to reach cost. Are technologies already agreed upon or are different technologies still being considered?
22. How are decisions made on technologies?
23. Are taxpayers informed on technologies and procurement process?
24. Attenuation tanks – continue with current system and upgrade Oak Bay pipes. Were other options such as this one considered?
25. Footprint of plant – is there a different in the architecture depending on the site? i.e. Haro Woods versus UVIC.
26. The standard footprint design was 1 ha?
27. Does tax increase start when project starts or when project ends?



Appendix 8 - Supporting Documents

Additional Questions Asked at Open Houses and Workshops

28. Peer review – could a glossary be included?
29. Old compost site – any discussions with UVIC on this site as an option?

July 9, 2009 – Neighbourhood Workshop

Questions asked in Queenswood Chapel of CRD staff/consultant

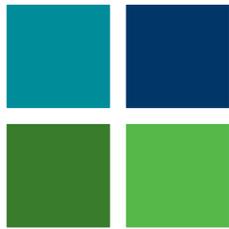
1. Has the CRD considered having a referendum? Have they considered asking the residents affected by the three proposed site whether or not they want sewage treatment in their neighbourhood?
2. If Haro Woods is not used as a site, would pumping be needed? What is the noise level associated with pumping?
3. Given the economic climate, what happens if the government backs out of their funding agreement? Will the project be abandoned? Does the CRD qualify for infrastructure funding or a stimulus package?
4. Has there been a cost benefit analysis done?
5. Are the University of Victoria sites available to the CRD? Is the CRD considering other sites if the 3 proposed aren't found suitable?
6. Why did the CRD purchase the Haro Woods land and not the degraded Saanich owned area?
7. How big would the treatment plant be? What about the size of a pumping station? Attenuation tanks?
8. What contaminants are currently going into the ocean? Would secondary treatment successfully extract these contaminants? What contaminants would be present in the biosolids? How will the biosolids be dealt with/disposed of?
9. Why does the CRD pump into the ocean? Why do we not store it or dispose of it on land?
10. How many days per year are the outfalls currently being used? How long would the outfalls have to be to sustain daily use?
11. What happens to the raw sewage if something at the new plant malfunctions? What happens when operators go on strike?

Appendix 8 - Supporting Documents

Additional Questions Asked at Open Houses and Workshops



12. Where is the value (economically and environmentally) for Victoria if we go ahead with secondary treatment?
13. How is the operating cost for the plant allocated? How would UVic pay for their impact on the flow?
14. How do you differentiate between Gyro Park and Haro Woods, when both are being used as parkland? Would the CRD keep the footprint small and work with Saanich to create a designated park in Haro Woods, if this site is chosen?
15. What are the annual operational cost differences between the three proposed sites?
16. Would the heat and energy recovered be sold to UVic? How much would this offset the operational costs?
17. What are the dates of the next reports and public meetings?
18. What would the height be of the sewage plants? Can the plant be completely buried underground?
19. Sewage treatment is not needed now or in the future. Is it too late to bring this argument to the provincial and federal government?
20. Has the CRD been in discussion with the UVic Board of Governors about using their land for treatment sites?
21. Have industrial sites been considered? Can the pumping station be placed on Saanich land?



Public Consultation Summary Report

Saanich East-North Oak Bay

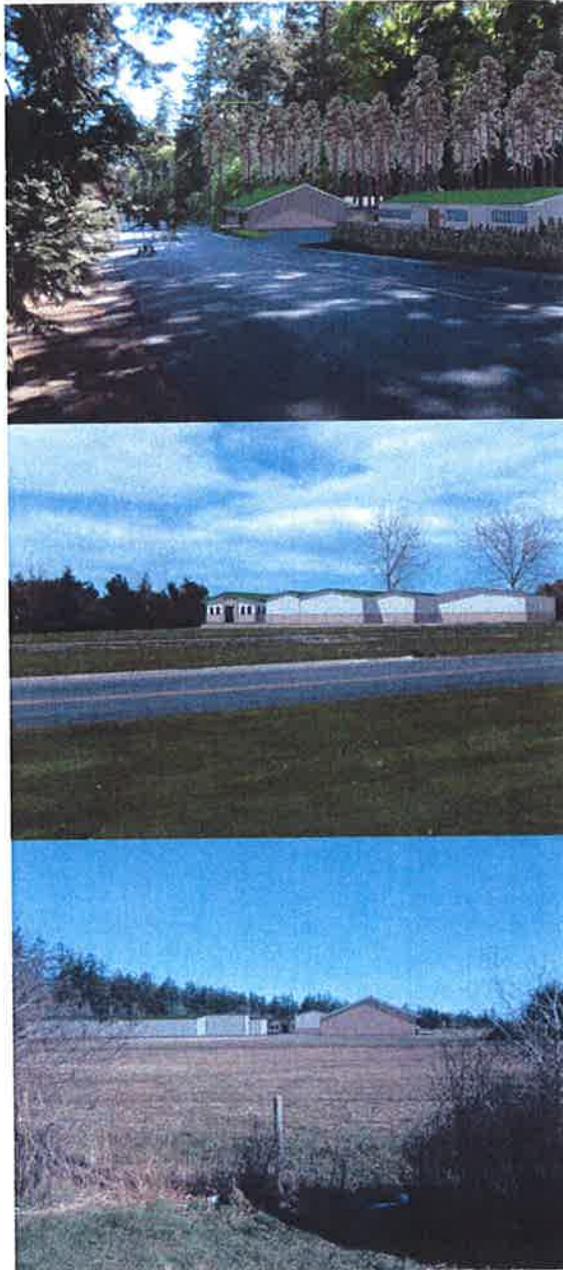
Wastewater Treatment Facility Siting

Core Area Wastewater Treatment Project

625 Fisgard Street, PO Box 1000
Victoria, BC, Canada V8W 2S6
www.crd.bc.ca

The logo for the Capital Regional District (CRD), consisting of the letters 'CRD' in a stylized, white, sans-serif font on a teal background.

Comparative Environmental and Social Review Saanich East-North Oak Bay Wastewater Treatment Facility Sites



Prepared for:



July 2009

Prepared by:



SUMMARY

As part of the Capital Regional District's (CRD's) wastewater treatment program, a treatment facility would be required in the Saanich East-North Oak Bay area. The facility is needed to reduce wastewater flows in downstream portions of the core area wastewater treatment system, and also to create opportunities to provide reclaimed water and energy for use in the surrounding community.

The CRD's Core Area Liquid Waste Management Committee (CALWMC) authorized preparation of an Environmental and Social Review (ESR) of the sites being considered for a treatment plant. In the Saanich East-North Oak Bay area, three candidate sites were identified through a scientific Geographic Information System (GIS) analysis. Using criteria that consider the technical aspects of wastewater treatment facility construction and operation, public concerns and priorities, and input from the CALWMC, the analysis identified lands that have the fewest constraints to siting a treatment facility. The three candidate sites under study are:

- Finnerty-Arbutus,
- Cedar Hill Corner, and
- UVic Fields.

Figure S-1 shows the locations of the three candidate sites. Other figures showing the candidate sites and conceptual facility layouts are presented in Figures 3-4 to 3-9.

A treatment facility would be built at the preferred site selected by the CALWMC. The information contained in this ESR will support the committee's site selection decisions and will aid in refining design of the treatment and ancillary facilities on the preferred site.

For each of the candidate sites, the comparative ESR examines the following topics as they relate to construction and operation of a wastewater treatment facility:

- Landforms, geology, and soils,
- Hydrology and water quality,
- Vegetation,
- Wildlife,
- Archaeology and heritage
- Community use,
- Noise, vibration, and lighting,
- Dust and air emissions,
- Odour,
- Traffic,
- Health and safety, and
- Visual aesthetics.



Figure S-1 Facility Location Overview

SUMMARY

Potential impacts were identified for both the treatment facility, and for ancillary facilities required for the operation of the facility, including gravity mains, forcemains, a small diameter pressurized pipe, and a pump station. No pump station would be needed if the Finnerty-Arbutus site is selected.

The methods applied in conducting the study are described more fully elsewhere in the ESR, but in general terms, the ESR is based on:

- a review of available literature on wastewater facility construction and operation,
- field inspections of the candidate sites and surrounding areas,
- comments received from the public through surveys and discussions at open houses and dialogue sessions,
- analysis of plans and reports prepared by municipalities and major institutions covering land use, environmental, and other topics,
- discussions with staff of local governments and major land-owning institutions, and direction provided by the CALWMC.

The facility to be located in SENOB would provide “liquids only” treatment, conveying solids for further treatment downstream. Table S-1 summarizes the treatment activities and standards associated with the SENOB facility.

Table S-1 SENOB Facility Treatment Activities and Effluent Quality

Flow Range	Treatment Steps	Treatment level
0 to 2 times Average Dry Weather Flow (ADWF)	<ul style="list-style-type: none"> • Influent pumping • Screening and grit removal • Primary treatment • Secondary and tertiary treatment (membrane – bioreactors - MBR) • Disinfection (ultra violet) 	<ul style="list-style-type: none"> • Meets standards for effluent reuse and exceeds standards for discharge to a marine environment
Greater than 2 to 4 times ADWF	<ul style="list-style-type: none"> • Influent pumping • Screening and grit removal • Chemically assisted primary settling 	<ul style="list-style-type: none"> • Meets standards for flows that exceed >2 times ADWF for discharge to a marine environment
Greater than 4 times ADWF	<ul style="list-style-type: none"> • Influent pumping • Screening and grit removal 	<ul style="list-style-type: none"> • Blended flows meet effluent criteria for discharge to a marine environment

The SENOB facility would produce reclaimed water of sufficiently high quality to be used for non-potable purposes. The facility also would allow energy to be recovered from effluent, for use in suitable structures nearby. The distribution and use of reclaimed water and recovered energy are not included in this ESR.

SUMMARY

Construction impacts were examined separately from impacts of operating a wastewater treatment facility. Construction includes site grading, excavation, foundation work, building construction, equipment installation and testing, commissioning of the facility, and landscaping or site restoration. Clearing and grubbing would be required for the Finnerty-Arbutus site. Operations include day-to-day functioning of the treatment facility and ancillary facilities, including routine maintenance.

Impacts identified in the ESR are described according to their:

- spatial extent (area affected),
- temporal extent (duration),
- reversibility,
- magnitude, and
- significance.

The impact assessment first examines the effects of “unmitigated” effects of construction and operation of treatment and ancillary facilities. These ratings reflect project effects if the actions outlined in the project description are taken, and represent the use of standard operating procedures for construction and operation of wastewater facilities. “Mitigated” impacts include measures recommended by the consultant that are not contained in the project description, and that are presented for consideration by the CRD.

Tables S-2, S-3, and S-4 summarize the significance of impacts identified in the ESR for each site. The ratings are provided for unmitigated and mitigated impacts on each of the topics considered. The text of the ESR explains the basis for the ratings assigned, and describes the mitigation measures needed to reduce impacts to less than significant levels. Definitions of the terms used in significance ratings can be found in Table 1-1.

SUMMARY

Table S-2 Finnerty-Arbutus site – Significance of impacts

Impact on:	Impact significance							
	Treatment facility				Ancillary facilities			
	Construction		Operation		Construction		Operation	
	Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated
Landforms, geology, and soils	L	L	L	L	L	L	L	L
Hydrology and water quality	L	L	L	L	L	L	L	L
Vegetation	S	S	L	L	L	L	L	L
Wildlife	S	S	L	L	L	L	L	L
Archaeology and heritage	TBD	TBD	L	L	TBD	TBD	L	L
Community use	S	S	L	L	L	L	L	L
Noise, vibration, and lighting	L	L	L	L	L	L	NA	N/A
Dust and air emissions	L	L	N/A	N/A	L	L	N/A	N/A
Odour	N/A	N/A	S	L	N/A	N/A	N/A	N/A
Traffic	L	L	L	L	L	L	L	L
Public health and safety	L	L	L	L	L	L	L	L
Visual aesthetics	S	S	S	L	L	L	L	L

S =	Significant	The identified effect would have a combination of characteristics that render it unacceptable to the public, regulators, other interests, or that exceeds standards or contravenes legal requirements.
L =	Less than significant	All other effects that are not considered significant.
N/A =	Not applicable	
TBD =	To be determined.	Following site selection, an Archaeological Impact Assessment will be completed on the site and ancillary facility sites to evaluate significance.

SUMMARY

Table S-3 Cedar Hill Corner site – Significance of impacts

Impact on:	Impact significance							
	Treatment facility				Ancillary facilities			
	Construction		Operation		Construction		Operation	
	Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated
Landforms, geology, and soils	L	L	L	L	S	L	L	L
Hydrology and water quality	L	L	L	L	S	L	L	L
Vegetation	L	L	L	L	S	S	L	L
Wildlife	L	L	L	L	S	S	L	L
Archaeology and heritage	TBD	TBD	L	L	TBD	TBD	L	L
Community use	S	S	L	L	S	S	L	L
Noise, vibration, and lighting	L	L	L	L	L	L	L	L
Dust and air emissions	L	L	N/A	N/A	L	L	N/A	N/A
Odour	N/A	N/A	S	L	N/A	N/A	L	L
Traffic	L	L	L	L	L	L	L	L
Public health and safety	L	L	L	L	L	L	L	L
Visual aesthetics	L	L	L	L	S	L	L	L

S =	Significant	The identified effect would have a combination of characteristics that render it unacceptable to the public, regulators, other interests, or that exceeds standards or contravenes legal requirements.
L =	Less than significant	All other effects that are not considered significant.
N/A =	Not applicable	
TBD =	To be determined.	Following site selection, an Archaeological Impact Assessment will be completed on the site and ancillary facility sites to evaluate significance.

SUMMARY

Table S-4 UVic Fields site – Significance of impacts

Impact on:	Impact significance							
	Treatment facility				Ancillary facilities			
	Construction		Operation		Construction		Operation	
	Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated
Landforms, geology, and soils	L	L	L	L	L	L	L	L
Hydrology and water quality	L	L	L	L	L	L	L	L
Vegetation	L	L	L	L	S	S	L	L
Wildlife	L	L			S	S		
Archaeology and heritage	TBD	TBD	L	L	TBD	TBD	L	L
Community use	S	S	L	L	S	S	L	L
Noise, vibration, and lighting	S	S	S	S	L	L	L	L
Dust and air emissions	S	S	N/A	N/A	L	L	N/A	N/A
Odour	N/A	N/A	S	L	N/A	N/A	L	L
Traffic	L	L	L	L	L	L	L	L
Public health and safety	L	L	L	L	L	L	L	L
Visual aesthetics	S	S	S	L	S	L	L	L

S =	Significant	The identified effect would have a combination of characteristics that render it unacceptable to the public, regulators, other interests, or that exceeds standards or contravenes legal requirements.
L =	Less than significant	All other effects that are not considered significant.
N/A =	Not applicable	
TBD =	To be determined.	Following site selection, an Archaeological Impact Assessment will be completed on the site and ancillary facility sites to evaluate significance.

SUMMARY

The following points highlight the results shown in the significance summary tables.

- Treatment facility operation has the potential to occasionally release odours under the existing project design. Augmenting the levels of treatment and ensuring backup systems are installed would reduce odour impacts to less than significant levels at all times.
- Visual aesthetic impacts can be reduced to less than significant levels by improving design quality of the treatment facility, and minimizing viewshed effects from surrounding properties. Once screening vegetation matures, the significance of visual impacts is reduced.
- On the Finnerty-Arbutus site, construction of the treatment facility would result in significant impacts to vegetation, wildlife, community use, and visual aesthetics. Mitigation would reduce all of these impacts to less than significant levels during facility operation.
- Ancillary facilities include gravity mains, forcemains, and (for Cedar Hill Corner and UVic Fields) a pump station. Construction of these facilities could create substantial nuisance effects for nearby residents unless mitigation is implemented that includes limiting hours of work, street sweeping, dust control, and effective traffic management.
- Under the present design, the forcemain and gravity main route to the Cedar Hill Corner facility crosses Upper Hobbs Creek drainage. This crossing would cause significant impacts on soils, hydrology, vegetation, wildlife, community use, and visual aesthetics. The soils and hydrology impacts can be mitigated through construction techniques, but reducing the vegetation, wildlife, and visual aesthetics impacts would require relocation of the pipe route.
- The only site where noise, vibration, and lighting impacts are expected to be significant is the UVic Fields site. The proximity of residences constrains the ability to mitigate these effects. Only relocation of the facility to another portion of the site would reduce these impacts to less than significant levels (though relocation could affect community use of Wallace Field). Though residents noted noise concerns at Cedar Hill Corner, the substantial separation distance between the treatment facility and houses would allow noise impacts to be effectively controlled.
- Disruption of public access from McCoy Road to UVic, and loss of planned recreational opportunities on the UVic Fields site are considered to be unmitigable significant impacts of construction. The impacts can be mitigated to less than significant levels during facility operation.
- The Cedar Hill Corner and UVic Fields sites would require construction of a pump station on the Finnerty-Arbutus site. The vegetation, wildlife, and community use impacts of constructing the ancillary pump station are considered significant and unmitigable.
- Archaeology impacts cannot be determined until an Archaeological Impact Assessment (AIA) is conducted on the selected site. Under British Columbia legislation, a proponent is required to mitigate a project's impacts on identified

SUMMARY

archaeological features. This requirement means that operational impacts must be less than significant.

- For all sites, application of standard design, construction, and operational practices would limit impacts on traffic and roads, dust and air emissions, and health and safety to less than significant levels.

Construction and operation of treatment and ancillary facilities would result in environmental and social impacts, nearly all of which can be mitigated. The nature of the impacts and recommended mitigation measures are described in the ESR.

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1.0 INTRODUCTION

This section describes the context, scope, and general methods used to prepare the following Environmental and Social Review (ESR) for the Saanich East-North Oak Bay (SENOB) wastewater treatment facility, which is part of the Capital Regional District's (CRD's) wastewater treatment program.

1.1 Context and background

The CRD has provided wastewater treatment services for communities throughout the region for decades, including secondary treatment facilities on Salt Spring Island and on the Saanich Peninsula. Operating under permit from the British Columbia Ministry of Environment, the CRD discharges screened wastewater from core area municipalities into the deep marine waters of the Strait of Juan de Fuca.

In 2006, the British Columbia Minister of Environment directed the CRD to begin planning to provide a higher level of wastewater treatment for the core area municipalities. Subsequently, the province requested the CRD to consider resource recovery as part of its wastewater treatment program. The Core Area Liquid Waste Management Committee (CALWMC) has authorized staff and consultants to undertake a variety of planning studies associated with wastewater treatment technology, resource recovery and reuse, and facility siting.

This Environmental and Social Review (ESR) was authorized by the CALWMC as part of the site selection and evaluation component of the core area liquid waste management program.

This comparative ESR is intended to:

- describe the characteristics of candidate treatment facility sites in the SENOB area,
- assess potential environmental and social effects of constructing and operating facilities on the candidate sites,
- identify the magnitude and significance of the impacts, and potential mitigation measures associated with the impacts,
- consider comments received from the public during recent open houses in the SENOB area, and
- provide information to support the selection of a preferred site by the CALWMC,
- support future design and construction decisions in ways that minimize impacts.

The comparative ESR fulfills a component of the CALWMC's Terms of Reference for the conduct of site selection and evaluation studies, issued in 2007.

1.2 Regulatory context

This ESR is part of a CRD-driven process of wastewater treatment facility site selection and evaluation. The content of the ESR was developed through discussions between the CRD and the consultant retained to prepare the ESR, and responds to comments received from the public and other interested parties.

The ESR is linked to several other environmental assessment and planning processes associated with the wastewater program:

- A triple bottom line (TBL) assessment and comparison of the three candidate wastewater treatment sites in SENOB will be provided to the CALWMC as part of the site selection decision process.
- An Environmental Impact Study (EIS) is required by the British Columbia Ministry of Environment as part of the Liquid Waste Management Plan review and approval process. An EIS is required for the entire CRD Wastewater Treatment Program, not just the SENOB facility, and examines both the marine and terrestrial environments. The CRD plans to conduct the EIS during 2009. The terrestrial EIS will rely in large measure on data collected in support of the ESR. A Stage 1 EIS has been conducted for the two marine areas where outfalls may be located. New data to support the Stage 2 marine assessment is presently being collected.
- An assessment under the *Canadian Environmental Assessment Act* (CEAA) may be required for all or some of the core area wastewater facilities. At the time that this ESR was prepared, the CRD was engaged in discussions with the Canadian Environmental Assessment Agency to determine whether an assessment would be required for the SENOB site. If a *Canadian Environmental Assessment Act* assessment is required, it would rely on much of the information collected to support the ESR.

1.3 Scope of the study

Section 2 of this report provides information on how the candidate sites were identified and selected. Section 3 describes how a wastewater treatment facility in Saanich East-North Oak Bay would be constructed and operated. Subsequent sections of the ESR examine environmental and social effects of the wastewater treatment facility and the ancillary facilities required for facility operation (mainly pipes and a pump station). The intent of the ESR is to provide comparable levels of assessment for each of the three identified candidate sites. After review of the ESR, input from the public, and other available sources of information, the CALWMC will select one preferred site for construction of a wastewater treatment facility.

The “study area” for the ESR includes the lands east of Gordon Head Road, south of Finnerty Cove, west of Cadboro Bay, and the northern portion of Oak Bay (Figure 1-1). The scope of analysis conducted varies for each of the topic areas included in this ESR. For instance, land use effects are expected to occur where the treatment facility and ancillary facilities will be built, and

1. INTRODUCTION

adjacent properties. Traffic effects may be experienced more broadly, so the assessment examines potential traffic issues at some distance from the proposed facility. Regional environmental implications of constructing a facility in SENOB are reviewed for relevant topics, and the cumulative effects assessment emphasizes sub-regional conditions.



Figure 1-1 Saanich East-North Oak Bay Treatment Facility Study Area

The topics examined in the ESR are relevant to the nature of construction and operation of wastewater facilities, and are based on:

- experience of CRD staff in delivery of wastewater treatment services,
- input from the CALWMC during review of the ESR design,
- comments received from the public on factors considered important in siting a wastewater facility, and
- consulting team experience in conducting siting and wastewater studies.

In 2007, the CRD conducted a public telephone survey of 907 residents to identify topics considered important in wastewater facility siting. The results of that survey helped to develop and refine the criteria used to select the candidate sites and the topics included in the ESR. Input received during the 2009 public involvement program aided the refinement of topics under study. Additional topics have been added in response to comments received from the CALWMC on the design of the ESR.

1.4 Approach to the study

The methods applied in conducting the study are described more fully elsewhere in the ESR, but in general terms, the ESR is based on:

- a review of available literature on wastewater facility construction and operation,
- field inspections of the candidate sites and surrounding areas,
- comments received from the public through surveys and discussions at open houses and dialogue sessions,
- analysis of plans and reports prepared by municipalities and major institutions covering land use, environmental, and other topics,
- discussions with staff of local governments and major land-owning institutions, and
- direction provided by the CALWMC.

Information used in the preparing the ESR includes government maps and reports, aerial photographs, geographic information system data and subsequent analysis, and design information on wastewater facility equipment, staffing, and other operational details.

In preparing to conduct the ESR, conceptual locations of wastewater facilities were prepared for each of the three candidate sites. Engineering staff of the CRD and their consultants were involved in developing the conceptual facility footprints.

It is important to recognize that the locations of structures shown on maps in this ESR can be changed to avoid or reduce impacts that are identified through the assessment and public review processes. Hence, although the conceptual locations are considered to be practical and would allow for construction and operation of the facility, the actual location and layout of structures that will be built on the selected site may vary from the conceptual designs used to support this assessment.

The ESR assesses the construction and operation of a membrane bioreactor (MBR) wastewater treatment facility on one of the three candidate sites. As more detailed engineering studies are conducted, other treatment technologies could be considered and eventually selected. Nonetheless, for the purposes of the ESR, MBR technology, which allows for a small facility footprint and high quality effluent, was assumed to be the technology of choice.

1.5 Impact ratings used for the Environmental and Social Review

Table 1-1 presents the assessment criteria applied in the ESR. The criteria cover such topics as the spatial context of project impacts, temporal context, reversibility, magnitude, and significance of potential effects of project construction and operation.

1. INTRODUCTION

The criteria applied in this study are based on industry standards for impact assessment, adapted for use in the SENOB wastewater assessment. The rating of impacts under these headings focuses on the mitigated impact identified in the ESR. The mitigation is based on standard construction and operating procedures contained in the project description (Section 3). Hence, significance is assigned to mitigated project effects. If additional mitigation is recommended by the consulting team (over and above that described in the project description), those additional measures are described in the text of the ESR. These additional measures would be intended to further reduce identified project impacts.

Table 1-1 Assessment criteria used in assessing project effects

Assessment Criteria		Definition
SPATIAL CONTEXT location of effect		
Treatment Facility Footprint		The Facility Footprint for the Project is the land area permanently occupied by the treatment facility including buildings, parking, and access.
Ancillary Facility Footprint		The Ancillary Facility Footprint for the Project is the land area temporarily or permanently occupied by wastewater trunks, gravity mains, forcemains, pump stations, and other associated facilities.
Workspace		Areas temporarily used during construction, including equipment and material storage or vehicle access.
Local Area		The lands within 250 m of the candidate site.
Regional Area		The Regional Study Area (RSA) is the area in the Core Area municipalities.
TEMPORAL CONTEXT of effect		
Duration (interval of the event causing the residual effect)	Short-term	Event duration is less than or equal to one year.
	Medium-term	Event duration is longer than one year but less than or equal to five years.
	Long-term	Event duration extends longer than five years.
Frequency (how often would the event that caused the residual effect is anticipated to occur)	Occasional	Event occurs intermittently.
	Periodic	Event occurs intermittently but repeatedly over the construction and operations period.
	Continuous	Event occurs continually over the assessment period.
Reversibility (period of time over which the residual effect extends)	Yes	The potential effect can be reversed.
	No	The potential effect cannot be reversed, despite efforts to mitigate.
MAGNITUDE of the effect		
Negligible		Potential effect is barely detectable.
Low		Potential effect is well below established or derived environmental standards or thresholds.
Moderate		Potential effect is detectable but meets established or derived environmental or regulatory standards or thresholds.
High		Potential effect exceeds established or derived environmental standards or thresholds.

1. INTRODUCTION

Assessment Criteria	Definition
BENEFICIAL or ADVERSE effect	
Beneficial	The resource or topic under study would be improved as a result of project effects.
Adverse	The resource or topic under study would be worsened as a result of project effect.
SIGNIFICANCE of the effect	
Significant	The identified effect would have a combination of characteristics that render it unacceptable to the public, regulators, other interests, or that exceeds standards or contravenes legal requirements.
Less than significant	All other effects that are not considered significant.

1.6 Project team

The ESR was prepared by Westland Resource Group and affiliated consultants, with the involvement of CRD personnel. The study team was headed by senior planners and environmental scientists at Westland, a Victoria-based environmental consulting firm. Expertise was provided in the following areas:

- land use planning and analysis,
- biology (vegetation and wildlife),
- hydrology and water quality,
- community effects (noise, odour, light and glare),
- archaeology and heritage, and
- Geographic Information System-based mapping and spatial analysis.

Additional consultants involved in the project include:

- Bunt & Associates Engineering (BC) Ltd. (traffic and roads),
- Dayton & Knight Ltd. (facility design, construction, and operation),
- Genesis Engineering Inc. (odour dispersion modelling),
- C.N. Ryzuk & Associates Ltd. (geotechnical analysis),
- Decision Economics Consulting Group (property values),
- Bjorn Simonsen (archaeology), and
- Stanton Tuller (meteorology).

All of these consultants have professional registrations in their various fields and are experienced in conducting studies of this type. Westland was selected to conduct the ESR after a competitive proposal process conducted by the CRD.

2.0 SELECTION OF CANDIDATE SITES

Selection of a short list of candidate treatment facility sites applied a science-based approach, using a Geographical Information System (GIS) to “overlay” various site selection criteria . The identification of candidate sites in the Saanich East-North Oak Bay area involved the following series of steps to determine the characteristics of the study area, and to assign compatibility ratings to particular parcels to accommodate a treatment facility:

1. Prepare draft site selection criteria
2. Criteria reviewed by the public, CRD committees and staff, First Nations, municipal staff and managers of major institutions
3. Revise site selection criteria
4. Collect and analyze information
5. Apply criteria to evaluate the suitability of areas for wastewater treatment facilities
6. Contact owners of potential sites
7. Identify candidate sites
8. Public Review of candidate sites
9. Prepare an Environmental and Social Review of short-listed sites.

The GIS analysis included the following topics, criteria and indicators (Table 2-1):

Table 2-1 Categories considered in GIS site selection process

Topics	Criteria	Indicators
Biological features	Ecological disturbance and ecological features	Level of past disturbance
		Sensitive Ecosystem Inventory
	Major streams	Proximity to major streams
Community	Odour	Potential for nuisance odour
	Land use	Compatibility with planned land uses
Archaeology and heritage	Archaeology	Archaeological potential
	Heritage structures	Presence of registered heritage structures
Geotechnical	Geotechnical development constraints	Surficial material, seismic and liquefaction risk and site drainage constraints
	Slope	Site steepness
	Site stability	Slope stability
Energy conservation	Reduced need for pumping	Gravity flow potential

2. SELECTION OF CANDIDATE SITES

The GIS analysis rated lands in the Saanich East-North Oak Bay study according to their suitability for a treatment facility. The owners of properties deemed to have the fewest constraints to locating a treatment facility were contacted by CRD staff and consultants. These property owners were the Queen Alexandra Foundation for Children and the University of Victoria. Following these meetings, three candidate sites were identified for further study and analysis in this ESR. The following candidate sites were presented to the CALWMC in April 2008, and approved for further investigation:

- Finnerty-Arbutus property,
- UVic Fields and
- Cedar Hill Corner.

Participants in the public involvement process identified several additional sites for consideration. Some of these sites were previously investigated, and others were not. A separate report will describe these sites, and reasons for further examination or exclusion from further study, as appropriate.

The University of Victoria has taken no position on the use of their lands for a treatment facility. If a university-owned site is chosen after the site analysis, public review, and selection process is complete, the university has invited the CRD to discuss how to proceed. No guarantees have been provided that University of Victoria-owned land would be available for the treatment facility.

3.0 DESCRIPTION OF THE WASTEWATER TREATMENT FACILITIES AND OPERATION

This section provides a description of the Saanich East-North Oak Bay (SENOB) wastewater treatment facilities. The description is based on a typical modern secondary treatment facility. Detailed design information, such as the orientation of the various components of the treatment facility on the site and exterior building finishes, have not been determined. These design details will be developed following public input and the selection of one of the three candidate sites.

3.1 Wastewater Conveyance and Treatment

The Ministry of Environment identified the following six objectives for wastewater treatment in a letter to the CRD dated December, 2007. The CRD provided a plan on how these objectives will be met.

- *Objective 1: Meet regulatory standards*
- *Objective 2: Minimize total project cost to taxpayers*
- *Objective 3: Optimize the distribution of infrastructure*
- *Objective 4: Reduce greenhouse gas emissions*
- *Objective 5: Optimize smart growth strategies*
- *Objective 6: Examine opportunities for public-private partnerships.*

The CRD adopted a series of goals and accompanying strategies for wastewater management (CRD, June 2008). The three goals are:

- *protect public health and the environment,*
- *manage wastewater in a sustainable manner, and*
- *provide cost effective wastewater management.*

Wastewater Treatment for Saanich East-North Oak Bay

A wastewater treatment facility in Saanich East-North Oak Bay will allow wastewater to be treated nearer to its source. The SENOB treatment facility will function as a decentralized wastewater treatment facility to reduce flows to existing CRD wastewater treatment facilities at Clover Point and Macaulay Point. The SENOB treatment facility provides opportunities for energy and water recovery.

The wastewater flow to the new SENOB facility would come from the existing Arbutus catchment area (Gordon Head) and would also take flow from the existing Penrhyn catchment area (Ten Mile Point and Cadboro Bay) (Figure 3-1).

3. DESCRIPTION OF THE WASTEWATER TREATMENT FACILITIES AND OPERATION

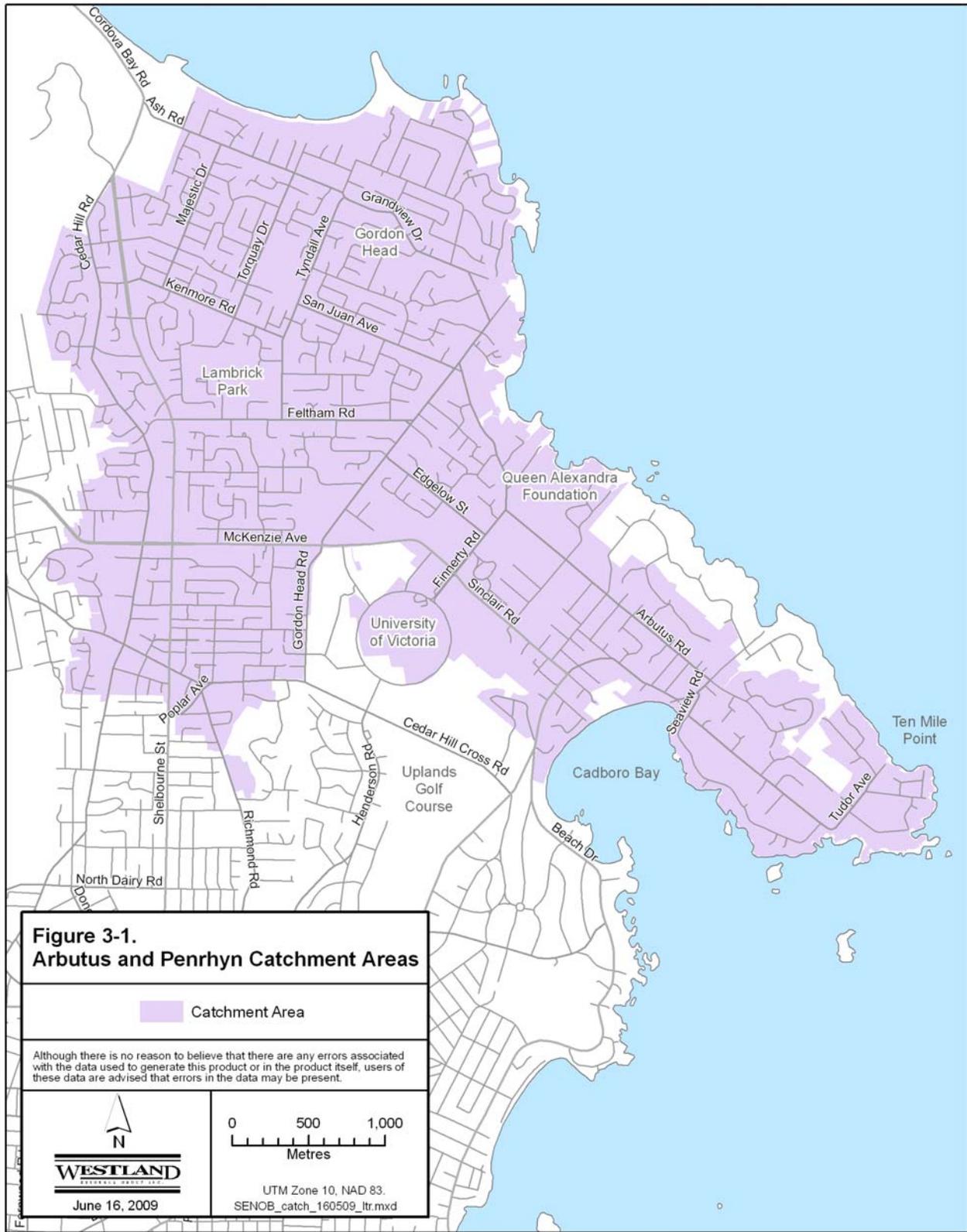


Figure 3-1 Arbutus and Penrhyn Catchment Areas

3. DESCRIPTION OF THE WASTEWATER TREATMENT FACILITIES AND OPERATION

The SENOB facility would be a “liquid stream only” wastewater treatment facility. Dilute sludge from the secondary treatment process at the SENOB treatment facility would be discharged into the existing CRD sewer system for further treatment at downstream facilities.

The SENOB facility would provide the following levels of treatment for wastewater flow and meet the stated quality standards for treated effluent.

Table 3-1 SENOB Facility Treatment Activities and Effluent Quality

Flow Range	Treatment Steps	Treatment level
0 to 2 times Average Dry Weather Flow (ADWF)	<ul style="list-style-type: none"> Influent pumping Screening and grit removal Primary treatment Secondary and tertiary treatment (membrane – bioreactors - MBR) Disinfection (ultra violet) 	<ul style="list-style-type: none"> Meets standards for effluent reuse and exceeds standards for discharge to a marine environment
Greater than 2 to 4 times ADWF	<ul style="list-style-type: none"> Influent pumping Screening and grit removal Chemically assisted primary settling 	<ul style="list-style-type: none"> Meets standards for flows that exceed >2 times ADWF for discharge to a marine environment
Greater than 4 times ADWF	<ul style="list-style-type: none"> Influent pumping Screening and grit removal 	<ul style="list-style-type: none"> Blended flows meet effluent criteria for discharge to a marine environment

Treatment units are assumed to be designed to achieve, for unrestricted use, the following standards (per Schedule 2 and Schedule 5 Table 3 BC Reg. 321/2004 and 305/2007):

- Biological oxygen demand (BOD5) <10 mg/L
- Naphelometric turbidity units (NTU) < 2.

Standby facilities are required to meet reliability requirements for the SENOB facility because facility shutdowns must be avoided. The proposed SENOB facility would be designed to:

- provide treatment works to produce a reclaimed water, or
- allow discharge of effluent to water or land that could be permanently or unacceptably damaged by a discharge of untreated wastewater for even a few hours.

The treated effluent that would be discharged to the marine environment through the Finnerty Cove outfall may not always meet reuse quality standards because it would be discharged into the strong currents of Haro Strait. All effluent slated for water reuse would meet high quality standards. The Environmental Impact Study (EIS) prepared for the SENOB project will provide further clarification on disinfection criteria for a marine discharge.

3. DESCRIPTION OF THE WASTEWATER TREATMENT FACILITIES AND OPERATION

The equipment and treatment units to be installed in the SENOB treatment facility must comply with the process reliability standards set out in the British Columbia Municipal Sewage Regulations.

The treatment facility is proposed to be constructed in two stages. Stage 1 would be built between 2010 and 2012, and would see 75% of the ultimate capacity constructed. The remaining 25% would be constructed in about 2030 (CRD, Mar 2007). Secondary and tertiary treatment capacity for reclamation is to be provided for up to two times the ADWF or 38 ML/d for the year 2065. Primary treatment would be provided for flows to about 63 ML/d. Treated effluent not required for reclamation would be discharged through the existing Finnerty Cove outfall. This outfall would be extended to move the discharge point further off-shore, pending results of marine studies presently underway. The outfall extension is a component of the SENOB project, but cannot be assessed in this ESR because the discharge location has not been determined.

The facility design is to be low profile and architecturally designed to fit with the surrounding neighbourhood. Components of the facility would be arranged and configured to suit the site.

A schematic diagram of the wastewater treatment process is presented in Figure 3-2.

3. DESCRIPTION OF THE WASTEWATER TREATMENT FACILITIES AND OPERATION

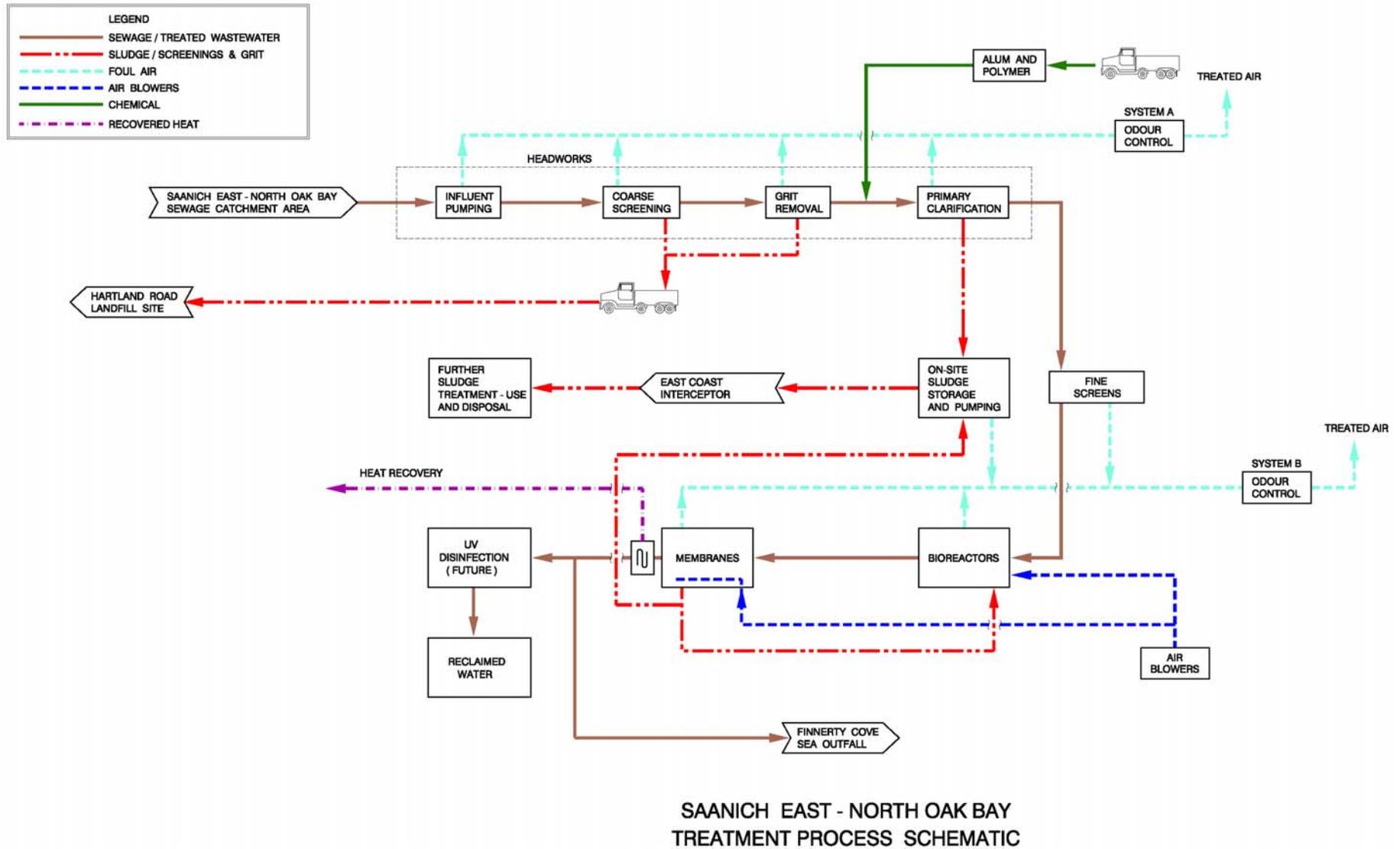


Figure 3-2 Saanich East-North Oak Bay treatment process schematic

Steps in the Wastewater Treatment Process

Wastewater treatment at the SENOB facility would involve:

- an influent pumping station (>63 ML/d),
- screening and grit removal of all wastewater flows (>63 ML/d),
- chemically-enhanced primary treatment for flows exceeding two times average dry weather flows (ADWF), (38 ML/d),
- secondary and tertiary treatment using Membrane Bioreactor (MBR) technology of wastewater volumes up to two times ADWF, or 38 ML/d,
- sludge (3.5-6.8 tons/day [5.2 tons/day] average) discharge and conveyance in existing trunk sewers for downstream treatment, and
- unused treated effluent released to marine waters near Finnerty Cove via an upgraded and extended existing or replaced outfall.

The SENOB wastewater treatment facility is planned to be constructed in two stages:

- Stage 1 construction (2010) to 75% of ultimate capacity
- Stage 2 (2030) to 100% of ultimate capacity

Wastewater Treatment Sites

The SENOB wastewater treatment facility layouts and site infrastructure for the three candidate sites that are presented in Figures 3-4 to 3-9 reflect the ultimate size of the facility in the year 2065.

1. Finnerty-Arbutus property

The proposed site on the corner of Finnerty Road and Arbutus Road is shown on Figure 3-3. The site is close to the existing Finnerty Cove outfall. The wastewater would be diverted into the treatment facility at the Finnerty-Arbutus site from the existing trunk sewer through a 20 m-long pipe, depending on the final location of the inlet structure of the treatment facility (Figure 3-4). The treated (unused) effluent would be discharged to the proposed outfall through a 1,200 m-long gravity main and outfall. The screenings and grit would be transferred by enclosed truck to the Hartland Landfill site, which is approximately 16 km northwest of the Finnerty-Arbutus site. The sludge would be pumped or discharged by gravity to the East Coast Interceptor. Wastewater from the Penrhyn pump station would be pumped to the Finnerty-Arbutus intake by a small diameter forcemain that is 1,500 m long.

3. DESCRIPTION OF THE WASTEWATER TREATMENT FACILITIES AND OPERATION

2. Cedar Hill Corner

The proposed Cedar Hill Corner site is north of Cedar Hill Cross Road and east of Haro Road as shown on Figure 3-5. The wastewater would be pumped to the treatment facility site at Cedar Hill Corner from the Arbutus Road Pump Station through a 1,750 m long forcemain (Figure 3-6). Moreover, a 850 m long forcemain has to be installed to divert the wastewater from the Garnet Pump Station forcemain along Sinclair Road.

Wastewater from Penrhyn pump station would be pumped to the Arbutus Road pump station by a small diameter of 1,500 m long forcemain. The Arbutus Road pump station is a new pump station with all additional forcemain components. The treated (unused) effluent would be discharged to the Finnerty Cove outfall through a 2,550 m long gravity main and outfall. The screenings and grits are transferred by ground transportation to the Hartland Landfill site, approximately 17 km away from the proposed Cedar Hill Corner site. Sludge is pumped or gravity discharged to the East Coast Interceptor.

3. UVic Fields

The proposed UVic Fields site is north of McKenzie Avenue and southeast of Gordon Head Road, the site is shown on Figure 3-7. The wastewater would be pumped to the treatment facility site at UVic Fields from the Arbutus Road Pump Station through a 1,350 m long forcemain (Figure 3-8). The treated (unused) effluent would be discharged to the Finnerty Cove outfall through a 2,150 m long gravity main and outfall. The screenings and grits are transferred to the Hartland Landfill site, approximately 16 km away from the proposed UVic Fields site. Sludge is pumped or gravity discharged to the East Coast Interceptor. A new pump station at Arbutus Road with connecting sewer main are needed if the UVic Fields site is selected. Wastewater from the Penrhyn pump station would be pumped to the Arbutus Road pump station by a small diameter of 1,500 m long forcemain.

3. DESCRIPTION OF THE WASTEWATER TREATMENT FACILITIES AND OPERATION

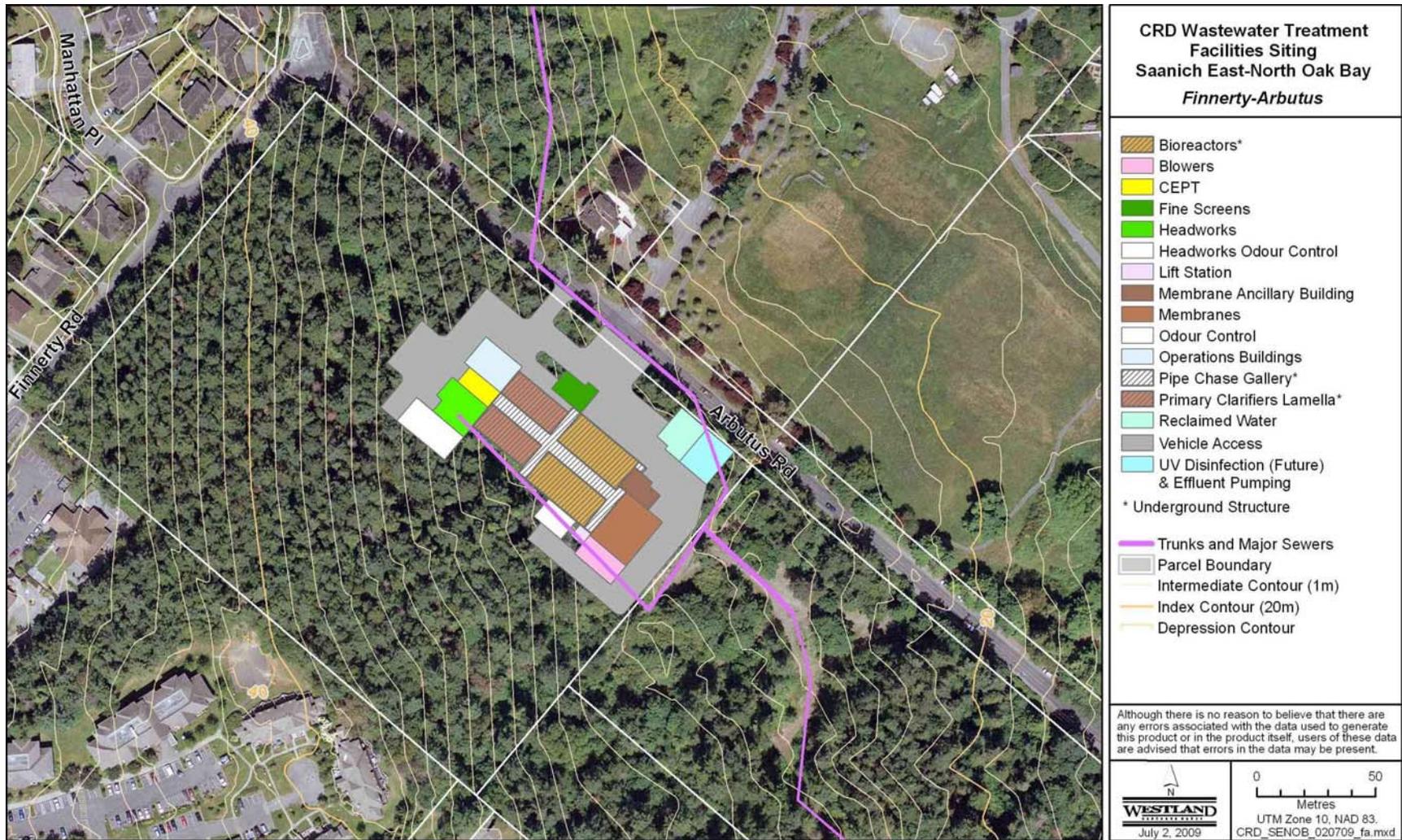


Figure 3-3 Finnerly-Arbutus facility conceptual layout

3. DESCRIPTION OF THE WASTEWATER TREATMENT FACILITIES AND OPERATION

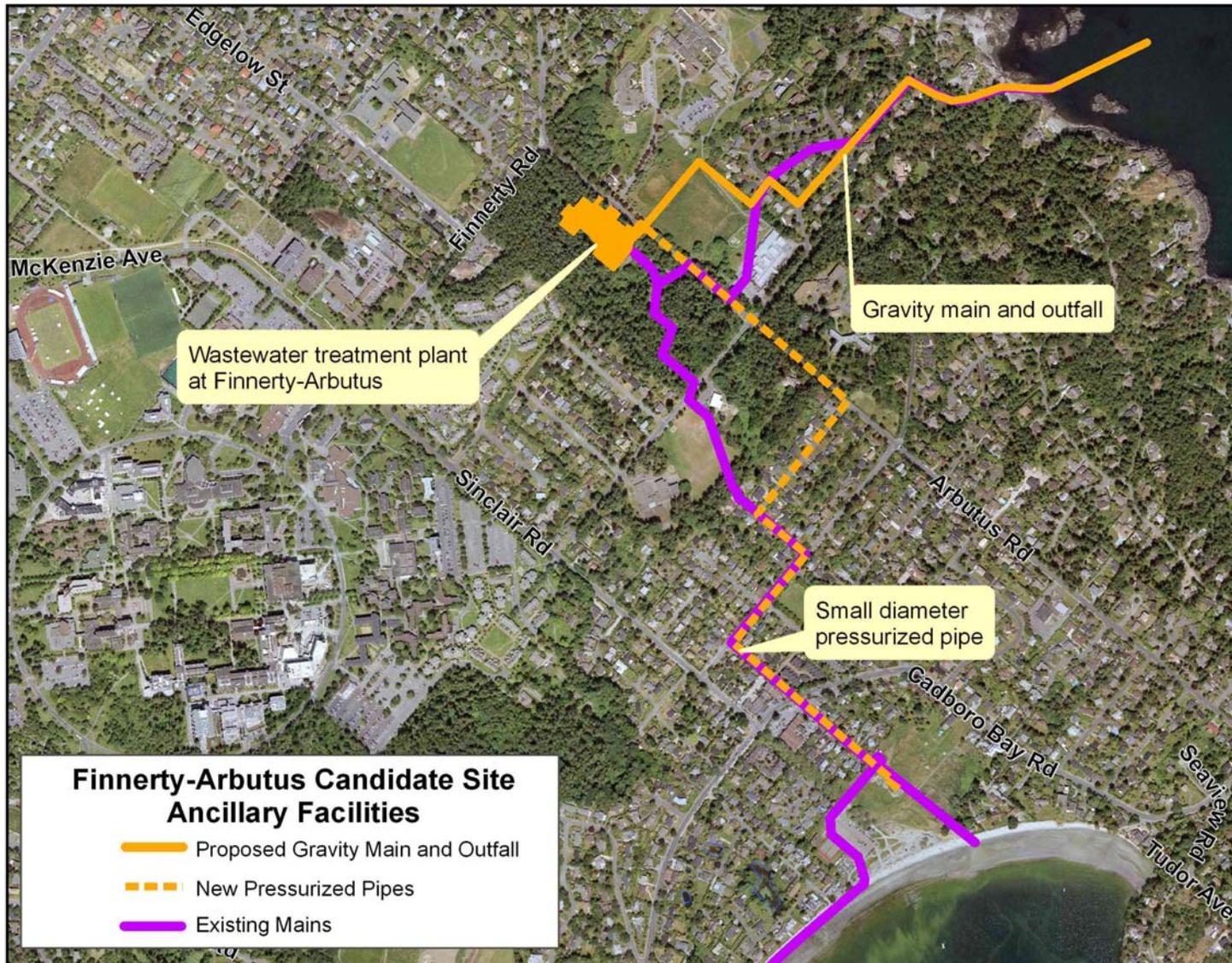


Figure 3-4 Finnerty-Arbutus candidate site infrastructure

3. DESCRIPTION OF THE WASTEWATER TREATMENT FACILITIES AND OPERATION

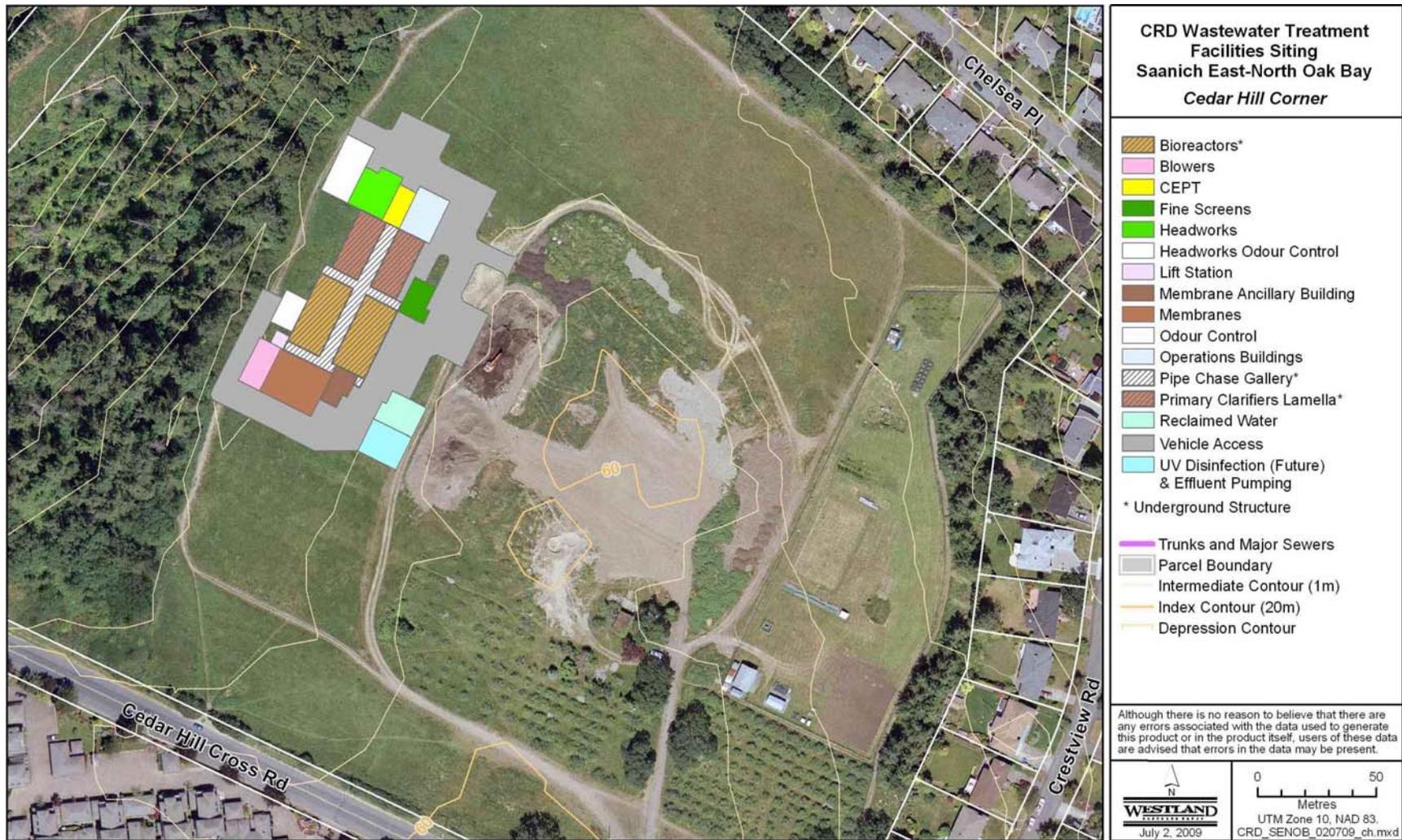


Figure 3-5 Cedar Hill Corner facility conceptual layout

3. DESCRIPTION OF THE WASTEWATER TREATMENT FACILITIES AND OPERATION

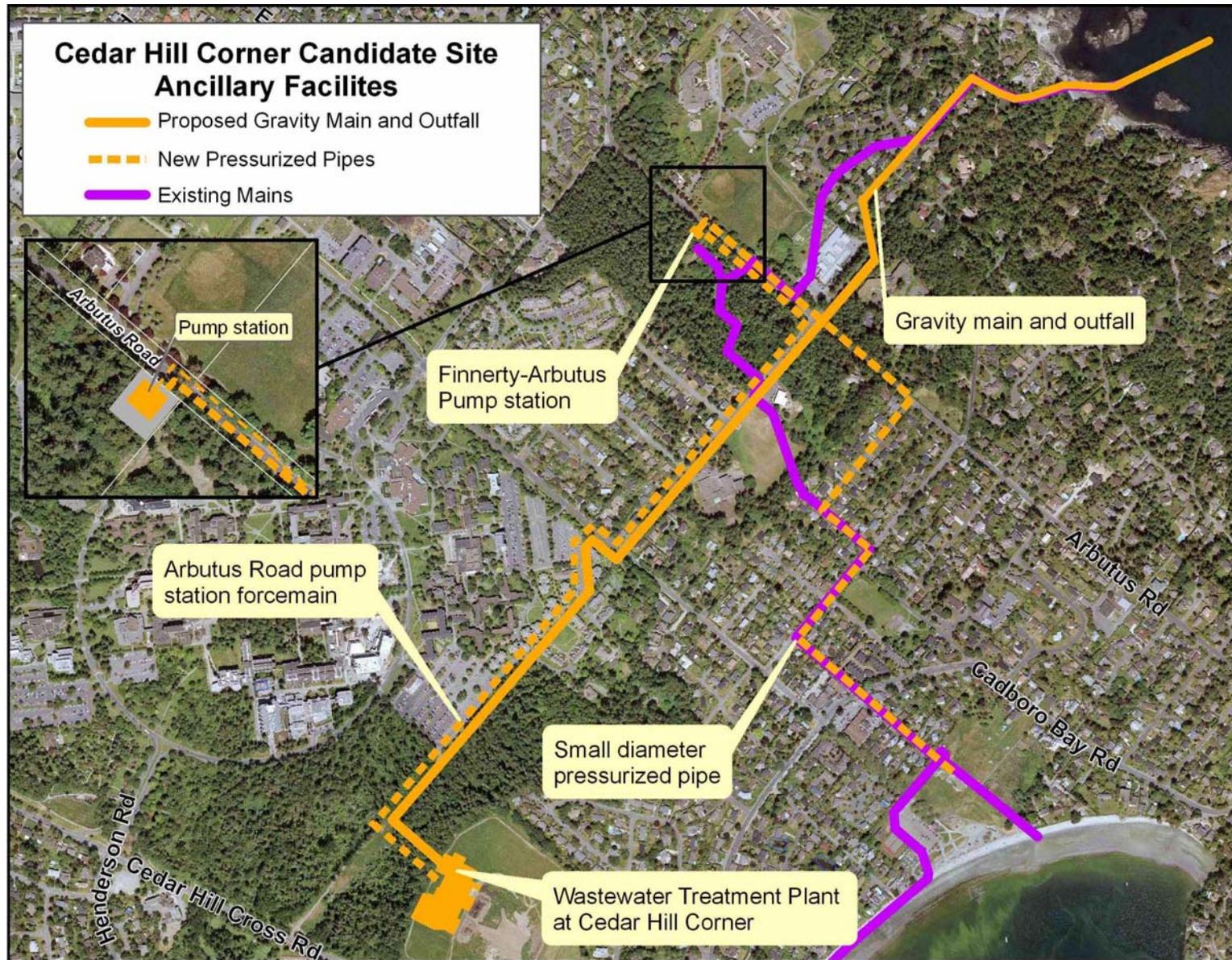


Figure 3-6 Cedar Hill Corner candidate site infrastructure

3. DESCRIPTION OF THE WASTEWATER TREATMENT FACILITIES AND OPERATION

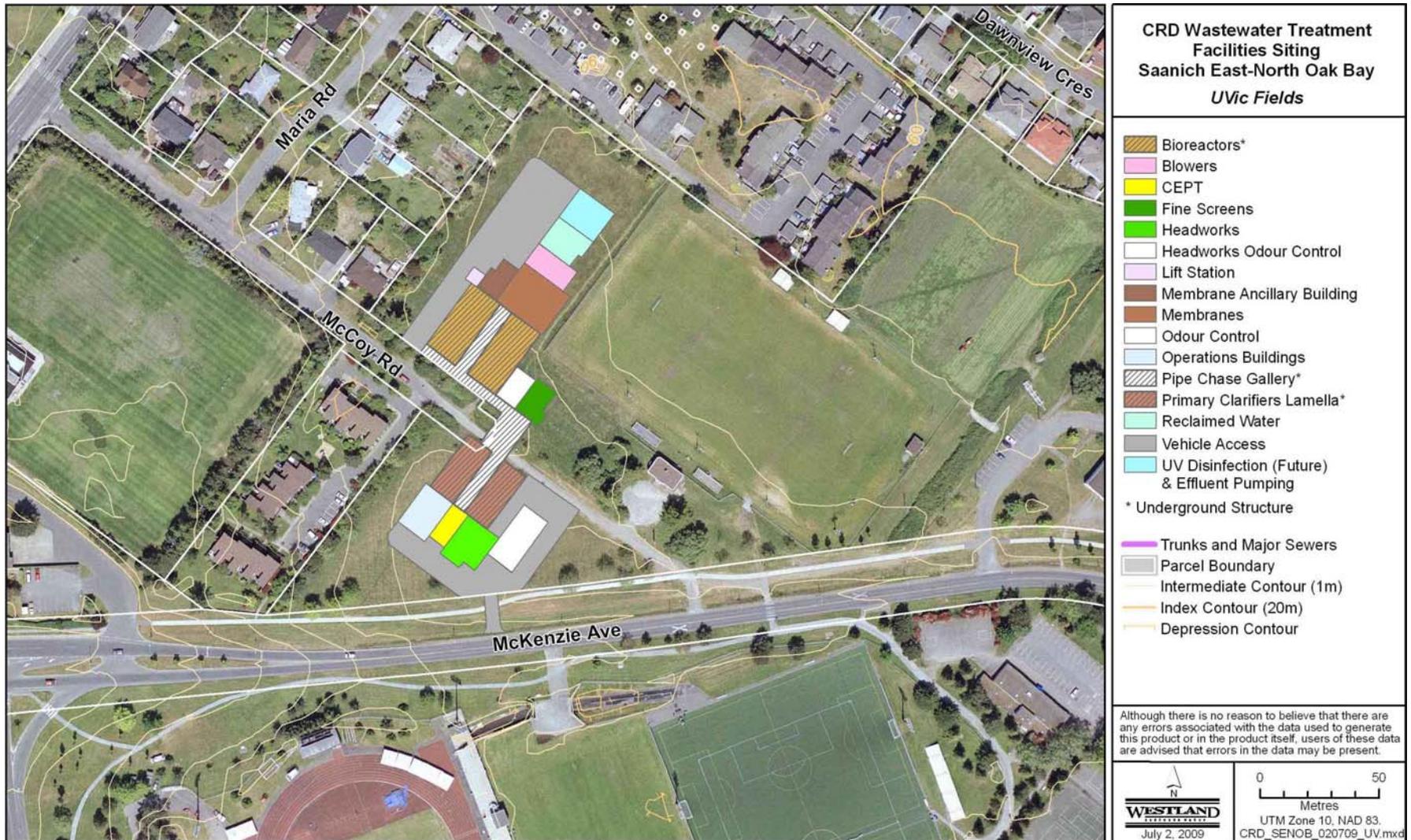


Figure 3-7 Uvic Fields facility conceptual layout

3. DESCRIPTION OF THE WASTEWATER TREATMENT FACILITIES AND OPERATION

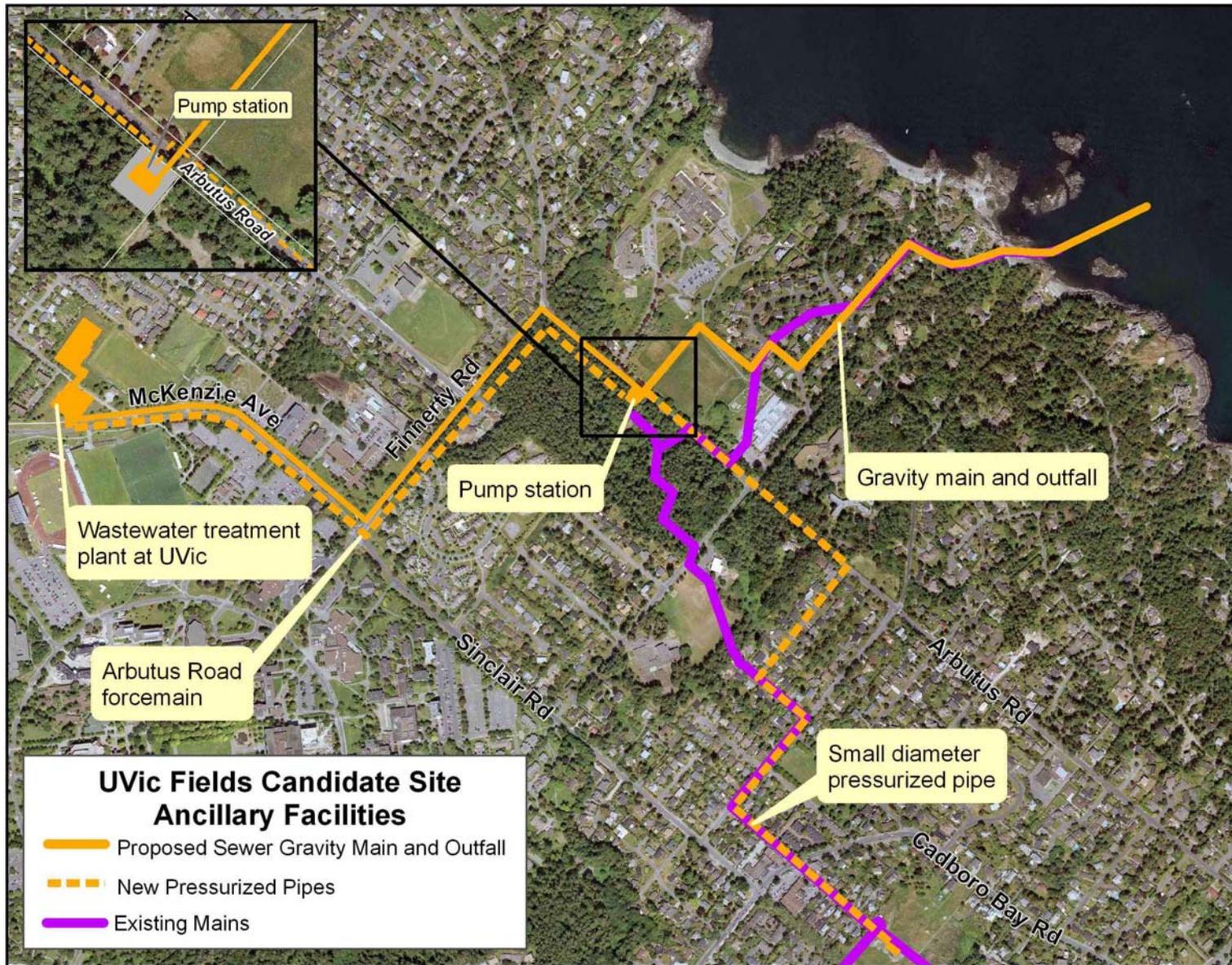


Figure 3-8 UVic Fields candidate site infrastructure

3.2 Operations

Operations of the treatment facility include day-to-day activities at the treatment facility and pump stations, and routine maintenance of all facilities.

This section provides information on transportation and traffic, and estimated noise and odour and electricity consumption for facilities at the site options.

Screenings and Grit Removal

Transporting screenings and grit to Hartland landfill would require one truck every five to six days. This estimate is based on the following assumptions:

- 2 mm screen,
- 10.5 m³ screenings per 100 ML treated, or 2 m³ of screenings per day,
- Grit 1.5 m³ of grit per 100 ML treated, or 0.3 m³ of grit per day,
- Trucks have a capacity of 13 m³.

Chemicals

Chemicals used in the treatment process would be largely inorganic materials such as acids, caustics, oxidizing chemical agents (alum, polymer), or compounds (mild acids) for cleaning the membranes. These chemicals would be delivered on weekly or less frequent basis in small to medium sized shipments (10-20 m³) and stored at the treatment facility in secured, covered structures with containment features.

An estimated 200 to 400 mg/L of aluminum sulfate would be needed for chemically assisted primary treatment, requiring 5 to 11 trucks per year (4,500 L per truck).

Operational Traffic

Table 3-2 summarizes the number of trucks required for screenings and chemicals for year 2020 and 2065 designs.

Table 3-2 Operational Traffic for Year 2020 and 2065 Design

Material	Direction	2010-2030 Operation	2030-2065 Operation
Screenings and grits transferred to the Hartland Landfill site	Out	1.5+0.2 m ³ /day (1 truck per 7 to 8 days)	2+0.3 m ³ /day (1 truck per 5 to 6 days)
Chemicals Alum	In	37.1 m ³ /year (8.3 trucks per year for alum)	49.5 m ³ /year (11 trucks per year for alum)

Note: A 13 m³ closed box truck is assumed for screening and grit transporting. A 4,500 L container is assumed for Alum.

3. DESCRIPTION OF THE WASTEWATER TREATMENT FACILITIES AND OPERATION

Servicing for the remote pump stations would include scheduled site visits on a weekly basis and annual cleaning except for unscheduled emergency attention. Sewers commonly require flushing on a rotational basis, which may be every 5 years or more.

Sewer and Outfall Connections Energy Use

Due to the variations in each site's elevation and distance from the trunk, the facilities would have different influent and effluent system configurations. These differences can be measured and compared in terms of electrical energy use. The energy requirements for a wastewater treatment facility would be the same regardless of site, and are estimated at 4×10^6 kWh/yr for an Average Dry Weather Flow (ADWF) of 17 ML/d. The energy use is high because of aeration needs and membrane operation.

1. Inflow Connection to Sites

Wastewater from Penrhyn pump station would be pumped to either the Finnerty-Arbutus site intake or, for the other alternative sites, to a new Arbutus pump station through a 1,500 m forcemain. Assuming 60 m elevation difference and hydraulic loss, the power requirement is about 50 kW.

Additional sewer forcemain and pumping requirements for each candidate site is summarized below:

- *Finnerty-Arbutus site:* Only a lift pump is required to divert wastewater to the Finnerty-Arbutus facility site. The wastewater would be diverted by pumping into the treatment facility at the site from the existing trunk sewer. Assuming a 4 m lift, the average power requirement is about 15 kW. Maximum power requirement for Peak Wet Weather Flow (PWWF) is about 60 kW. The additional energy requirements are about 150,000 kWh/yr.
- *UVic Fields site:* The wastewater would be pumped to the treatment facility site at UVic Fields from the Arbutus Road Pump Station through a 1,350 m long forcemain (the forcemain is assumed to be 1,500 mm diameter to manage Peak Wet Weather Flows (PWWF)). Assuming 35 m of lift and hydraulic loss for average flow, the power requirement is about 130 kW. The power requirement is during PWWF, however, is much larger due to the line losses and would be approximately 520 kW, which is equivalent to about 1,140,000 kWh/yr.
- *Cedar Hill Corner site:* The wastewater would be pumped to the treatment facility site at Cedar Hill Corner from the Arbutus Road Pump Station through a 1,750 m long forcemain with 35m of lift. Additionally, an 850 m long forcemain would be installed to divert the wastewater from the Garnet Pump Station forcemain along Sinclair Road. Power requirements would be slightly greater than for the UVic Fields

3. DESCRIPTION OF THE WASTEWATER TREATMENT FACILITIES AND OPERATION

site at approximately 135 kW. The annual energy requirements are about 1,180,000 kWh/yr.

2. Discharge from Sites

Treated effluent discharge pipe lengths are different for each candidate site. The marine outfall length should likely be the same; however, the outfall would need to be confirmed through diffuser modeling studies in conjunction with a future Environmental Impact Study (EIS):

- *Finnerty-Arbutus site*: The treated unused effluent would be discharged by gravity to the outfall through a 1,200 m forcemain and outfall.
- *UVic Fields site*: The treated unused effluent would be discharged by gravity to the outfall through a 2,150 m forcemain and outfall.
- *Cedar Hill Corner site*: The treated unused effluent would be discharged by gravity to the outfall through a 2,550 m forcemain and outfall.

The elevations of the sites above sea level are 25 m at Finnerty-Arbutus and 55 m at UVic Fields and Cedar Hill Corner. These elevations are anticipated provide sufficient head for gravity flow outfalls and no pumping will be required.

3. Sludge Discharge

The biological sludge produced during secondary and tertiary treatment at the treatment facility would be about 0.8 to 1.0% solids concentration, while the sludge from primary clarifiers could be about 2 to 6% solids concentration. The combined sludge concentration could be around 1.5 to 2%. In this case, transferring the sludge by gravity from the on-site storage tanks in the treatment facility to the East Coast Interceptor at Haro Road could be problematic at least for the UVic Fields and Cedar Hill Corner sites. Dilution of the combined sludge with the backwash water from the secondary and tertiary facility could be a preferred alternative for pumping the sludge to the interceptor. If needed, the pumping requirements should be about one-tenth of the influent pumping power requirement.

The approximate pumping distances between the candidate sites and the East Coast Interceptor at Haro Road are:

- Finnerty-Arbutus site – 350 m
- UVic Fields site – 1,750 m
- Cedar Hill Corner site – 1,410 m

3. DESCRIPTION OF THE WASTEWATER TREATMENT FACILITIES AND OPERATION

4. Summary

The estimated energy requirement to bring wastewater into the facility is lowest at the Finnerty-Arbutus site by a factor of three (3). Discharging sludge and from Finnerty-Arbutus also requires the least energy, by a factor of 8. Table 3-3 summarizes the estimated electrical energy use at each site.

Table 3-3 Estimated power requirements for each candidate site

Power Requirements (kW)	Candidate Sites		
	Finnerty-Arbutus	Cedar Hill Corner	UVic Fields
Penrhyn Pump Station to Finnerty-Arbutus facility or Finnerty-Arbutus pump station	50	50	50
Bringing gravity flow wastewater to facility	15	135	130
Power required for treatment (figures from CRD Discussion Paper 038-DP-1)	453	453	453
Sludge pumping (one-tenth of influent pumping)	1.5	13.5	13
Total Power required for all pumping	66.5	198.5	193
Total power requirement (treatment plus pumping)	519.5	651.5	646
Total number of kWh per year	4,550,820	5,707,140	5,658,960
Total annual energy cost (@ \$0.07/kWh)	\$318,557	\$399,500	\$396,127
Annual energy cost of pumping (@ \$0.07/kWh)	\$40,778	\$121,720	\$118,348

Noise, Vibration and Light

1. Noise

Operation of the wastewater treatment facility would generate noise from the following equipment on site:

- air-driven pumps,
- compressors,
- fans and blowers,
- diesel driven pumps, and
- standby diesel power generators.

Noise at the property line of the treatment facility is not to exceed 45 dB (evening) and 55 dB (daytime), and must also comply with zoning regulations. Sound attenuation would be installed in the buildings housing the units and on diesel engines exhaust to ensure that decibel levels remained below 45 dB at the property line, to meet the local municipal bylaw requirement, and to meet WCB/OSHA criteria for worker safety. All noise-generating equipment would be installed in soundproof rooms to meet these requirements.

3. DESCRIPTION OF THE WASTEWATER TREATMENT FACILITIES AND OPERATION

2. Vibration

All installed vibrating equipment would be contained in isolated structures that meet vibration limits acceptable to the residential community. Since the wastewater systems to be used at the treatment facilities do not include excessive vibrating equipment and are typical of current operating systems found elsewhere, vibration issues are not anticipated and if present can be fixed.

The CRD as an employer for the treatment facility would meet the requirements of the *Occupational Health and Safety Regulation of Workers Compensation Act (BC)*.

3. Lighting

The lighting plan for the SENOB facility is expected to include normal post top sodium vapour lighting standards similar to those on residential streets. If night work is required, higher intensity lamps may be needed. All lighting would be directed downward and would have shields installed to prevent lighting of the night sky.

In accordance with corporate activities for environmental sustainability, facility planning would incorporate energy efficiency and BC Hydro “Power Smart” initiatives and the applicable Leadership in Energy and Environmental Design (LEED™) standards for green buildings. For example, LED lighting that uses little energy and emits low UV light could be specified.

Sources of Odour and Odour Control

1. Odour Sources

The following odour sources in the treatment facility and the two odour containment process areas are given in Table 3-4.

Table 3-4 Odour Sources in the treatment facility

Source	Untreated Potential Odour
System A Source (the untreated wastewater recovery area)	
Headworks	Strong to Very Strong
CEPT	Light to Moderate (chemical)
Primary Clarifier*	Very Strong
Headworks Odour control	Light to Moderate (chemical)
System B Source (the treated effluent area)	
Pipe Chase Gallery	Nil to Light
Fine Screen	Very Strong
Bioreactors*	Strong (musty)
Membranes*	Strong (musty)

3. DESCRIPTION OF THE WASTEWATER TREATMENT FACILITIES AND OPERATION

Source	Untreated Potential Odour
Membrane Ancillary Building	Very light
Lift Station and Sludge Pumping Station	Strong to Very Strong
Reclaimed water storage	Nil to Light
UV Disinfection (Future) and Effluent Pumping**	Nil to Very Light
Odour Control	Light to Moderate (chemical)
Blowers Building	Nil to Very Light

Notes: * 75% of the units would be constructed for 2010-2030

** UV Disinfection units to be installed in future within the existing building

2. Odour Control in Wastewater Treatment Facilities

The facility design needs to include best practice solutions for minimizing release of odour, especially from untreated wastewater and sludge. With proper attention to design details during the detailed design stage, routine release of odours from the treatment facility processes can be minimized by:

- the use of submerged inlets and weirs,
- eliminating turbulence in influent piping and channels,
- the elimination of physical conditions leading to the formation of turbulence,
- proper process loadings,
- containment of odour sources,
- off-gas treatment,
- good house keeping, and
- keeping access doors and buildings closed.

Treatment System A and likely System B would be a three stage wet chemical scrubber with final polish step of activated carbon and odours will be scrubbed from the treatment facility's ventilation air before this air is discharged via one or more roof fans to the atmosphere.

State of the art odour scrubbing is commonly accomplished using a multistage chemical scrubber that may be followed, if necessary, by an activated carbon polishing step. Air emissions from the treatment facility roof fan(s) would be emitted into the atmosphere at high velocity.

Odour discharges are expressed in terms of Odour Units per hour, which is simply the odour concentration (Odour Units) in the ventilation air times the ventilation airflow rate (m³ per hour). An Odour Unit (OU) is a measure of odour concentration and is defined

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as the amount of dilution with clean air required to bring the odour down to a non-detectable level.

3. Acceptable Odour Concentration

The design of the facility would ensure that odour at the facility property line does not exceed 5 odour units (OU) per m³, as an hourly average 98 percentile based on a 15 minute rolling average (Project Description, Mar 2009). During routine annual maintenance of odour control equipment, emissions could reach 15 odour units for a few hours. Unless such maintenance occurs during still air conditions, even odours generated during routine maintenance are unlikely to be considered objectionable by nearby residents. Table 3-5 compares various odour magnitudes.

Table 3-5 Odour Intensity Versus Ambient Odour Concentration

Category Scale	Field Qualitative Odour Intensity Scale	Estimated Odour Concentration (OU) (Detection Threshold)	Typical Description of Odour
No odour (usual limit of public acceptability)	Odorant present in the air, which activates the sense of smell but the characteristics may not be distinguishable.	≤ 5	None
Very Light	Odorant present in the air, which activates the sense of smell and is distinguishable and definite but not necessarily objectionable in short durations but not may be objectionable in longer durations.	> 5 – 15	Earthy, stale, musty, chemical
Light		>15 – 50	Earthy, garbage, soil, chemical
Moderate	Odorant present in the air, which easily activates the sense of smell, is very distinct and clearly distinguishable and may tend to be objectionable and/or irritating.	>50 – 150	Sewer, sour, solvent, chemical
Strong	Odorant present in the air, which would be objectionable and cause a person to attempt to avoid it completely, could indicate a tendency to possibly produce physiological effects during prolonged exposure.	>150 – 1,500	Offensive, sewer, garbage
Very strong	Odorant present which is so strong it is overpowering and intolerable for any length of time and could tend to easily produce some physiological effects	>1,500	Offensive, chemical, putrid, rotten, sewer, urine, septic

Source: Adopted from *Manual of Practise No. 25, Control of Odours and Emissions From Wastewater Treatment Plants*, Wat. Env. Fed., 2004, and fit to real data from WWTP

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For the SENOB treatment facility project, the ambient odour guideline is 5 OU, not to be exceeded under the worst-case meteorological conditions. The effectiveness of the treatment facility ventilation air scrubbing would be chosen so that this guideline is not exceeded during normal operation and all meteorological conditions. It is expected that there would occasionally be short periods of time when the scrubbers are being maintained and odour emissions would exceed their design values. These “upset” conditions could lead to higher ambient odour levels, perhaps 15 odour units, especially if the emissions coincide with unfavourable meteorological conditions, such as evening inversions.

4. Security

Once the treatment facility is constructed, the operational staff would work daily at the facility. Access to the site would be controlled at all times. The building doors and main gates would be remotely alarmed by the CRD's supervisory control and data acquisition (SCADA) monitoring system. A combination of sturdy, but attractive, materials for fencing, lighting and landscaping would be incorporated into the design to discourage vandalism at the treatment facility site.

Drainage Management

Current principles for low impact development and stormwater management would be employed in facility planning. Uncontaminated storm runoff from roofs of structures would be directed to infiltration facilities where site conditions allow. Parking areas and other on-grade surfaces would be constructed using permeable pavers, or the runoff from these areas would be directed to biofiltration swales or similar facilities. In general, disturbance of the natural hydrology of the site would be minimized as far as practical. Landscaping would incorporate pervious soils and vegetation to minimize increases in site runoff caused by the facilities. Native vegetation would be used in landscaping to reduce irrigation demand.

A credit for stormwater management towards LEED™ certification is available if disruption of natural water flows by minimizing stormwater runoff is limited or on-site infiltration increased and contaminants reduced.

3.3 Construction

Safety, Security, and Effects on Surrounding Properties

Construction is anticipated to start in late summer or fall, 2010 with the SENOB treatment facility taking up to 2.5 years to complete.

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Peak construction activity would occur in the first nine months during excavation and pouring concrete. After this, the work would be similar to construction of utility or industrial buildings.

1. Safety

The noise exposure to construction workers could be a safety issue during construction and normal operating activities if proper safety procedures are not observed.

Construction activities may post safety risks to the public if safety is not properly managed by the contractor and administered by the CRD.

The construction activities would comply with safety criteria established by OSHA, WCBBC, and NFPA. The safety manuals and instructions should be followed. Workers should be trained during the construction and operation period and residents should be informed during construction. Temporary safety fencing and warning signs would be installed around the construction site.

A traffic management plan would address traffic disruptions, truck traffic, and access maintenance to nearby institutions, and residences during construction. Flag persons would direct vehicles and pedestrians around the construction site. Construction drivers will observe speed limits and exercise caution near the school or hospitals.

2. Noise

Construction activities that take place in the District of Saanich or District of Oak Bay must comply with the relevant municipal noise bylaws for hours of work and noise levels. Work is allowed to occur on weekdays from 7 am to 5 pm with no work on Sundays or holidays (except in an emergency).

Construction activities such as running excavation vehicles, truck deliveries, and using chainsaws, compressors, water pumps, concrete pouring pumps, rock breakers, and blasting and blasting signals could be a noise source for nearby residents. Generally all potential noise sources that operate on a permanent or semi-permanent basis can be designed or controlled to meet the adjoining property line standard.

3. Vibration

Potential sources of vibration during the construction phase of the treatment facility include heavy equipment movement, blasting, compactors, and paving equipment.

Nearby residents may be affected by vibration (due to construction activity such as blasting) when vibration is only slightly in excess of perception levels. Activities causing vibration should occur only between 8 am and 7 pm Monday to Saturday. The residents should be informed and advised regarding work periods that may contain abnormal vibration conditions. The equipment in the treatment facility building is designed to

3. DESCRIPTION OF THE WASTEWATER TREATMENT FACILITIES AND OPERATION

ensure vibration is dampened or held within acceptable operating limits for protection of the equipment and operational staff.

The Contractor must ensure that workers are not exposed to vibration in excess of the limits specified in the Occupational Health and Safety regulation.

4. Dust and Mud

Construction may result in short-term localized dust generation air quality impacts. Air pollutants generated during construction are generally fugitive dust and equipment exhaust emissions. Trucks will have box covers when hauling granular materials that could create dust nuisances.

The CRD Code of Practice for “Construction and Development Activities” would be used to mitigate dust and mud impacts. Erosion and sediment control plans would be prepared and implemented during construction. Authorities may require additional dust control plan submissions to all relevant agencies prior to construction.

During wet weather, mud from excavated areas could be spread off site through truck hauling. Tracking of mud offsite is not expected to be significant since the area is contained and trucks are unlikely to be located where tracking would be a problem.

Once the facility is operational, no dust or mud related problems are anticipated since the site would be paved and vegetated to prevent formation of either.

Construction Activities

The SENOB wastewater treatment facility needed to serve the population from 2010 to 2030 is roughly 75% of the size of the facility needed to serve the region in 2065. Construction work would therefore be undertaken in two stages. The construction period for the year 2030 design for a 17 ML per day (ADWF) facility would begin in 2010 and would be completed in 2.5 years by the year 2013. Whether the work is delivered in a design-build or design-bid-build construction contracts, the time frame for construction activity would be roughly the same. Facility capacity is anticipated to be expanded by 2030, with construction work starting in 2027 and completed in less than 2 years.

The maximum construction activity would see a peak monthly labour component of 30 to 40 workers during the concrete pouring stage. Most of the time, about 10 to 15 workers would be onsite on a daily basis. This pattern would repeat for the 2027 construction.

The construction would be done in the following stages:

1. Clearing and grubbing for the portion of the site in the facilities footprint. This work could be completed in three to four months.

3. DESCRIPTION OF THE WASTEWATER TREATMENT FACILITIES AND OPERATION

2. Rough grading, road construction, site servicing, excavation and filling to prepare the site. This stage of construction would likely be undertaken in the later part of the first year and would also include installation of foundations.
3. Slabs, structures, and site facilities would then be constructed, and equipment would be installed.
4. Equipment would be delivered during the last one and half years of the construction period, and installed in accordance with the project management scheduling.

The land and marine sections of the outfall and other ancillary facilities would be constructed during the 2.5 year interval when the treatment facility is being built. The ancillary forcemains, marine outfall, and pump stations would need to be completed before the SENOB facility begins functioning.

The CRD or Contractor should secure a staging area to provide enough space for stock piling of materials. The Contractor has to manage delivery of concrete and other construction materials to be able to fit in the staging area.

Site Preparation

The area requirements for individual process components are summarized in Table 3-6 for the SENOB wastewater treatment facility. Stage I would see 75% of the ultimate capacity constructed. It is assumed that 75% of primary clarifier, bioreactors, and membranes would be constructed and the rest of the units and buildings would be constructed to accommodate installation of Stage II equipment.

Table 3-6 Area Requirement for the SENOB treatment facility Components

SENOB Treatment Facility Units	Facility Area (m ²)	
	2010–2030	2030–2065
Pipe Chase Gallery	520	520
Headworks	300	300
Fine Screen	180	180
CEPT	120	120
Primary Clarifier	450*	600
Bioreactors	630*	840
Membranes	345*	460
Membrane Ancillary Building	150	150
Lift Station + Sludge Pumping Station	80	80
Reclaimed water storage	240	240
UV Disinfection (Future) & Effluent Pumping	260	260
Operations Building	300	300
Headworks Odour Control	300	300
Odour Control	130	130

3. DESCRIPTION OF THE WASTEWATER TREATMENT FACILITIES AND OPERATION

SENOB Treatment Facility Units	Facility Area (m ²)	
	2010–2030	2030–2065
Blowers Building	200	200
Road and Parking	5,665	5,190
Total (m2)	9,870	9,870

Notes: * 75% of units would be constructed for 2010 – 2030.
The 2030 area includes the 2010 facilities.

Regardless of the site, about 1 ha plus buffer allowance would be prepared during Stage I to meet the total needs shown for 2065 construction.

Construction Methods and Scheduling

The quality of a completed treatment facility can be affected by the skill and knowledge of the contractor and its staff, their attention to the environment, and their choices of construction and inspection methods at each stage of construction. As in the development of appropriate alternatives for facility design, choices of appropriate technology and methods for construction are critical ingredients in the success of the project.

Before construction begins, the CRD may consider requesting the contractor to propose alternative building methods. These methods would be intended to improve the cost, time, and reliability performance of construction.

1. Treatment Facility Construction Schedule

Expected timing for construction works could be as follows:

- 2010 Site clearing, excavation, construction of tanks and buildings, installation of major pipes.
- 2011 Complete buildings, backfill structures, install mechanical and electrical systems (pumps, piping and ducts).
- 2012 Complete final site grading, complete equipment installation, start up and test equipment, and complete landscaping.

2. Gravity Sewer to Outfall

The gravity main alignment from the treatment facility to the outfall will be analyzed and selected after marine studies are completed later this year, identifying the optimum offshore location for effluent discharge. This alignment could primarily follow the existing right-of-way or could follow a new route. The alignment selected will seek to minimize environmental and community impacts.

The gravity main to the outfall could be installed by open trench or trenchless methods that use boring or tunnelling techniques. For the purposes of this ESR, the analysis will

3. DESCRIPTION OF THE WASTEWATER TREATMENT FACILITIES AND OPERATION

be based on installing a new gravity main that follows much of the existing right-of-way using open trench construction methods.

3. Outfall

The marine portion of the outfall would be installed by pre-construction of pipe and sinking it in place on the water. Some prior excavation of the sea bottom may be required. This work would be done from barges and on the water except for the connection to the land portion. Dispersion modeling and the Ministry of Environment criteria would be used to determine outfall length.

4. Sludge line to the East Cost Interceptor at Haro Road

Waste solids from the treatment facility would be conveyed to other facilities for further treatment transferred by gravity sewer line. The approximate length of sewer lines for each site would be as follows:

- Finnerty-Arbutus site – 350 m
- UVic Fields site – 1,710 m
- Cedar Hill Corner site – 1,410 m

These sewer line connections have to be completed prior to completion of the overall facility construction.

5. Sewer Forcemain and Arbutus Road Pump Station for UVic Fields and Cedar Hill Corner Candidate Sites

Additional sewer forcemain and a pumping station at Arbutus Road are required for the UVic Fields and Cedar Hill Corner candidate sites as follows:

- UVic Fields site – 1,350 m forcemain
- Cedar Hill Corner site – 2,600 m forcemain (1,750 m long between the Arbutus Road Pump Station and the Cedar Hill Corner site; 850 m long forcemain diverted Garnet Pump Station forcemain along Sinclair Road).

Construction of sanitary sewer lines and its appurtenances are generally tendered separately from the wastewater treatment facility construction contracts. Additional sewer line construction means additional soil disturbance due to excavation and backfilling, and might cause temporary traffic delays along the roadways during the construction period.

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6. Sewer Forcemain (small diameter) for All Candidate Sites

Sewer from the Penrhyn pump station would be pumped to the Finnerty-Arbutus intake for the Finnerty-Arbutus site; and to the Arbutus Pump Station for the UVic and the Cedar Hill Corner sites by a small diameter of 1,500 m long forcemain.

Construction Traffic

Construction traffic would include delivery of equipment and supplies. For the 2010 to 2013 construction period, material and equipment deliveries would include 12 m³ concrete trucks and trucks delivering reinforcing steel, major equipment, and general service materials.

The estimated truck traffic for concrete, steel, excavated material, soil and fill transport during construction for the 2030 and 2065 facilities are shown in Table 3-7. Cut and fill volumes required for site preparations were estimated from the facilities plans shown on Figure 3-3, Figure 3-7, and Figure 3-5.

The assumptions in estimating the cut and fill volumes for each site include:

- the cut and fill work needed for the construction of the 2030 facility would be conducted in 2010, so no major site disturbing options would be needed in 2030,
- a minimum 0.5 m cut depth for clearing and grubbing was assumed over the portion required for construction of facilities for each site,
- cut materials on site would be used as fill and materials from clearing and grubbing and contaminated soils would not be reused, and
- a layer of gravel 0.3 m deep would be required to cover the cleared site.

If rock outcrops are encountered, all of the rock would be cut to level the site and crushed to be reused as fill. Peak activity is about 10 trucks per day.

Concrete volumes were estimated assuming building height for all unit processes at 4 m. A 300 mm slab was assumed for all unit processes. Peak activity is about 11 trucks per day during concrete-pouring activities.

Vehicle types would include flatbed trucks, tandems, small to large delivery vehicles, cranes, excavators, and related equipment.

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Table 3-7 Construction Truck Traffic

	Concrete	Reinforcing Steel	Clearing or Grubbing and Aggregate	Excavation
Number of truck loads Phase 1 construction (2010)	2,100 per 9 month	40 per 9 months	625 per 3 months	1,200 per 7 months
	11* per day	1 per week	10 per day	8 per day
Number of truck loads Phase 2 construction (2027)	690 per 4 months	15 per 4 months	100 per 1 month	360 per 3 months
	8-9 per day	1 per week	5 per day	6 per day

Note: A volume of 10 m³ is assumed for cut and fill dump truck, 12 m³ for concrete truck and 20 ton for steel trucks in the estimates. A 25% adjustment factor is used to allow for contingency.

**21 working days per month*

The concrete is assumed to not use a batch facility on site.

Labour Force during Construction

Construction activities could be undertaken in parallel with several crews working. The Contractors and the CRD could minimize the effects of construction activities by informing the public on schedules and traffic routing.

1. Wastewater Treatment Facility

Construction of the wastewater treatment facility would require approximately 2,400 workers per year of site labour over 2.5 years. This estimate assumes a peak of 30 to 50 workers per day on site during the concrete work, and averages about 10 to 15 workers per day during the rest of the construction period. (The work would occur coincidentally and not additionally.)

2. Sewers

The influent forcemain installation crew could be composed of 6 to 8 workers per day. The construction periods for the forcemains at the candidate site for an assumed nominal pipe installation of 20 m/day are as follows:

- UVic Fields site – 3 to 4 months (1,350 m)
- Cedar Hill Corner – 6 to 7 months (2,600 m)

The effluent pipe installation crew could also be composed of 6 to 8 workers per day. The length of the land section to the marine outfall varies among the candidate sites, therefore (assuming 20 m/day nominal installation), the expected construction periods vary as follows:

3. DESCRIPTION OF THE WASTEWATER TREATMENT FACILITIES AND OPERATION

- Finnerty-Arbutus site – 3 months (1,200 m)
- UVic Fields site – 5½ months (2,150 m)
- Cedar Hill Corner – 6½ months (2,550 m)

Sewer line (for sludge transfer) construction crew could be composed of 5 to 7 workers per day. Assuming 20 m/day nominal pipe installation, the expected construction periods for the candidate sites are as follows:

- Finnerty-Arbutus site – 1 month (350 m)
- UVic Fields site – 4-4½ months (1,710 m)
- Cedar Hill Corner site – 3½ months (1,410 m)

Small diameter pressure pipe for the small offsite pump station (Penrhyn) is similarly estimated as follows:

- Finnerty-Arbutus site – 3-4 months (1,500 m)
- UVic Field site – 3-4 months (1,500 m)
- Cedar Hill Corner site – 3-4 months (1,500 m)

3. Arbutus Road Pump Station

A new pump station is required for the UVic and Cedar Hill cross candidate sites to divert wastewater to the treatment facility sites. The construction activities related to the new pump station may take 10-12 months.

4.0 FIRST NATIONS INTERESTS

4.1 Traditional territories

The Saanich East-North Oak Bay area is in the overlapping traditional territories of the Esquimalt First Nation, the Songhees Nation, and the Tsawout First Nation. No specific information for the Esquimalt First Nation was made available for this report; therefore the traditional territory and traditional uses specific to the Esquimalt First Nation are not presented.

The Songhees Nation (also known as *Lekwungen* people) has occupied their traditional territory since long before European contact. The Songhees people are part of a larger Straits Salish cultural group, who occupy traditional territory north of the Strait of Juan de Fuca, in southern Vancouver Island and the southern Gulf Islands (Suttles 1951). Early ethnographers of the Straits Salish people are Wayne Suttles (1951), Homer Barnett (1938-39), Diamond Jenness (n.d.), and later Wilson Duff (1969). Franz Boas (1891) and Charles Hill-Tout (1907) also mention the Straits Salish in their research.

Suttles (1951) described the traditional territory of the Songhees (or *Songish*):

The territory of the *Songish* included both shores of the southern entrance of Haro Strait. On the western shore of the strait it extended from Cordova Bay (on the north) to Parry Bay (on the south) on Vancouver Island, and on the eastern shore from Open Bay on Henry Island to Eagle Cove on San Juan Island. The winter villages of the Songish were perhaps a dozen in number and stood in every bay from Cordova Head (Cowichan Head in Cordova Bay) to William Head on (southern) Vancouver Island.

Boas (1891) names and describes locations of 12 Songhees village sites in the project Study Area, including sites at Cadboro Bay, Oak Bay (Willow's Beach), Discovery Island, Victoria Harbour, Esquimalt Harbour, and Beecher Bay. Hill-Tout (1905) names and describes 11 pre-contact Songhees village sites in similar locations. When the Fort Victoria Treaties were signed with the Lekwungen people and Governor James Douglas, 11 different autonomous household groups signed onto the treaties (Duff 1969). These household groups occupied different areas of Songhees Nation traditional territory in the Capital Regional District. Keddie (2003) provides additional information on early Songhees history in the Study Area, including notes on village sites on the Gorge waterway, the Metchosin shoreline, and other locations. Bernick (2001) produced a report on the status of archaeological sites in the Study Area, which includes information on resource use associated with some of the village sites.

4.2 Traditional use

Suttles (1951) provides detailed information on the Songhees use of the food resources of the sea, foreshore, and uplands, including methods of harvest of fish, shellfish, birds, sea and land

4. FIRST NATIONS INTERESTS

mammals and plants. The open grassy meadowlands of what is now the University of Victoria were maintained by regular use of fire by the Songhees people to promote the growth and harvest of camas bulbs, a major source of carbohydrates (Beckwith 2005).

Reef-netting in shallow near-shore locations was of paramount importance in the aboriginal economy of the Straits Salish people. Because of the relative scarcity of good salmon rivers on the east coast of Vancouver Island, reef-netting of migrating salmon was a common practice along the shores of the Study Area. Fluctuations in sea levels over the past 3,000 years may have altered some of the near-shore reef-net sites (Keddie, *pers. comm.*). Some reef-net sites in the Victoria area were in use until the 1920s.

Several recent Traditional Use Study (TUS) reports contain detailed information on Songhees Nation traditional use, gathered from interviews of living informants. English (1996) conducted interviews with 13 Elders in 1995, in research related to the construction of the Vancouver Island Highway. All major Songhees families were represented in the interviews. Report information remains confidential to the Songhees Nation and to the authors (English 1996).

The Te'mexw Treaty Association conducted a Traditional Use Study in 2003 (TTA 2003). LGL Limited of Sidney prepared the data for the Te'mexw mapping project. Data were gathered from five communities: Lekwungen (Songhees), Malahat, Scia'new (Beecher Bay), Snaw-naw-as (Nanoose) and T'sou-ke (Sooke). Elders were interviewed and asked about their harvesting practices and about other traditional harvesting knowledge they may have from their ancestors. Relevant to this report, from the Songhees Nation, 10 Elders were interviewed. Results of the interviews were mapped, and composite maps were produced of harvest of land and sea resources.

From interview data gathered by Te'mexw Treaty Association, there appears to be more TUS information associated with use of shellfish, fish, and resources from the sea than for food resources on land. Little cultural use information was provided, possibly due to concerns for confidentiality. A preference for food resources from the sea may result in First Nation concerns about discharge of treated effluent from outfalls into Haro Strait.

4.3 Relationship of First Nations to CRD and wastewater project

The Capital Regional District's (CRD) approach to working with First Nations on the Core Area Wastewater Management Program is to create a clear understanding of roles, responsibilities, and expectations at the front end of the program to ensure the potential of a strong working relationship throughout its completion. As a result, the CRD has entered into a protocol with the province to form a partnership on consultation and engagement by outlining those issues which are the responsibility of the CRD, and those that ultimately lie with senior governments.

4. FIRST NATIONS INTERESTS

Within that agreement, the province retains overall responsibility for consultation with First Nations including outlining which First Nations need to be engaged and to what extent. The CRD is taking the “on the ground” responsibility for making sure First Nations are well informed about the project, have real opportunities to provide input, and can see how that input is being used, where practical, in the design and construction of the project. If issues remain, it will then be the provincial or federal government’s responsibility to respond to, and, where appropriate accommodate assertions concerning potential impacts on a First Nation’s existing aboriginal or treaty rights.

In addition to the protocol with the provincial government, the CRD has taken the following steps to engage First Nations on the wastewater management program:

- The CRD has renewed its secondment of a senior official from the Province with a strong background in aboriginal relations to help work with First Nations on these issues.
- The CRD and the province have signed tripartite protocols (attached) with the Songhees, Esquimalt, and Beecher Bay Nations laying out a common understanding of the consultation/engagement process (the Esquimalt protocol is awaiting provincial ratification).
- The CRD is also trying to address other issues with these First Nations which have the potential to affect progress on a good working relationship on this project.
- The Province has provided initial capacity funding to the Songhees, Beecher Bay, and Esquimalt Nations to support the consultation process.
- The CRD has met with federal agencies to ensure a common understanding with regard to consultation duties with First Nations if federal decisions are required to complete the project.
- The CRD has entered into the information sharing process in earnest with Songhees, Esquimalt and Beecher Bay Nations on project design and siting work recording interests and providing these records to MOE officials (summary of interests on next page).
- At the request of the Tsawout First Nation, the CRD has provided an overview of the wastewater treatment project to that First Nation and will be providing a formal briefing to Tsawout Chief and Council when scheduling permits. The CRD will work with Ministry of Environment officials to determine whether a more formal consultation process should be entered into with the Tsawout.
- The CRD has provided information packages to the Tseycum, Tsartlip, and Pauquachin Nations to keep them informed on the project even though provincial officials have not advised that consultation should be pursued with these communities.

Table 4-1 summarizes the CRD’s First Nations engagement to date.

4. FIRST NATIONS INTERESTS

Table 4-1 First Nation Engagement Chart

First Nation	Status	Interests Identified to Date	Engagement on other Issues	Next Steps
Songhees	Consultation MOU signed	<ul style="list-style-type: none"> • Use of federal Crown land • Impacts to the foreshore • Protection of natural resources • Any outfall located near Chatham and Discovery Islands • Affects on marine species • Affects on archaeological sites • Adequate sewage capacity for Songhees lands including future Treaty Settlement Land 	<ul style="list-style-type: none"> • Regional Growth Strategy • E&N rail trail 	<p>Continue meeting to gather interests.</p> <p>Next meeting early July</p>
Esquimalt	Consultation MOU signed by Esquimalt and CRD, awaiting BC ratification	<ul style="list-style-type: none"> • Meaningful participation in the project and concerns about the timelines for input • Impacts on the environment including the foreshore and marine species 	<ul style="list-style-type: none"> • Sewer infrastructure • Regional Growth Strategy • E&N rail trail 	<p>Continue meeting to discuss the project and examine Esquimalt participation</p> <p>Next meeting early July</p>
Beecher Bay	Consultation MOU signed	<ul style="list-style-type: none"> • Location of any outfall near Albert Head • Use of Crown land for sewage treatment in the Western Communities 	<ul style="list-style-type: none"> • Sea to sea greenbelt • Beecher Bay sewage treatment plant 	<p>Continue meeting to gather interests.</p> <p>Next meeting July</p>
Tsawout	Information package provided	<ul style="list-style-type: none"> • May have concerns about the extension of the Finnerty Cove outfall affect on fishing and marine species • Affects of discharges into inland water bodies 	<ul style="list-style-type: none"> • Expansion of service agreement • Partnering on foreshore restoration • Tsawout sewage treatment plant 	Briefing with Chief and Council on wastewater project this summer
Saanich Tribes	Information package provided			Continue to forward information packages and be prepared to provide information
<ul style="list-style-type: none"> • Tsartlip • Tseycum • Pauquachin 				

4. FIRST NATIONS INTERESTS

Goals for the remainder of 2009

- Continue to provide information to First Nations on project design, gather interests and feedback, and use that information where possible in project design. Resolve issues, as possible, and refer those not resolvable within the CRD legislative mandate to the provincial or federal government.
- Provide information to other interested First Nations not directly affected by the program.
- Continue to use the wastewater management program as a vehicle to address other relationship issues between the CRD and First Nations.

The CRD recognizes that consultation and engagement with First Nations is not an endeavour that can be accomplished by simply setting a deadline. Given the complexities of the wastewater management program, the legal requirement and genuine desire to engage and consult with First Nations in a meaningful way, and the number of other important endeavours taxing these First Nation's capacity, this pursuit can be expected to require more effort and possibly more time than was envisioned at the inception of the project.

5.0 SUMMARY OF PUBLIC INVOLVEMENT AND COMMENTS RELEVANT TO THE ESR

Public meetings give the Capital Regional District (CRD) a chance to share important information on the site selection and impact assessment processes and to describe technical details about wastewater treatment with the public. Public involvement also provides opportunities for the public to share their specific concerns and ideas. The content and analyses in this Environmental and Social Review (ESR) have been influenced by the concerns and priorities expressed by the public.

Since 2004, the CRD has conducted a variety of public involvement activities on the wastewater program. With regard to the siting process, in the fall of 2007, the CRD sought public comment on the site selection criteria for wastewater treatment facilities through advertisements, web input, and a random telephone survey of core area residents. In 2008, site selection analysis, engineering studies, and reports to the Ministry of Environment were prepared, refining the elements of the wastewater program.

In 2009, open houses and workshops were scheduled to provide opportunities for the public to obtain information and to comment on the wastewater treatment program and the site selection process (Table 5-1).

Table 5-1 Neighbourhood open houses and workshops on facility siting

Date	Time	Location
Open House: Tuesday, June 16, 2009	3:00-8:00 pm	<i>Gordon Head Neighbourhood</i> Gordon Head United Church 4201 Tyndall Avenue
Open House: Wednesday, June 17, 2009	3:00-8:00 pm	<i>Cadboro Bay Neighbourhood</i> Cadboro Bay United Church 2625 Arbutus Road
Open House: Friday, June 19, 2009	3:00-8:00 pm	<i>Oak Bay Neighbourhood</i> Emmanuel Baptist Church 2121 Cedar Hill Cross Road
Meeting-Workshop: June 22, 2009	6:30-9:00 pm	Queenswood Centre at 2494 Arbutus Road
Meeting-Workshop: July 7, 2009	6:30-9:00 pm	Emmanuel Baptist Church 2121 Cedar Hill Cross Road
Meeting-Workshop: July 9, 2009	6:30-9:00 pm	Queenswood Centre at 2494 Arbutus Road

5. SUMMARY OF PUBLIC INVOLVEMENT AND COMMENTS RELEVANT TO THE ESR

Attendees of the open houses could discuss the project with CRD staff and consultants, and had opportunities to complete comment forms that contained six open-ended questions. The questions could also be answered online at the CRD's website, <http://www.wastewatermadeclear.ca/>.

The workshops provided a forum for input and feedback on the candidate sites through facilitated discussions and large group questions and answers. Key points from those discussions were recorded on flipcharts. The remainder of this report summarizes common themes that were collated from the dialogue notes of the workshop and input received at the open houses.

Community Impacts

The Saanich East-North Oak Bay areas has several long-established communities where residents maintain a strong social and environmental connection and an appreciation of the area's special sense of place. In this context, participants of the public meetings expressed concerns about potential impacts of the treatment facility on the quality of life in their community, including unpleasant odours, increased noise, increased truck traffic during construction and operation, and loss of high-use outdoor recreational spaces. Respondents expressed a sense that the treatment facility represented an industrial type of land use that would adversely affect their community character and quality of life. Comments and questions were posed about site design, such as extent of natural screening and how much of the facility would be constructed above-grade or below-grade. The candidate sites that could provide a natural buffer between the treatment facility and homes were generally deemed more suitable and were considered to have fewer impacts on property values.

Respondents identified potential diminished residential property values as a major concern. Residents want to be assured that their property values would not be reduced by the treatment facility, and want the CRD to develop a strategy to effectively address the issue. Participants also wanted to know the effect of the wastewater program on property taxes.

Public safety

Strongly linked to the residential values of this area, participants expressed concerns about the safety of people in this community. In particular, questions were raised about the safety of children in childcare facilities, elementary schools, Queen Alexandra medical facilities, parks, and natural play areas that are in the study area. Comments were made on risks associated with a seismic fault at the Finnerty-Arbutus site.

Environmental impacts

Common concerns pertaining to the environmental impacts include the potential for degraded air quality, overall size of the facility footprint (including pipes, pump stations, *etc.*), the possible

5. SUMMARY OF PUBLIC INVOLVEMENT AND COMMENTS RELEVANT TO THE ESR

contamination of soil and groundwater, and the energy required to operate the treatment facility and pump stations, and associated GHG emissions. Participants noted concerns that a treatment facility in the Finnerty-Arbutus site would result in adverse impacts to the forested natural area where children play. The Haro Woods area holds considerable environmental and community value. Environmental concerns unique to the UVic Cedar Hill Corner site focused on potential impacts to the adjacent old growth forest in the Upper Hobbs Creek drainage. Participants suggested examining each of the sites in greater detail and then siting the facility in the areas having the greatest previous disturbance.

Transparency of decisions

Some respondents suggested that there has been insufficient communication between the CRD and the public about the wastewater project. Questions were raised about the extent of UVic's engagement in the siting process and a lack of transparency in UVic's response to siting a treatment facility on their land. Some comments suggested that the site selection and facility design decisions be based on scientific and technical considerations, minimizing political influence.

Many respondents questioned the scientific basis of the decision to proceed with wastewater treatment in the region. The decision to site a facility in Saanich East-North Oak Bay was often criticized.

Opportunities

Public forum participants identified the following specific opportunities or benefits for each candidate site:

Finnerty-Arbutus site

Respondents stated that this site could provide opportunities for a natural buffer between the treatment facility and nearby homes, particularly if the surrounding green space is designated as parkland or a /protected natural area. The ability to operate a treatment facility here without pumps and associated environmental impacts and financial costs also was noted.

UVic Cedar Hill Corner site

The key opportunities that were identified for this site include the potential to use reclaimed water for golf course irrigation; the site is already affected by human uses and it is an area already identified for potential future development by UVic. Because the site is large, a buffer could be provided between the treatment facility and residences. This site could also provide research opportunities for UVic students, faculty, and the community.

5. SUMMARY OF PUBLIC INVOLVEMENT AND COMMENTS RELEVANT TO THE ESR

UVic Fields site

Benefits identified by the public included the opportunity for UVic to use the heat, energy, or treated water from the treatment facility. Respondents also noted that the site is already disturbed by human uses, thus minimizing disturbance to sensitive environmental areas; it is close to major transportation routes for ease of access during construction and operation; the facility could provide on-campus research opportunities for UVic students, faculty, and the broader community; and the facility would be well suited to UVic's existing institutional appearance.

Effect of public comments on the ESR

The comments received from the public through the various involvement opportunities have influenced the content of the ESR. The site selection criteria were based topics identified by the public as being important to locating a treatment facility. The recent round of open houses and meetings has generated results that have helped to refine the issues under study, and the determination of impact magnitude and significance. Though some public comments raise issues beyond the scope of the ESR (particularly questions about the need for wastewater treatment in the region), the assessment of project effects has considered public concerns to the extent technically feasible.

6.0 STUDY METHODS AND INFORMATION OVERVIEW

This section of the ESR report outlines the data collection and assessment methods used by the study team.

Sections 8 (Finnerty-Arbutus), 9 (Cedar Hill Corner), and 10 (UVic Fields) describe the existing conditions of the three candidate wastewater treatment facility sites and the ancillary facilities (e.g. pumps and sewer lines) connecting the treatment facility to the Finnerty Cove marine outfall. An impact assessment for each site and ancillary facilities is presented in each section for the following disciplines:

- Landforms, geology, and soils,
- Hydrology and water quality,
- Vegetation,
- Wildlife,
- Odour,
- Traffic,
- Visual aesthetics,
- Community,
- Property values,
- Archaeology and heritage, and
- Public health and safety.

6.1 Landforms, geology, and soils

Investigation of the geotechnical conditions at the sites consisted of collection and review of available information for the study area, including most notably the BC Ministry of Energy and Mines Quaternary Geology mapping of Greater Victoria (Monahan and Levson, 2000).

Published information was supplemented by interpretation of current and historical Provincial and Federal Government aerial photographs based on, knowledge of local conditions, their engineering properties, and construction implications provided by C.N. Ryzuk and Associates, and an engineering site reconnaissance on April 8, 2009.

6.2 Hydrology and water quality

The assessment of hydrologic and water quality conditions in the study area was based on:

- Review of topographic maps and orthophotos,

6. STUDY METHODS AND INFORMATION OVERVIEW

- On-site field inspections conducted in several seasons,
- Examination of reports prepared by municipalities and institutions.

The University of Victoria's Integrated Watershed Management Plan (<http://web.uvic.ca/fmgt/assets/pdfs/SWMP/SWMP.htm>) provided information on water and drainage near the Cedar Hill Corner site, and on the lands upslope from the Finnerty-Arbutus site. Storm drain information was obtained by field inspection and from maps produced by the District of Saanich and the Capital Regional District. No published information was available on water quality in potentially affected surface or ground water.

Field inspections included observation of streams and slopes on the candidate sites. Slope angles were measured at several locations using a hand-held clinometer. Evidence of slope instability was sought. The potential relationship between drainage courses and adjacent trails was examined, as was the effect of vegetation on surface soil conditions and water quality. The locations of storm drains discharging into natural drainage courses were noted, as were the effects of these discharges on flows and erosion features.

6.3 Vegetation

A review of existing information, literature, and other data was completed before initiating field work. This office-based review included the examination of aerial photographs, existing reports about the vegetation of the SENOB study area, and sensitive ecosystem inventory mapping of the three candidate sites. The work was conducted to determine the extent of natural vegetation on the sites and the variability in vegetation composition.

Information about rare and endangered plant species and plant communities was obtained from the Conservation Data Centre (CDC) online database (BC CDC, 2008). This information and an Element Occurrence Report (EOR) for each candidate site were reviewed to determine whether rare plants or rare plant communities have been recorded on the candidate sites or their ancillary facilities. Interviews with local naturalists were conducted and plant information provided by these individuals was used as part of the baseline data collection work completed in May 2009.

Field visits were conducted to determine vegetation composition and distribution of the existing vegetation features of the three candidate sites and the associated ancillary facilities. This work was done in late April and early May 2009 to ensure early spring plant species present at the candidate sites were documented.

The following information was collected at each site:

- canopy cover (dominant tree species),
- shrub cover (dominant tall and low shrubs), and

6. STUDY METHODS AND INFORMATION OVERVIEW

- groundcover (dominant herbaceous species).

A ‘Site Inventory and Conservation Evaluation’ was completed for each site and associated ancillary facilities using standard “Develop With Care” checklists (MOE 2006). During the site visit, all categories outlined in the protocol were assessed, but only topics relevant to the study sites are presented in this ESR.

6.4 Wildlife

Existing information was compiled about wildlife use and habitats at each candidate site and associated ancillary facilities. Existing information sources consulted include CDC element occurrences, Sensitive Ecosystem Inventory (SEI), Victoria Natural History Society database of important wildlife habitats, other literature, and conversations with local knowledgeable naturalists. The candidate sites were characterized using aerial photography, topographic data, and SEI mapping before field work was conducted.

Field visits were conducted at each candidate site and associated ancillary facilities to document wildlife use, evaluate habitat conditions, and record wildlife habitat features. A ‘Site Inventory and Conservation Evaluation’ was completed for each site and its ancillary facilities using standard “Develop with Care” checklists (MOE 2006).

6.5 Archaeology and heritage

An Archaeological Overview Assessment (AOA) was conducted for the purpose of identifying and assessing archaeological resource potential in a specified study area. A field reconnaissance was completed as part of the AOA to verify the location of known or potential sites or features, and to conduct an overview assessment of their condition.

The AOA study for the SENOB wastewater treatment program followed the methodology and process described in the *British Columbia Archaeological Assessment Guidelines*. The AOA included the following tasks and activities:

- A comprehensive review of archaeological reports and Archaeological Site Registry database information for the CRD, with a special emphasis on the potential wastewater treatment facility study area (Saanich East-North Oak Bay),
- Acquisition and analysis of archaeological site inventory records for the study area, followed by the production of ortho-maps showing the location and extent of identified archaeological site locations,
- Review of maps and aerial photographs to analyze landscape features and other physical characteristics for the purpose of determining areas with archaeological site potential,

6. STUDY METHODS AND INFORMATION OVERVIEW

- Review of archaeological potential mapping for the CRD (Millennia Research Ltd. 2008),
- Review of the CRD Natural Areas Atlas and Harbours Ecological Inventory and Rating (HEIR) mapping,
- Meetings and consultation sessions with the Songhees Nation and Esquimalt First Nation to solicit information from these First Nations that might be beneficial to the study. In the course of these meetings, arrangements were made to include a member of each First Nation in the field reconnaissance component of the study, and
- Completion of a comprehensive field reconnaissance of candidate treatment facility sites. Note: the field visits included archaeological personnel from Westland Resource Group and representatives from the Songhees Nation and Esquimalt, First Nation).

Letters of introduction were sent to the Chief and Councils of Songhees Nation and Esquimalt First Nation. The letters described the siting study and requested meetings to discuss First Nations' perspectives on the project and the availability of traditional use (TUS) information. Meetings were held with Songhees Nation political and legal representatives, and permission was obtained for use of previously prepared TUS reports. The Esquimalt First Nation chose not to provide TUS information for the purposes of this ESR.

The heritage structures were taken from the Provincial Designated Sites Registry, a list of formally "Designated" (and thereby protected) provincial and local municipal heritage designations, maintained by the Heritage Branch. Buildings and sites only listed in municipal heritage registers were not included in this analysis, as there is no formal protection of these types of sites.

Archaeology and heritage information overview

There are more than 800 archaeological sites in the Capital Regional District, most of which are protected under the terms of the Heritage Conservation Act. A review of archaeological potential mapping by Millennia Research Ltd. (2008) showed that archaeological sites in the CRD are typically found near water features such as streams, lakes, and small wetlands, and terrain features such as relatively flat tops of small knolls or ridges, and coastline areas.

Recorded archaeological and heritage sites located in the CRD are included in a Provincial Archaeological Registry database that is maintained by the Archaeology Branch of the Ministry of Tourism, Sport, and Culture. The following archaeological sites are recorded in the SENOB study area:

- a prehistoric winter village of Songhees people (called Snyeqa' in Sencoten language), on southeast corner of Cadboro Bay, now mostly destroyed by shoreline residential development;

6. STUDY METHODS AND INFORMATION OVERVIEW

- several pockets of shoreline shell midden, in disturbed condition, located east of Finnerty Cove along rocky headlands;
- an isolated find of a prehistoric artifact on Finnerty Beach, in the intertidal zone, in front of property owned by Queen Alexandra Centre for Children's Health;
- two culturally modified trees located at north and south ends of Arbutus Cove, north of Finnerty Cove on the Gordon Head shoreline; and
- Goward House, a registered heritage building and property, also designated as a Municipal Heritage Site by the District of Saanich.

None of the recorded archaeological sites located in the SENOB study area occur in the candidate sites under consideration for the treatment facility or ancillary facilities.

6.6 Community

The community section of this ESR builds on information collected for the siting analysis, which included a review of existing planning documents, site visits, and discussions with representatives of the District of Saanich, District of Oak Bay, Capital Regional District, University of Victoria, and the Queen Alexandra Foundation for Children to understand existing and planned land uses.

The preparation of this ESR involved a review of the latest versions of the District of Saanich Official Community Plan, District of Oak Bay Official Community Plan, Cadboro Bay Local Area Plan, University of Victoria Campus Plan, draft University of Victoria Sustainability Action Plan, and zoning bylaws. News articles, media releases, letters to the editor, and information on other community initiatives were also reviewed to understand the regional and local context.

Discussions were held with municipal and regional planners, and representatives from the Queen Alexandra Foundation and the University of Victoria to understand concerns and development plans. Attendance at three public open houses enabled a better understanding of community concerns, potential impacts, and appropriate mitigation measures.

Colour ortho photography was reviewed and visits to the three sites were conducted to confirm existing land uses in the community. These visits were undertaken numerous times and during various seasons through the siting analysis and ESR preparation phase. The most recent visits occurred during June 2009. The proposed routing for the ancillary facilities was reviewed in ortho photos and site visits to accessible areas.

Community context overview

The Saanich East-North Oak Bay study area is an urban area primarily composed of established residential neighbourhoods, the University of Victoria campus, and other large institutional land holdings, such as schools and health facilities.

Most of residences in the SENOB study area are detached dwellings, with some attached residences on and near the UVic campus. The primary access routes to the area are along McKenzie Avenue, Arbutus Road, and Cedar Hill Cross Road.

6.7 Odour

Odour modelling was conducted to estimate the maximum off-site odour concentrations that may occur as a result of adverse meteorological conditions. Two meteorological-input scenarios were modeled using the EPA ISC-PRIME atmospheric dispersion model. The first approach used two years of meteorological data from the University of Victoria and the ISC-PRIME complex terrain option to estimate plume elevated-terrain interactions. The second scenario modeled evening temperature inversions when little or no winds are present, allowing cool surface air to flow (“drain”) downhill. These drainage winds normally give rise to the maximum odour concentrations off-site from an odour source. Although the ISC-PRIME model is not sophisticated enough to automatically generate these drainage wind fields directly from digital terrain data, the winds can be simulated by manually creating a short-term meteorological data file consisting of light, down-slope winds and a strong temperature inversion, and then using the ISC-PRIME flat-terrain option.

6.8 Traffic and roads

The study methods used for the traffic impact analysis were as follows:

- Determine the existing conditions with respect to vehicular volumes on preferred routings for the candidate sites, including accident histories and bus service on the various links;
- Identify an order of magnitude current pedestrian and bicycle traffic in the transportation corridors of the preferred routings;
- Forecast the type and amount of traffic that would be generated by the project for both the construction and operation time frames, and identify relevant transportation and traffic related issues;
- Determine the impact of providing the supporting infrastructure of pipes under the road surface for the various options;
- Review current and future roadway cross-section data on preferred access routings;
- Assess the level of impact on affected neighbourhoods and road users; and

6. STUDY METHODS AND INFORMATION OVERVIEW

- Identify mitigation measures to reduce or avoid traffic impacts.

6.9 Public health and safety

Health. Wastewater treatment is one of the great public health advances of modern times. The liveability of our cities depends in large measure on the effectiveness of wastewater treatment and effluent management. However, wastewater management is not without some health risks.

Recent health research reports indicate that microbial aerosols released from wastewater treatment facilities may constitute health risks for treatment facility workers, but there is no conclusive evidence of risk to nearby residents (Carducci et al. 2000; Heinonen-Tanski et al. 2009; Fracchia, et al. 2006; Lee et al. 2006; Brandi, et al. 2000; Health Canada 2009). This research indicates that the level of risk depends on work practices, worker hygiene, wastewater treatment processes, facility design, and environmental factors. More specifically, health risks depend on the exposure pathways (e.g., equipment failure or emissions of gas, liquids, or solid waste) and the kind of potential risk factor (e.g., gases, chemicals, bacteria, odours). Inhalation of aerosols originating from wastewater has been reported to be the primary source of worker exposure (Brown 1997).

Health Canada (2009) indicates that the probability of exposure to health risks associated with the construction and operation of wastewater treatment facilities ranges from very rare to moderate to unknown. Health Canada lists potential health impacts on urban areas and recreational users adjacent to wastewater treatment facilities (Table 6-1).

Table 6-1 Potential health impacts associated with wastewater treatment facility construction and operation

Exposure	Nature of exposure	Effects on health	Population at risk	Probability of occurrence	Biological-Environmental monitoring indicators
Gas emissions or emissions to air	Nitrogen oxide (NO _x)	Irritation of respiratory tract	Urban and suburban areas	Rare to moderate	Ambient air measurements
	Dioxins, furans	Some carcinogenic compounds	Unknown	Rare or unknown	Ambient air measurements; epidemiological studies
	Polycyclic Aromatic Hydrocarbons (PAHs)	Some carcinogenic compounds	Workers and local population	Unknown	Ambient air sampling; beno[a]pyrene and other PAH concentrations
Nuisances	Odours	Quality of life	Vicinity	Rare to moderate	Complaints, perception

Source: Health Canada. Canadian Handbook on Health Impact Assessment – Volume 4: Health Impacts by Industry Sector. Chapter 8 Wastewater and Sludge Management.

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The physical design of traditional wastewater treatment facilities can include open settlement tanks, aeration basins, sludge handling processes, and areas of mechanical agitation of waste material. Such layouts are typically not designed to prevent the dispersion of wastewater aerosols, (Brown 1997) and may release localized airborne microbes and fungi that are measurable within 20 m of the facility (Heinonen-Tanski 2009 and Brandi et al. 2000).

Research on health risks to wastewater treatment workers indicates that the workers have an increased risk of exposure to bacteria, funguses, parasites, and viruses that can cause intestinal and lung infections (Center for Construction Research and Training 2004). These illnesses, sometimes referred to as “sewage worker’s syndrome,” include infections of the airway, gastrointestinal system, central nervous system, and joint pain (Thorn et al. 2002 and Carducci et al. 2000). The researchers call for clinical investigations to determine exact causes of reported symptoms.

The proposed SENOB wastewater treatment facility would be entirely enclosed, and would include advanced odour control and air filtration systems. This enclosed design would eliminate the exposure microbial aerosol releases outside the treatment facility. The ventilation system would filter air vented from the interior of the facility to the outside. This ventilation system would not be connected to the odour control system in the facility.

The odour control units would include absorption, adsorption, filtration, entrapment, and chemical conversion systems that remove disease-causing organisms to varying degrees of efficiency. The odour control systems for high odour sources in the SENOB facility involve a three stage chemical scrubber followed by activated carbon treatment. Chemical scrubbers typically use an acid followed by hypochlorite and water to removed amine and reduced sulphur compounds; sometimes a caustic is also used. This system provides a barrier to most viruses and bacteria. Next, the activated carbon filter absorbs residual molecular organic compounds not completely oxidized by the scrubber. It is unlikely that disease organisms would pass through the odour treatment system and pose a risk to nearby residents (H. Kelly, pers. comm., June 23, 2009).

Potential biological vectors of disease transfer from traditional wastewater facilities may include birds, rodents, and insects. Because the SENOB facility would be enclosed, however, the risk of disease transfer by birds, rodents, or insects is negligible.

Safety. Safety risks associated with the wastewater facility would occur primarily during construction. The movement of heavy equipment and the presence of open excavations can cause a risk to the unwary public. An increase in traffic, however slight, would increase the probability of vehicular collisions. Operational traffic volumes would be low, and unlikely to contribute to public safety risks. Storage of chemicals used in the wastewater treatment and odour control processes would be stored in secure facilities, where they would not pose a risk to the public.

6.10 Visual aesthetics

The visual assessment entails a subjective assessment of the changes in the attractiveness of a location as a result of construction of a wastewater treatment facility. The assessment considers the degree of landscape modification, and the compatibility of the structures with surrounding landscape features. Modifications can include the removal of existing trees and shrubs, changes to slopes, and the addition of roads, buildings, lighting, and other utility structures.

Two field visits were made to each of the candidate treatment facility sites. The initial visit was made in early March prior to deciduous foliage growth, and a second visit made in mid-May after summer foliage was established. Photographs were taken at each of the sites to record and interpret potential visual impacts from a number of vantage points. These photos were used in combination with aerial photography to assess the visual impact of a treatment facility at each of the three sites.

To gain a comprehensive understanding of the visual impact of the treatment facility, and the potential effectiveness of mitigation, 3-D digital models were developed for each of the three facilities using typical design features and layouts for a treatment facility. The models were also superimposed on photos taken from key viewpoints to provide an artist's rendering of a facility at each of the three sites.

Due to the short-term nature of construction, visual mitigation options are generally considered only for the operational phase of a project. When considering visual impacts due to construction activities, the impact is deemed irreversible only if it cannot be mitigated or removed in a reasonable period of time, typically less than two years.

6.11 Property values

Project effects on property values

The effect of siting and operating a wastewater treatment facility on residential property values is a common concern expressed by residents of neighbourhoods where the facility could be sited. Many questions about property value effects were asked during the CRD public involvement sessions in June 2009, and in letters and emails received by the CRD. These concerns are understandable, as houses represent a substantial investment by many people, and changes in existing land uses are often viewed in light of potential effects on that investment. These public concerns apply not only to wastewater treatment, but also to other kinds of land use change that depart from existing patterns in a neighbourhood.

Substantial research effort was devoted to assessing the effects of a wastewater facility on residential property values as part of this ESR. This section of the report summarizes the results of that research, presenting examples from other cities and identifying the kinds of factors that

6. STUDY METHODS AND INFORMATION OVERVIEW

can reduce property value. The implications of these results for assessing property value effects of siting a wastewater facility in the study also are explained.

Methods

A thorough search of the literature and telephone conversations with CRD staff indicate that no studies have been conducted on the impacts of wastewater treatment facilities or similar land uses in the CRD. In the absence of locally relevant research, case studies from other locations were sought.

Case studies are assumed to be most reliable when information is the studied site and the area where a facility is proposed are similar in terms of factors such as:

- neighbourhood characteristics (housing quality, location, and population);
- the environment and potential project impacts are similar for the two sites; and
- the original valuation study was carefully conducted and used sound valuation techniques.

There are, however, issues and limitations with this technique:

- results may be useful only for making gross estimates of values, unless the sites share all of the site, location, and user specific characteristics,
- reliable studies for the policy or issue in question may not be available (it may be difficult to obtain appropriate studies, because many are not published), and
- adequacy and accuracy of existing studies may be difficult to assess, and
- extrapolation beyond the range of characteristics of the initial study is not recommended (Ecosystem Valuation website, May 2009)

Review of the available literature did not identify studies of land values where circumstances are similar to those in Saanich East-North Oak Bay. For example, the personal preferences and real estate markets of Saanich and Oak Bay are likely to differ from those in such studied locations as Dallas and Indianapolis.

Factors affecting property value

Many characteristics of a residential dwelling may affect its value. Recent studies have found that “slanted versus flat roof, sprinkler system, garden bath, separate shower stall, double oven and gated community positively affect selling price while not having attic space, living in an earthquake zone, proximity to a hog farm, proximity to a landfill, proximity to high voltage lines” negatively affect selling price (Sirmans *et al.* 2005).

6. STUDY METHODS AND INFORMATION OVERVIEW

Other factors also may influence property values, “for example, two houses that are otherwise similar in terms of age, square footage, number of bedrooms, etc., can have divergent market values if one of those houses is located proximate to an amenity (such as a park, greenway, golf course or beach). Such amenities are generally valued by residents and capitalized into the market value of the house” (Campbell *et al.* 2007).

A waste water treatment facility may be considered by some residents to be a “locally unwanted land use” (LULU) that may cause negative property value impacts” (Delacy 2004). Little research was found that specifically assesses the property value effects of siting a treatment facility. The only recent reference to this topic compared the effects on suburban property values of landfills, sewage treatment plants, a regional airport, high traffic roads, mushroom production facilities, and large-scale animal production operations. The report concluded that “no significant impact was found for sewage treatment plants” (Ready and Adballa 2003).

In the case of a siting a wastewater treatment facility in Saanich East-North Oak Bay, property values could be affected by the following factors.

- Construction—including nuisance effects such as noise, dust, visual impacts, and traffic disruptions during construction of the treatment and ancillary facilities. If they occur at all, construction effects on property values would be temporary and entirely reversible;
- Visual aesthetics– the diminution of views from affected properties either through loss of view of something considered positive (ocean, parks, hills, trees, open spaces) or through intrusion of the treatment facility into the previous view from a property. These changes are generally considered long-term (i.e. post-construction);
- Odour – taken to mean that noxious odours from a treatment facility may be sensed. This impact would be occasional and long-term;
- The stigma effect– “Stigma reflects any discounts by the marketplace as a result of a detrimental condition - an adverse public perception regarding a property...which extracts a penalty on the marketability of the property and hence its value. Diminution in value tends to be greatest immediately after the loss or damage is identified, before the nature and extent of the difficulty is fully known. Scientific conclusions about the presence or absence of impacts do not necessarily correlate with the marketplace's conclusion about the duration of economic impact on real estate. Thus anticipating the future impact of a LULU has as much to do with attendant publicity as with the event itself. While so-called "sensory cues" are key to impacts, (i.e., what can be seen, smelled or heard) the concept of stigma has much more to do with reputation and the intangible components of human desire that influence ‘marketability.’ Marketability is defined by appraisers as the state of being saleable” (Bell 2008);

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- Loss of public parks – Evidence exists that public parks are a positive amenity for a home and are capitalized into its price. A recent study in Portland, Oregon found a 1 to 3 % increase in the value of homes within 1,500 feet (461 m) of public parks. A Dallas, Texas study suggests that approximately 85% of an urban park's positive property value impact occurs within 800 feet (246 m) of its edge (Nicholls 2004). Each of the three candidate sites in Saanich East-North Oak Bay are on or near parks or open space and a change in land use might reduce nearby property values.
- Loss of greenways – Research indicates that loss of greenways or access to them may adversely affect property values. In Indianapolis, Indiana, location within one-half mile (812 m) of a conservation corridor had a positive effect on property values of 2%. In Austin, Texas two neighbourhoods adjoining a greenway showed that statistically significant 6 percent and 12 percent increases in value occurred for properties directly adjacent to the amenity (Nicholls 2004).

No evidence could be found in the literature that to suggest that the construction and operation of wastewater treatment facilities directly affect values of nearby properties. Indeed, anecdotal information suggests that wastewater treatment facilities may have little effect on the construction and sale of residential properties near such facilities. For example, in Bedford, Nova Scotia a secondary treatment facility did not affect the ability of property developers to construct and sell high-end condominiums on a property 50 m from the facility (T. Tam, personal communication, June 25, 2009). It is possible, however, that these condominiums could have yielded higher prices in the absence of the treatment facility.

In Calgary, Alberta, housing was built within 300 m of an existing wastewater treatment facility. Since moving into the housing, some residents have reportedly complained to the City of Calgary about unpleasant odours from the facility and a disrupted view of the Bow River, located on the far side of the facility (K. McDonald, personal communication, June 25, 2009). Whether odour led to an adverse impact on property values in this area has not been determined.

It should be noted that the characteristics of wastewater facilities vary substantially. The effects on neighbouring properties of large wastewater plants with open clarifiers and basic odour control would be quite different from the small, enclosed, high-tech facilities being considered for Saanich East-North Oak Bay. Modern wastewater facilities are often seen as amenities for neighbourhoods, supporting community gatherings, education, and recreation, as in Vancouver, Washington's Marine Park wastewater facility. This variation in the kinds and effects of impacts of wastewater facilities compounds the challenge of forecasting project effects on nearby properties.

Property value effects in Saanich East-North Oak Bay

In the absence of clear evidence of property value effects of wastewater facilities, it is not possible to specify how locating a treatment facility in Saanich East-North Oak Bay would affect property values. Even the significance of such effects cannot be stated with confidence.

Nonetheless, it may be possible to identify site characteristics that could affect property values, and measures that could mitigate those effects.

Finnerty –Arbutus site. The nearest residence is more than 100 m away from the planned location for a facility on the Finnerty-Arbutus site. If the treatment facility is built and operated in a way that complies with project description specifications, the nearest homes would neither see, hear, nor smell the facility once it is constructed. Nuisance effects of facility construction would be noticed, but these impacts are less likely to affect property value than long-term operational effects. Some “stigma” effect is possible, but in the absence of actual physical impact, it is probable that no property value reductions would result from construction on the Finnerty-Arbutus site.

Cedar Hill Corner site. The distance between the Cedar Hill Corner facility footprint and its nearest residential neighbour is 115 m. Vegetation around the margins of the site provides a visual screen, as would landscaping of the treatment facility. Once the construction-related disturbance of nearby residents ends, it is unlikely that the operation of the facility would affect residential properties or their values.

UVic Fields site. Unlike the other two candidate sites, the UVic Fields site provides limited space to buffer the treatment facility from nearby housing. The conceptual facility footprint is only 18 m from the nearest residential property line, and several homes are less than 50 m from the planned facility. Although the treatment facility would be designed to operate without noise, vibration, or odour effects at the property line, a buffer would provide extra assurance that adjacent properties would not be affected. Adjacent residents could see the treatment facility across their back fences, so the presence of buildings—even if attractively designed—would be noticeable. Because of the proximity of the treatment facility, the potential for property value effects on adjacent homes is likely greater for the UVic fields site than others. Nonetheless, whether a measurable effect would occur is unknown, as is the potential magnitude of the effect.

Conclusion

Although it may be suggested that the potential for effect is greater at one site than another, there is no basis in research or experience for estimating the amount of property value change or the likelihood that an effect would result. Hence, the ESR does not contain an estimate of property value effects of the facility on residences near the candidate sites.

7.0 FINNERTY-ARBUTUS SITE DESCRIPTION AND IMPACT ASSESSMENT

7.1 General site description

The Finnerty-Arbutus site is a 4.4 ha forested area located in the District of Saanich, between the University of Victoria campus and Haro Strait (Figure 3-3). The property is owned by the Capital Regional District (CRD), and was previously owned by the Queen Alexandra Foundation.

The property and surrounding wooded lands are often referred to as Haro Woods by members of the public. The wooded area is comprised of three parcels, owned by the CRD, the District of Saanich, and the University of Victoria.

The Finnerty-Arbutus property is bounded by Arbutus Road to the north and Finnerty Road to the west. Forested land, medical facilities, and fields owned by the Queen Alexandra Foundation for Children are located across Arbutus Road. Other adjacent land uses include forested parcels owned by the District of Saanich and University of Victoria to the east, detached dwellings across Finnerty Road to the west, and University of Victoria student accommodation and a child care centre located to the south of the Finnerty-Arbutus property.

The site is part of an urban green space that is used by community members for walking, running, dog walking, orienteering, environmental study, and BMX biking. A network of informal trails has been developed on the site. This public use of the site, although common, is not a permitted use. The site is private property that was posted for no trespassing by the previous owner.

7.2 Ancillary facilities site description

Ancillary facilities associated with a treatment facility at the Finnerty-Arbutus site include a gravity main, which would carry effluent to the ocean outfall, and a small diameter pressurized pipe, which would convey wastewater to the treatment facility from the existing Penrhyn pump station in Cadboro Bay (Figure 3-4).

The gravity main would be constructed in existing and new rights-of-way. The main would be located underground across a field on the Queen Alexandra Foundation property and in an existing right-of-way across a residential property. It would then be installed beneath the roadway of Alpine Crescent, Haro Road, and Monarch Place. The gravity main would be installed in an existing right-of-way across four residential properties before reaching the existing outfall location in Finnerty Cove.

The small diameter pressurized pipe would be constructed from the Penrhyn pump station, in Cadboro Bay, to the Finnerty-Arbutus site entirely under existing roads, including, Penrhyn Street, Hobbs Street, Maynard Street, Rowley Street, and Arbutus Road.

7.3 Finnerty-Arbutus impact assessment

Landforms, geology, and soils

Treatment facility site conditions

The ground surface of the Finnerty-Arbutus site slopes gently eastward to a maximum elevation change on the site is 8 to 9 m. Site observations corroborate historical photographs, and indicate the ground surface has not been modified significantly by excavation or fill placement. Ground disturbing activities related to creating BMX bike jumps and drainage ditches were observed. The site appears to be reasonably well-drained.

The soil stratigraphy at the Finnerty-Arbutus site consists of a relatively thin veneer of surficial topsoil, overlying a morainal deposit of hard or very dense gravelly sandy silt or silty sand till. The till stratum is expected to be at least a few metres thick, and may be underlain by a pre-glacial marine deposit of dense to very dense silty sand or sandy silt, commonly called the Quadra Sediments. The groundwater table is expected to be within 3 to 4 m of the present ground surface except over the south and southeast areas of the site, where a relatively thin layer of compact to dense sand is present directly atop the glacial till. The sand is believed to be a beach deposit from washing of the upslope till materials during past periods of higher relative sea level.

Given the soil stratigraphy at the site, the natural frequency is expected to be in the range of 10 hertz, with an average shear wave velocity in the upper 30 m in the order of 400 to 500 m/sec, corresponding to a Site Class “B” in the current National Building Code. The site is in an area that could be affected by a Cascadia Subduction event. Information from Natural Resources Canada indicates a peak ground acceleration of 0.61 g and spectral accelerations of 1.22, 0.82, 0.38 and 0.19 g, for respective periods of 0.2, 0.5, 1.0 and 2.0 seconds respectively for a design seismic event of 2% in 50 years (Bednarski, J. pers. comm.). Seismically, these conditions are typical of the area and are unlikely to present substantial development constraints on wastewater treatment facility design.

The public raised concerns about faults in the area, particularly on the Finnerty-Arbutus site. In response, the consultant conducted further investigations into the seismic risk. This information is applicable to all sites in the SENOB study area. The United States Geological Survey (USGS) as part of their Earthquake Hazards Program has undertaken subsea investigations and released information in 2008 that confirms the presence of two newly-identified faults in a fault system in the Strait of Juan de Fuca that transects towards southern Vancouver Island. One of these faults,

on termed the Devils Mountain Fault (or DMF, which itself not one of the new faults), extends from the Cascadia Foothills towards Vancouver Island (more than 125 km) and information indicates the Quaternary Deposits are deformed on both sides of this fault where seismic reflection has been done. The two new faults are more constrained to the Whidbey Island area but are interpreted to be part of a complex system involving the DMF. It is postulated that the DMF continues west of the USGS database and passes several kilometres south of Victoria, merging with the Leech River or San Juan Faults to the west. The USGS states that neither the Leech River nor San Juan Faults have been recognized as active or potentially active. Alternatively, they suggest that the DMF may extend more northerly in Haro Strait and pass north of Victoria. This alignment has not been described but it could reasonably pass through the SENOB area. (US Geological Survey 2008)

Subsequent to the publication of the USGS Professional Paper, the CTV ran a news article on April 24, 2008 in which they stated updated seismic maps from USGS showed newly discovered fault lines that ran south of Victoria, which could cause earthquakes that would result in severe damage and potentially costing billions of dollars.

The National Research Council (NRC) in 2009 issued a Program Outcome following their Reducing Risk from Natural Hazards Program that states the Leach River Fault is an extension of the DMF, acknowledging that two damaging paleoearthquakes have been identified by LIDAR about 40 km east of Victoria in Washington State. They indicate they have undertaken 310 km² of LIDAR (radar) investigations, but have only analyzed 71 km². In summary, they state “No evidence of historic earthquakes has yet been found in the Victoria area by this or any other study. So far, current models of seismic hazard for the Victoria area do not need revision, but more needs to be done to exercise due diligence and determine if the Leach River Fault Zone has been active in geologically recent times” (National Research Council 2009).

In summary, even if one of these faults could give rise to a 1 in 1,000 year earthquake event, the current building code requires design for a 1 in 2,000 year event (except in the case of slope stability, where a 1 in 500 year event is considered, which does not apply to the candidate sites). The most recent research notes that current models of seismic hazard for the Victoria area do not need revision, and the seismic risk information applied to the SENOB candidate sites is based on the best available science.

Impacts and mitigation measures

Treatment facility construction. Landform recontouring would occur during the construction phase. Approximately one hectare of the presently undisturbed site would be cleared and levelled. A retaining wall or earth bank 5 to 10 m high would be constructed at the southwestern corner of the footprint. Excavation instability, or settlement associated with fill placement are not expected. The native soils at the site are relatively competent materials to support the anticipated load associated with a wastewater treatment facility, and no unique or unusual

geotechnical concerns are anticipated. Although the groundwater table could be relatively high, it is expected that it could be depressed quite readily with ditching or conventional drainage installations. Associated seepage values are not expected to be excessive. The construction of a treatment facility at this site would require significant excavation and fill placement because of the sloped terrain. Native mineral soils excavated from the site could be reused for subgrade fill and the surface sands and gravels could be used for select granular fill. Seismically, the accelerations noted correspond to a Site Class “C”, and depending on the spectral acceleration considered, and the period of the various facilities, some adjustments to facility design may be necessary.

Mitigation measures. Further study of the site is required to refine the Seismic Site Class assessment before preparing detailed construction designs. Topsoil removed during excavation could be stored onsite for later use landscaping the property. Protecting the soil against erosion or contamination by chemicals or noxious weeds would improve its value when spread on the site following construction. Erosion and sedimentation risk can be reduced further by taking the following actions:

- Prepare and implement a sediment control plan prior to any construction
- Cover any stockpiles with tarps if heavy rain is expected
- Use sediment fences, straw bales, *etc.* during soil stripping and site levelling activities, to prevent sediments leaving the site.
- Ensure the full reuse of stockpiled soils during site landscaping
- Use an “avoid and control” approach to preventing erosion and sedimentation rather than a reactive approach, and
- Have an environmental monitor onsite during soil stripping, stockpiling, and extensive land levelling activities. The monitor should inform construction staff about erosion and sediment control, and stock pile a supply of erosion control materials onsite.

Impacts associated with soils, geology, and landforms during construction are considered to be local in extent and reversible. Erosion and sedimentation effects would be short-term, and re-grading would be a long-term effect. The mitigation measures outlined above would further reduce the magnitude of any construction impacts on landforms, geology, and soils. The magnitude is considered to be low and the impact **less than significant**.

Treatment facility operation. After construction is completed and operation of the treatment facility begins, no additional impacts on the landforms or geology of the site are anticipated. Heavy rainfall on exposed soils can increase erosion and sedimentation risk. This risk is greatly reduced under established vegetative cover. Under typical facility design and construction practices, the area of exposed soils subject to erosion during operation is considered to be

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relatively small. The period of such risk would be highest during the interval between the end of construction and establishment of vegetation.

Mitigation measures. To ensure that operational erosion and sedimentation impacts remain less than significant, the following actions could be taken,

- Minimize areas of steep fill around the facility where soils are exposed to rainfall
- Hydroseed or use dense plantings of native vegetation to ensure good coverage of bare soils, so reducing erosion risk.

Erosion and sedimentation from operations are considered to be local in extent and reversible. The magnitude is considered to be low and the impact **less than significant**.

Ancillary facility construction. The route of the gravity main access to the outfall follows existing pipe rights-of-way and roads. No impacts on soils, landforms, or geology are anticipated, so impacts can be considered **less than significant**.

The location and geologic condition of the outfall route are subjects of separate study, and are not considered in this ESR.

Ancillary facility operation. Operation of the gravity main and outfall are not considered to affect geology, landforms, or soils. Impacts are considered **less than significant**.

Hydrology and water quality

Treatment facility site conditions

The Finnerty-Arbutus site slopes from west to east. The steepest parts of the property are along the western and southwestern boundaries, where it abuts Finnerty Road and University of Victoria housing and daycare facilities. Slopes here are in the 12-15% range. Most of the remainder of the property is gently sloping, with slopes of 5% or less.

The only defined drainage course on the site crosses the centre of the Finnerty-Arbutus property from west to east. This depression has become an erosion feature in recent years as a result of development of the area near Finnerty and Sinclair. The drainage is dry through most of the year, flowing only after rainfall events. The source of water is an area called “Lam Circle Ravine” in the University of Victoria *Integrated Stormwater Management Plan*. Development of University of Victoria housing and the daycare centre on the margins of the “ravine” likely increased the rates of runoff in this area. A storm drain discharges water from the housing complex to the drainage at the border of the CRD-owned property.

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The drainage follows a walking path along most of its length; the path could have provided water with a preferential path across the Finnerty-Arbutus property. Throughout most of its length, the drainage has downcut only a few centimetres, suggesting that it is of recent origin. In the central portion of the Finnerty-Arbutus site, the defined channel disappears, and the drainage water percolates into the soil. Several small depressions carry storm water to the stormwater ditch along Arbutus Road. One depression discharges near the bus stop, and another near the eastern edge of the Finnerty-Arbutus parcel. This latter drainage follows the course of a walking path and a wastewater main.

As part of its Draft Terms of Reference for the Cadboro Bay Institutional Property Action Plan, the District of Saanich has included mapping of the Finnerty-Arbutus property. A map shows a feature called “Finnerty Creek” that crosses the parcel. A thorough site inspection has revealed mapping inaccuracies. The defined channel crosses only the southeastern portion of the site; it is not continuous. The feature is not a creek, but a result of recent runoff channelization from upslope development.

Many paths used by walkers and mountain bikers crisscross the Finnerty-Arbutus site. These paths and the rights-of-way for sewer lines intercept surface flow and channelize runoff during rainfall events. Where these routes reach Arbutus Road, they discharge runoff into the roadside ditch.

The sandy and loamy character of soil on the Finnerty-Arbutus property, combined with the extensive tree cover and understory vegetation, indicate that most rainfall infiltrates into the soil of the site. Only where pathways interrupt this subsurface flow, or where stormdrains concentrate runoff from upslope, is there a surface expression of water.

The quality of the water on the site is suspect, as it flows from urban areas and roadways to the south and west. No water quality sampling was conducted as part of this study.

Ancillary facility conditions

The only ancillary facilities associated with the Finnerty-Arbutus facility are the gravity main and outfall. The gravity main would cross the Queen Alexandra fields, a relatively flat area north of Arbutus Road. The roadside ditch along Arbutus Road is the only drainage feature affected by the gravity main. Most of the length of the gravity main would be located in roadways (such as Alpine Crescent and Monarch Place). The outfall would cross the rocky foreshore. Runoff is primarily overland flow directly into Haro Strait.

Impacts and mitigation measures

Treatment facility construction. Excavation associated with construction of a wastewater facility on the Finnerty-Arbutus property would result in changes to the site’s hydrology. Shallow

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subsurface flow of groundwater would be intercepted by excavation, as would small surface drainages. This water would need to be infiltrated elsewhere on the site, or conveyed to the roadside ditch along Arbutus Road. The ephemeral drainages that carry runoff from the University of Victoria property to the south would need to be re-routed.

During the two-year construction period, excavations would need to be dewatered to maintain safe working conditions. This pumped water would be discharged to ground or to the roadside ditch. Such water from construction excavations often contains suspended sediment. There are no sensitive downstream receptors that would be affected by short-term increases in sediment loads.

Mitigation measures. A Qualified Environmental Professional should be retained to refine and revise the Streamside Protection and Enhancement Area shown in the District of Saanich documents.

Settlement ponds or filtration basins should be provided to reduce suspended sediments in construction drainage. A water management plan should be prepared to minimize on-site and off-site effects of groundwater and surface water changes associated with the project. Onsite infiltration of runoff would be included in project design.

Construction-related changes to hydrology would begin with site grading and continue in the long-term. Water quality effects would begin during grading and decline following site restoration. Drainage effects would be local, confined to the facility footprint. If onsite infiltration is successful, then no downslope effects of increased rates of runoff are expected. Impacts on water quality are reversible following construction. The magnitude of potential construction impact on water quality and hydrology is considered low, resulting in a rating of **less than significant**.

Treatment facility operation. Operation of the facility would see runoff handled through onsite management and infiltration. The conceptual location of the facility at the lowest point on the Finnerty-Arbutus property minimizes down-gradient effect on the site, but also limits the amount of runoff reduction that could be accomplished before discharging flows into the ditch on Arbutus Road.

With onsite infiltration, operation of the facility would not result in releases of wastewater to the site or into offsite drainage facilities. Even during high rainfall events, no overflows of wastewater from the facility would occur. Chemicals used in the wastewater treatment process would be stored in secure structures.

Mitigation measures. Onsite infiltration of runoff from the facility would minimize effects on hydrology or water quality.

Operational effects on hydrology or water quality would be measurable only during high or persistent rainfall events. Such effects would persist in the long-term. The low elevation location of the conceptual layout reduces down-gradient effects on hydrology or water quality. Changes in hydrology and water quality associated with the operation of the facility would be irreversible. The magnitude of these effects would be low, and the impact is considered **less than significant**.

Ancillary facility construction. Clearing and trenching associated with installing the gravity main and outfall could channelize runoff during rainfall events. Dewatering of trenches should be conducted in ways that does not introduce sediments into stormdrains or ditches. Standard construction techniques for handling of stockpiled soils should be sufficient to avoid erosion and sedimentation impacts.

Mitigation measures. Sediment ponds or filtration should be employed during dewatering of pipe trenches. Stockpiled soil should be covered or otherwise protected from erosion and sedimentation.

Construction impacts of ancillary facilities on hydrology and water quality would be confined to trenches and cleared areas. Any impacts would be short-term and reversible. The magnitude of these effects is low, and **less than significant**.

Ancillary facility operation. Once construction of the gravity main and outfall are complete, revegetation would protect surface soils from erosion. Minor changes in surface flow patterns may occur in the medium-term. No effects on water quality are expected.

Mitigation measures. Standard site restoration procedures would be sufficient to protect soils from erosion. Monitoring should be conducted to ensure that pipe routes do not channel surface runoff, resulting in erosion.

Project impacts on hydrology limited to unpaved areas crossed by pipes, and effects would be medium-term and reversible. No effects on water quality are expected. The magnitude of effects is low, and the impact is **less than significant**.

Vegetation

Regional Overview

The SENOB study area is located in the Coastal Douglas Fir (CDF) biogeoclimatic zone. This area experiences warm and dry summers and mild and wet winters. The climate extremes in the CDF are less severe than those of other coastal British Columbia regions because of the rain shadow effect created by the Vancouver Island and Olympic mountains (Meidinger and Pojar 1991).

Vegetation in the CDF is primarily forested, although some open Garry Oak woodland and rocky outcrop habitats occur in this biogeoclimatic zone. Forests in the CDF are typically dominated by Coastal Douglas fir (*Pseudotsuga menziesii*), and depending on the microclimate, western redcedar (*Thuja plicata*), arbutus (*Arbutus menziesii*), Garry oak (*Quercus garriana*), and red alder (*Alnus rubra*) commonly occur (Meidinger and Pojar 1991).

The CDF has a large number of rare and endangered plant species. Though many of the region's rare species are at the northern extent of their range, several endemic species, unique to the region also occur. Rare or endangered, and endemic plant species occur in seaside, aquatic, rock outcrop, and forested habitats.

Undisturbed forest habitats in the CDF are increasingly rare, with less than 1% of the entire CDF zone remaining in mature or old forest condition in British Columbia. These forests were logged in the 1900s, and cleared for agriculture and human settlement (Pojar *et al.*, 2004). All plant communities, or natural habitats in the CDF are listed as threatened or endangered (red listed) by the British Columbia Conservation Data Centre.

Treatment facility site conditions

The Finnerty-Arbutus site is located in a stand of mature, second growth Douglas fir forest. The two most dominant plant communities found on the candidate site are Douglas fir/dull Oregon grape (CDFmm/01) and Douglas fir/arbutus (CDFmm/02). These plant communities, like most natural areas on southern Vancouver Island, are red-listed by the BC Conservation Data Centre (CDC).

Local community groups have invested time and effort in enhancing the environmental values of the adjacent forested properties to the south, through a three year invasive plant removal program (Norm Mogenson, pers. comm.), and further restoration efforts are proposed by the community (Kowbel *et al.* 2009). The University of Victoria has protected their section of the adjacent Haro Woods property from development in perpetuity (UVic 2003).

The majority of the proposed site occurs in the Douglas fir/dull Oregon grape plant community, which has a closed canopy of Douglas fir, western redcedar, bigleaf maple (*Acer macrophyllum*), and arbutus. Along the south-eastern extent of the proposed site is a narrow band of Douglas fir/arbutus plant community, with a forest canopy composed primarily of Douglas fir, arbutus, and Garry Oak.

Much of the understory vegetation at the proposed site is dominated by invasive plant species, including English ivy (*Hedera helix*), Scotch broom (*Cytisus scoparius*), spurge daphne (*Daphne laureola*), Himalayan blackberry (*Rubus discolor*), and English holly (*Ilex aquifolium*). These invasive species out-compete many of the native plant species on the site, which include

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oceanspray (*Holodiscus discolor*), dull Oregon grape (*Mahonia nervosa*), Nootka rose (*Rosa nutkana*), snowberry (*Symphoricarpus albus*), thimbleberry (*Rubus parviflorus*), sword fern (*Polystichum munitum*), and salal (*Gaultheria shallon*). Areas of the understory are densely vegetated, but the interior of the property has patches of more open understory.

The BC Conservation Data Centre (CDC) has no records of red or blue listed, or COSEWIC listed plant species on the Finnerty-Arbutus site. No rare plant species were noted during the site investigation. A local resident and naturalist has studied the native vegetation in the Haro Woods area, south of the candidate site and has not located any rare plant species. (Judy Spearing, pers. comm.). Much of the native ground cover has been affected by extensive ground disturbance associated with walking trails, bike trails, and jumps. The altered ground cover reduces the likelihood of presence of rare plants.

An ephemeral drainage crosses the property, and may be affected by the footprint of the treatment facility. Regular flow in this drainage feature is restricted to the winter rainy season and other large rain events.

Ancillary facility conditions

The ancillary facilities associated with the Finnerty-Arbutus site would generally be located in existing rights of way. Any new construction work associated with the sewer trunk would occur in non-vegetated areas.

Table 7-1 summarizes the presence of sensitive vegetation elements associated with the Finnerty-Arbutus site and ancillary facilities.

Table 7-1 Sensitive vegetation resources on or near the Finnerty-Arbutus site and associated ancillary facilities

Presence of sensitive vegetation elements	Site	Trunk-Outfall
Terrestrial ecosystems in relatively unmodified state:		
• older forests or mature forests	Yes	No
• second growth forests	Yes	No
• native grasslands/shrub/herb communities	No	No
• Garry oak woodland community	No	No
• coastal bluffs	N/A	No
Presence of ecosystems at risk:		
• ecological communities on Conservation Data Centre Red or Blue lists	Yes	No
• ecosystem types identified by Sensitive Ecosystems Inventory	No	No
• areas identified as environmentally sensitive by local governments	Yes	No
Presence of aquatic or riparian ecosystems:		
• seasonal or permanent watercourses (streams, creeks, rivers, ditches)	Yes	No

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Presence of sensitive vegetation elements	Site	Trunk-Outfall
• seasonal or permanent wetlands, seepage areas, or vernal pools	No	No
• riparian ecosystems beside these aquatic ecosystems and vegetated gullies	No	No
Presence of vegetation species at risk and their habitats:		
• species at risk identified by COSEWIC	No	No
• species on provincial Red and Blue lists	No	No
• regionally significant species	Yes	No
• habitats for any of these species	Yes	No

Impacts and mitigation measures

Treatment facility construction. Clearing for construction of the wastewater treatment facility would result in a direct loss of approximately 1 ha of the conifer-dominated woodland of the Finnerty-Arbutus site. Additional forest clearing may be required to meet construction workspace needs and Work Safe BC danger trees requirements. The forest clearing would involve removal of mature Douglas fir, western red cedar, grand fir, arbutus, bigleaf maple, and garry oak trees. Indirect losses of mature trees and shrubs caused by windthrow, soil compaction and project-related changes to site drainage can also be expected. No recorded sensitive ecosystems or rare element occurrences would be affected by the construction or operation of the treatment facility.

It is noteworthy that the property is currently zoned RS-12 and RS-14. If detached housing were built on the property, as permitted under the current zoning, clearing impacts would be considerably greater than the forest cover losses expected for the construction of the treatment facility.

Mitigation measures. No mitigation measures to avoid direct clearing impacts were identified. Project effects on vegetation values could be reduced by relocating the footprint to the southeast. Site disturbance has been substantial on this property to the south, which is owned by the District of Saanich. A small number of Garry oak trees that occur near the south western boundary of the proposed footprint, and can be avoided by re-configuring the facility layout.

As impact avoidance to the forested ecosystem is not possible, compensation measures should be considered by the CRD. These measures could include registering a protective covenant to prevent tree cutting on the remaining forested woodland, aggressive invasive plant management, and restoration of native plant cover.

The clearing of vegetation would affect the treatment facility footprint and workspace. The loss of mature forest is a long-term effect, and is irreversible. The magnitude of the effect is moderate and adverse. As the impacts cannot be mitigated, the effect of constructing the wastewater treatment facility at the Finnerty-Arbutus site on vegetation would be **significant**.

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Relocation of the wastewater treatment facility to nearby cleared property with fewer vegetation values could reduce the effects on vegetation to **less than significant** levels.

Treatment facility operation. Operation of the treatment facility does not require additional removal of native vegetation. No effects of treatment facility operation on vegetation are anticipated.

Ancillary facility construction. Construction of the ancillary facilities is not anticipated to require removal of native vegetation, as the ancillary facilities would be built in existing road ways and rights of way. Some domestic trees and shrubs would be removed during construction of the gravity main to the outfall. Potential effects on vegetation from ancillary facility construction are **less than significant**.

Ancillary facility operation. Operation of the ancillary facilities does not require additional removal of native vegetation. No effects of ancillary facility operation on vegetation are anticipated and therefore considered **less than significant**.

Wildlife

Regional context

The project area occurs in the CDF biogeoclimatic zone, on southern Vancouver Island. The climate and island location of this region define the wildlife diversity that occurs. Black-tailed deer are the most abundant large mammal, but occasionally black bear and cougar enter rural green spaces. Southern Vancouver Island hosts a large diversity of birds.

Mature forests are uncommon on southern Vancouver Island, as much of the region was logged during the early 1900s and more recently. Much of the land has been developed for urban and rural uses.

Remaining areas of mature and old forest are important to many species, including Yellow-bellied Sapsucker, Hairy Woodpecker, Northern Flicker, Downy Woodpecker, Steller's Jay, Common Raven, Chestnut-backed Chickadee, Brown Creeper, Winter Wren, and Varied Thrush (Meidinger and Pojar 1991). The nests created by primary cavity excavators, such as Pileated Woodpecker, are important for secondary cavity nesters, such as Northern Saw-whet Owl, Western Screech Owl, and California Myotis.

In urban areas, a greater presence of non-native species occur, including Rock Pigeon, House Sparrow, European Starling, Norway Rat, and House Mouse. Several native wildlife species have, however, adapted to urban habitats, including Herring Gull, Northwestern Crow, raccoon, and Little Brown Myotis (Meidinger and Pojar 1991).

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Green spaces and parks located in largely urban environments tend to have a combination of native and introduced wildlife species.

Treatment facility site conditions

The Finnerty-Arbutus site is currently a mature second growth forest that is connected to other forested parcels. The mature second growth forest habitat found on this property is becoming increasingly rare in the CRD. Although the understory plant community has been greatly altered by invasive weeds and ground disturbances, the forest structure provides important attributes for forest-dependent wildlife species.

Wildlife habitat features that occur on the Finnerty-Arbutus site include several wildlife trees; mature, large limbed trees; rotten logs; and other woody debris. Wildlife trees provide potential nesting habitat for woodpeckers and secondary cavity nesters, such as Northern Saw-whet Owl or Western Screech Owl (blue listed). There are also habitat features important to raptors such as Coopers Hawks, including potential nest sites and prey. The downed rotten logs and other woody debris are habitat for invertebrates and small mammals, which are important foods for the birds breeding in the area.

Several wildlife trails occur in the area, and black-tailed deer use this forested area for security and thermal cover, as well as for feeding.

The forest provides breeding habitat for an array of common bird species, such as American Robin, Chestnut-backed Chickadee, Pine Siskin, Winter Wren, House Finch, Dark-eyed Junco, Golden-crowned Kinglet, Spotted Towhee, and Red-breasted Nuthatch (Hocking 2000). During an April 2009 site visit, a Barred Owl was heard vocalizing nearby, and other species noted on the candidate site included Orange-crowned Warbler and Swainson's Thrush.

Ancillary facilities conditions

The ancillary facilities associated with the Finnerty-Arbutus site would occur in existing roads and established rights of way. These areas do not contain important wildlife habitat or habitat features.

Table 7-2 Sensitive wildlife on or near the Finnerty-Arbutus site and associated ancillary facilities

Presence of sensitive wildlife	Site	Trunk-Outfall
Presence of wildlife species at risk and their habitats:		
• species at risk identified by COSEWIC	No	No
• species on provincial Red and Blue lists	None detected	No
• regionally significant species	Yes	No
• habitats for any of these species	Yes	No
Presence of important wildlife habitat features:		

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Presence of sensitive wildlife	Site	Trunk-Outfall
• wildlife trees, snags, mature, large-limbed trees	Yes	No
• rotten logs and other woody debris	Yes	No
• man-made habitat enhancements	No	No
• hedges and shelterbelts	Yes	No
• groundwater springs and seepages	No	No
Evidence of wildlife use:		
• wildlife corridors	Yes	No
• deer habitat	Yes	No
• potential raptor nest site	Yes	No
• nearby presence of protected areas or habitats	No	No

Impacts and mitigation measures

Treatment facility construction. Clearing for construction of the treatment facility would result in a loss of mature second growth forest. The area to be cleared would include the approximately 1.5 ha footprint plus any additional construction-phase temporary workspace. Removal of danger trees, which are often wildlife trees, may be required within 1.5 tree lengths (approximately 45 m) of the candidate site under Work Safe British Columbia regulations.

Removal of forest typically affects wildlife in the following ways:

- (a) loss of thermal and security habitat and habitat features (*i.e.*, canopy cover);
- (b) loss of reproductive habitat and habitat features (*i.e.*, nest trees);
- (c) direct mortality during clearing activities;
- (d) sensory disturbances associated with the clearing and construction activities; and
- (e) loss of habitat connectivity (movement corridors).

Mitigation measures. The loss of potential reproductive, security, and thermal habitat from this site would be long-term, and cannot be mitigated. To offset the effect, compensation to enhance habitat values in nearby green spaces could be considered. For example, removal of invasive plant species could increase the habitat quality for ground nesting birds and small mammals, which are also important food species for raptors in the area. Installing water retention features on the central drainage of the Finnerty-Arbutus site would benefit wildlife by creating habitat complexity, while also controlling erosion.

Direct mortality and effect of construction related sensory disturbances could be reduced through timing vegetation clearing work to avoid the nesting bird season (March 15 to July 31).

Clearing for treatment facility construction would cause the removal of wildlife habitat and habitat features on the facility footprint and workspace. The loss of mature forest habitat is a

long-term effect, and cannot be reversed. The magnitude of the effect is moderate and adverse. As the impacts cannot be mitigated, the effect of constructing the wastewater treatment facility at the Finnerty-Arbutus site on wildlife would be **significant**. If the wastewater treatment facility were moved to nearby cleared properties having lower habitat values, the effects on wildlife could be reduced to **less than significant** levels.

Treatment facility operation. Operation of the treatment facility would not require additional removal of wildlife habitat. As the site is located in an urban setting, sensory disturbance effects on wildlife are thought to be low. Effects of treatment facility operation on wildlife would be **less than significant**.

Ancillary facility construction. Construction of the ancillary facilities is not anticipated to require removal of wildlife habitat or habitat features, as the ancillary facilities occur in existing road ways and rights of way. Potential effects on wildlife from ancillary facility construction are **less than significant**.

Ancillary facility operation. Operation of the ancillary facilities does not require additional removal of native vegetation. No sensory disturbances effects of ancillary facility operation are anticipated. Potential effects on wildlife from ancillary facility operation are **less than significant**.

Archaeology and heritage

Treatment facility site conditions

The Finnerty-Arbutus property contains no previously recorded archaeological sites. Mapping by Millennia Research Ltd. (2008) shows areas of archaeological potential near the eastern corner of the property.

Although no archaeological material was observed in the course of field examinations, portions of the Finnerty-Arbutus parcel within 30 m of the intermittent drainage were assessed to have a moderate to high potential for containing sub-surface archaeological deposits. The recent disturbance by dirt bikers has lowered the archaeological potential in much of the site. Except for the eastern corner and the drainage, this parcel was deemed to have low archaeological potential.

Ancillary facility conditions

The local area near the Finnerty-Arbutus site, where installation of the ancillary facilities, including piping would occur, has areas of moderate archaeological potential near topographic features, such as knolls and ridges, and the near the shoreline.

Impacts and mitigation measures

Treatment facility construction. Ground and tree-clearing activities associated with the construction of a treatment facility at the Finnerty-Arbutus parcel have the potential to damage, displace, or destroy buried archaeological materials and sites. Land alterations during the construction of the facility may break or displace cultural materials, such as cairns, inland shell middens, or culturally modified trees.

Construction activities that may affect archaeological resources include tree cutting, tree root removal, and grading to prepare the building site, or excavation for installing below ground facility elements. Micro-topographic features, such as terraces, knolls, and ridges where buried archaeological sites are often located, are susceptible to these types of activities. Heavy construction equipment may depress cultural soil horizons and sediments, resulting in the destruction of the context of archaeological artefacts and features (Golder Associates 2008).

Mitigation measures. If the Finnerty-Arbutus parcel is chosen as a future treatment facility site, an Archaeological Impact Assessment (AIA) should be conducted before ground disturbance begins, focusing on shovel testing in high-potential areas. Based on findings, site specific mitigation planning would be completed.

A detailed assessment of effects of construction on archaeological resources would be completed once a site has been chosen, as part of an AIA. Assessment and mitigation would be comply with the *British Columbia Heritage Conservation Act*. Mitigation would describe reasonable compensation for the removal, loss, disruption, modification, or alteration of archaeological and heritage resources as a result of the project.

Treatment facility operation. The activities that affect archaeological and heritage resources are likely to occur during, and be limited to, the construction phase of the project. It is unlikely that facility operation would affect archaeological or heritage resources and therefore impacts are considered **less than significant**.

Ancillary facility construction. The ground disturbing activities, including excavation and trenching, associated with constructing ancillary facilities have the potential to damage, displace, or destroy buried archaeological materials and sites. The proposed pipe routes mainly follow road rights-of-way, where any existing archaeological remains have likely been disturbed. The greatest risk of encountering archaeological sites during pipe installation is near the shoreline. Construction of ancillary facilities may result in the permanent loss or alteration of archaeological or heritage sites.

Mitigation measures. If the Finnerty-Arbutus site is chosen as a future treatment facility, an Archaeological Impact Assessment (AIA) should be conducted in areas along the pipe corridor way that have high archaeological potential in advance of ground disturbance

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activity. Site specific archaeological mitigation plans would be prepared after completing the AIA.

A detailed assessment of effects of construction on archaeological resources would be completed once a site has been chosen, as part of an AIA. Assessment and mitigation would comply with the *British Columbia Heritage Conservation Act*. Mitigation would include reasonable compensation for the removal, loss, disruption, modification, or alteration of archaeological and heritage resources as a result of the project.

Ancillary facility operation. The activities that affect archaeological and heritage resources are likely to occur during, and be limited to, the construction phase of the project. Facility operation is not expected to affect archaeological or heritage resources and therefore impacts are considered **less than significant**.

Community

Treatment facility site conditions

The Finnerty-Arbutus site is a forested parcel in a residential and institutional area, located between the UVic campus and Haro Strait in Saanich East.

Although the Finnerty-Arbutus property is privately owned and posted for no trespassing, the area is routinely used by the public for recreation. The main uses are walking, running, orienteering, environmental study, and BMX biking. A network of informal trails supports these recreational activities, both on the site and on adjoining forested lands, considered as community green spaces by members of the public (Photo 7-1 and Photo 7-2). Various community groups, including the Cadboro Bay Residents Association (CBRA) are advocates for designating the Finnerty-Arbutus site, and the adjacent properties owned by the District of Saanich and University of Victoria, collectively refer to “Haro Woods” as a park.

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Photo 7-1 Finnerty-Arbutus Forest

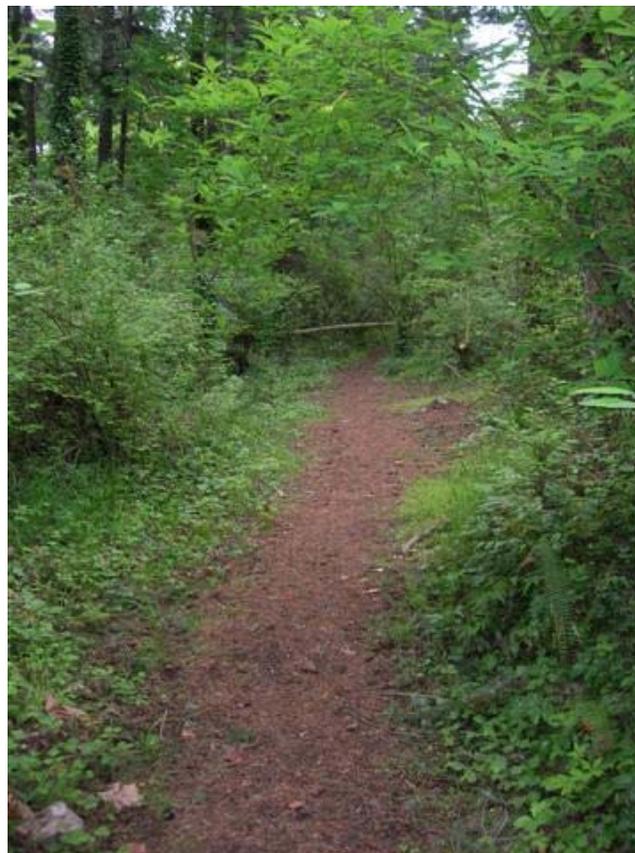


Photo 7-2 Trails on the Finnerty-Arbutus site

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Discussions with representatives from the Queen Alexandra Foundation, the former owner of the site, indicated that BMX biking is an illegal, but popular pursuit on the Finnerty-Arbutus site. The Queen Alexandra Foundation representative stated that they have removed bike jumps numerous times for public safety and liability reasons. Site visits confirm the continued presence of these jumps (Photo 7-3). Construction has involved digging trenches, creating soil mounds up to 2 m high, and reinforcing the structures with timbers cut from the forest. Several of these bike jump complexes are located along trails in the Finnerty-Arbutus site.



Photo 7-3. BMX bike jumps on Finnerty-Arbutus site

Existing underground sewer pipes cross the Finnerty-Arbutus property. Both 450 and 600 mm pipes are identified in the online GIS system provided by the District of Saanich (Saanich Online Mapping System 2009).

Adjacent land uses

Institutional uses are prominent near the Finnerty-Arbutus site. The Lam Family Student Housing Complex on the UVic campus is located 115 m south from the facility footprint (Figure 7-1). The complex provides housing for 181 families in two- and three-bedroom townhouses and apartments (University of Victoria website). The UVic Child Care Complex is located northwest of the Lam family housing, approximately 125 m from the proposed facility.

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Complex A of the UVic Child Care facility provides services for 66 children aged 18 months to five years through three child care programs for different age groups (University of Victoria website). Complex B houses the Out of School Care Program and the Summer Fun Program, which provide child care through the summer months for 50 children.

The Finnerty-Arbutus site is adjacent to lands owned by the District of Saanich and the University of Victoria. The adjacent District of Saanich parcel is identified as Haro Woods in the Cadboro Bay Local Area Plan (LAP), and is designated as “public wild woodland”. This designation recognizes the neighbourhood’s desire to preserve the parcel in its natural state. Nonetheless, the parcel is zoned to permit detached dwellings, but has covenant requiring a public hearing before considering development on the site (Stanley, pers comm.) In reference to the District of Saanich property, the LAP states, “the property was acquired as a site for a potential wastewater treatment facility, but a plant is no longer required in this location.”

The University of Victoria owns a 1.1 ha parcel south of the District of Saanich property. The University of Victoria Campus Plan (2003) identifies the forested area as “protected from development in perpetuity” to preserve habitat for local flora and fauna. This designation is similar to the terms of a restrictive covenant registered on the UVic property.

The Finnerty-Arbutus site is located across Arbutus Road from the Queen Alexandra Centre for Children’s Health. The Queen Alexandra Foundation for Children owns the property at 2400 Arbutus Road, and leases the land to Vancouver Island Health Authority (VIHA). On this site, VIHA provides child and family rehabilitation, mental health, and prosthetic services to children, youth, and adults.

Children’s health services previously offered on the site involved overnight and ongoing visitation by patients. Currently, most children’s health services do not include overnight stays (VIHA representative, pers. comm.). However, in-patient mental health care is offered at the Ledger House through three service units, including the Children’s Unit, Youth Unit, and Special Care Unit. The length of stay for patients is determined on the basis of individual client need. The Finnerty-Arbutus treatment facility would be approximately 130 m south of the Ledger House.

A baseball field and a large open space are located just north of Arbutus Road (Figure 7-1). A former detached residence on Arbutus Road that currently serves as a Queen Alexandra Foundation for Children administrative building is 25 m from the facility footprint. The G.R. Pearkes daycare facility is located 160 m from the facility footprint, north of Arbutus Road.

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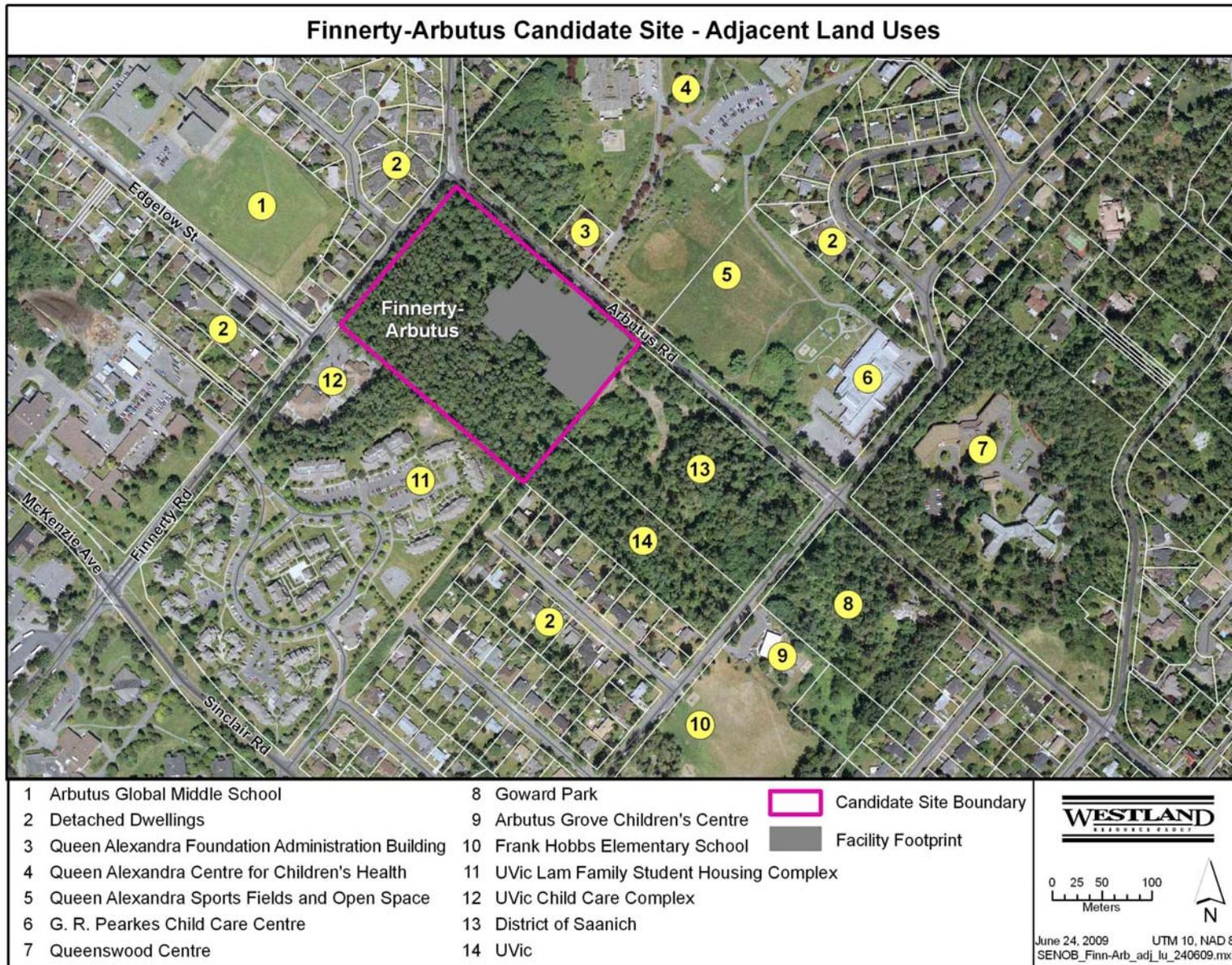


Figure 7-1 Finnerty-Arbutus Candidate Site – Adjacent Land Uses



Photo 7-4 Queen Alexandra Foundation grass field north of Arbutus Road

Property owned by the Sisters of Saint Ann is located across Arbutus Road, 260 m from the facility footprint. A portion of the property is used to support the activities of the Queenswood retreat centre. According to the Queenswood centre website, “Queenswood has recently become a non-profit organization governed by a board of long-time supporters of Queenswood. The non-profit society has a license agreement for use of the facility. We share the 14-acre property with a retirement home for Sisters of St. Ann” (Queenswood Centre website).

An elementary and middle school are located southeast and east of the Finnerty-Arbutus property. Frank Hobbs elementary school is located 360 m southeast of the proposed facility footprint. The school had 285 students in 13 classes from kindergarten to grade 5 during the 2008-2009 school year (Greater Victoria School District website). The Arbutus Grove Children’s Centre is located 290 m east of the facility footprint. Buildings associated with the Arbutus Global Middle School are located 310 m southwest. The school had 357 students during the 2008-2009 school year (Greater Victoria School District website).

The District of Saanich’s Goward Park is located 260 m southeast of the facility footprint. Goward House is 360 m from the facility footprint, and serves as an activity centre for adults. The facility is operated by the non-profit Goward House Society, in conjunction with a full-time co-ordinator and volunteers (Goward House website).

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Detached residences are located 110 m northwest of the facility footprint on Finnerty Road, 190 m northwest on Alpine Crescent, and 100 m southeast on Sutton Road, south of the UVic forested parcel.

Consistency With Planned Land Uses

The District of Saanich Official Community Plan (OCP) identifies the Finnerty-Arbutus site as “Institutional”, consistent with the former ownership of the site by the Queen Alexandra Foundation for Children. The Finnerty-Arbutus site is zoned RS-12 and RS-14, both Single Family Dwelling designations, under District of Saanich Zoning Bylaw. A portion of the site, around “Finnerty Creek”, is identified as a Development Permit Area due to an identified floodplain and riparian area.

The Cadboro Bay Local Area Plan (LAP) identifies the Finnerty-Arbutus site as “General Residential”. The LAP states that several large land parcels in the plan area are undeveloped or underdeveloped, including the subject property, and that an action plan would be developed “to address the future opportunities and implications of these properties in Cadboro Bay, Gordon Head and Saanich” (Corporation of the District of Saanich 2002). Terms of reference have been developed and were approved by Council in June 2009.

The LAP identifies Arbutus Road as a designated bikeway, and an area of community mobility concern as a result of “motor vehicle speed sight lines at cross streets”. The plan identifies a proposed trail or walkway from Hobbs Street, along Maynard Street, and on the field at Frank Hobbs elementary school, Saanich’s Haro Woods property, and the Finnerty-Arbutus property. The proposed trail is identified as a “potential local greenway”.

Ancillary facility conditions

A gravity main and a small diameter pressurized pipe would be required to operate the treatment facility at the Finnerty-Arbutus site. The gravity main would be constructed in existing and new rights-of-way across the Queen Alexandra Foundation field, in an existing right-of-way across a residential property, under Alpine Crescent, Haro Road, Monarch Place, and in an existing right-of-way across four detached residential properties.

The small diameter pressurized pipe would be constructed from the Penrhyn pump station to the Finnerty-Arbutus site entirely under existing roads, including, Penrhyn, Hobbs, Maynard, Rowley Streets, and Arbutus Road. Land uses near this route are predominately detached residential.

Impacts and Mitigation Measures

Treatment facility construction

Community use. During the treatment facility construction phase, community use would be restricted in and around the active construction area. Until recently, the site was owned by the Queen Alexandra Foundation, which placed no trespassing signs at the entrances to the property to deter use. However, a pattern of community use has developed, which includes walking, running, dog walking, orienteering, environmental study, and biking.

Mitigation measures. Opportunities for recreation activities may exist on the portions of the Finnerty-Arbutus site outside of the treatment facility footprint and workspace during the construction of the facility. Similar recreational activities to those currently undertaken on Finnerty-Arbutus site are also available on the adjacent District of Saanich and UVic properties. Signage and newspaper advertisements would be used to inform community users of the construction schedule and portions of the site that would have access restrictions.

Community use of the facility footprint and workspace portion of the site would be restricted during the construction period, resulting in a medium-term impact. The facility footprint would be a long-term alteration to an area where recreational use is not permitted, but occurs, so the impacts are not reversible. Further discussion is provided in the treatment facility operation section. The construction work space would only be used during the construction period, representing a medium-term, reversible impact. The availability of nearby recreational opportunities would help to reduce some of the community impacts during the construction phase. Recreation is not encouraged on the site, but restricted access to an area considered public green space may result in high magnitude impacts, that are considered **significant**.

Noise, vibration, and lighting. Construction of the facility would involve the use of heavy machinery, compressors, pumps, concrete pouring equipment, and other equipment to prepare the site and build the treatment facility. During the construction period, noise and vibration impacts could affect neighbouring residents and institutional uses. Especially sensitive receptors in proximity to the proposed treatment facility footprint are users of the Queen Alexandra facility and UVic daycare. Peak construction activity would occur in the first 9 months during excavation and concrete pouring phase. The project is expected to take 18- to 24 months to complete. After the 9-month peak construction activity has occurred, the construction activities would be similar to the construction of utility or industrial buildings. Construction activities would comply with the applicable municipal bylaws for hours of works and noise levels. Work would usually occur on weekdays from 7 am to 5 pm with no work on Saturdays, Sundays, or holidays (except in an emergency or where a critical piece of work must be completed in a specified work window). If required, lighting would be oriented to reduce effects on residents and institutional users.

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Mitigation measures. Discussions will be undertaken with the Queen Alexandra Foundation, Vancouver Island Health Authority, UVic, neighbouring residents, and other institutional users during project planning and prior to construction to confirm noise mitigation measures, and construction hours.

Noise and vibration impacts would mainly occur during the 9-month site preparation period, but may occur occasionally at other times during the construction phase. As a result, the impact is considered to be medium-term. Noise and vibration effects could affect the local area.

Generally, the noise and vibration effects would be moderate in magnitude, but could be higher for patients at the Ledger House and UVic daycare due to sensitive receptors at those two facilities. The noise and vibration effects are reversible once construction is complete. With adherence to the mitigation measures discussed with the Queen Alexandra Foundation, Vancouver Island Health Authority, and UVic representatives, noise and vibration impacts are considered to be **less than significant**.

Dust and air emissions. Construction of the facility would result in medium-term localized air quality impacts, including dust and exhaust emissions from machinery.

Mitigation measures. The treatment facility footprint is surrounded by a forested buffer, and is not directly adjacent to residences or institutional users. When transporting soil that could create dust nuisances, trucks would have box covers. The CRD Code of Practice for “Construction and Development Activities” would be used to mitigate dust and air emission impacts. Additional dust control plans may be required, and would be developed as required.

Dust and air emission impacts at the Finnerty-Arbutus site are expected to occur during the medium-term construction period, and are reversible once construction is complete. Through the use of mitigation measures, the impact is considered low in magnitude, and **less than significant**.

Traffic. The construction of the treatment facility would require the delivery of equipment and supplies, and the movement of workers to the site along McKenzie Avenue, a designated truck route, and residential streets, including Finnerty and Arbutus roads (refer to Traffic and roads section for more detail). During the construction period, material and equipment deliveries could include trucks delivering concrete, steel, equipment, and general service materials.

Mitigation measures. A traffic management plan would be prepared to address traffic disruptions, truck traffic, and access to nearby institutions, and residences during construction. Flag persons would direct vehicles and pedestrians around the construction site. Construction drivers would observe speed limits and exercise extreme caution in areas such as residential neighbourhoods or near schools and hospitals. Ongoing communication with District of Saanich, UVic, Queen Alexandra Foundation, and other

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representatives would be undertaken to minimize effects on residents, institutional users, and other community members.

Traffic effects may occur throughout the entire treatment facility construction phase, but specific phases would have higher truck volumes. The effect is considered to be low in magnitude, and would occur in the local area, primarily on Finnerty and Arbutus roads. Traffic effects are reversible once construction is complete. With the development and implementation of a traffic management plan to reduce effects on local residents and institutional uses, traffic effects are expected to be **less than significant**.

Treatment facility operation

Community use. Operation of the facility would alter existing land use on a portion of the Finnerty-Arbutus site resulting from the conversion from a forested site to utility use. In the facility footprint, the existing forest recreation opportunities would no longer exist. To date, the CRD has not prepared a long-term management plan for the remainder of the site.

Mitigation measures. The facility would be constructed on only a portion of the Finnerty-Arbutus site. Community input, regarding the desired future land use for the remaining property, would be encouraged.

The conversion of a forested area to a utility use on the treatment facility footprint would be a long-term impact, and not reversible. The impact would be considered high in magnitude for some members of the community due to the loss of a portion of a site used as urban green space. However, until recently, the site was privately held and recreational use was not encouraged, but still occurred. The impacts are considered **less than significant**.

Odour. Operation of a treatment facility in a developed residential and institutional area could generate odours that would be noticeable by local residents and institutional users. The treatment facility would be designed to minimize operational odour, using the 3-stage system and other processes described in the project description. Typical operation of the treatment facility would result in no detectable odour at the treatment facility boundary.

Annual maintenance would be conducted in during breezy weather, minimizing risk of odour impacts, however, odour could be detectable in some instances.

In rare cases of equipment malfunction, odours impacts of unknown magnitude and duration could affect the local area. The season and prevailing winds direction patterns at the time would determine the potential effects.

Mitigation measures. The odours released during facility operation could be reduced by ensuring that a backup system is installed. Backup treatment could be provided during

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routine maintenance or in response to mechanical failure. This mitigation would reduce the magnitude of impact of maintenance or breakdowns to low under all circumstances.

Under normal facility operations, odours would not be detectable beyond the project footprint. As previously discussed, some detectable odour could occur during annual maintenance or if equipment malfunctions. The impact is considered long-term, even though individual events would be short-term, perhaps measured in hours or days. If odour impacts do occur, they are most likely to affect the local area near to the facility, and would be reversible, high magnitude, and **significant**. With the application of a backup capability using the 3-stage odour control system, the odour impacts could be reduced to low magnitude, reversible, and would be **less than significant**.

Noise, vibration, and lighting. Operation of the treatment facility would generate noise, vibration, and lighting issues. Noise generating equipment would include:

- air-driven pumps,
- compressors,
- fans and blowers,
- diesel driven pumps, and
- standby diesel power generators.

The nearest residence to the treatment facility would be located 100 m southeast of the treatment facility. A house converted to a Queen Alexandra Foundation administrative building is located approximately 25 m from the footprint.

The treatment facility would be designed not to exceed 45 dB and 55 dB at the edge of the facility footprint, during the evening and day respectively. Sound attenuation would be installed in the buildings housing the units and on diesel engine exhaust to ensure that decibel levels remained below 45 dB at the property line, to meet the local municipal bylaw requirement, and to meet WCB/OSHA criteria for worker safety. All noise-generating equipment would be installed in soundproof rooms to meet these requirements.

All installed vibrating equipment would be contained in isolated structures that meet vibration limits acceptable to the residential community. Since the wastewater systems to be used at the treatment facilities do not include excessive vibrating equipment and are typical of current operating systems found elsewhere, vibration issues are not anticipated and if present can be mitigated.

The lighting plan for the Finnerty-Arbutus facility is expected to include normal post top sodium vapour lighting standards similar to those on residential streets. All lighting would be directed downward and would have shields installed to prevent lighting of the night sky.

In accordance with corporate activities for environmental sustainability, facility planning would incorporate energy efficiency and BC Hydro power smart initiatives and the applicable Leadership in Energy and Environmental Design (LEED™) standards for green buildings. For example, LED lighting that uses low energy and emits low UV light could be specified.

Mitigation measures. No specific mitigation measures are needed, aside from the specified design measures.

Noise, vibration, and lighting impacts would be long-term in duration and local in spatial extent. With appropriate design and maintenance, noise, vibration, and lighting impacts are considered to be low magnitude. The operation of the facility would result in changes to the existing conditions that are not reversible, but are **less than significant**.

Traffic. Operation of the treatment facility would require the removal of screenings and grit from the site by truck. Transporting screenings and grit to Hartland landfill would require one truck every five to six days. Truck movements would be timed to avoid sensitive time periods, such as weekends. Trucks would be enclosed to limit odour impacts.

Mitigation measures. No special mitigation measures are needed as long as normal operating procedures are followed.

The removal of screenings and grit would be a long-term impact, that is not reversible, but is considered low in magnitude due to the low volume of operational truck traffic. The impact is **less than significant**.

Ancillary facility construction

An expanded network of pipes would be required to support the operation of the treatment facility, including a gravity main and outfall, and a small diameter pressurized pipe from the Penrhyn pump station.

Noise, vibration, dust, and community use. The construction of the gravity main would introduce noise, vibration, and dust impacts for residents and institutional users near the construction area. Land disturbance would occur on five properties where existing rights-of-way exist.

The small diameter pressurized pipe would be constructed from the existing Penrhyn pump station to the Finnerty-Arbutus site under Penrhyn, Hobbs, Maynard, Rowley Streets, and Arbutus Roads.

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Mitigation measures. Discussions with potentially affected home owners and institutional users prior to construction would help to ensure mitigation measures are appropriate to minimize potential risk to children and other users, and to minimize disturbance. CRD representatives will work with UVic, District of Saanich, and District of Oak Bay representatives and community groups to minimize impacts of constructing the ancillary through residential neighbourhoods. Site restoration plans would be developed with property owners.

The Queen Alexandra Foundation field that is crossed by the gravity main can be restored for use as a field. CRD representatives will work with Queen Alexandra Foundation representatives to secure a new right-of-way and to minimize impacts of constructing the pipe route in the existing right-of-way. Pipe construction would be conducted in accordance with local municipal bylaws to minimize disturbance. Dust control measures, including the use of box covers on trucks, the application of CRD codes of practice, and a dust management plan would be used to reduce effects on residents and land users.

With the application of approved mitigation measures, the impacts are considered short-term in duration and reversible. For the ancillary facilities constructed under roads, the construction would be similar to other public road projects. Even with the application of mitigation measures, the magnitude of noise, vibration, and dust impacts near the ancillary facility construction area would be moderate over the short-term. The landscapes on five residential properties with existing rights-of-way crossed by the project would be altered, but impacts would be reduced through discussions with property owners and site restoration plans, resulting in a medium-term impact, that is reversible, and moderate in magnitude. The impacts of ancillary facility construction would be **less than significant**. Impacts of the gravity main on residential properties could be avoided by relocating the main and outfall to another route. The outfall discharge location is presently under study. Once these studies are complete, outfall and gravity main decisions will be made.

Traffic. Impacts during the ancillary facility construction phase would include delays, detours, and temporary changes in traffic volumes through residential neighbourhoods.

Mitigation measures. A traffic management plan will be developed for the construction period. CRD representatives will work with municipal planners, land owners, and community groups to inform them of the project schedule.

The development and implementation of a traffic management plan would help to reduce traffic effects of the project. The impacts are considered to be local, short-term, reversible, low to moderate in magnitude, and **less than significant**.

Ancillary facility operation

Community use. The types of land use activities that would be permitted in rights-of-way is limited. Generally, the construction of permanent structures are not permitted in a right-of-way.

Mitigation measures. Where new rights-of-way are required, the CRD will seek an agreement with the land owner, mitigating future land development limitations in the right-of-way. The CRD will communicate with property owners whose land would be crossed in existing rights-of-way to reduce potential impacts. Route alternatives will be assessed in an effort to avoid effects on residential property.

With easement agreements established between the CRD and property owners, and communication with property owners whose lands would be crossed by the ancillary facilities, the long-term impact would be local, long-term, moderate in magnitude, not reversible, and **less than significant**.

Traffic and roads

Treatment facility site conditions

The Finnerty-Arbutus site is located southeast of the Finnerty Road–Arbutus Road intersection in the District of Saanich. Truck routes and other roads in the vicinity of the candidate sites are outlined in Figure 7-2.

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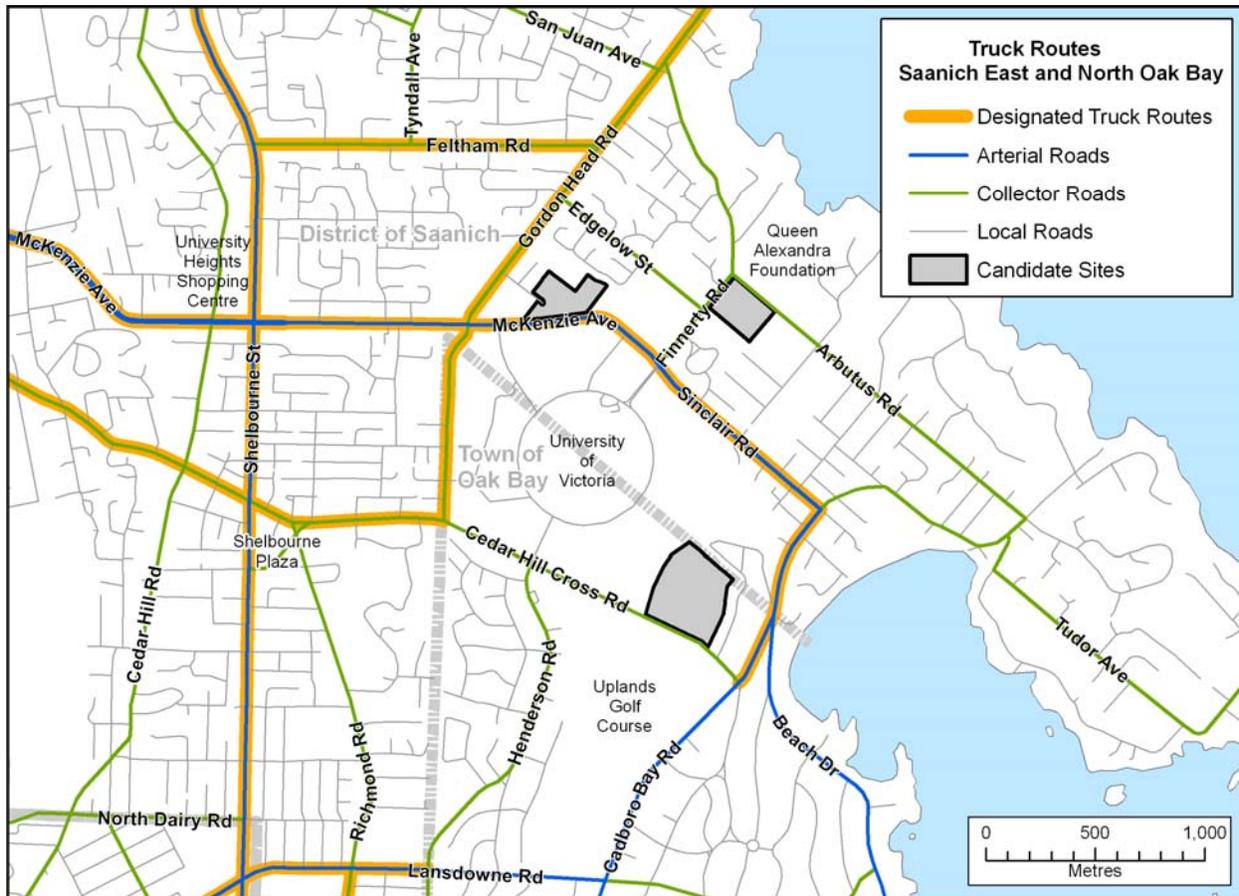


Figure 7-2 Truck routes and other roads in Saanich East-North Oak Bay

The initial traffic impact assessment for this project examines the volumes and types of vehicular traffic; road classification; proximity to designated truck routes; alternative modes of transportation; accident history; transit service; and impact on existing traffic from construction and installation of pipes underneath existing road surfaces.

These factors are considered for following time frames for this project:

- 2009 Present Conditions,
- 2010 – 2012 Construction of Phase 1 facility,
- 2030 Operation at full capacity of Phase 1 facility,
- 2030 – 2032 Construction of Phase 2 or expanded facility, and
- 2065 Operation at full capacity of expanded facility.

When considering the potential routing(s) to and from the site, designated truck routes are used where possible as well as the shortest route to designated truck routes. The Finnerty-Arbutus site would be accessed from Arbutus Road, Finnerty Road, and McKenzie Avenue. Arbutus Road and Finnerty Road have a municipal functional classification of collector roads. McKenzie Avenue has a functional classification as an arterial road and is also the nearest designated truck route.

Ancillary facility conditions

The gravity main and outfall are the only ancillary facilities associated with the Finnerty-Arbutus site. Most of the length of these two facilities would be located under roadways such as Alpine Crescent and Monarch Place (Figure 3-4).

Impacts and mitigation measures

Data were obtained from the District of Saanich and the Capital Regional District. The existing volumes on the road links to the facility are illustrated in Table 7-3. This table shows the current traffic volumes in vehicles per day (vpd) and vehicles per hour (vph) for the PM Peak Hour period for each road link. An assumed growth rate of 1% per annum was used to forecast these traffic volumes to 2030, when the second phase of construction is scheduled to begin. Traffic volumes for 2065 were not forecast as there are too many uncertainties related to future transportation technologies, infrastructure, travel modes, and modal shares.

Table 7-3 Daily and PM peak hour traffic volumes for the access route to the Finnerty-Arbutus site

Road Name	Characteristic	Units	2009	Volumes	2030	Source
McKenzie Ave	Traffic - vehicular volumes	Vehicles per day (vpd)	12,495	vpd	15,399	Municipal, CRD
		Vehicles per hour (vph) - PM Peak	1,312	vph	1,617	
Finnerty Road	Traffic - vehicular volumes	Vehicles per day (vpd)	9,734	vpd	11,996	
		Vehicles per hour (vph) - PM Peak	1,023	vph	1,261	
Arbutus Road	Traffic - vehicular volumes	Vehicles per day (vpd)	4,905	vpd	6,045	
		Vehicles per hour (vph) - PM Peak	515	vph	635	

As arterial roads are expected to carry traffic volumes in the range of 10,000 to 30,000 vpd, and major collectors from 5,000 to 20,000 vpd, the road links on the preferred routing have no capacity limitations for the forecast growth in background traffic.

Treatment facility construction. The forecast trips for the construction of the candidate site for Phases 1 (2010 construction) and 2 (2030 construction) are shown in Table 7-4 as average trip rates per day (vpd) with an assumed 240 workdays per annum.

The construction of Phase 1 in 2010 to 2012 is forecast to generate approximately 75 two-way vpd for the candidate site and approximately 45 two-way vpd for Phase 2 construction in 2030 to 2032.

Table 7-4 Forecast vehicular volumes for Phases 1 and 2 construction of the Finnerty-Arbutus facility

CONSTRUCTION TRAFFIC			
YEAR 2010		Duration	Average two-way trips (vpd)
Activities	Clearing/Grubbing/Aggregates	3 months	10 trucks
	Excavations	7 months	8 trucks
	Concrete	9 months	5 - 6 trucks
	Steel	9 months	1 truck / week
	Equipment, materials	24 months	1 truck / week
	Workers	24 months	50 cars
YEAR 2030			Average two-way trips (vpd)
Activities	Clearing/Grubbing/Aggregates	1 month	5 trucks
	Excavations	3 months	6 trucks
	Concrete	4 months	4 - 5 trucks
	Steel	4 months	1 truck / week
	Equipment, materials	24 months	1 truck / week
	Workers	24 months	30 cars

Mitigation measures. Construction traffic safety mitigation measures are presented in the Public Health and Safety section of this ESR. An important traffic issue would be the parking requirement for construction workers driving to and from the site. If the clearing and grubbing stage can create enough parking on-site for all construction workers then there would be negligible impact. If there is not enough space to accommodate all the parking on-site, it is recommended that van-pooling, ride-sharing and park and ride programs be developed to reduce the number of trips or that additional parking be developed elsewhere.

The Phase 1 construction traffic of 75 vpd represents an increase of traffic of 0.60%, 0.77%, and 1.53% on McKenzie Avenue, Finnerty Road, and Arbutus Road respectively over current volumes. Increases in the range of 1% are considered negligible while the impact on Arbutus Road would be low. The 45 vpd construction trips associated with Phase 2 construction are all well below 1% and as such are also considered negligible. The spatial impact would be local and of medium-term duration. While the traffic would be continuous over the construction period, it can be reduced by creating parking areas elsewhere and there is no residual effect resulting in a rating of **less than significant**.

Treatment facility operation. As shown in Table 7-5, the number of site-generated trips for the operation of the candidate site is quite small and when compared to the existing and forecasted vehicular trips on the road links in the preferred routing, these trips would have a negligible impact. The preferred routing is identified due to the truck traffic involved with the construction stages of the project and the need to use designated truck routes. Because operations staff will

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live in various parts of the region, they will not be constrained to a particular travel route. Staff's distributed travel network would reduce the impact even further.

Table 7-5 Forecast vehicular volumes for Phases 1 and 2 operation of the Finnerty-Arbutus facility

OPERATIONAL TRAFFIC		
YEAR 2030		Average two-way trips (vpd)
Activities	Truck Loads	
	Screenings / Grit	1 truck / week
	Chemical	8 - 9 trucks / year
	Employees	12 cars
YEAR 2065		Average two-way trips (vpd)
Activities	Truck Loads	
	Screenings / Grit	1-2 trucks / week
	Chemical	1 truck / month
	Employees	15 cars

Mitigation measures. No mitigation measures are required.

Although traffic effects would be continuous, the magnitude of the effect is low, and the resulting rating is **less than significant**.

Ancillary facility construction. Ancillary facility pipes would be buried in the road corridor, most probably underneath the travel lanes, using cut and cover methods.

Construction would disrupt vehicular traffic on affected routes. The extent and severity of disruption would be a function of the traffic volumes and available opportunities to keep some lanes open or to reroute traffic. All the roads potentially effected by the construction of ancillary facilities are two-lane, so it is assumed that one lane could remain open and alternating directions of traffic utilize the remaining lane.

Mitigation measures. Standard procedures for managing vehicular traffic in a construction zone would be implemented, which would result in one lane remaining open to alternating directions of traffic. Construction could be restricted to single blocks at a time and scheduled outside of peak periods of vehicular activity.

The impact would be local, of short-term duration, and continuous during the construction period. Considering volumes of traffic affected, the result is a low impact on the local and collector routes. One-way alternating traffic would be permitted and there would be no residual impact, resulting in a rating of **less than significant**.

Ancillary facility operation. There would be no impact from the operation of the ancillary facilities, because all of the pipes would be underground.

Mitigation measures. Road surfaces would be restored to operational standards and no additional mitigation measures would be required.

Although the impact would be local in nature and continuous, there would be no measurable residual effect and as such the rating is **less than significant**.

Public health and safety

Treatment facility construction. Health risks during construction are limited to exposure to dust and noise. Dust control measures would be implemented if dust is generated during construction. The forested character of the site would limit wind transport of dust to nearby residential areas.

Members of the public stated that autistic children living near the Finnerty-Arbutus site or that are present in the Queen Alexandra Ledger House could be upset by the noise of construction activity. The homes and facilities housing autistic children are more than 100 m from the construction site. It is not certain that the generally moderate level of site grading and foundation noise over a period of six to twelve months, punctuated by intermittent louder noises, would constitute a serious mental health risk. The facility construction following completing of the foundation stage would be relatively quiet.

During construction, the greatest safety risk would result from vehicles on roads and heavy equipment operation on the site. With the use of flaggers and signage, the risk to the public from vehicle movement is greatly reduced. The construction site would be fenced to prevent access by walkers, mountain bikers, or other members of the public. Flaggers would be present during school hours to ensure that students, particularly those walking to elementary or junior secondary schools, do not gain access to the site.

Mitigation measures. Nearby residents are typically notified in advance of disruptive construction activities. The project contractor would communicate regularly with managers of the Queen Alexandra facility to discuss construction activities and ways to avoid the potential disruption of health centre activities. Efforts would be made to avoid dust or loud noise during periods deemed sensitive by the Queen Alexandra facility managers.

For safety mitigation, no special access or traffic control measures are needed, beyond those that are applied as part of standard construction practices for projects of this nature.

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The potential health and safety effects of construction would be temporally limited to the construction interval, and are considered medium-term. Spatially, the greatest health and safety risks would occur immediately adjacent to the construction worksite, with the risk diminishing with distance from the site. These impacts are reversible. Public safety impacts are considered to be of low magnitude. Health effects are considered to be of moderate magnitude because of the proximity of the Queen Alexandra facilities. With appropriate controls of construction activities, public safety and health effects are considered **less than significant**.

Treatment facility operation. Few public safety risks would be associated with treatment facility operation. The facility would be fenced to minimize public entry, and the equipment at the facility is enclosed. Health risks would be limited to treatment facility workers who may come into contact with untreated wastewater or microbial aerosols. The enclosed facility would prevent direct transmission of disease organisms to residents. The three-stage odour control system reduces the risk of viruses, bacteria, or other contaminants being discharged by air from the facility. The distance between the treatment facility and other residences or institutions (more than 100 m) further reduces public health risks.

Public safety risks are limited to the slight increase in vehicle traffic associated with the project.

Mitigation measures. No measures are needed to protect public health and safety during facility operation beyond those included in facility design specifications and standard operating procedures.

The spatial extent of public health impacts are limited to the wastewater facility itself. Public safety effects would be limited to traffic related risks. The temporal extent is local, and any impacts would be reversible. The magnitude of public health and safety impacts are negligible, and are considered **less than significant**.

Ancillary facility construction. Public safety issues associated with installing pipes in roadways and along rights-of-way are primarily associated with operation of heavy equipment and the presence of open trenches. Flaggers would be available during the day to manage vehicles and pedestrians near the worksite. Barriers or flagging is typically erected to alert people to the presence of open trenches. No public health effects would be associated with ancillary facility construction.

Mitigation measures. Standard construction procedures would be followed to minimize safety risks during pipe construction.

The public safety risk of ancillary facility construction would be limited to the period of construction (short- to medium-term) and to the area where active construction is occurring. The impacts would be reversible. Magnitude of this impact considered low, and **less than significant**.

Ancillary facility operation. Once the pipes are in service, no public health or safety impacts would occur.

Visual aesthetics

Treatment facility site conditions

The Finnerty-Arbutus site is forested and on a moderately sloping hillside adjacent to Arbutus Road. The parcel, and neighbouring forested parcels are used for informal recreation by the local community and contain a network of paths dominated by BMX jumps (Photo 7-5). The forest understory varies from open areas lacking vegetation, to areas of dense ocean spray and big-leafed maple. The surrounding area is forested to the south, west and north of the site. To the northeast and east, on the north side of Arbutus Road, there is an open grassy slope. The closest neighbouring structure is a residential style office building at the entry to the Queen Alexandra facility. The nearest dwellings are east of the site, and largely screened by existing vegetation and break of slope. Visibility from roads is restricted to Arbutus Road, a two-lane collector road with no sidewalks (Photo 7-6). Traffic volumes are low to moderate, and it is not a truck route. There are two bus stops, one on either side of Arbutus road adjacent to the facility, from which people could view the site.



Photo 7-5 Existing forest interior of site showing understory vegetation and BMX bike jump



Photo 7-6 Existing conditions looking northwest along Arbutus Road towards candidate site (forest at left side of road near the car)

Ancillary facility conditions

The viewsheds of the ancillary facilities are roadways, the Queen Alexandra fields, and detached residences in the Queenswood neighbourhood.

Impacts and mitigation measures

Treatment facility construction. The visual character of the site would be altered by construction of the treatment facility. Constructing the facility requires clearing and levelling of approximately 1 ha of the 4.4 ha parcel and would result in approximately 25% of the site being converted from forest to utility structure, parking, and other paved and landscaped areas. Little alteration would be made to the remainder of the site. Informal users of the site (it is private property with no authorized public access) would have views of the construction through the forest. Construction site lighting during winter months would intrude into the forest.

Visual impacts of construction on the site from outside the parcel would be screened by forest vegetation from all directions except east, northeast, and Arbutus Road. Across Arbutus Road a dispersed line of deciduous trees and a minor break of slope partially screen the site from the nearest residential area 200 m to the east, and the Queen Alexandra buildings to the northeast (200 m) and southeast (250 m). Unobstructed views of the facility would only be obtained from Arbutus Road and the residential style office directly opposite and 30 m from the site.

Mitigation measures. During construction, no mitigation of visual impacts is feasible.

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Based on this analysis, the visual impact of the treatment facility construction is considered to be short-term and irreversible, and of high magnitude due to the loss of forest landscape. For this reason the visual impact on the Finnerty-Arbutus site is considered to be **significant**.

Treatment facility operation. Operation of a treatment facility on the site would transform a forested viewscape to one of forested background with utility structures in the foreground. The structures would be visible from Arbutus Road and from vantages to the east, northeast, and southeast. Existing trees and terrain would substantially screen the facility from those viewpoints, with the exception of Arbutus Road and the adjacent office building. During the hours of darkness, facility lighting would introduce artificial illumination into the area.

Mitigation measures. Careful building design incorporating analogous woodland colours could reduce the visual impact of the building against a forest backdrop. Planted shrubs and naturally regenerating forest edge vegetation would largely screen views of the facility through the forest. Careful positioning and use of lighting would minimize artificial illumination in the forest. The addition of vegetative screening and landscaping along Arbutus Road, and control of lighting would substantially mitigate the impact of the facility from Arbutus Road, and other areas in visual range. Photo 7-7 and Photo 7-8 illustrate post-construction views of the facility from the office on Arbutus Road looking south and from the grassy area through a row of trees looking east.

Based on this analysis, the visual impact of the treatment facility on the site is considered to be long-term and irreversible, and of moderate magnitude due to the loss in forested landscape. For this reason the visual impact on the Finnerty-Arbutus site is considered to be **significant**. It is noted that relocating the site further into the forest would effectively screen the facility from external viewers, but would consequently increase the visual impact on informal users of the site. Such relocation would, on balance, reduce the visual impact to **less than significant** levels.

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Figure 7-3 Overview of Finnerty-Arbutus candidate facility



Photo 7-7 Rendered view of candidate facility looking southeast across Arbutus Road

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Photo 7-8 **Rendered view of candidate facility looking southwest across Arbutus Road**

Ancillary construction. Construction on ancillary sewer pipes would result in approximately 2,700 m of pipe being laid along the suburban streetscapes of Queenswood and Cadboro Bay. Views of construction equipment and construction traffic would be localized and of moderate duration (up to two years). These impacts are short-term, reversible, of low magnitude, and considered to be **less than significant**.

Ancillary operation. All ancillary infrastructure associated with this site are underground, so considered to have no visual impact, and therefore, **less than significant**.

8.0 CEDAR HILL CORNER SITE DESCRIPTION AND IMPACT ASSESSMENT

8.1 General site description

The Cedar Hill Corner property is an undeveloped 11.3 ha grassy area, often referred to as the “Henderson dog walking area” or the “CJVI property” by local residents (Figure 3-5). The property is owned by the University of Victoria, but separated from the main university campus by South Woods and the Upper Hobbs Creek drainage. The site was once used as a family farm, and has an estimated 250 fruit trees on the site. The centre of the site, now used as a soil storage area by UVic, was previously used for the CJVI radio transmitter until 1964. The Cedar Hill Corner Property is bounded by Cedar Hill Cross Road, South Woods and the Upper Hobbs Creek drainage, and residential areas to the north and east.

The UVic Campus Plan (2003) states that the “university purchased the property from Island Broadcasting Co. Ltd. in 1964. The site has remained undeveloped since that time”. The plan also states that the Cedar Hill Corner property is reserved for future UVic development. Interest has been expressed by community members and UVic students in conducting some form of agricultural activity on the site.

Currently, the site is a very popular dog walking area for local residents, BMX bike riding, and stockpiling fill material by UVic also occur on the site. A fence has recently been constructed around the soil piles on the site, which was the area used by BMX mountain bikers.

8.2 Ancillary facilities site description

Ancillary facilities required to operate a treatment facility on the Cedar Hill Corner site include a gravity main, a forcemain, a pump station at the Finnerty-Arbutus property, and a small diameter pressurized pipe.

Wastewater would be pumped to the Cedar Hill Corner treatment facility via an underground forcemain from a newly constructed pump station on the Finnerty-Arbutus site, approximately 0.16 ha in size. The pump station would receive wastewater from the East Coast Interceptor (ECI), and a small diameter pressurized pipe, which conveys wastewater from the Penrhyn pump station in Cadboro Bay. The small diameter pressurized pipe would be constructed from the Penrhyn pump station to the Finnerty-Arbutus site entirely under existing roads, including, Penrhyn Street, Hobbs Street, Maynard Street, Rowley Street, and Arbutus Road.

From the Cedar Hill Corner treatment facility, the gravity main would cross Upper Hobbs Creek drainage to join the Haro Road right-of-way, owned by the District of Oak Bay. After leaving the right-of-way, the pipe would be located adjacent to a University of Victoria parking lot,

university residences, and in the road rights-of-way of Haro Road and Monarch Place before reaching the ocean outfall via an existing right-of-way across four residential properties.

The forcemain would pump wastewater from a pump station at the Finnerty-Arbutus site to the Cedar Hill Corner site in a similar alignment to that of the gravity main. The forcemain would be located under Arbutus Road, and then south under Haro Road, adjacent to university residences and parking lot, and in the District of Oak Bay right-of-way, before crossing Upper Hobbs Creek drainage.

8.3 Cedar Hill Corner impact assessment

Landforms, geology, and soils

Treatment facility site conditions

The Cedar Hill Corner site is grassed, with a uniform surface sloping slightly westward, and appears to be well-drained. Information from the interpretation of historical aerial photographs indicates the site conditions have not been modified by significant excavation or by fill placement, aside from the stockpiles of fill materials near the centre of the site. No watercourses are present on the site.

The soil stratigraphy at the site consists of a surficial veneer of topsoil overlying 4 to 5 m of stiff to very stiff brown silty clay, up to 3 m of firm grey silty clay and then a morainal deposit of hard, dense gravelly sandy silt, sand, and glacial till. The till deposit may be underlain at depth by a pre-glacial marine deposit of dense to very dense silty sand, or sandy silt, commonly referred to as the Quadra Sediments. The groundwater level at the site is expected to be within 3 to 4 m of the present ground surface.

The near surface clay materials at the site are believed to be of marine origin with the consistency of the upper layers to be stiff to very stiff material, the result of consolidation by desiccation during periods of lower relative sea levels. The underlying firm material is near normally consolidated, and would compress in response to a significant increase in surface loading conditions, resulting in some subsidence.

Based on the soil stratigraphy at the site, the natural frequency is expected to be in the range of 4 to 7 hertz, with an average shear wave velocity in the upper 30 m varying from 300 to 400 m/sec, corresponding to a Site Class “B/C” as per the current National Building Code. The site is in an area that could be affected by a Cascadia Subduction event. Information from Natural Resources Canada, indicates a peak ground acceleration of 0.61 g and spectral accelerations of 1.22, 0.82, 0.38 and 0.19 g, for respective periods of 0.2, 0.5, 1.0 and 2.0 seconds respectively for a design seismic event of 2% in 50 years. The accelerations noted relate to a site with soil conditions corresponding to a Site Class “C.” As the estimated Vs30 is near the boundary between Site

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Classes “B” and “C,” some adjustments may be necessary depending on the spectral accelerations considered, and the period of the various wastewater treatment facilities. Seismically these conditions are not unusual for the area and present no substantial constraints on development of a wastewater treatment facility.

Impacts and mitigation measures

Treatment facility construction. Due to the relatively level nature of the site only slight landform recontouring would be needed. Topsoil would be removed and stored for later use onsite, and minor grading (cutting and filling of less than 2 m) is anticipated. As noted, there may exist a substratum of compressible clay, which could consolidate in response to a significant increase in surface loading conditions, resulting in long-term, time dependent subsidence of the ground surface.

Based on the anticipated soil conditions, relatively light loading associated with the proposed wastewater treatment facilities, and local experience, no unusual geotechnical concerns are expected during development at this site. There may be settlement associated with increased loading because of a possible substratum of compressible clay. The native clay soils at the site are relatively impermeable, and no significant seepage is anticipated from excavation that may penetrate the groundwater table. However, perched water table conditions could result in localized high water table and surface water ponding, particularly during periods of heavy or prolonged precipitation.

Mitigation measures. It is expected that any settlement could be easily mitigated by selecting appropriately graded sand or gravel, or by placing a pre-load in advance of construction to settle sensitive soil elements. Landform, geology, and soils effects on the project would be limited to the facility footprint and workspace. Erosion and sedimentation from construction are considered to be local in extent and reversible. The magnitude is considered to be low and the impact **less than significant**.

Treatment facility operation. After construction is completed and operation of the treatment facility begins, no additional impacts on the landforms, geology, or soils of the site are anticipated. Heavy rainfall on exposed soils can increase erosion risk. This risk is greatly reduced under established vegetative cover.

Mitigation measures. Standard revegetation and landscaping practices would be sufficient to manage operational erosion and sedimentation impacts.

Under typical facility design and construction practices, the area of exposed soils subject to erosion during operation is considered to be relatively small. The period of such risk would be highest during the interval between the end of construction and establishment of vegetation. Erosion and sedimentation from operations would be limited to the project footprint and

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workspace and are considered to be medium-term and reversible. The magnitude is considered to be low and the impact **less than significant**.

Ancillary facility construction. From the west side of Upper Hobbs Creek Drainage to Haro Strait, the routes of the forcemain and gravity main follow existing roads and pipe rights-of-way. Impacts on soils, landforms, or geology in this portion of the route are considered to be local, temporary, reversible, and of negligible magnitude. The crossing of Upper Hobbs Creek, however, poses challenges to installation of the gravity main and forcemain. Slopes are steep (30-40%) and show signs of relatively rapid downcutting by Hobbs Creek through sands and silts. Construction in this area could result in erosion or small slope failures.

Mitigation measures. Additional onsite investigations would be needed to prepare identify appropriate construction methods that would avoid or minimize erosion risks. Special trench stabilization and excavation methods (including end-hauling of excavated material to reduce working space requirements), microtunneling, directional drilling, or even an aerial crossing of the Upper Hobbs Creek drainage may be considered. The technical feasibility and cost of these or other measures, and their effectiveness in avoiding construction impacts, have not been assessed.

Potential geology and soils effects of ancillary facility construction across Upper Hobbs Creek drainage would be local and medium-term. Determination of reversibility would require additional study. The magnitude of potential effects is considered moderate. In the absence of detailed site investigations, construction specifications, and prescription of mitigation measures, the impact is judged to be **significant**.

Although conditions in the Upper Hobbs Creek drainage are challenging, they are not outside the range of conditions encountered during utility installation in the CRD. It can be stated with confidence that additional site investigations would allow identification of construction methods that would avoid or mitigate potential geology and soils impacts. Such construction measures would be designed to reduce the extent and magnitude of potential impacts, and lower the rating to **less than significant**.

The location and geologic condition of the outfall route are subjects of separate study, and are not considered in this ESR.

Ancillary facility operation. Assuming that slopes on Upper Hobbs Creek drainage can be stabilized following construction, operation of the forcemain, gravity main, and outfall are unlikely to affect geology, landforms, or soils. Impacts are considered **less than significant**.

Hydrology and water quality

Treatment facility site conditions

The Cedar Hill Corner site is relatively flat, with slight gradients sloping toward the east and west from a “height” of land near the soil piles in the centre of the parcel. Clay is the most common surface soil, though there are also expressions of loamy and sandy surface soils, which would provide moderate rates of infiltration.

The conceptual location for the treatment facility, on the west-central margin of the cleared portion of the Cedar Hill Corner site, abuts a treed area identified in the University of Victoria *Integrated Stormwater Management Plan* as Upper Hobbs Creek drainage. Much of the precipitation falling on the western half of the Cedar Hill Corner site would make its way via groundwater or overland flow into Upper Hobbs Creek.

Ancillary facility conditions

The main drainage course potentially affected by the ancillary facilities is Hobbs Creek.

Hobbs Creek has been enclosed in Oak Bay on the south side of Cedar Hill Cross Road. An artificial pond in the townhouse development south of the Cedar Hill Corner parcel Upland Estates may represent a remnant of the Hobbs Creek drainage. Runoff from the Uplands Golf Course, the townhouses, Henderson Recreation Centre, and Cedar Hill Cross Road enters upper Hobbs Creek via a culvert beneath Cedar Hill Cross Road. The stream meanders through the upper Hobbs Creek drainage. Low (~30 cm) log weirs have created several small ponds along upper Hobbs Creek. The creek becomes more deeply incised as it flows north through the increasingly sandy soils of Mystic Vale. Downstream of Mystic Vale, Hobbs Creek passes through residential areas on its way to Cadboro Bay. To the east of Cadboro Bay Road, the stream supplies water to several artificial ponds on private property.

The upper Hobbs Creek drainage is laced with footpaths, several of which can be accessed from the Cedar Hill Corner site. An “official” path starts at the top of a stairway 250 m north of Cedar Hill Cross Road. Many of these paths provide preferential drainage routes to the creek.

Upper Hobbs Creek drainage is steep-sided. In southern portions of the drainage, slopes are a moderate 18%. In the central portions of upper Hobbs Creek, the slopes of the east bank (adjacent to the conceptual location of the wastewater facility) are 33%, and 40% on the west bank. Further to the north, near Mystic Vale, the eastern slopes are 38% and the western bank (below UVic Parking Lot #1) has a 50% slope.

Impacts and mitigation measures

Treatment facility construction. Because the Cedar Hill Corner site is nearly flat, excavation associated with construction of the wastewater facility is unlikely to increase erosion and sedimentation risk on the site. It is unlikely that excavation would contribute to changes in hydrology of the Cedar Hill Corner parcel or in Hobbs Creek. Water pumped from excavated areas during wet weather may contain sediments that can affect downstream water quality. The soil piles already located on the parcel do not appear to have affected hydrology or water quality.

Rinse water from cement trucks and from freshly-poured concrete has the potential to affect water quality. Rinse water from concrete pouring activities would not be discharged on the site, and no measurable effect on surface or ground water quality is expected.

Mitigation measures. Stockpiles of excavated soil should be covered to prevent erosion, and should be stored at least 10 m from the treed area and top of slope east of Hobbs Creek. Water pumped from excavations should be settled or filtered to remove suspended sediment before release. Cement truck rinse water should be removed from site for treatment. Other water used in concrete pouring should be managed to prevent entry into the Hobbs Creek drainage.

Any potential effects would be limited to the facility footprint and disturbed area. Because erosion and sedimentation risks are linked to rainfall events, they are considered occasional and medium-term impacts, occurring only during the construction period (two years). Effects are reversible. The magnitude of construction effects on hydrology and water quality are considered low, and the effects would be **less than significant**.

Treatment facility operation. Once completed, the wastewater facility would increase the impervious surface of the Cedar Hill Corner site. As specified in the project description, roof and perimeter drainage would be re-infiltrated into the ground. Such measures would minimize potential effects on hydrology or water quality.

Operation of the facility would not result in releases of wastewater to the site or Hobbs Creek. Even during high rainfall events, no wastewater overflows from the facility would occur. Chemicals used in the wastewater treatment process would be stored in secure structures.

Mitigation measures. No additional mitigation measures are needed, aside from standard operating procedures for CRD wastewater treatment facilities.

Operation of the facility is not expected to affect hydrology or water quality. The magnitude of operational effects on hydrology and water quality are considered low, and the effects would be **less than significant**.

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Ancillary facility construction. The primary area where effects on hydrology or water quality could occur would be the crossing of Hobbs Creek to the west of the wastewater facility. The slopes of the Hobbs Creek drainage area steep—33% to the east of the stream and 40% to the west. Clearing of the right-of-way and workspace would entail removal of mature trees and understory, exposing the erodible soils to rainfall. Excavation of trenches to install the pipes would require careful soil management to avoid erosion and sedimentation.

Mitigation measures. Avoiding crossing the steep sections of the upper Hobbs Creek drainage is the preferred mitigation measure. If re-routing is not possible, then ditch plugs should be installed at 20 m intervals on the steep slopes of upper Hobbs Creek drainage. Installing the pipe crossing of Hobbs Creek should be conducted during low flow periods. Measures should be taken to minimize the width of disturbed area needed to install the pipes. The disturbed area should be revegetated immediately following completion of construction.

Construction of the ancillary facilities across Hobbs Creek drainage could lead to increases in erosion and sedimentation on the ancillary facility footprint, affecting stream hydrology and water quality. The spatial extent of this impact is near the pipe trench and workspace, with potential downslope effects on Hobbs Creek. The impact could be medium-term, occurring during rainy seasons over several years, until vegetation is re-established. The impact is occasional, accompanying rainfall events, and is reversible. The magnitude of this potential impact is considered high, and the impact would be **significant**. If the recommended mitigation measures are applied, however, the magnitude of the impact would be moderate or low, reducing the impact to **less than significant** levels.

Ancillary facility operation. Pipe trenches can provide preferential routes for drainage on steep slopes, resulting in erosion or slope destabilization. The pipe routes crossing Upper Hobbs Creek drainage could contribute to such a risk. Elsewhere along the ancillary facility routes, little effect on hydrology or water quality would be expected.

Mitigation measures. The route of the pipe crossings of Hobbs Creek drainage should be relocated further to the north to avoid steep slopes, even as far north as Cedar Hill Cross Road. If the route cannot be relocated, revegetation of the disturbed area should accompany other erosion control measures. The right-of-way should be monitored regularly for signs of erosion or slope destabilization.

Ancillary facility operation has the potential to affect the Hobbs Creek drainage. Erosion and drainage risk would be an occasional impact, associated with rainfall events. The impacts could begin following construction, and persist in the long-term (more than five years). The effects are considered reversible. The magnitude of the impact is considered moderate, though with mitigation the impact is considered **less than significant**.

Vegetation

Treatment facility site conditions

The Cedar Hill Corner site is located on a previously cleared property that is dominated by non-native grasses. Much of the property's soil has been disturbed by past land use activities, such as farming or soil storage. The area does not support a native plant community, and no plant species at risk were recorded, or are expected to occur at the site.

The northwestern side of the site is adjacent to mature forest, the edge of which is composed of mature Garry oak trees, other native tree species, and old fruit trees. This area is locally referred to as Upper Hobbs Creek or Upper Mystic Vale.

Ancillary facility conditions

The route for the sewer trunk and outfall associated with the Cedar Hill Corner site crosses Upper Hobbs Creek drainage for approximately 120 m between the facility and existing rights of way and roads. A Riparian Areas Regulation assessment would be required for work within 30 m of Hobbs Creek.

Upper Hobbs Creek's plant communities are identified in the Sensitive Ecosystem Inventory as conifer dominated old forest. The dominant plant community is zonal Douglas Fir-Salal (CDFmm/01), which is red-listed by the British Columbia Conservation Data Centre, and is an identified plant community in the provincial Identified Wildlife Management Strategy (Pojar *et al.*, 2004). Old growth representatives of this plant community occur in less than 1% of its original range, and maintaining or recovering good condition, old growth stands of this plant community is a priority of the provincial strategy (Pojar *et al.*, 2004).

The forest is a moderately open stand of Douglas fir, grand fir, western redcedar, and bigleaf maple. The understory is composed mostly of dull Oregon grape, salal, oceanspray, and trailing blackberry. Common herbaceous plants include broad-leaved starflower, sword fern, and bracken fern. There are two historical records of plant species at risk in the area, dense spike primrose (red-listed, COSEWIC endangered) and Lobb's water buttercup (extirpated), but no evidence of these species was found along the proposed sewer trunk route.

There are noticeable levels of ground disturbance in the Upper Hobbs Creek section of the ancillary facility route, including walking trails, invasive plant species, and erosion, which have reduced the integrity of the shrub and herbaceous components of the plant community.

A pump station would be required for the sewer trunk and outfall, and is proposed to be placed on the Finnerty-Arbutus property. For a detailed description of the vegetation on this property, refer to Vegetation in Section 8.3.

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Table 8-1 summarizes the presence of sensitive vegetation resources on the Cedar Hill Corner candidate site and ancillary facilities.

Table 8-1 Sensitive vegetation resources on or near the Cedar Hill Corner site and associated ancillary facilities

Presence of sensitive vegetation resources	Site	Trunk- Outfall	Pump Station
Presence of sensitive ecosystems:			
• older forests or mature forests	No	Yes	Yes
• second growth forests	No	Yes	Yes
• native grasslands/shrub/herb communities	No	No	No
• Garry Oak Woodland	No	No	No
• coastal bluffs	N/A	No	N/A
Presence of ecosystems at risk			
• ecological communities on Conservation Data Centre Red or Blue lists	No	Yes	Yes
• ecosystem types identified by Sensitive Ecosystems Inventory	No	Yes	No
• areas identified as environmentally sensitive by local governments	No	Yes	Yes
Presence of aquatic or riparian ecosystems			
• seasonal or permanent watercourses (streams, creeks, rivers, ditches)	No	Yes	Yes
• seasonal or permanent wetlands, seepage areas, or vernal pools	No	Yes	No
• riparian ecosystems beside these aquatic ecosystems and vegetated gullies	No	Yes	No
Presence of plant species at risk and their habitats			
• species at risk identified by COSEWIC	No	None detected	No
• species on provincial Red and Blue lists	No	None detected	No
• regionally significant species	No	Yes	Yes
• habitats for any of these species	No	Yes	Yes

Impacts and mitigation measures

Treatment facility construction. Construction on the site would not involve clearing native vegetation or rare plant communities, as the site is previously cleared. The site is directly adjacent to mature forest, and Work Safe British Columbia may require some removal of danger trees, if they are located within 1.5 tree lengths (approximately 45 m) of the site.

Mitigation measures. The potential effect of clearing trees from the edge of the cleared area can be mitigated by locating the site away from the forest edge, to minimize the need to remove “danger trees”.

Construction related changes to vegetation would be minimal, unless removal of trees from the edge of the facility is required to reduce safety risks. Effects of such tree removal would be long-term and irreversible. The magnitude of any tree removal would be moderate, resulting in a

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rating of **less than significant**. If the facility footprint is designed in a manner that eliminates the need for tree removal, the magnitude of treatment facility construction on vegetation would be negligible.

Treatment facility operation. Operation of the treatment facility does not require removal of vegetation. No effects of treatment facility operation on vegetation are anticipated and therefore impacts are considered **less than significant**.

Ancillary facility construction. Construction of the sewer forcemain and gravity main would involve clearing permanent right-of-way and temporary work space through an old forest community that is provincially red listed, and identified by the regional Sensitive Ecosystems Inventory. The proposed route crosses a steep gully and Hobbs Creek.

Clearing and construction of the pump station associated with the sewer main and outfall would occur at the northeastern corner of the Finnerty-Arbutus site. The total footprint size is approximately 0.16 ha, though additional forest clearing may be required for temporary work space and to meet Work Safe British Columbia rules. The forest clearing would involve removal of mature Douglas fir, arbutus, and bigleaf maple trees. Indirect losses of mature trees and shrubs caused by windthrow, soil compaction and project-related changes to site drainage can also be expected. The clearing would occur in an area where a small ephemeral drainage meets the roadside ditch.

Mitigation measures. To avoid the magnitude of effects of clearing the old forest community, the sewer trunk could be re-routed to avoid Upper Hobbs Creek, and instead leave the site to the south, follow Cedar Hill Cross Road eastward, and connect with the Haro Road right of way. No new right of way would be created, and clearing for temporary work space would be greatly reduced.

To reduce the potential impact of forest clearing for the construction of the pump station on the Finnerty-Arbutus site, alternate locations for the pump station on previously cleared land could be explored. If relocating the pump station is not possible, compensation measures can be considered by the CRD, such as restricting tree cutting and public disturbance on the remainder of the site, aggressive invasive plant management, and restoration to native plant cover.

Construction of ancillary facilities would require the removal of sensitive vegetation from the upper Hobbs Creek and for the pump station on the Finnerty-Arbutus property. The vegetation clearing would occur in the ancillary facility footprint and associated workspace. The duration of the effects of vegetation clearing are long-term, and not reversible. The magnitude of the effects of vegetation removal are adverse and of high magnitude, resulting in a rating of **significant**.

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If the sewer trunk could be re-routed to avoid Upper Hobbs Creek, the magnitude of the effect of installing pipes on vegetation would be reduced to low.

If compensation measures were implemented, the magnitude of constructing a pump station on the Finnerty-Arbutus site could be reduced to moderate. As the impacts of constructing a pump station at the Finnerty-Arbutus site cannot be mitigated, the effect on vegetation would remain **significant**.

Ancillary facility operation. Operation of the ancillary facilities does not require removal of vegetation. Except for the potential of increased tree blowdown risk over the medium-term, only negligible effects of ancillary facility operation on vegetation are anticipated and therefore impacts are considered **less than significant**.

Wildlife

Treatment facility site conditions

The Cedar Hill Corner candidate site occurs in a previously cleared area and does not contain important wildlife habitat or habitat features.

Ancillary facilities conditions

The proposed route associated with the Cedar Hill Corner candidate site crosses Upper Hobbs Creek for approximately 120 m of its length. This area is identified as old forest by the regional Sensitive Ecosystem Inventory, and the forest structure provides important habitat features for wildlife species.

Upper Hobbs Creek has a number of wildlife trees, mature large-limbed trees, rotten logs and other woody debris that provide roosting and nesting habitat to a variety of forest birds, small mammals, and invertebrates. Many wildlife trees are located on the northwestern side of Upper Hobbs Creek, adjacent to the University of Victoria right of way. These trees are used by primary cavity excavators, such as Northern Flicker, Pileated Woodpecker, Hairy Woodpecker, and Chestnut-backed Chickadee, and secondary cavity nesters, such as Vaux's Swift, Northern Saw-whet Owl, California Myotis, and Little Brown Bat. The area also has a number of downed rotten logs and other woody debris, which is habitat for small mammals, and invertebrates.

A number of nesting boxes appropriate for Western Screech Owl and Northern Saw-whet Owl have been installed in the area, enhancing the nesting habitat values. A Barred Owl was observed in the Upper Hobbs Creek drainage during site inspections for this project.

Hobbs Creek flows through the drainage, providing suitable habitat for amphibians, such as red-legged frogs (Blue-listed, COSEWIC – special concern), and long-toed salamanders.

A pump station would be required for the forcemain and is proposed to be placed on the Finnerty-Arbutus property. For a detailed description of the wildlife and wildlife habitat on this property, refer to Wildlife in Section 8.3.

Table 8-2 summarizes the presence of wildlife and wildlife habitats on the Cedar Hill Corner site and ancillary facilities.

Table 8-2 Environmentally valuable wildlife on or near the Cedar Hill Corner site and associated ancillary facilities

Presence of sensitive wildlife	Site	Trunk-Outfall	Pump Station
Presence of wildlife species at risk and their habitats:			
• species at risk identified by COSEWIC	No	Yes	No
• species on provincial Red and Blue lists	No	Yes	None detected
• regionally significant species	No	Yes	Yes
• habitats for any of these species	No	Yes	Yes
Presence of important wildlife habitat features:			
• wildlife trees, snags, mature, large-limbed trees	No	Yes	Yes
• rotten logs and other woody debris	No	Yes	Yes
• man-made habitat enhancements	No	Yes	No
• hedges and shelterbelts	No	Yes	Yes
• groundwater springs and seepages	No	Yes	No
Evidence of wildlife use:			
• wildlife corridors	No	Yes	Yes
• deer habitat	No	Yes	Yes
• potential raptor nest sites	No	Yes	Yes
Nearby presence of protected areas or habitats	No	Yes	No

Impacts and mitigation measures

Treatment facility construction. Construction on the site would not involve clearing of wildlife habitat or habitat features, as the site is previously cleared. The site abuts mature forest, and Work Safe British Columbia may require removal of danger trees, if they are located within 1.5 tree lengths (approximately 45 m) of the facility footprint. Such danger tree removal would cause a loss in available habitat.

Mitigation measures. The potential effect of clearing trees from the edge of the cleared area could be mitigated by moving the facility footprint away from the forest edge.

Construction related changes to wildlife would be minimal, unless removal of trees from the edge of the facility are required to reduce safety risks. Effects of such tree removal would be

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long-term, and non reversible. The magnitude of tree removal would be moderate, resulting in a rating of potential effects on wildlife of **less than significant**. If the facility footprint is designed in a manner that eliminates the need for tree removal for safety reasons, the magnitude of treatment facility construction on vegetation would be negligible.

Treatment facility operation. No potential effects of treatment facility operation on wildlife or wildlife habitat are anticipated and therefore impacts are considered **less than significant**.

Ancillary facility construction. Clearing for the construction of the sewer main would result in a loss of old forest habitat. Removal of forest typically affects wildlife in the following ways:

- (a) loss of thermal and security habitat and habitat features (*i.e.*, canopy cover);
- (b) loss of reproductive habitat and habitat features (*i.e.*, nest trees);
- (c) direct mortality during clearing activities;
- (d) sensory disturbances associated with the clearing and construction activities; and
- (e) loss of habitat connectivity and movement corridors.

Mitigation measures. The loss of potential reproductive, security, and thermal habitat can be mitigated only by avoiding the clearing of forested ecosystems in Upper Hobbs Creek drainage. This mitigation would require an alternative route for the sewer mains. To minimize loss of the wildlife trees adjacent to the right of way, instead of removing them, Work Safe British Columbia compliance may be achievable by topping trees to a shorter height that no longer is a safety risk to nearby workers, but maintains some wildlife habitat values.

To reduce the potential impacts on wildlife habitat from building a pump station at the Finnerty-Arbutus site, alternate locations on previously cleared land could be explored. If moving the pump station facility is not possible, compensation to enhance habitat values in nearby green spaces could be considered. For example, removal of invasive plant species could increase the habitat quality for ground nesting birds and small mammals, which are important foods for raptors in the area.

Direct mortality and effect of construction related sensory disturbances during the removal of forest for the sewer trunk and pump station could be reduced through timing work to avoid the nesting bird season (March 15 to July 31).

Construction of ancillary facilities would require the removal of wildlife habitat and habitat features from the footprint and workspace areas of Upper Hobbs Creek and the Finnerty-Arbutus site. The duration of the effects on wildlife habitat are long-term, and not reversible. The magnitude of the adverse effects on wildlife associated with clearing the forested areas is moderate to high, resulting in a rating of **significant**.

If the sewer trunk could be re-routed to avoid Upper Hobbs Creek, the magnitude of the effect of installing pipes on wildlife would be reduced to low.

If compensation measures were implemented, the magnitude of constructing a pump station on the Finnerty-Arbutus site could be reduced to moderate. As the impacts of constructing a pump station at the Finnerty-Arbutus site cannot be mitigated, the effect on wildlife would remain **significant**.

Ancillary facility operation. No potential effects of ancillary facility operation on wildlife or wildlife habitat are anticipated and therefore impacts are considered less than significant.

Archaeology and heritage

Treatment facility site conditions

The Cedar Hill Corner site was deemed to have low potential to contain buried archaeological deposits or features, due to past agricultural activities and deposit of fill materials from off-site. The site has been levelled in the past, leaving no small knolls or ridges on this property, which are often areas with higher archaeological potential.

Shell midden material was noted in stored fill material on site during a site visit. This material originates from off-site construction areas. Although this material is not considered to have much archaeological value due to its highly disturbed condition, the British Columbia Archaeology Branch considers such deposits archaeological sites.

The Cedar Hill Corner property has not been formally documented as a site by the British Columbia Archaeological Site Registry system. There are no previously documented archaeological sites on or adjacent to this property.

Ancillary facility conditions

The Upper Hobbs Creek area is rated as having archaeological potential (Millennia Research Ltd. 2008). During a site visit, no evidence of archaeological deposits or materials was found in the area of the proposed pipe crossing. However, it was deemed that that the lands in upper Hobbs Creek within 30 meters of the stream have a moderate potential for containing sub-surface archaeological deposits. This determination is based on the presence of traditional plant resources of value to local First Nations, and the archaeological potential associated with riparian areas and watercourses in the CRD

This site would also require construction of a pump station at the Finnerty-Arbutus site. There is archaeological potential at the pump station site location (Millennia Research Ltd. 2008).

Impacts and mitigation measures

Treatment facility construction. Construction impacts to archaeological resources could be caused by levelling of building sites, building foundation construction, or digging of trenches to install treatment facility below ground structures.

Mitigation measures. If the Cedar Hill Corner site is chosen as a future treatment facility, an Archaeological Impact Assessment (AIA) would be conducted out in areas along the pipe corridor that have archaeological potential. The AIA would be completed before ground disturbance begins. Based on any findings, site specific archaeological mitigation planning would be completed.

The extent of shell midden material present in stockpiled soils, and the source of material would be determined and assessed, and its archaeological significance, if this portion of the Cedar Hill Corner parcel is disturbed during construction of the wastewater facility.

The AIA would contain a detailed assessment of effects of construction on archaeological resources. All assessment and mitigation will comply with the *British Columbia Heritage Conservation Act*. Mitigation will provide reasonable compensation for the removal, loss, disruption, modification, or alteration of archaeological and heritage resources as a result of the project.

Treatment facility operation. The activities that affect archaeological and heritage resources are likely to occur during, and be limited to, the construction phase of the project. It is unlikely that there would be any effects of facility operation on archaeological or heritage resources and therefore impacts are considered **less than significant**.

Ancillary facility construction. The ground disturbing activities, including excavation and trenching, associated with constructing ancillary facilities have the potential to damage, displace, or destroy buried archaeological materials and sites. The potential for this effect is greatest in the upper Hobbs Creek area and near the shoreline of Finnerty Cove. Road rights-of-way, where most of the ancillary facility pipes would be installed, are unlikely to contain undisturbed archaeological remains. Ground disturbance also has the potential to affect buried archaeological materials at the Finnerty-Arbutus pump station location. Construction of ancillary facilities may result in the permanent loss or alteration of archaeological or heritage resources.

Mitigation measures. If the Cedar Hill Corner site is chosen as a future treatment facility, an Archaeological Impact Assessment (AIA) would be conducted in areas along the pipe corridor and pump station site that have high archaeological potential in advance of ground disturbing activity. Archaeological mitigation plans would be based on results of the AIA.

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A detailed assessment of effects of construction on archaeological resources would be completed after a site has been chosen, as part of an AIA. Assessments and mitigation would comply with the *British Columbia Heritage Conservation Act*. Mitigation would provide reasonable compensation for the removal, loss, disruption, modification, or alteration of archaeological and heritage resources as a result of the project.

Ancillary facility operation. The activities that affect archaeological and heritage resources are likely to occur during, and be limited to, the construction phase of the project. It is unlikely that facility operations would affect archaeological or heritage resources and therefore impacts are considered **less than significant**.

Community

Treatment facility site conditions

The Cedar Hill Corner property is an expansive grassy area owned by the University of Victoria, located in the District of Oak Bay. The property is separated from the main university campus by South Woods and Upper Hobbs Creek. The Cedar Hill Corner property site is bounded by Cedar Hill Cross Road, South Woods, the Upper Hobbs Creek drainage, and residential areas to the north and east. The site is in the Cadboro Bay neighbourhood.



Photo 8-1 Cedar Hill Corner property

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The site was once a family farm. Approximately 250 apple trees remain on the property. The property was purchased by CJVI radio, and then by UVic in 1964. The site has remained undeveloped since that time. A water well is still registered on the site. Other land uses on portions of the site predominantly cleared site include structures associated with the UVic Centre for Forest Biology. The operation is currently inactive.

The Cedar Hill Corner property is a very popular area for dog walkers. Nets associated with a disc golf course are located on the property, but recent information suggests this course is no longer used. Until recently, BMX jumps existed near the centre of the Cedar Hill Corner property, but were levelled and fenced. Access to Upper Hobbs Creek is provided from the Cedar Hill Corner property.

UVic currently uses a portion of the site for soil storage and mixing. In June 2009, a fence was constructed to restrict access to the soil piles.



Photo 8-2 Dog walkers on Cedar Hill Corner property



Photo 8-3 BMX jumps on part of the Cedar Hill Corner property that is now fenced

Adjacent land uses

The proposed treatment facility footprint is approximately 135 m north of the Uplands Estates townhouses, south of Cedar Hill Cross Road, 215 m west of detached residences on Crestview Road, and 115 m south of residences on Chelsea Place Road (Figure 8-1).

The footprint is bounded to the west by a wooded area known as Upper Hobbs Creek, an important green space used by community members. The proposed footprint is 305 m from UVic buildings, 195 m from a UVic parking lot, and 390 m from UVic student housing.

The treatment facility footprint would be approximately 205 m northeast of the Henderson Park Recreation Centre Complex, 225 m northwest of the north end of the Uplands Golf Course, and 390 m from Uplands School.

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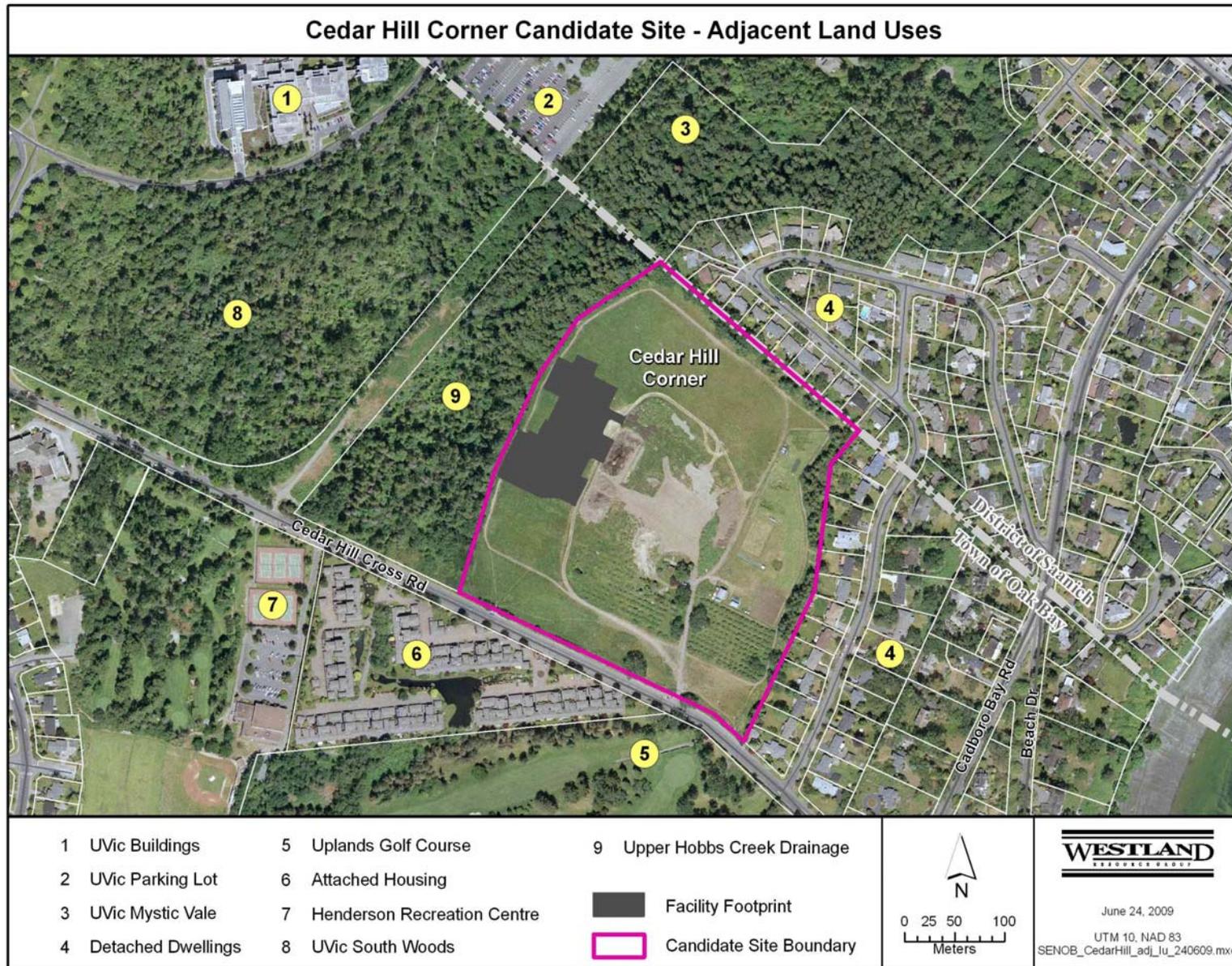


Figure 8-1 Adjacent land uses at Cedar Hill Corner site

Consistency with planned land use

The UVic Campus Plan identifies the Cedar Hill Corner property as an area reserved for future UVic expansion. “The CJVI property has potential for temporary uses and permanent development, including academic expansion, faculty and student housing, sports and recreational facilities, parking, and any special opportunity uses that may arise.” Discussions with UVic representatives identified a general need for development lands to support university operations and growth. The 2003 Campus Plan states that a Master Plan for the site will be prepared before development occurs, with the following stipulations:

- “The Master Plan will be guided by the vision and principles of this Campus Plan, as it may be amended from time to time,
- Permanent development will provide landscaping and visual buffering to minimize its impact on nearby neighbours and on the adjoining forested areas of the University, and
- Creative thought must be given to the best way to provide links and connections from these lands to other areas of the campus.”

The Campus Plan also states that the Haro Road right-of-way, owned by the District of Oak Bay, will be reviewed in the context of the Cedar Hill Corner Property Master Plan.

Interest has been expressed by students, faculty, and community members in examining alternative uses for the Cedar Hill Corner property, including agricultural use, and identified as the Mystic Vale Farmlands in a 2005 report (Found and M’Gonigle, 2005). The report describes the history of the property, and academic, research, social, and economic opportunities associated with the Cedar Hill Corner property. A recent article confirms interest in agricultural use, stating the land could support “new opportunities for campus agriculture” (Martlet, March 5, 2009).

The second draft of the University of Victoria Sustainability Action Plan describes action items for the period 2009 to 2014 (University of Victoria 2009b). Relevant action items include:

- “develop a management plan for University Cedar Hill Corner that will guide its use in the short-term and the process for master plan preparation”; and
- “investigate the potential for integrated resource recovery, should the CRD proceed with a sewage treatment program in close proximity to the Gordon Head Campus.”

The Cedar Hill Corner property is located in the District of Oak Bay. The OCP designates the subject property as “Institutional”, and the OCP contains an objective to “work with the University of Victoria and Camosun College to address issues arising out of the presence of these large institutions in the Municipality”. Further, the OCP states in cases where either the University of Victoria or Camosun College submits a major development proposal which would be located in close proximity to residential properties in Oak Bay, the Municipal Council should

offer its input to the University with a view of minimizing any negative impact of the development on nearby residents” (Corporation of the District of Oak Bay 1997). The zoning bylaw identifies the site a P1 – General Institutional Use.

Ancillary facility conditions

Ancillary facilities required to operate the treatment facility on the Cedar Hill Corner property include a gravity main, a forcemain, a small diameter pressurized pipe, and a pump station at the Finnerty-Arbutus site.

The gravity main would be routed across an important recreational area, Upper Hobbs Creek, before travelling along a right-of-way owned by Corporation of the District of Oak Bay, adjacent to a UVic parking lot and UVic residences, before moving to road rights of way, including Haro Road and Monarch Place. The gravity main would be located in an existing right-of-way across four residential properties.

A treatment facility on the Cedar Hill Corner property would require the construction of a pump station on the Finnerty-Arbutus site to pump wastewater to the treatment facility.

The forcemain would be in a similar alignment to the gravity main, but constructed from the Finnerty-Arbutus pump station to the Cedar Hill Corner property, under Arbutus Road and Haro Road, adjacent to UVic residences and a UVic parking lot, in the District of Oak Bay right-of-way, and across Upper Hobbs Creek drainage.

The small diameter pressurized pipe would be constructed from the existing Penrhyn pump station to the Finnerty-Arbutus site under existing roads, including Penrhyn, Hobbs, Maynard, Rowley Streets, and Arbutus Road.

Impacts and mitigation measures

Treatment facility construction

Community use. During the treatment facility construction phase, community use would be restricted in and around the active construction area on the Cedar Hill Corner property. Currently, members of the community use the site for dog walking and other informal recreation.

The treatment facility would be built on approximately 1.0 ha of the 16.0 ha site. Construction would temporarily require additional workspace to construct the treatment facility. During construction, some areas on the Cedar Hill Corner property could continue to be available for dog walking.

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Mitigation measures. Signage and newspaper advertisements would be used to inform community members of the construction schedule and portions of the site that may have access restrictions.

Restrictions on community use of the facility footprint and workspace portion of the site during the construction period would result in a medium-term construction impact. The operational effects on community use are discussed in a subsequent section. The construction work space would only be used during the construction period, representing a reversible impact. Portions of the site have recently been fenced, restricting access to these areas. During treatment facility construction, public access to the western portion of the site would be restricted. Access to Upper Hobbs Creek could be maintained. Given the recent fencing of the centre of the property, and the existing fenced UVic forestry centre, the additional access restrictions during the construction period would introduce a high magnitude, local impact, that is reversible after the completion of construction, but considered **significant**.

Noise and vibration. Construction of the facility would involve the use of heavy machinery, compressors, pumps, and concrete pouring equipment to prepare the site and build the treatment facility. During the construction period, noise and vibration impacts could affect neighbouring residents and recreational users. The primary construction period would occur during the first 9 months when excavation and concrete pouring are undertaken. After the 9-month peak site-disturbing activity has occurred, construction would be similar to that of other utility or industrial buildings.

Construction activities would comply with the Town of Oak Bay noise bylaw for hours of work and noise levels. Work would usually occur on weekdays from 7 am to 5 pm with no work on Saturdays, Sundays or holidays (except in an emergency or where a critical piece of work must be completed in a specified work window).

Mitigation measures. Discussions will be undertaken with UVic and local residents during project planning and prior to construction to discuss potential issues.

Noise and vibration impacts would be concentrated during the 9-month peak construction, but may occur occasionally over the entire construction phase. As a result, the impact is considered to be medium-term in duration. The noise and vibration effects would be moderate in magnitude, and reversible, but could periodically affect recreational users of the Cedar Hill Corner property and Upper Hobbs Creek. With adherence to the mitigation measures outlined in this section, including discussions with UVic representatives and local residents, noise and vibration impacts are considered to be **less than significant**.

Dust and air emissions. Construction of the facility could result in air quality impacts on recreational users and local residents due to dust and exhaust emissions.

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The treatment facility would be constructed in a grassy area, with some areas of exposed soil. The treatment facility would not be constructed adjacent to existing residences or institutional structures. The CRD Code of Practice for “Construction and Development Activities” would be used to mitigate dust and air emission impacts during construction of the treatment facility. When transporting soil that could create dust nuisances, trucks would have box covers to reduce releases.

Mitigation measures. No mitigation measures are required in addition to standard construction best practices.

Dust and air emission impacts from the construction of the treatment facility on the Cedar Hill Corner property are expected to occur during the medium-term construction period, and are reversible. Through the use of standard construction best practices, the impact is considered low in magnitude, and **less than significant**.

Traffic. The construction of the treatment facility would require the delivery of equipment and supplies, and the movement of workers to the site along McKenzie Avenue, Gordon Head Road, and Cedar Hill Cross Road.

Mitigation measures. A traffic management plan will be prepared to address traffic disruptions, truck traffic, and the continued access to nearby institutions and residences during construction. Flag persons would direct vehicles and pedestrians around the active construction site. Construction drivers will observe speed limits and exercise caution. Ongoing communication with Town of Oak Bay, UVic, and local residents, will be undertaken to minimize traffic impacts.

Traffic effects may occur throughout the entire treatment facility construction phase, but the peak construction period would have higher truck volumes. The impacts would occur in the local area, primarily on Cedar Hill Cross Road and Gordon Head Road and is considered to be low in magnitude, and reversible. With the development and implementation of a traffic management plan, traffic effects are expected **less than significant**.

Treatment facility operation

Community use. The University of Victoria has raised concerns about the potential loss of their developable land. The construction of the treatment facility on the Cedar Hill Corner property would reduce the developable land area available to UVic. Community members have also raised concerns about the loss of dog walking areas.

Mitigation measures. Discussions between the CRD and the University of Victoria representatives would be undertaken in order to reach agreement on appropriate mitigation or compensation for the use of developable UVic property. Existing use of the

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remainder of the site would be available for dog walking post-construction, subject to UVic's development plans.

With an agreement between UVic and CRD, and continued access by dog walkers to the remainder of the site, land use effects of the treatment facility would be considered moderate in magnitude, permanent, restricted to the treatment facility footprint, not reversible, but **less than significant**.

Odour. Operation of a treatment facility on the Cedar Hill Corner property, under certain conditions could generate odours that would be noticeable by local residents. The treatment facility would be designed to minimize operational odour, using the 2-stage system and other processes described in the project description. Typical operation of the treatment facility would result in no detectable odour at the treatment facility boundary.

Annual maintenance would be conducted in during breezy weather, minimizing risk of odour impacts, however, odour could be detectable in some instances.

In rare cases of equipment malfunction, odours impacts of unknown magnitude and duration could affect the local area. The season and prevailing winds direction patterns at the time would determine the potential effects.

Mitigation measures. The odours released during facility operation could be reduced by ensuring that a backup system is installed. Backup treatment could be provided during routine maintenance or in response to mechanical failure. This mitigation would reduce the magnitude of impact of maintenance or breakdowns to low under all circumstances.

Under normal facility operations, odours would not be detectable beyond the project footprint. As previously discussed, some odour releases could occur during annual maintenance or if equipment malfunctions. The impact is considered long-term, even though individual events would be short-term, perhaps measured in hours or days. If odour impacts do occur, they are most likely to affect the local area near to the facility, and would be reversible, high magnitude, and **significant**. With the installation of backup odour control systems, the odour impacts would be reduced to low magnitude, and would be **less than significant**.

Noise, vibration, and lighting. Operation of the treatment facility could generate noise, vibration, and lighting issues, resulting in effects to site users and local residents. Noise generating equipment would include:

- air-driven pumps,
- compressors,
- fans and blowers,

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- diesel driven pumps, and
- standby diesel power generators.

Sound attenuation would be installed in the buildings housing the units and on diesel engine exhaust to ensure that decibel levels remained below 45 dB at the property line, to meet the local municipal bylaw requirement, and to meet WCB/OSHA criteria for worker safety. All noise-generating equipment would be installed in soundproof rooms to meet these requirements. The treatment facility would be designed not to exceed 45 dB and 55 dB at the edge of the facility footprint, during the evening and day respectively.

The treatment facility would be designed with the design parameters outlined in the project description to minimize noise, vibration, and lighting disturbance to residents and site users.

Mitigation measures. No mitigation is needed beside the design features proposed for the facility. If noise complaints occur following commissioning of the facility, conduct additional land-forming or equipment muffling to eliminate off-site noise transmission.

With the use of best management practices and effective design for noise, vibration, and lighting, the impacts would be considered low in magnitude for the local area, not reversible, and **less than significant**.

Traffic. Operation of the treatment facility would require the removal of screenings and grit from the site by truck. Transporting screenings and grit to Hartland landfill would require one truck every five to six days. Trucks would be enclosed to limit odour impacts.

Mitigation measures. Truck movements would be timed to avoid sensitive time periods, such as weekends.

The removal of screenings and grit would be a long-term impact that is not reversible, but is considered low in magnitude due to the low volume of operational truck traffic. The impact is **less than significant**.

Ancillary facility construction

Noise, vibration, dust, and community use. An expanded network of pipes and a pump station would be required to support the operation of the treatment facility as described in the project description. Construction of ancillary facilities would introduce noise, vibration, dust, and land impacts.

Construction of the pump station on the Finnerty-Arbutus site would introduce impacts similar to those discussed in the assessment of the Finnerty-Arbutus treatment facility. The pump station footprint would be smaller than a treatment facility, but many of the same issues related to

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restrictions on community access, dust, noise, vibration, and traffic would exist. The mitigation measures for constructing the pump station would be similar to those that would be used to construct a treatment facility.

Ancillary facility construction would be conducted in accordance with local municipal bylaws to minimize noise and vibration disturbance. Dust control measures, including the use of box covers on trucks, the application of CRD codes of practice, and a dust management plan would be used to reduce effects on residents.

Mitigation measures. During the construction period, activity would be limited near the construction area. Discussions with potentially affected home owners and institutional users prior to construction would ensure mitigation measures are appropriate to minimize potential human risk.

CRD representatives would work with UVic, District of Saanich, and District of Oak Bay representatives and community groups to minimize impacts of constructing the ancillary facilities in wooded areas and through residential neighbourhoods.

With the application of approved mitigation measures, the impacts of pipe construction under roads are considered short-term in duration, and reversible, similar to other public road projects. The magnitude of the effect is considered moderate, short-term, of local extent, and **less than significant**.

Construction of the pump station on the Finnerty-Arbutus site would introduce a high magnitude impact on not permitted, but existing community use of the area in the medium-term, that is **significant**.

Construction of ancillary facilities across Upper Hobbs Creek would be considered high magnitude due to the importance of the area to local residents, and **significant**. With a revised alignment designed to avoid crossing Upper Hobbs Creek, the impact could be reduced to **less than significant**.

Traffic. Impacts during the ancillary facility construction phase would be related to delays, detours, and temporary changes in traffic volumes through residential neighbourhoods.

Mitigation measures. A traffic management plan would be developed for the construction period. CRD representatives would work with municipal planners, land owners, and community groups to inform them of the project schedule.

The development and implementation of a traffic management plan would help to reduce traffic effects of the project. The impacts are considered to be local, short-term, reversible, low to moderate in magnitude, and **less than significant**.

Ancillary facility operation

Community use. Limitations would be placed on the types of development permitted in existing and new rights-of-way and at the Finnerty-Arbutus property, outside of the pump station footprint, as public access would be restricted on the pump station footprint. Generally, the construction of permanent structures by land owners is not permitted in the right-of-way.

Mitigation measures. Where new rights-of-way are required, CRD will reach an agreement with landowners, mitigating future land development limitations in the right-of-way. The CRD would communicate with property owners whose land would be crossed in existing rights-of-way to reduce potential impacts. Community input, regarding the desired future land use of the remaining portions of the Finnerty-Arbutus site would be encouraged.

With agreements established between the CRD and property owners securing rights-of-way, and communication with property owners whose lands would be crossed by the ancillary facilities, the long-term impact is not reversible, but low in magnitude. Community input as to the future use of the remainder of the Finnerty-Arbutus site would help to offset the potential impacts of constructing a pump station, which are considered long-term, not reversible, and of moderate magnitude, and **less than significant**.

Noise, vibration, and lighting. The operation of treatment facility at the Cedar Hill Corner property would require a pump station on the Finnerty-Arbutus property. The pump station could generate noise and vibration, and could require on-site lighting.

Mitigation measures. The pump station would be designed to generate limited noise and vibration outside of the pump station building. Lighting on the site would be oriented to minimize disturbance.

With appropriate facility design, focussed on limiting noise, vibration, and lighting effects, the impacts would be considered low magnitude, long-term, not reversible, but **less than significant**.

Odour. The operation of the pump station has the potential to generate odour. However, the pump station would be designed to have no detectable odour at the treatment facility boundary during normal operation.

The potential for odour impacts may exist during annual odour control maintenance or during equipment failure. In rare cases of equipment malfunction, odour impacts of unknown magnitude and duration could affect the local area. The season and prevailing winds direction patterns at the time would determine the potential effects.

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Mitigation measures. An odour control back-up system would be designed to avoid odour releases during maintenance and malfunctions.

Under normal facility operations, odours would not be detectable beyond the project footprint. Some odour releases could occur during annual maintenance or if equipment malfunctions, but these effects would be reduced through the use of a back-up system. Potential odour effects are considered long-term, even though individual events would be short-term, perhaps measured in hours. Any impacts are reversible, of low magnitude, and **less than significant**.

Traffic and roads

Treatment facility site conditions

The Cedar Hill site is located southeast north of Cedar Hill Cross Road between Haro Road and Crestview Road in the District of Oak Bay. Access to the site would be from Haro Road (Figure 7-2).

The initial traffic impact assessment for this project examines the volumes and types of vehicular traffic; road classification; proximity to designated truck routes; alternative modes of transportation; accident history; transit service and impact on existing traffic from construction and installation of pipes underneath existing road surfaces.

These factors are considered for the following periods for this project:

- 2009 Present Conditions,
- 2010 – 2012 Construction of Phase 1 facility,
- 2030 Operation at full capacity of Phase 1 facility,
- 2030 – 2032 Construction of Phase 2 or expanded facility, and
- 2065 Operation at full capacity of expanded facility.

When considering the potential routing(s) to and from the site, designated truck routes are used where possible as well as the shortest route to designated truck routes. The Cedar Hill Corner site would be accessed from Haro Road, Cedar Hill Cross Road, Cadboro Bay Road, Sinclair Road, and McKenzie Avenue. Cedar Hill Cross Road, Cadboro Bay Road, Sinclair Road, and McKenzie Avenue are classified as arterial roads while Haro Road is classified as a local road, although at this point it is a right-of-way. In addition, Cadboro Bay Road, Sinclair Road, and McKenzie Avenue are all designated truck routes. The foregoing routing provides access to the closest designated truck route, which is Cadboro Bay Road. However, the shortest route to McKenzie Avenue is via Cedar Hill Cross Road and Gordon Head Road. Cedar Hill Cross Road is an arterial road but is not a designated truck route, and Gordon Head Road is both an arterial road and truck route.

Ancillary facility conditions

The ancillary facilities consist of the gravity main and outfall from the site, the Arbutus Road pump station, and its forcemain. The alignment for the ancillary facilities is along the Haro Road right-of-way and under existing roadways (Figure 3-6).

Impacts and mitigation measures

Data were obtained from the District of Saanich and the Capital Regional District. The existing volumes on the road links to the facility are illustrated in Table 8-3. This table shows the current traffic volumes in vehicles per day (vpd) and vehicles per hour (vph) for the PM Peak Hour period for each road link. An assumed growth rate of 1% per annum was used to forecast these traffic volumes to 2030, when the second phase of construction is scheduled to begin. Traffic volumes for 2065 were not forecast as there are too many uncertainties related to future transportation technologies, infrastructure, travel modes, and modal shares.

Table 8-3 Daily PM peak hour traffic volumes for the access route to the Cedar Hill Corner site

Road Name	Characteristic	Units	2009	Volumes	2030	Source
McKenzie Ave / Sinclair Rd	Traffic - vehicular volumes	Vehicles per day (vpd)	12,500	vpd	15,405	Municipal, CRD
		Vehicles per hour (vph) - PM Peak	1,300	vph	1,602	
Cadboro Bay Road	Traffic - vehicular volumes	Vehicles per day (vpd)	8,838	vpd	10,892	
		Vehicles per hour (vph) - PM Peak	928	vph	1,144	
Cedar Hill X Rd	Traffic - vehicular volumes	Vehicles per day (vpd)	7,143	vpd	8,803	
		Vehicles per hour (vph) - PM Peak	750	vph	924	

As arterial roads are expected to carry traffic volumes in the range of 10,000 to 30,000 vpd, and major collectors from 5,000 to 20,000 vpd, the road links on the preferred routing have no capacity limitations for the forecast growth in background traffic.

Treatment facility construction. The forecast trips for the construction of the candidate site for Phases 1 (2010) and 2 (2030) are shown in Table 8-4. They are provided as average trip rates per day (vpd) with an assumed 240 workdays per annum.

Table 8-4 Forecast vehicular volumes for Phases 1 and 2 construction of the Cedar Hill Corner facility

CONSTRUCTION TRAFFIC			
YEAR 2010		Duration	Average two-way trips (vpd)
Activities	Clearing/Grubbing/Aggregates	3 months	10 trucks
	Excavations	7 months	8 trucks
	Concrete	9 months	5 - 6 trucks
	Steel	9 months	1 truck / week
	Equipment, materials	24 months	1 truck / week
	Workers	24 months	50 cars
YEAR 2030			Average two-way trips (vpd)
Activities	Clearing/Grubbing/Aggregates	1 month	5 trucks
	Excavations	3 months	6 trucks
	Concrete	4 months	4 - 5 trucks
	Steel	4 months	1 truck / week
	Equipment, materials	24 months	1 truck / week
	Workers	24 months	30 cars

The construction of Phase 1 in 2010 to 2012, it is forecast to generate approximately 75 two-way vpd for the candidate site and approximately 45 two-way vpd for Phase 2 construction in 2030 to 2032.

Mitigation measures. Construction traffic safety mitigation measures are presented in the Public Health and Safety section of this ESR. Parking would be required for construction workers driving to and from the site. If the clearing and grubbing stage can create enough parking on-site for all construction workers, the magnitude of the parking impact would be low. If there is not enough space to accommodate all the parking on-site, it is recommended that van-pooling, ride-sharing, and park and ride programs be developed to reduce the number of trips to and from the site, or that additional parking be developed elsewhere.

The Phase 1 construction traffic of 75 vpd represents an increase of traffic of 0.60%, 0.85%, and 1.05% on McKenzie Avenue-Sinclair Road, Cadboro Bay Road, and Cedar Hill Cross Road respectively over current volumes. Increases in the range of 1% are considered negligible. The 45 vpd construction trips associated with Phase 2 construction are all well below 1% and as such are considered negligible. The spatial impact would be local and of medium-term duration. While the traffic would be continuous over the construction period, it can be reduced by creating parking areas elsewhere, resulting in a rating of **less than significant**.

Treatment facility operation. As shown in Table 8-5, the number of site-generated trips for the operation of the candidate site is quite small and when compared to the existing and forecasted

vehicular trips on the road links in the preferred routing, these trips would have a negligible impact.

Table 8-5 Forecast vehicular volumes for Phases 1 and 2 operation of the Cedar Hill Corner facility

OPERATIONAL TRAFFIC		
YEAR 2030		Average two-way trips (vpd)
Activities	Truck Loads	
	Screenings / Grit	1 truck / week
	Chemical	8 - 9 trucks / year
	Employees	12 cars
YEAR 2065		Average two-way trips (vpd)
Activities	Truck Loads	
	Screenings / Grit	1-2 trucks / week
	Chemical	1 truck / month
	Employees	15 cars

The preferred routing is identified to accommodate truck traffic during construction and the need to use designated truck routes. Operations staff would not have to use this particular route, and their distributed travel would reduce the impact even further.

Mitigation measures. No mitigation measures are required besides standard traffic management practices.

Traffic effects would be continuous over the life of the project, but the magnitude of the effect is negligible and the resulting rating is **less than significant**.

Ancillary facility construction. Ancillary facility pipes would be buried in the road corridor, most probably underneath the travel lanes, using cut and cover methods.

Construction would disrupt vehicular traffic on affected routes. The extent and severity of disruption would be a function of the traffic volumes and available opportunities to keep some lanes open or to reroute traffic. All the roads potentially effected by the construction of ancillary facilities are two-lane, so it is assumed that one lane could remain open and alternating directions of traffic utilize the remaining lane.

Mitigation measures. Standard procedures for managing vehicular traffic in a construction zone would be implemented which would result in one lane remaining open to alternating directions of traffic. Construction could be restricted to single blocks at a time and scheduled outside of peak periods of vehicular activity.

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Also as noted earlier, the alignment would be adjusted to avoid potential impacts on existing ecosystems such as Hobbs Creek. For construction in these areas there would be no impact on existing routes beyond construction traffic utilizing these facilities.

The impact would be local, of short-term duration, and continuous during the construction period. Considering volumes of traffic affected, the result is a low to moderate impact on the local and collector routes. One-way alternating traffic would be permitted and there would be no residual impact resulting in a rating of **less than significant**.

Ancillary facility operation. There would be no impact from the operation of the ancillary facilities, because all of the pipes would be underground.

Mitigation measures. Road surfaces would be restored to operational standards and no additional mitigation measures would be required.

Although the impact would be local in nature and continuous, there would be no measurable residual effect and as such the rating is **less than significant**.

Public health and safety

Impacts and mitigation measures

Treatment facility construction. Dust would be the sole health risk resulting from construction activities on the site. Dust control measures would be initiated if dust generation is likely. The vegetated buffer on three sides of the property would limit wind transport of dust to adjacent residential areas.

During construction, the greatest safety risk would result from vehicles on roads and heavy equipment operation on the site. The use of flaggers and signage would minimize the risk to the public from vehicle movement. The construction site would be fenced to prevent access by dog walkers, students, or other members of the public.

Mitigation measures. Nearby residents would be notified about the construction schedule. The project contractor would communicate regularly with managers of the University of Victoria to discuss construction activities and the potential for disruption of university activities.

No special access or traffic control measures are needed, beyond those that are applied as part of standard construction practice for projects of this nature.

The potential health and safety effects of construction would occur only during construction, and are considered medium-term. Spatially, health risks would be limited to areas immediately next

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to the worksite, and traffic safety risks would be limited to roadways. These impacts are reversible. Health and safety impacts are considered to be of low magnitude. With appropriate controls of construction activities, the significance of public safety and health effects are considered **less than significant**.

Treatment facility operation. Few public safety risks would be associated with treatment facility operation, because it would be fenced to minimize unauthorized entry, and the equipment is inside buildings. Health risks would be experienced primarily by workers who come into contact with untreated wastewater or microbial aerosols. Residents would not be exposed to disease organisms. The three-stage odour control system reduces the risk of viruses, bacteria, or other contaminants being discharged by air from the facility. The distance between the treatment facility and residences or institutions further reduces public health risks.

Public safety risks are limited to the slight increase in vehicle traffic associated with the project.

Mitigation measures. No measures are needed to protect public health and safety during facility operation beyond those included in standard operating procedures.

The spatial extent of public health impacts are limited to the wastewater facility itself, and public safety effects would be limited to roads. The temporal extent is long-term, and any impacts would be reversible. The magnitude of public health and safety impacts are negligible, and are considered **less than significant**.

Ancillary facility construction. Public safety issues associated with installing pipes in roadways and along rights-of-way, and construction of the pump station on Arbutus Road are primarily associated with operation of heavy equipment and the presence of open trenches. Flaggers would be available during the day to manage vehicles and pedestrians near the worksite. Barriers and flagging would be used to prevent people from reaching worksites.

Mitigation measures. Standard construction procedures would be followed to minimize safety risks during pipe construction.

The public safety risk of ancillary facility construction would be limited to the period of construction (short- to medium-term) and to the area where active construction is occurring. The impacts would be reversible. The magnitude of this impact considered low, and **less than significant**.

Ancillary facility operation. Once the pipes and pump station are in service, public health or safety impacts would be negligible and **less than significant**.

Visual aesthetics

Treatment facility site conditions

The Cedar Hill Corner site is a gently sloped grass area that is part of a predominately flat and open parcel of approximately 16 ha. The parcel is characterized by small orchard trees, managed and unmanaged grass fields, a fenced stockpile of fill material, and a fenced one hectare abandoned forest research facility. The stockpiled fill material creates a negative visual impact in an otherwise semi-rural viewshed. A mixed coniferous deciduous forest provides a striking backdrop to the northwest. Deciduous trees and shrubs border the area on the remaining three sides.

The main viewers of the parcel are drivers and pedestrians on Cedar Hill Cross Road, residents to the north and east, and dog walkers who frequent the property. Portions of the site may be visible from second-story windows of the Uplands Estates townhouses. There are no vehicles regularly accessing the site, and no artificial lighting. Photo 8-4 and Photo 8-5 show the site being used by dog-walkers, vegetative screening beside Cedar Hill Cross Road, and Uplands Estates townhouses overlooking the site.



Photo 8-4 Cedar Hill Corner site looking south towards Uplands Estates



Photo 8-5 Cedar Hill Corner site looking east across stockpiled fill material

Ancillary facility conditions

The visual quality of the ancillary facility pipe routes are primarily suburban streetscapes through Queenswood, Cadboro Bay and north Oak Bay. Two natural viewsheds are affected by ancillary facilities:

- the Finnerty-Arbutus pump station site, and
- the crossing of Upper Hobbs Creek drainage.

Impacts and mitigation measures

Treatment facility construction. The visual character of the Cedar Hill Corner site would be altered by construction of a treatment facility. Approximately 1 hectare of the 16 hectare parcel would have topsoil removed, the site graded, and the grassy area replaced by utility structures. An access road would be constructed from Cedar Hill Cross Road to the facility increasing visibility of the site from the road. Users of the site would have views of construction activities and construction traffic.

Visual impacts of construction on the site from outside the parcel would be experienced by foot and road traffic from Cedar Hill Cross Road (100 m distant), though partially screened through a dispersed row of trees and shrubs. Approximately 12 of the 64 townhouse units on Uplands Estates complex (130 m south of the facility) on Cedar Hill Cross Road would have views of

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construction activities from second floor windows. Vegetation, and a 2 m wall adjacent to the road are a visual barrier to ground level views of the site from Uplands Estates. Residential dwellings on Chelsea Road to the northeast (130 m), and Crestview Road to the east (200 m) and southeast (250 m) would have partial views of construction, though trees and shrubs provide dense screening

Mitigation measures. Construction mitigation options include using the stored fill material and cleared topsoil to create earth screens to shield site users and local residents from the visual impact of construction activities.

Construction of the treatment facility would result in the replacement of a flat grassy area with pavement and buildings, and the creation of an access road bringing traffic into an area that has no formal vehicle access. The overall visual aesthetic impact of construction is considered to be local, of moderate duration (up to two years) and reversible. The magnitude of the impact is considered **less than significant** due to the moderate duration of the construction period.

Treatment facility operation. The presence of the facility would alter the visual aesthetics of the site. The stockpiled fill material detracts from the otherwise semi-rural character of the parcel and a treatment facility would add an additional industrial element. An access road would bring worker and trunk traffic onto the site through the parcel. Security and space lighting would be used to maintain and operate the facility at night. Users of the site would have uninterrupted views of the treatment facility from the north, northeast, south, and southeast. Stored fill, orchard trees, and forest provide screening from other vantage points.

Visual impacts beyond the parcel boundaries would be similar to those encountered during the construction phase. Foot and road traffic from Cedar Hill Cross Road would have partially screened views through a dispersed row of trees and shrubs. Approximately 12 of the 64 townhouse units on Uplands Estates complex (130 m) on Cedar Hill Cross Road would have views of the facility from second floor windows. Residential dwellings to the northeast, east, and southeast would have partial views of the treatment facility, though trees and shrubs provide dense screening.

Mitigation measures. Mitigation measures should include vegetative or landscaped earth screening to the northeast, east, and southwest of the facility with the purpose of screening the facility from overlooking residential areas. Careful building design, could reduce visual impacts. The backdrop for the facility from most viewing angles is forest, so the use of analogous forest colours for buildings may minimize visual impacts. Control of security and space lighting can be used to minimize glare and artificial light intrusion off-site.

Based on this analysis, the visual impact of the treatment facility on the site is considered to be long-term, and of moderate magnitude due to the addition of a utility structure on a semi-rural

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parcel. It should be noted that the future use of this parcel has not been planned by UVic, but is likely to include structures for purposes associated with university functions. The open space visual character of the CHC site should be considered temporary.

The large size of the parcel and the ability to screen the treatment facility by landscaping provide substantial visual mitigation opportunities that could reduce the visual impact of the Cedar Hill Corner site to be **less than significant**. Photo 8-6 and Photo 8-7 illustrate post-construction views of the facility through gaps in the trees and shrubs along Cedar Hill Cross Road. No additional screening or landscaping has been used.



Figure 8-2 Overview of Cedar Hill Corner candidate facility

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Photo 8-6 Rendered view of candidate facility looking northeast from Cedar Hill Cross Road



Photo 8-7 Rendered view of candidate facility looking north from Cedar Hill Cross Road

Ancillary facility construction. Construction of ancillary sewer pipes would result in 5,800 m of pipe being laid along the suburban streetscapes of Queenswood, Cadboro Bay, and north Oak Bay, and through 220 m of existing right of way and 80 m of forest. The 16 m wide corridor

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through the mature forest at Hobbs Creek, immediately west of the Cedar Hill Corner site would create a visual break in the forest visible from a large portion of the site, and potentially from the residential areas to the east and southeast.

A pump station would be constructed at the forested Finnerty-Arbutus site on a footprint of 43m by 37 m. Construction of the pump station requires clearing and levelling of approximately 0.16 ha of the 4.4 ha parcel and would result in 3.5% of the site being converted from forest to pavement and buildings. Although a relatively small area of the total parcel, the converted landscape would be adjacent to Arbutus Road and visible from the road and from the east, northeast, and southeast.

Mitigation measures. Consideration should be given to relocating the pipeline corridor to leave the forest backdrop of the facility undisturbed. The pump station footprint and location at Finnerty-Arbutus should be reviewed to determine if the clearing requirement can be reduced, or if the pump station can be relocated further from Arbutus Road to maintain the forested viewscape of the site from Arbutus Road and locations to the east.

Views of construction equipment and construction traffic would be localized and of moderate duration (up to two years). The visual impacts of clearing a corridor in the Upper Hobbs Creek forest and of clearing 0.16 ha of forest at the Finnerty-Arbutus site are considered to be of moderate magnitude and irreversible. Collectively these demonstrably negative aesthetic impacts are considered **significant**, but mitigation options can reduce visual impacts markedly. Re-routing the ancillary sewer pipe would avoid creating a cleared forest corridor, reducing the magnitude of that visual impact to low and less than significant levels. Additionally, reducing or relocating the clearing requirements for the pump station at Finnerty-Arbutus can reduce the magnitude of the overall visual impact to low and **less than significant**.

Ancillary facility operation. All of the ancillary infrastructure would be below ground with the exception of the pump station at the Finnerty-Arbutus site, the pump station would add a utility structure to a forested landscape. A driveway would bring worker and trunk traffic onto the site. Security and space lighting may be used to maintain and operate the pump station at night. Users of the site would have interrupted views of the pump station through the forest. Visual impacts beyond the parcel boundaries would be restricted to views from Arbutus Road and views from the south east and east. Forest provides screening from other vantage points

Mitigation measures. The relatively small (0.16 ha) footprint of the pump station affords extensive opportunities to screen the pump station from the remainder of the site, and from locations beyond the parcel. Vegetative and earth screening can be used to reduce visual impacts. Careful building design that incorporates the use of forest colours would mute visual impact. Consideration may be given to placing the pump station underground and using off-site parking to reduce the clearing requirement and achieve the lowest level of visual impact.

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Based on this analysis, the visual impact of the pump station on the site is considered to be long-term, and of low magnitude due to the small footprint required from the site and the extensive mitigation opportunities that can be used to reduce the visual impact. With extensive mitigation the visual impact of the pump station would create no demonstrably negative aesthetic impact and can be considered **less than significant**.

9.0 UVIC FIELDS SITE DESCRIPTION AND IMPACT ASSESSMENT

9.1 General site description

The 4.6 ha University of Victoria fields site is located on the north side of McKenzie Avenue at the northwestern extent of the UVic campus (Figure 3-7). The UVic Fields site includes Wallace Field, and grassy areas to the west, east, and south. The site is separated from the main UVic field complex by McKenzie Avenue.

Wallace Field is the home pitch for the University of Victoria men's and women's rugby teams. The northwest field and southern grassy area under consideration for the treatment facility are not extensively used for organized recreational activities.

UVic has recently provided conceptual plans for the west, east, and south fields on the UVic Fields site. The plans identify interests in developing a rugby training field, a new grass field, and tennis courts on grassy areas to the northeast, northwest, and southern portions of the study area.

The University of Victoria Fields study area is adjacent to attached and detached dwellings to the west, southwest, and north. A parking lot and UVic buildings are located to the east, and Mackenzie Avenue to the south. Two structures on the Saanich heritage registry are located on the UVic Fields site, but outside of the proposed treatment facility footprint.

9.2 Ancillary facilities site description

Ancillary facilities required to operate the treatment facility on the University of Victoria Fields site include a gravity main, a forcemain, a pump station, and small diameter pressurized pipe.

Wastewater would be pumped to the UVic Fields site via an underground forcemain from a pump station on the Finnerty-Arbutus site, approximately 0.04 ha in size. The pump station would receive wastewater from the East Coast Interceptor (ECI), and a small diameter pressurized pipe, which conveys wastewater from the Penrhyn pump station in Cadboro Bay. The small diameter pressurized pipe would be constructed from the Penrhyn pump station to the Finnerty-Arbutus site entirely under existing roads, including, Penrhyn Street, Hobbs Street, Maynard Street, Rowley Street, and Arbutus Road.

The gravity main would be constructed in existing and new rights-of-way. The pipe would be installed on the north side of McKenzie Avenue and beneath Finnerty Road and Arbutus Road to the Queen Alexandra property, where it would cross the field and follow a right-of-way across an adjacent residential property. The pipe would be buried in the roadway under Alpine Crescent,

Haro Road, and Monarch Place. The pipe would then be installed in an existing right-of-way across four residential properties before reaching the existing outfall pipe.

The forcemain would transport wastewater from the Finnerty-Arbutus pump station, along Arbutus Road, Finnerty Road, and McKenzie Avenue to reach the treatment facility.

9.3 UVic Fields impact assessment

Landforms, geology, and soils

Treatment facility site conditions

The ground surface at UVic Fields site is primarily grassed, with some ornamental trees and shrubs along McCoy Road. The ground surface north of McCoy Road has a slight slope to the southwest. To the south of the eastward extension of McCoy Road, the site is crowned. The site appears well drained with no obvious drainage channels onsite. Site observations and a review of historical aerial photographs indicate that north of McCoy Road the site has been levelled by fill placement, with the thickness of fill increasing toward McCoy Road. The portion of the site south of McCoy Road is crowned and has probably been formed by fill placement.

The subsurface soil stratigraphy consists of mineral fill or topsoil overlying 4 to 5 m of stiff to very stiff brown and grey brown silty clay, up to 3 m of firm grey silty clay, and then a morainal deposit of hard, dense gravelly sandy silty, or silty clay glacial till. The glacial till is expected to extend to a significant depth and may be underlain by a pre-glacial marine deposit of dense to very dense silty sand or sandy silt, commonly referred to as the Quadra Sediments. The groundwater table is expected to rise within 2 to 3 m of the ground surface during the wetter periods of the year.

The fill material at the site is estimated to be 1 to 2 m thick. North of McCoy Road, the fill material increases in thickness southward to a maximum of 1.0 to 1.5 m alongside McCoy Road. South of McCoy Road, the fill material increases toward the centre of the crowned area to a maximum depth of 1.5 to 2.0 m. This fill material is unlikely to be suitable to provide stable, long-term, subgrade support for buildings and ancillary structures.

The near surface clay materials at the site are considered to be of marine origin with the consistency of the upper stiff to very stiff material, the result over-consolidation by desiccation during periods of lower relative sea levels. The underlying firm material is near normally consolidated, and would compress in response to a significant increase of surface loading conditions, resulting in some subsidence.

Considering the soil stratigraphy at the site, a natural frequency is expected in the order of 4 to 7 hertz, with an average shear wave velocity in the upper 30 m (V_{s30}) varying from 300 to

400 m/sec, corresponding to a Site Class “B/C” as per the current National Building Code. The site is in an area that could be affected by a Cascadia Subduction event. Information from Natural Resources Canada, indicates a peak ground acceleration of 0.61 g and spectral accelerations of 1.22, 0.82, 0.38 and 0.19 g, for respective periods of 0.2, 0.5, 1.0 and 2.0 seconds respectively for a design seismic event of 2% in 50 years. The accelerations noted relate to a site with soil conditions corresponding to a Site Class “C.” Seismically, these conditions are not unusual for the area and present no substantial constraints on development of a wastewater treatment facility. However, as the estimated Vs30 is near the boundary between Site Classes “B” and “C,” some adjustments to facility design may be necessary depending on the spectral accelerations considered, and the period of the various wastewater treatment facilities.

Impacts and mitigation measures

Treatment facility construction. Due to the gently sloped nature of the site, only slight landform recontouring would be necessary. The topsoil would be removed and stored for later use onsite, and minor grading (cutting and filling of less than 2 m) is anticipated. The native mineral soils at the site are expected to be competent materials to support a wastewater treatment facility. The possible presence of a substratum of compressible clay could cause subsidence.

Based on the anticipated soil conditions, relatively light loading associated with the proposed wastewater treatment facility, and local experience, no unique geotechnical concerns are expected during development of this site. There appears to be fill materials over portions of the site. The native clay soils at the site are relatively impermeable, and no significant seepage is anticipated from excavation that may penetrate the groundwater table. However, perched water table conditions could result in a localized high water table and surface water ponding, particularly during periods of heavy or prolonged precipitation

Mitigation measures. The possible presence of a compressible clay substratum that could cause subsidence requires further assessment to determine if the stratum exists, and if it, could require additional excavation and placement of new select fill. It is expected that any settlement could be easily mitigated by selecting appropriately graded sand or gravel, or by placing a pre-load in advance of construction to settle sensitive elements. Existing fill materials on the site should be assessed and a determination made on the requirement for additional excavation and placement of new select fill. Protecting the topsoil against erosion or contamination by chemicals or noxious weeds would improve its value when spread on the site following construction

Impacts associated with soils, geology, and landforms during construction are considered to be local in extent and reversible. The magnitude is considered to be low and the impact **less than significant**, the mitigation measures outlined above would further reduce the magnitude of any construction impacts on landforms and soils.

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Treatment facility operation. After construction is completed and operation of the treatment facility begins, no additional impacts on the landforms or geology of the site are anticipated. Erosion and sedimentation risk may persist after construction ends, and before vegetation is re-established.

Erosion and sedimentation from operations are considered to be local in extent and reversible. The magnitude is considered to be low and the impact **less than significant**.

Ancillary facility construction. The route of the forcemain and gravity main parallel existing roads and rights-of-way, where geologic and soil conditions are shown to be compatible with construction of roads and installation of pipes. Installing the forcemain and gravity main are not expected to affect soils, landforms, or geology, so impacts are considered **less than significant**.

The location and geologic condition of the outfall route are subjects of separate study, and are not considered in this ESR.

Ancillary facility operation. Operation of the gravity main and outfall are not considered to affect geology, landforms, or soils. Impacts are considered **less than significant**.

Hydrology and water quality

Treatment facility site conditions

The treatment facility site on the UVic Fields is nearly flat, having been graded during construction of a rugby pitch. The lands surrounding the UVic Fields site are served by District of Saanich or University of Victoria storm drains. There are no surface water features or drainages on the UVic Fields site. Rainfall percolates into groundwater or flows into adjacent storm drain facilities.

A nearby resident stated that the UVic Fields site is characterized by poor drainage, and that springs or near-surface water table conditions are found on the site. No field investigations have been conducted to characterize groundwater conditions.

Ancillary facility conditions

The forcemain and gravity main connecting the UVic Fields site to the pump station on Arbutus Road would parallel Saanich roadways. No natural runoff channels are located in this area. A roadside ditch along Arbutus Road collects runoff from adjacent properties and the road itself. The area needed for the pump station would be small (0.16 ha), and would be located near the lowest elevation of the Finnerty-Arbutus site.

Impacts and mitigation measures

Treatment facility construction. Excavation of land to accommodate the treatment facility would cause ponding of groundwater and runoff during wet weather. Such water often has high levels of suspended solids that can contribute to pollution of offsite drainage courses.

If ground water levels are high or if springs are present, pumping would be needed to remove excess water from excavated areas. Infiltration of this drainage water may be infeasible if the ground is saturated.

Mitigation measures. Settlement ponds or filtration methods should be used to reduce suspended sediment in water removed from treatment facility excavations. Above-ground ponds would be needed if the soil is saturated from springs or high water tables on the site.

The duration of potential construction stage impacts on water quality would be limited to periods of wet weather. This impact is occasional, medium-term, and reversible, and would affect only the area where drainage water would be discharged. The magnitude of the impact is considered low, unless springs are present, in which case the effects could be moderate. The impacts can be mitigated with standard construction practices, the effect on hydrology and water quality would be **less than significant**.

Treatment facility operation. The treatment facility would increase the impervious surface of the UVic Fields site. Infiltration of roof and perimeter drainage would reduce the affect on groundwater and offsite runoff. Few or no effects on water quality are expected.

No discharges of wastewater from the treatment facility to storm drains would occur. Chemicals used in the wastewater treatment process would be stored in secure structures.

Mitigation measures. No additional mitigation measures are needed aside from stated design specifications and standard operating procedures for CRD wastewater treatment facilities.

Operation of the facility would not affect hydrology or water quality. The magnitude of operational effects on hydrology and water quality is considered low, and the effects would be **less than significant**.

Ancillary facility construction. Construction of the forcemain and gravity main to serve the UVic Fields site would require excavation along the north side of McKenzie Avenue, then down the right-of-way of Finnerty and Arbutus roads. Neither this construction, nor the construction of the pump station at the Finnerty-Arbutus site, nor the gravity main to the outfall are expected to disrupt drainage courses.

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During construction, runoff captured by open pipe trenches or the pump station excavations would be managed on or near the disturbed areas. Runoff would be infiltrated or detained in ponds. Suspended sediment in the runoff would be settled out in detention ponds before discharge to District of Saanich storm drains or ditches.

Mitigation measures. Standard construction management actions of runoff infiltration or storage should be adequate to mitigate the potential hydrology or water quality effects of ancillary facility construction.

Hydrology and runoff effects of ancillary facility construction would affect the project footprint and, potentially, downstream drainages. The duration of potential effects would be short- to medium-term, depending on the length of the construction interval, and would be an occasional effect. Potential effects would be reversible, of low magnitude, and **less than significant**.

Ancillary facility operation. Once the pipes and pump station are constructed, operation of the ancillary facilities should have little effect on hydrology or water quality. Most of the pipes would be beneath road surfaces or in road rights-of-way, and would not contribute to erosion or runoff in the area. The pump station footprint is small and, with onsite infiltration, would not affect hydrology or water quality.

Mitigation measures. Standard operating procedures should be sufficient to mitigate hydrology or water quality risks associated with the project.

No hydrology or water quality impacts are expected to be associated with ancillary facilities that support a treatment facility at the UVic Fields site. Impacts, therefore, are considered to be of negligible magnitude and to be **less than significant**.

Vegetation

Treatment facility site conditions

The University of Victoria Fields candidate site occurs in a previously disturbed area that is currently a non-native grassy field. The area does not contain sensitive ecosystems, ecosystems at risk, or plant species at risk.

Ancillary facility conditions

The proposed sewer trunk right of way associated with the University of Victoria Fields site follows existing roads and rights of way, and does not require clearing of sensitive ecosystems, ecosystems at risk, or plant species at risk.

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A pump station would be required for the sewer trunk and outfall, and is proposed to be placed on the Finnerty-Arbutus property. For a detailed description of the vegetation on this property, refer to Vegetation in Section 8.3.

Table 9-1 summarizes the presence of plants and plant communities on the University of Victoria Fields site and ancillary facilities.

Table 9-1 Sensitive vegetation resources on or near the UVic Fields site and associated ancillary facilities

Presence of sensitive vegetation resources	Site	Trunk-Outfall	Pump Station
Presence of sensitive ecosystems:			
• older forests or mature forests	No	No	Yes
• second growth forests	No	No	Yes
• native grasslands/shrub/herb communities	No	No	No
• Garry Oak Woodland communities	No	No	No
• coastal bluffs	N/A	No	N/A
Presence of ecosystems at risk			
• ecological communities on Conservation Data Centre Red or Blue lists	No	No	Yes
• ecosystem types identified by Sensitive Ecosystems Inventory	No	No	No
• areas identified as environmentally sensitive by local governments	No	No	Yes
Presence of aquatic or riparian ecosystems			
• seasonal or permanent watercourses (streams, creeks, rivers, ditches)	No	No	Yes
• seasonal or permanent wetlands, seepage areas, or vernal pools	No	No	No
• riparian ecosystems beside these aquatic ecosystems and vegetated gullies	No	No	No
Presence of plant species at risk and their habitats			
• species at risk identified by COSEWIC	No	No	No
• species on provincial Red and Blue lists	No	No	No
• regionally significant species	No	No	Yes
• habitats for any of these species	No	No	Yes

Impacts and mitigation measures

Treatment facility construction. Site preparation and construction of the treatment facility on the University of Victoria Fields site would not involve clearing of any sensitive vegetation types, rare plants, or plant communities. No effects on vegetation are anticipated with these activities and therefore impacts are considered **less than significant**.

Treatment facility operation. No effects of treatment facility operation on vegetation are anticipated and therefore impacts are considered **less than significant**.

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Ancillary facility construction. No vegetation clearing is anticipated for the construction of the sewer trunks, outfall, and associated piping.

Forest clearing would be required for the construction of the pump station at the north eastern corner of the Finnerty-Arbutus site. The total footprint size is approximately 0.16 ha, though additional forest clearing may be required for temporary work space and to meet Work Safe British Columbia rules. The forest clearing would involve removal of mature Douglas fir, arbutus, and bigleaf maple trees. Indirect losses of mature trees and shrubs caused by windthrow, soil compaction and project-related changes to site drainage can also be expected. The clearing would occur in an area where a small ephemeral drainage meets the roadside ditch.

Mitigation measures. To reduce the potential impact of forest clearing to accommodate the pump stations, alternate locations for the pump station on previously cleared land could be explored. If relocating the pump station is not possible, compensation measures can be considered by the CRD. These may include restricting the cutting of trees on the remainder of the site via covenant, aggressive invasive plant management, and restoration to native plant cover.

The duration of the effects of vegetation clearing for the construction of a pump station at the Finnerty-Arbutus site are long-term, and not reversible. The magnitude of the adverse effect of vegetation removal is high, resulting in a rating of **significant**.

If compensation measures were implemented, the magnitude of constructing a pump station on the Finnerty-Arbutus site could be reduced to moderate. As the impacts of constructing a pump station at the Finnerty-Arbutus site cannot be mitigated, the effect on vegetation would remain **significant**.

Ancillary facility operation. No effects of ancillary facility operation on vegetation are anticipated and therefore impacts are considered **less than significant**.

Wildlife

Treatment facility site conditions

The University of Victoria Fields site is located on a previously cleared property that is not thought to contain any wildlife species at risk, their habitats, or habitat features.

Ancillary facility conditions

The proposed sewer trunk and outfall associated with the University of Victoria Fields site would be installed in existing road beds and rights of way, which are not thought to contain any wildlife species at risk, their habitats, or habitat features.

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A pump station would be required for the sewer trunk and outfall, and is proposed to be placed on the Finnerty-Arbutus property. For a detailed description of the wildlife and wildlife habitat on this property, refer to Wildlife in Section 8.3.

Table 9-2 summarizes the presence of wildlife and wildlife habitat on the University of Victoria Fields site and ancillary facilities.

Table 9-2 Environmentally valuable wildlife on or near the UVic Fields site and associated ancillary facilities

Presence of sensitive wildlife	Site	Trunk-Outfall	Pump Station
Presence of wildlife species at risk and their habitats:			
• species at risk identified by COSEWIC	No	No	No
• species on provincial Red and Blue lists	No	No	None detected
• regionally significant species	No	No	Yes
• habitats for any of these species	No	No	Yes
Presence of important wildlife habitat features:			
• wildlife trees, snags, mature, large-limbed trees	No	No	Yes
• rotten logs and other woody debris	No	No	Yes
• man-made habitat enhancements	No	No	No
• hedges and shelterbelts	No	No	Yes
• groundwater springs and seepages	No	No	No
Evidence of wildlife use:			
• wildlife corridors	No	No	Yes
• deer habitat	No	No	Yes
• potential raptor nest site	No	No	Yes
Nearby presence of protected areas or habitats	No	No	No

Impacts and mitigation measures

Treatment facility construction. Clearing and construction of the University of Victoria Fields site would not disturb any wildlife habitats or habitat features. No impacts are expected, so impacts are considered **less than significant**.

Treatment facility operation. No effects on wildlife of operating a wastewater treatment facility at the University of Victoria Fields site are anticipated, so impacts are considered **less than significant**.

Ancillary facility construction. No clearing of wildlife habitat is anticipated for the construction of the sewer trunks and associated piping.

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Habitat disturbance due to the construction of the pump station in the Finnerty-Arbutus site would result in a loss of mature second growth forest. The area to be cleared would include the approximately 0.16 ha footprint of the pump station, plus any additional construction-phase temporary workspace. Removal of danger trees, which are often wildlife trees, may be required within 1.5 tree lengths (approximately 45 m) of the candidate site under Work Safe British Columbia regulations.

Removal of forested habitats typically affects wildlife in the following ways:

- (a) incremental loss of thermal and security habitat and habitat features (*i.e.*, canopy cover);
- (b) incremental loss of reproductive habitat and habitat features (*i.e.*, nest trees);
- (c) direct mortality during clearing activities;
- (d) sensory disturbances associated with the clearing and construction activities.

Mitigation measures. To reduce the potential forest clearing impacts and subsequent wildlife habitat losses, alternate locations on previously cleared land across the road could be explored. If moving the pump station facility is not possible, compensation to enhance habitat values in nearby green spaces could be considered. For example, removal of invasive plant species could increase the habitat quality for ground nesting birds and small mammals, which are also important foods for raptors in the area.

Direct mortality and effects of construction related sensory disturbances during the removal of forest could be reduced through timing work to avoid the nesting bird season (March 15 to July 31).

There would be a loss of wildlife habitat and habitat features at the Finnerty-Arbutus site to accommodate the pump station. The effects on wildlife would occur in the pump station footprint and associated workspace. The duration of the effects on wildlife habitat is long-term, and not reversible. The magnitude of the effects on wildlife associated with clearing the forested areas is high, resulting in a rating of **significant**.

If compensation measures were implemented, the magnitude of constructing a pump station on the Finnerty-Arbutus site could be reduced to moderate. As the impacts of constructing a pump station at the Finnerty-Arbutus site cannot be mitigated, the effect on wildlife would remain **significant**.

Ancillary facility operation. No effects on wildlife of operating ancillary facilities associated with the University of Victoria Fields site are anticipated, so impacts are considered **less than significant**.

Archaeology and heritage

Treatment facility site conditions

This property was historically farmed. There are several Second World War army buildings located to the east of the candidate site. Some of these structures, including the Gordon Head Army Camp east of Wallace Field, and the Maritime-Naval Communications Centre, south of Wallace Field, are on the District of Saanich Heritage Register, though they lack protection under the *British Columbia Heritage Conservation Act*.

The area of the playing fields has been extensively disturbed by agricultural and construction activities. Construction or agricultural fill may have been deposited and levelled on the property in the past. Remains of fill piles that line the eastern boundary of the property are now covered with shrubs.

No evidence of archaeological materials, features, or sites was noted on the property during field reconnaissance. The area is deemed to have low archaeological potential.

Ancillary facility conditions

Most of the wastewater and effluent pipes associated with the University of Victoria Fields site occur in existing road ways or other previous linear disturbances. The archaeological potential of these corridors is low. Archaeological potential exists near small topographic features such as knolls or ridges, and near the shoreline at Finnerty Cove.

This site would also require construction of a pump station at the Finnerty-Arbutus site. Archaeological potential has been identified at the pump station site location (Millennia Research Ltd. 2008).

Impacts and mitigation measures

Treatment facility construction. The University of Victoria Fields site has low potential to contain buried archaeological deposits or features, due to past land altering activities (agriculture) and construction of playing fields. It is unlikely that construction at this site would cause any effects on archaeological or heritage resources.

Treatment facility operation. The activities that affect archaeological and heritage resources are likely to occur during, and be limited to, the construction phase of the project. It is unlikely that facility operation would affect archaeological or heritage resources, so impacts are considered **less than significant**.

Ancillary facility construction. The ground disturbing activities, including excavation and trenching, associated with constructing ancillary facilities have the potential to damage, displace,

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or destroy buried archaeological materials and sites. The potential for this effect is greatest in the upper Hobbs Creek area and near the shoreline of Finnerty Cove. Road rights-of-way, where most of the ancillary facility pipes would be installed, are unlikely to contain undisturbed archaeological remains. Ground disturbance also has the potential to affect buried archaeological materials at the Finnerty-Arbutus pump station location. Construction of ancillary facilities may result in the permanent loss or alteration of archaeological or heritage resources.

Mitigation measures. If the University of Victoria Fields site is chosen as a future treatment facility, an Archaeological Impact Assessment (AIA) would be conducted in areas along the pipe corridor and pump station site that have high archaeological potential in advance of ground disturbing activity. Archaeological mitigation plans would be based on results of the AIA.

A detailed assessment of effects of construction on archaeological resources would be completed after a site has been chosen, as part of an AIA. Assessments and mitigation would comply with the *British Columbia Heritage Conservation Act*. Mitigation would provide reasonable compensation for the removal, loss, disruption, modification, or alteration of archaeological and heritage resources as a result of the project.

Ancillary facility operation. The activities that affect archaeological and heritage resources are likely to occur during, and be limited to, the construction phase of the project. It is unlikely that facility operations would affect archaeological or heritage resources, so impacts are considered **less than significant**.

Community

Treatment facility site conditions

The UVIC fields site includes Wallace Field and three other grassy areas at the northern boundary of the UVic campus, bordered by a residential and institutional area.

Wallace Field is the home field for the University of Victoria men's and women's rugby teams and is used throughout the year. The field is well drained and in excellent condition. The field is used only for varsity rugby.

The northwest and northeast fields (Photo 9-1) are in poor condition, and are not extensively used for formal recreation activities, although used by local area residents. The "south field" is a triangular grassy area with no current use identified. UVic representatives have identified a shortage of field space on the campus and recently released conceptual plans to redevelop the fields for recreational use.

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The study area includes two sites identified on the Saanich Heritage Register, including the Gordon Head Army Camp 220 m east of proposed treatment facility footprint, and the Maritime-Naval Communications Centre, 35 m east of the footprint.



Photo 9-1 **UVic Fields site**

Adjacent Land Uses

Residences are located adjacent to the UVic fields study area in the west, southwest, and north (Figure 9-1). The treatment facility footprint would border residential property with detached dwellings to the west, and attached dwellings to the north and southwest.

The study area is located at the northern extent of the UVic campus, across McKenzie Avenue from UVic's natural grass and artificial turf sports fields. A parking lot and UVic buildings are located east of the study area approximately 200 m from the footprint. The treatment facility footprint is 200 m from Mount Douglas High School.

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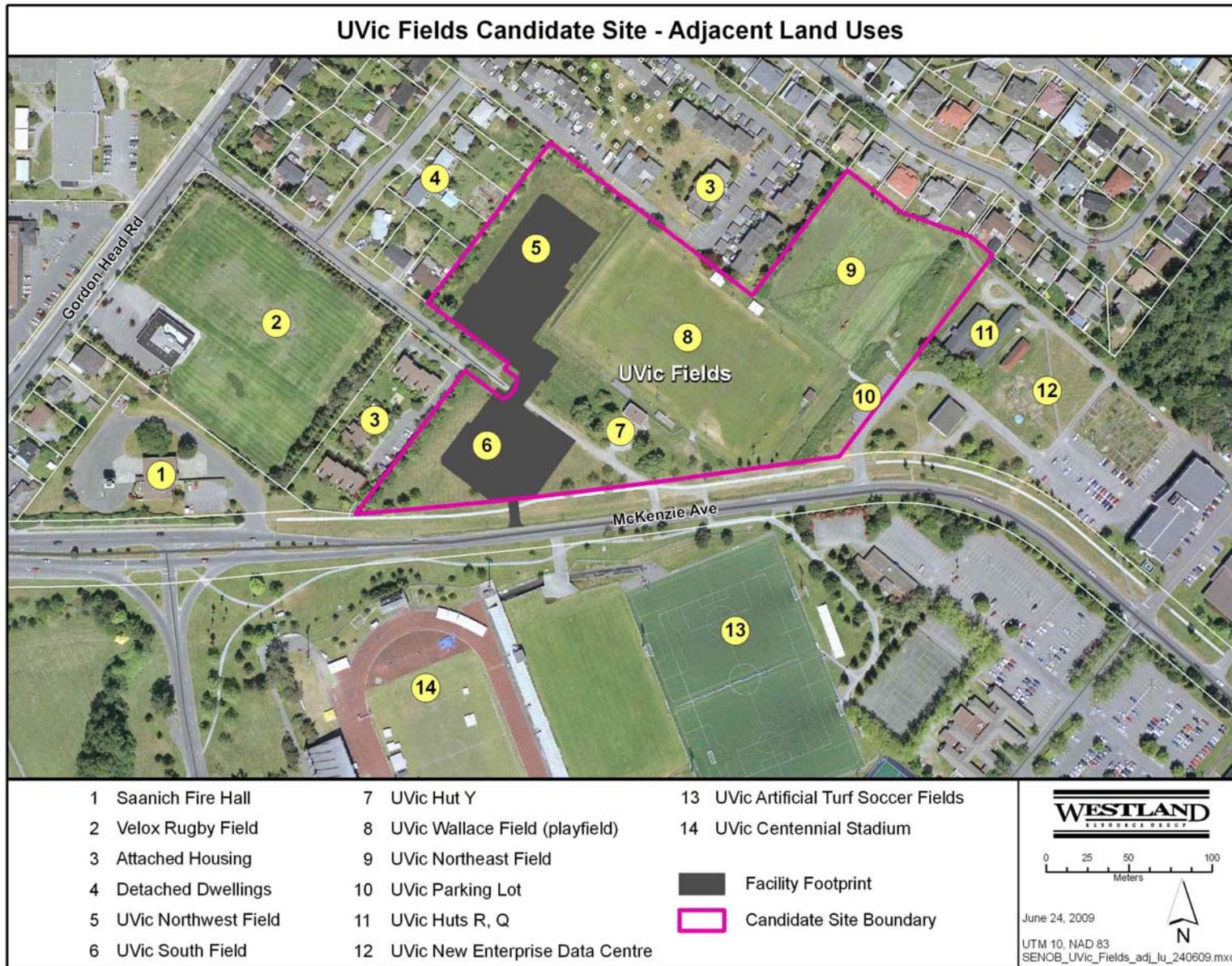


Figure 9-1 Adjacent land uses at UVic Fields site

Compatibility with planned land uses

Construction of the treatment facility on the site would conflict with UVic conceptual plans for the site. UVic representatives have expressed concern about the potential displacement of playfields, at a time when UVic is seeking additional field space for students and faculty.

The UVic Campus Plan states that expanding outdoor recreation opportunities would require “a combination of strategies, including the renovation of Wallace Field, additional land purchases, and possible use of sections of the CJVI property” (University of Victoria, 2003). Discussions with UVic representatives confirmed redevelopment interests in the study area.

According to UVic representatives, the northeast field is in poor condition. The field is 90 m by 70 m and considered just large enough for a soccer field, although the length of 90 m is marginal. Conceptual plans identify the development of a rugby training area on the field. The northwest field is approximately 120 m by 65 m. UVic has identified that these dimensions are suitable for a soccer field, although the width is quite narrow.

The “south field” is a triangular grassy area. Conceptual UVic plans identify an interest in developing tennis courts on the site.

The facility footprint is located in the District of Saanich. The OCP designation is “Institutional” and the zoning is P1-U, University Zone.

Ancillary facility conditions

Ancillary facilities required to operate the treatment facility on the UVic Fields site include a gravity main, a forcemain, and a small diameter pressurized pipe. Because the Cedar Hill Corner site is at a higher elevation from the East Coast Interceptor main, a treatment facility on the candidate site would require the construction of a pump station on the Finnerty-Arbutus site to pump wastewater to the facility.

The gravity main would be routed under McKenzie Avenue, Finnerty Road, Arbutus Road, across the Queen Alexandra Foundation field, in an existing right-of-way across a residential property, under Alpine Crescent, Haro Road, Monarch Place, and in an existing right-of-way across four detached residential properties. The forcemain would be in a similar alignment, but constructed from the Finnerty-Arbutus pump station to the UVic Fields site.

The small diameter pressurized pipe would be constructed from the existing Penrhyn pump station to the Finnerty-Arbutus site under existing roads, including, Penrhyn, Hobbs, Maynard, Rowley Streets, and Arbutus Road.

Impacts and mitigation measures

Treatment facility construction

Community use. During the treatment facility construction phase, community use of the northwest and south fields, and in project workspace around the active construction area would be restricted. A heavily used bike path and pedestrian route would be disrupted. Informal recreation use is known to occur on the treatment facility footprint by nearby residents.

Mitigation measures. Opportunities for recreation activities would exist on the portions of the UVic Fields site outside of the treatment facility footprint and workspace during the construction phase. Play fields are also located across McKenzie Avenue on the UVic campus. Signage and newspaper advertisements would be used to inform community users of the construction schedule and portions of the site that may have access restrictions. A safe alternative route would be sought to provide continued access for pedestrian and bike traffic.

Construction of the treatment facility would occur on the treatment facility footprint and workspace over a 18 to 24 month period. During the construction period, recreational activities would be limited in the active construction area. The construction work space, outside of the treatment facility footprint would only be used during the construction period, representing a reversible impact. Even with alternative areas for community recreation, the proximity of the proposed treatment facility footprint adjacent to residences, and the known informal recreational activities on the site, the impact is considered to be high magnitude over the construction phase, medium-term, local in extent, and **significant**.

Noise and vibration. The treatment facility would be constructed adjacent to residential properties on McCoy, Maria, and Dawnview Roads. Construction of the treatment facility would involve the use of heavy machinery, compressors, pumps, concrete pouring equipment, and other equipment to prepare the site and build the treatment facility. During the construction period, noise and vibration impacts would affect local residents and UVic users. Peak construction activity would occur in the first 9 months during excavation and concrete pouring, however, the project is expected to take 18 to 24 months to complete. After the 9-month peak construction activity has occurred, the construction activities would be similar to the construction of utility or industrial buildings. Construction activities would comply with the District of Saanich noise bylaw for hours of work and noise levels. Work would usually occur on weekdays from 7 am to 5 pm with no work on Saturdays, Sundays or holidays (except in an emergency or where a critical piece of work must be completed in a specified work window).

Mitigation measures. Discussions would be undertaken with UVic representatives and neighbouring residents during project planning and prior to construction to confirm noise mitigation measures, and construction hours.

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Residents would be advised of work periods during which abnormal vibration conditions may occur.

Noise and vibration impacts would be concentrated during the 9-month peak construction, but may occur over the 18 to 24 month construction phase. Therefore impacts are expected to occur in the local area over the medium-term. The proximity of residences to the treatment facility footprint would result in a high magnitude impact, that is reversible post-construction, but is considered **significant**.

Dust and air emissions. Construction of the facility could result in air quality impacts on adjacent residents due to dust and exhaust emissions.

Mitigation measures. The CRD Code of Practice for “Construction and Development Activities” would be used to mitigate dust and air emission impacts during construction of the treatment facility. Additional dust control plans may be required after discussion with local residents. Monitoring would occur throughout the construction period to reduce effects on adjacent property owners. When transporting soil that could create dust nuisances, trucks would have box covers to reduce releases.

Dust and air emission impacts from the construction of the treatment facility on the UVic Fields are expected to occur during the medium-term construction period. The treatment facility would be constructed adjacent to residential properties, and even with the use of mitigation measures the impact is considered high in magnitude, reversible, and **significant**.

Traffic. The construction of the treatment facility would require the delivery of equipment and supplies, and the movement of workers to the site along McKenzie Avenue.

Mitigation measures. A traffic management plan would be prepared to address traffic disruptions, truck traffic, and access maintenance to UVic, and residences during construction. Flag persons would direct vehicles and pedestrians around the active construction site. Construction drivers would observe speed limits and exercise extreme caution near schools and other sensitive areas. Ongoing communication with District of Saanich, UVic, and local residents, would be undertaken to minimize traffic impacts.

Traffic effects may occur throughout the entire treatment facility construction phase, but the peak construction period would have higher truck volumes. McKenzie Avenue is a designated truck route, but the treatment facility would be constructed on a field near to a residential neighbourhood. With the development and implementation of a traffic management plan, traffic effects are expected to be moderate in magnitude, reversible, and **less than significant**.

Treatment facility operation

Community use. Construction of the treatment facility on the UVic Fields site would reduce the field area available for UVic recreation, community use, and conflicts with UVic conceptual redevelopment plans. Construction and operation of the treatment facility would occupy the northwest and south fields, precluding future use as proposed by UVic.

Mitigation measures. The northeast field would remain available for redevelopment as being considered by UVic. Discussions between UVic and CRD should continue to identify ways to mitigate the loss of field space and reach appropriate accommodation.

With an agreement between UVic and CRD, and alternative areas available for informal recreation, land use effects would be considered moderate in magnitude, local in extent, long-term, not reversible, but **less than significant**.

Odour. Operation of a treatment facility on the UVic Fields site, under certain conditions could generate odours that would be noticeable by local residents. The treatment facility would be designed to minimize operational odour. Typical operation of the treatment facility would result in no detectable odour at the treatment facility boundary.

Annual maintenance would be conducted in during breezy weather, minimizing risk of odour impacts. However, odour could be detectable in some instances.

In rare cases of equipment malfunction, odours impacts of unknown magnitude and duration could affect the local area. The season and prevailing winds direction patterns at the time would determine the potential effects. If a malfunction occurs, odours would be most noticeable during calm weather conditions, when wind would not provide mixing and dispersion of odours.

Mitigation measures. The odours released during facility operation could be reduced by ensuring that a backup system is installed. Backup treatment could be provided during routine maintenance or in response to mechanical failure. This mitigation would reduce the magnitude of impact of maintenance or malfunctions to low under all circumstances.

Odour effects are considered long-term, even though individual events would be short-term, perhaps measured in hours or days. If odour impacts do occur, they are most likely to affect the local area near to the facility, and would be reversible, high magnitude, and **significant**. With the application of a backup odour control system, the odour impacts could be reduced to low magnitude, reversible, and would be **less than significant**.

Noise, vibration, and lighting. Operation of the treatment facility would generate noise, vibration, and lighting issues. The treatment facility would be located adjacent to residential properties. Noise generating equipment would include:

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- air-driven pumps,
- compressors,
- fans and blowers,
- diesel driven pumps, and
- standby diesel power generators.

The treatment facility would be designed not to exceed 45 dB and 55 dB at the edge of the facility footprint, during the evening and day respectively. Operation of the treatment facility would also comply with zoning regulations. Sound attenuation would be installed in the buildings housing the units and on diesel engine exhaust to ensure that decibel levels remained below 45 dB at the property line, to meet the local municipal bylaw requirement, and to meet WCB/OSHA criteria for worker safety. All noise-generating equipment would be installed in soundproof rooms to meet these requirements.

All equipment that could create vibrations would be installed inside structures. Because the wastewater systems to be used at the treatment facilities do not include excessive vibrating equipment and are typical of current operating systems found elsewhere, vibration issues are not anticipated and, if they occur, can be fixed.

The lighting plan for the UVic Fields facility is expected to include normal post top sodium vapour lighting standards similar to those on residential streets. If night work is required, higher intensity lamps may be needed. All lighting would be directed downward and would have shields installed to prevent lighting of the night sky and local residences.

In accordance with corporate activities for environmental sustainability, facility planning would incorporate energy efficiency and BC Hydro power smart initiatives and the applicable Leadership in Energy and Environmental Design (LEED™) standards for green buildings. For example, LED lighting that uses low energy and emits low UV light could be specified.

Mitigation measures. Appropriate design would be used to reduce noise, vibration, and lighting effects. The proximity of the site to residences would be expected to introduce an impact of moderate impact either continuously or occasionally over the long-term. Such effects may be reversible. The risks of noise, vibration, or lighting effects are considered sufficiently high that the impacts are considered **significant**.

Traffic. Operation of the treatment facility would require the removal of screenings and grit from the site by truck. Transporting screenings and grit to Hartland landfill would require one truck every five to six days. Truck movements would be timed to avoid sensitive time periods, such as weekends. Trucks would be enclosed to limit odour impacts.

Mitigation measures. Standard procedures are sufficient to minimize impacts.

The removal of screenings and grit would be a long-term impact, that is not reversible, but is considered negligible in magnitude due to the low volume of operational truck traffic. The impact is **less than significant**.

Ancillary facility construction

Noise, vibration, dust, and community use. An expanded network of pipes and a pump station would be required to support the operation of the treatment facility, as described in the project description. Construction of ancillary facilities would introduce noise, vibration, dust, and land impacts.

Construction of the pump station on the Finnerty-Arbutus site would introduce impacts similar to those discussed in the assessment of the Finnerty-Arbutus treatment facility. The pump station footprint would be small than a treatment facility, but many of the same issues related to dust, noise, vibration, and traffic would exist. The mitigation measures for constructing the pump station would be similar to those that would be used to construct a treatment facility.

Ancillary facility construction would be conducted in accordance with local municipal bylaws to minimize noise and vibration disturbance. Dust control measures, including the use of box covers on trucks, the application of CRD codes of practice, and a dust management plan would be used to reduce effects on residents and land users.

Mitigation measures. During the construction period, activity would be limited near the active construction area. CRD representatives will work with UVic and District of Saanich, and community groups to minimize impacts of constructing the ancillary facilities through residential neighbourhoods, and along residential streets.

With the application of approved mitigation measures, the impacts of pipe construction under roads are considered short-term in duration, and reversible, similar to other public road projects. The magnitude of the effect is considered moderate, short-term, and of local extent. The impacts of pipe installation can be mitigated and are considered **less than significant**. However, construction of the pump station on the Finnerty-Arbutus site would cause medium-term land disturbance and community use impacts that are considered to be high magnitude. Until recently, the Finnerty-Arbutus site was privately held and recreational use was not encouraged, but still occurs so the impacts are considered **significant**.

Traffic. Impacts during the ancillary facility construction phase would be related to delays, detours, and temporary changes in traffic volumes through residential neighbourhoods.

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Mitigation measures. A traffic management plan would be developed for the construction period. CRD representatives will work with municipal planners, land owners, and community groups to inform them of the project schedule.

The development and implementation of a traffic management plan would help to reduce traffic effects of the project. The impacts are considered to be short-term, reversible, low to moderate in magnitude, and **less than significant**.

Ancillary facility operation

Community use. Limitations would exist over the types of development that are permitted in existing and new rights-of-way and at the Finnerty-Arbutus property, outside of the pump station footprint, and public access would be restricted on the pump station footprint. Generally, the construction of permanent structures by land owners is not permitted in the right-of-way.

Mitigation measures. Where new rights-of-way are required, CRD will reach an agreement with landowners, mitigating future land development limitations in the right-of-way. The CRD would communicate with property owners whose land would be crossed in existing rights-of-way to reduce potential impacts. Community input, regarding the desired future land use for the remaining portions of the Finnerty-Arbutus site would be encouraged

With agreements established between the CRD and property owners securing rights-of-way, and communication with property owners whose lands would be crossed by the ancillary facilities, the long-term impact is not reversible, but low in magnitude. Community input as to the future use of the remainder of the Finnerty-Arbutus site would help to offset the potential impacts of constructing a pump station, which are considered long-term, not reversible, and of moderate magnitude, and **less than significant**.

Noise, vibration, and lighting. The operation of treatment facility at the UVic Fields would require a pump station on the Finnerty-Arbutus property. The pump station would generate noise and vibration, and could require on-site lighting.

Mitigation measures. The pump station would be designed to generate limited noise and vibration outside of the pump station building. If required, lighting on the site would be directed to minimize disturbance.

With appropriate facility design, focussed on limiting noise, vibration, and lighting effects, the impacts would be considered low magnitude, long-term, not reversible, but **less than significant**.

Odour. The operation of the pump station has the potential to generate odour. However, the pump station would be designed to have no detectable odour at the treatment facility boundary during normal operation.

The potential for odour impacts may exist during annual odour control maintenance or during equipment failure. In rare cases of equipment malfunction, odour impacts of unknown magnitude and duration could affect the local area. The season and prevailing winds direction patterns at the time would determine the potential effects.

Mitigation measures. An odour control back-up system would be designed to avoid releases of noticeable odour during maintenance and malfunctions.

Under normal facility operations, odours would not be detectable beyond the project footprint. Some odour releases could occur during annual maintenance or if equipment malfunctions, but these effects would be reduced through the use of a back-up system. Because of the proximity of homes to the conceptual location of a treatment facility on this site, occasional low-magnitude releases of odour may be noticeable. Potential odour effects are considered long-term, even though individual events would be short-term, perhaps measured in hours or less. Impacts are reversible, of low magnitude, and **less than significant**.

Traffic and roads

Treatment facility site conditions

The University of Victoria Fields site is located northeast of the McKenzie Avenue - Gordon Head Road intersection in an area currently used for UVic athletics in the District of Saanich. Access to the site would be via McKenzie Avenue, which is an arterial road and a designated truck route (Figure 7-2).

The initial traffic impact assessment for this project examines the volumes and types of vehicular traffic; road classification; proximity to designated truck routes; alternative modes of transportation; accident history; transit service; and impact on existing traffic from construction and installation of pipes underneath existing road surfaces.

These factors are considered for the following periods for this project:

- 2009 Present Conditions,
- 2010 – 2012 Construction of Phase 1 facility,
- 2030 Operation at full capacity of Phase 1 facility,
- 2030 – 2032 Construction of Phase 2 or expanded facility, and
- 2065 Operation at full capacity of expanded facility.

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When considering the potential routing(s) to and from the site, designated truck routes are used where possible as well as the shortest route to designated truck routes. The UVic Fields site would be accessed from McKenzie Avenue. This road is classified as an arterial road and is a designated truck route.

Ancillary facility conditions

The ancillary facilities consist of the gravity main and outfall from the site, the Arbutus Road pump station, and the forcemain between the pump station and site. Most of the length of these facilities would be underneath existing roadways such as McKenzie Avenue, Finnerty Road, Alpine Crescent, and Monarch Place (Figure 3-8).

Impacts and mitigation measures

Data were obtained from the District of Saanich and the Capital Regional District. The existing volumes on the road links to the facility are illustrated in Table 9-3. This table shows the current traffic volumes in vehicles per day (vpd) and vehicles per hour (vph) for the PM Peak Hour period for each road link. An assumed growth rate of 1% per annum was used to forecast these traffic volumes to 2030, when the second phase of construction is scheduled to begin. Traffic volumes for 2065 were not forecast as there are too many uncertainties related to future transportation technologies, infrastructure, travel modes, and modal shares.

Table 9-3 Daily and PM peak hour traffic volumes for the access route to the UVic Fields site

Road Name	Characteristic	Units	2009	Volumes	2030	Source
McKenzie Ave	Traffic - vehicular volumes	Vehicles per day (vpd)	12,500	vpd	15,405	Municipal, CRD
		Vehicles per hour (vph) - PM Peak	1,300	vph	1,602	

As arterial roads are expected to carry traffic volumes in the range of 10,000 to 30,000 vpd, McKenzie Avenue would have no capacity limitations for the forecast growth in background traffic.

Treatment facility construction. The forecast trips for the construction and operation of the candidate site for Phases 1 (2010) and 2 (2030) are shown in Table 9-4 as average trip rates per day (vpd) with an assumed 240 workdays per annum.

Table 9-4 Forecast vehicular volumes for Phases 1 and 2 construction of the UVic Fields facility

CONSTRUCTION TRAFFIC			
YEAR 2010		Duration	Average two-way trips (vpd)
Activities	Clearing/Grubbing/Aggregates	3 months	10 trucks
	Excavations	7 months	8 trucks
	Concrete	9 months	5 - 6 trucks
	Steel	9 months	1 truck / week
	Equipment, materials	24 months	1 truck / week
	Workers	24 months	50 cars
YEAR 2030			Average two-way trips (vpd)
Activities	Clearing/Grubbing/Aggregates	1 month	5 trucks
	Excavations	3 months	6 trucks
	Concrete	4 months	4 - 5 trucks
	Steel	4 months	1 truck / week
	Equipment, materials	24 months	1 truck / week
	Workers	24 months	30 cars

The construction of Phase 1 in 2010 to 2012 is forecast to generate approximately 75 two-way vpd for the candidate site decreasing to approximately 45 two-way vpd for Phase 2 construction in 2030 to 2032.

Mitigation measures. Construction traffic safety mitigation measures are presented in the Public Health and Safety section of this ESR. An important traffic issue would be the parking requirement for construction workers driving to and from the site. If the clearing and grubbing stage can create enough parking on-site for all construction workers then there would be negligible impact. If there is not enough space to accommodate all the parking on-site, it is recommended that van-pooling, ride-sharing and park and ride programs be developed to reduce the number of trips or that additional parking be developed elsewhere.

The Phase 1 construction traffic of 75 vpd represents an increase of traffic of 0.60% on McKenzie Avenue respectively over current volumes. Increases in the range of 1% are considered negligible. The 45 vpd construction trips associated with Phase 2 construction are all well below 1% and as such are considered negligible. The spatial impact would be local and of medium-term duration. While the traffic would be continuous over the construction period, it can be reduced by creating parking areas elsewhere, resulting in a rating of **less than significant**.

Treatment facility operation. As shown in Table 9-5, the number of site-generated trips for the operation of the candidate site is quite small and when compared to the existing and forecasted vehicular trips on the road links in the preferred routing, these trips would have a negligible impact. The preferred routing is identified to accommodate truck traffic during construction and

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the need to use designated truck routes. Operations staff would not have to use this particular route, and their distributed travel would reduce the impact even further.

Table 9-5 Forecast vehicular volumes for Phases 1 and 2 operation of the UVic Fields facility

OPERATIONAL TRAFFIC		
YEAR 2030		Average two-way trips (vpd)
Activities	Truck Loads	
	Screenings / Grit	1 truck / week
	Chemical	8 - 9 trucks / year
	Employees	12 cars
YEAR 2065		Average two-way trips (vpd)
Activities	Truck Loads	
	Screenings / Grit	1-2 trucks / week
	Chemical	1 truck / month
	Employees	15 cars

Mitigation measures. No mitigation measures are required.

Staff may be spread over the regional area, and while the event would be continuous, the magnitude of the effect is negligible, has no residual effect and the resulting rating is **less than significant**.

Ancillary facility construction. Ancillary facility pipes would be buried in the road corridor, most probably underneath the travel lanes, using cut and cover methods.

Construction would disrupt vehicular traffic on affected routes. The extent and severity of disruption would be a function of the traffic volumes and available opportunities to keep some lanes open or to reroute traffic. All the roads potentially effected by the construction of ancillary facilities are two-lane, so it is assumed that one lane could remain open and alternating directions of traffic utilize the remaining lane.

Mitigation measures. Standard procedures for managing vehicular traffic in a construction zone would be implemented which would result in one lane remaining open to alternating directions of traffic. Construction could be restricted to single blocks at a time and scheduled outside of peak periods of vehicular activity.

The impact would be local, of short-term duration and continuous during the construction period. Considering volumes of traffic affected, the result is a moderate impact on the local, collector, and arterial routes. One-way alternating traffic would be permitted, resulting in a rating of **less than significant**.

Ancillary facility operation. There would be no impact from the operation of the ancillary facilities as all of the piping would be underground.

Mitigation measures. Road surfaces would be restored to operational standards and no additional mitigation measures are required.

While the impact would be local in nature and continuous, there would be no measurable residual effect and as such the rating is **less than significant**.

Public health and safety

Impacts and mitigation measures

Treatment facility construction. Noise and dust generated during construction could have health effects on adjacent residents. Dust control measures would be employed to limit creation of dust during ground-disturbing activities. Wind transport of dust to adjacent residential properties to the west and north of the site is possible.

During construction, the greatest safety risk would result from vehicles on roads and heavy equipment operation on the site. Automobiles, pedestrians, and cyclists entering and leaving the University of Victoria via McKenzie Avenue may experience delays and an increased safety risk. The McCoy Road bicycle path would probably be closed during construction. With the use of flaggers and signage, the risk to the public from vehicle movement can be minimized. The construction site would be fenced to prevent unauthorized public access. Flaggers would be present during school hours to further limit access to the site and protect travellers from construction traffic.

Mitigation measures. Nearby residents would be notified before disruptive construction activities occur. The project contractor would communicate regularly with managers of the University of Victoria to discuss construction activities and the potential for disruption of university activities. Dust impacts to nearby residences should be monitored during construction and appropriate actions taken to control dust transport from the construction site.

No special access or traffic control measures are needed, beyond those that are applied as part of standard construction practice for projects of this nature.

The potential health and safety effects of construction would be temporally limited to the construction interval, and are considered medium-term. Spatially, the health and safety risks are greatest at the perimeter of the worksite, and are low elsewhere. These impacts are reversible. Safety impacts are considered to be of low magnitude, and health effects are considered to be of moderate magnitude because of the proximity of residences. With appropriate controls of

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construction activities, the significance of public safety and health effects are considered **less than significant**.

Treatment facility operation. Public safety risks are limited to the slight increase in vehicle traffic associated with the facility operation. The facility would be fenced to prevent unauthorized entry, and the equipment at the facility is enclosed. Health risks would be limited to workers who come into contact with untreated wastewater or microbial aerosols. The enclosed facility prevents direct transmission of disease organisms to residents, reinforced by the odour control system that limits viruses, bacteria, or other contaminants from being discharged from the facility.

Mitigation measures. No measures are needed to protect public health and safety during facility operation beyond those included in the specified design and standard operating procedures.

There are negligible public health impacts associated with the wastewater facility. Public safety effects would be limited to traffic-related risks. The temporal extent is long-term, and impacts would be reversible. The magnitude of public health and safety impacts are negligible, and are considered **less than significant**.

Ancillary facility construction. Public safety effects during ancillary facility construction are mainly associated with operation of heavy equipment and the presence of open trenches. Flaggers would be available during the day to manage vehicles and pedestrians near the worksite. Barriers or flagging is typically provided to alert people to the presence of open trenches. Unauthorized access to worksites is strictly limited.

Mitigation measures. Standard construction procedures would be followed to minimize safety risks during pipe and pump station construction.

The public safety risk of ancillary facility construction would be limited to the period of construction (short- to medium-term) and to the area where active construction is occurring (mostly road rights-of-way and the pump station site). The impacts would be reversible. Magnitude of this impact is considered low, and **less than significant**.

Ancillary facility operation. Once the pipes and pump station are in service, any public health or safety impacts would be negligible and **less than significant**.

Visual aesthetics

Treatment facility site conditions

The UVic Fields site is an open grassy area crossed by a footpath and bike path. Alongside the path is a row of deciduous trees. Adjacent, and east of the site, is the UVic Wallace rugby field. To the west and north are detached dwellings, a townhouse complex, and the CRD Campus View Housing complex. Deciduous trees and shrubs border the site to the west. McKenzie Avenue is adjacent and parallel to the southern boundary of the site (Photo 9-2 and Photo 9-3). Users of the site or drivers and pedestrians on McKenzie Avenue have views a grassy field, lawn, and ornamental trees.



Photo 9-2 Existing view of UVic Fields site looking north across McKenzie Avenue



Photo 9-3 Existing view of north section of UVic Fields site looking north to townhouse complex

Ancillary facility conditions

The visual qualities of the ancillary facility pipe routes are primarily suburban streetscapes. The semi-natural forested viewshed at the Finnerty-Arbutus pump station site, is affected by construction of a pump station.

Impacts and mitigation measures

Treatment facility construction. Constructing the facility requires removal of approximately six deciduous trees and realignment, or temporary closure of the path that crosses the site. Pavement and buildings would replace a grassy field, lawn, and ornamental trees. Drivers and cyclists on McKenzie Avenue and users of the adjacent footpaths and recreational facilities would have unobstructed views of portions of construction site. Deciduous trees and buildings associated with Wallace Field provide partial screening of the northern portion of the site from the south and east. Approximately four of the units at the CRD townhouse complex at 2249 McCoy Road would have views of the construction (30 m from construction site). Approximately 15-20 units of the 72 units in the townhouse complex at 3987 Gordon Head Road would have views of construction (40 m or more from construction site). Several private dwellings on McCoy and Maria Roads would have views of the construction, though dense summer foliage would obscure views from immediately adjacent dwellings (20 m from construction site). Due to the proximity of the site to the detached dwellings to the east, and townhouses to the southeast and north, construction lighting is likely to contribute to visual impact during the hours of darkness.

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Mitigation measures. Due to the proximity of dwellings to the construction site temporary screening and careful use of security and space lighting at night should be used to reduce the visual impact of construction on residents and vehicle and foot traffic on McKenzie Avenue.

The overall visual aesthetic impact of construction is considered to be local and of moderate duration (occasional occurrence for up to two years). The magnitude of the impact is moderate, irreversible, and is considered **significant**.

Treatment facility operation. Operation of the treatment facility on the site would transform the visual character from grass field and lawn with deciduous trees to pavement and buildings. The treatment facility would be near (20-40 m) detached dwellings and housing to the west and north of the site. Players and spectators at Wallace Field to the east would have unobstructed views of the north section of the facility. Drivers, cyclists, and foot traffic on McKenzie Avenue would have unobstructed views of the south section of the facility.

Mitigation measures. Mitigation measures can reduce the visual impacts associated with the operational treatment facility. Vegetative or landscaped earth screening surrounding the facility would provide partial screening. Careful building design, attuned to the surrounding residential and recreational land uses in the area should be employed to minimize the typically industrial look of a treatment facility. Security and space lighting could be positioned to minimize glare and artificial light intrusion off-site. Photo 9-4 and Photo 9-5 illustrate post-construction views of the facility from the south side of McKenzie Ave, no vegetation, or landscape screens or have been added.

Based on this analysis, the visual impact of the treatment facility on the site is considered to be long-term, and of moderate magnitude due to the,

- loss of a grass and lawn area,
- addition of an industrial structure in a recreational and residential area, and
- high visibility of the location to local residents and traffic on McKenzie Avenue.

Collectively these visual impacts would create a demonstrably negative aesthetic impact that is considered **significant**. Mitigation opportunities are available to reduce visual impacts through partially screening the site and through the use of building designs that are complimentary to surrounding land uses. These measures would reduce the visual impact to **less than significant** levels.

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Figure 9-2 Overview of UVic Fields and neighbouring properties



Photo 9-4 Rendered view of UVic Fields facility looking north across McKenzie Avenue



Photo 9-5 **Rendered view of UVic Fields facility looking northwest across McKenzie Avenue**

Ancillary facility construction. Construction of ancillary pipes would result in views of construction equipment and construction traffic in the suburban streetscapes of southeast Gordon Head, Queenswood, and Cadboro Bay. Views of construction and related traffic would be localized, and of moderate duration (up to two years).

A pump station would be constructed at the forested Finnerty-Arbutus site. Construction of the pump station requires clearing and levelling of approximately 0.16 ha of the 4.4 ha parcel, converting 3.5% of the site from forest to utility structure. Although a relatively small portion of the site, it is in a visually prominent location that can be viewed from Arbutus road and locations to the east, northeast, and southeast.

Mitigation measures. Mitigation measures should consider reducing the facility footprint to minimize clearing, such as reducing on-site parking and consider relocating the pump station to a less visually prominent part of the site to maintain the existing vegetation adjacent to Arbutus Road.

The clearing of a small (0.16 ha) area of forest at the Finnerty-Arbutus site is considered to be of moderate magnitude, due to its prominent visual position within the parcel, which would present views of the cleared area to traffic on Arbutus Road and locations to the east, northeast, and southeast.

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Views of construction equipment and construction traffic would be localized and of moderate duration (up to two years). The visual impacts of clearing at the Finnerty-Arbutus site are considered to be of moderate magnitude and irreversible. This demonstrably negative aesthetic impact is considered **significant**. However, implementing mitigation measures will reduce the impact to **less than significant**.

Ancillary facility operation. All of the ancillary infrastructure would be below ground with the exception of the pump station at Finnerty-Arbutus. The pump station would add utility structure to a forested landscape. A driveway would bring worker and truck traffic onto the site. Security and space lighting may be used to maintain and operate the pump station during the hours of darkness. Users of the site would have interrupted views of the pump station through the forest. Visual impacts beyond the parcel boundaries would be restricted to views from Arbutus Road and views from the east, northeast, and southeast. The forest provides screening from other vantage points.

Mitigation measures. The relatively small footprint of the pump station affords extensive opportunities to screen it from the remainder of the site, and from locations beyond the parcel. Vegetative and landscape screening can be used to reduce visual impacts. Careful building design that incorporates the use of analogous forest colours would mute visual impact. Consideration should be given to placing the pump station underground and using off-site parking to achieve the lowest level of visual impact.

Based on this analysis, the visual impact of the pump station on the site is considered to be long-term, and of low magnitude due to the small footprint required from the site and the extensive mitigation opportunities that can be used to reduce the visual impact. With extensive mitigation the visual impact of the pump station would create no demonstrably negative aesthetic impact and can be considered **less than significant**.

10.0 CUMULATIVE EFFECTS

For the purposes of this ESR, cumulative effects refer to the regional or sub-regional effects of constructing and operating a wastewater treatment facility in combination with the effects of other existing or planned developments.

The area considered in this cumulative effects assessment includes Gordon Head, Mt. Tolmie, and Oak Bay north of Lansdowne Road. Most of this area has been developed for housing, though the University of Victoria, Queen Alexandra Foundation facilities, and numerous public schools constitute a substantial institutional presence. Several large natural areas have been protected in this subregion, including Mount Douglas Park, Mount Tolmie Park, and several ocean waterfront areas in Gordon Head, Cadboro Bay, and Oak Bay. Some residual forest areas remain on lands owned by the University of Victoria and District of Saanich. Virtually all forest lands have been logged at least once; old growth is limited to scattered trees and small residual stands in parks. Few open streams remain; most have been enclosed in storm drains. The natural landscape in this suburban area has been largely replaced by roads, structures, lawns, and other landscaping.

Environmental effects of a wastewater facility

Landforms, geology, soils, hydrology, water quality, vegetation, and wildlife taken together may form the “environment” of the study area. Even without a detailed analysis of the study area, examination of aerial photographs or a cursory field inspection leads to the conclusion that existing development in the study area constitutes a high magnitude, long-term, irreversible impact on the environment that must be considered **significant**.

A treatment facility and its supporting ancillary infrastructure would affect a total of 2 to 3 ha of land. This small footprint makes a slight contributions to the magnitude of cumulative effects in the study area. If the treatment facility is built on previously-disturbed land that has limited environmental value, the contribution to cumulative effects would be further reduced. The kinds of contribution made by the treatment and ancillary facilities to cumulative effects include:

- Increased area of impervious surface, which could alter hydrology. The specified treatment of runoff (infiltrated on site, minimizing runoff), would mitigate this impact.
- Removal of mature trees. This impact would occur on the Finnerty-Arbutus or Cedar Hill Corner sites, and the loss of vegetation is not considered mitigable. With less than 1% of the entire Coastal Douglas fir Zone remaining in mature or old forest condition in British Columbia, any further removal is a cause for concern.
- Loss of wildlife habitat associated with the mature forest. Wildlife habitat has been replaced or severely altered in the study area, and further losses would jeopardize the survival of forest-dependent species.

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Offsetting the physical environmental impact of building a treatment facility is the ability to treat wastewater relatively near to its source (the Gordon Head neighbourhood) and to recover water and energy for reuse. The marine environment would benefit from discharge of much cleaner effluent than is the case today, and a longstanding impact on the sea would be mitigated.

In light of the existing significant cumulative effect of development in the study area, the relatively small contribution of the wastewater facility to those impacts, and the offsetting marine benefits of treatment, the contribution of the wastewater facility to cumulative environmental effects is considered **less than significant**. A caveat to this determination is the need to make every effort to avoid removal of mature coastal Douglas fir vegetation communities in siting the wastewater facility.¹

Social effects

Cumulative effects of development on social phenomena in the study area are less clear than are environmental effects. The effect of development on social topics considered in this ESR—archaeology, heritage, traffic, health, safety, visual aesthetics, odour, noise, vibration, lighting, dust, air emissions, and community use—would be the subject of debate among experts. It is beyond the scope of this ESR to, for example, quantify specific health and safety conditions throughout the cumulative effects study area. Fortunately, such an assessment is not required to understand the following potential contribution of the proposed wastewater treatment facility to the cumulative effects of existing conditions.

- The cumulative effects of existing development on archaeological and heritage resources in the study area can be considered adverse and **significant**. Although it is unlikely that the wastewater facility would contribute to further damage or loss of archaeological or heritage resources, the topic will be investigated in detail after a site is chosen.
- Even during the busy construction period, traffic associated with the wastewater project would constitute less than 2% of vehicles on major roads, and much less during facility operation. Traffic congestion is a serious issue in the study area, but the wastewater facility would not materially contribute to the problem except temporarily during construction.
- Compared with the aggregate impacts of urban form and design of existing development and societal activities in the study area that affect public health, safety, noise, vibration, lighting, dust, and air emission conditions, the wastewater facility's contribution would be negligible,

¹ It bears mention that the study of environmental impacts of the CRD's proposed wastewater project greatly exceeds the level of review of nearly all other existing developments in the study area. Private and public lands continue to be cleared of the scant remaining mature coastal Douglas fir forest for housing, roads, highway interchanges, golf courses, agriculture, utility corridors, other urban development, and even commercial logging. This clearing typically proceeds without mitigation, compensation, or even, in most cases, consideration of its ecological or cumulative effect.

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- The visual aesthetics effects of the proposed wastewater facility would be small in comparison with the appearance of other structures throughout the study area,
- Wastewater treatment has the potential to release unpleasant odours that could affect a portion of the study area, but the CRD is committed to a goal of eliminating noticeable odours from the Saanich East-North Oak Bay facility.

The effects of development in the study area on socially-important issues are recognized to be serious and in need of investigation and action. The analysis conducted in this ESR, however, indicates that the contribution of the wastewater facility to the cumulative social effects of development in the study area would be of low or negligible magnitude and **less than significant**.

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Triple Bottom Line Analysis of Candidate Saanch East-North Oak Bay Wastewater Treatment Facility Sites



Prepared for:



Making a difference...together

July 2009

Prepared by:



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1.0 INTRODUCTION AND PROJECT DESCRIPTION

1.1 The Project

In 2006, the British Columbia Minister of Environment directed the Capital Regional District (CRD) to begin planning to provide a higher level of wastewater treatment for the core area municipalities. Subsequently, the province requested the CRD to consider resource recovery as part of its wastewater treatment program. The Core Area Liquid Waste Management Committee (CALWMC) considered several options for delivering a decentralized model of wastewater treatment in the region. All of the shortlisted options included a treatment facility in Saanich East-North Oak Bay (SENOB). The CALWMC has authorized staff and consultants to undertake a variety of planning studies associated with wastewater treatment technology, resource recovery and reuse, facility siting, and an Environmental and Social Review (ESR) in the Saanich East-North Oak Bay area.

As part of the site selection process, three candidate sites for a wastewater facility were identified in the area shown in Figure 1. The following sites were presented to the CALWMC in April 2008 and approved for further investigation:

- Finnerty-Arbutus site,
- Cedar Hill Corner site, and
- UVic Fields site.

For each site, engineering staff of the CRD and their consultants developed conceptual facility footprints. The potential impacts of constructing and operating a treatment facility on each of these sites are described and evaluated in the ESR. The ESR and this Triple Bottom Line (TBL) analysis also include the ancillary facilities (gravity mains, forcemains, and a small-diameter pressurized pipe from Penrhyn Pump Station to the treatment facility) that are needed to support operation of the treatment facility. The analyses of Cedar Hill Corner and UVic Fields sites include a pump station at the Finnerty-Arbutus site because of their location in the catchment area.



Figure 1 Candidate sites for a wastewater treatment facility in Saanich East-North Oak Bay

1.2 The Triple Bottom Line approach

Site selection is a complex process, and so the CRD has elected to use a Triple Bottom Line assessment and comparison of the three candidate wastewater treatment sites in the Saanich East-North Oak Bay study area. The results of this analysis will be used by the CALWMC as part of the site selection process.

The TBL approach provides a basis for examining the performance of alternative sites for a wastewater treatment facility and associated ancillary facilities. TBL is a tool that provides decision makers with a comparison of the socio-community, economic, and environmental ratings of the candidate sites. The approach allows technical and subjective assessments to be combined in a single score. The results of the TBL analysis can be used in combination with other information available to the CALWMC in selecting an optimum wastewater treatment facility site.

1.3 Objective

The purpose of this report is to outline the approach and results of the TBL analysis, comparing the three candidate sites in the Saanich-East North Oak Bay study area.

2.0 METHODS AND ANALYSIS

2.1 Triple Bottom Line evaluation process

This TBL analysis assesses and compares the environmental, social-community, and economic performance of the three candidate wastewater treatment sites in Saanich East-North Oak Bay (SENOB). For each topic, a set of criteria was developed, based in part on the topics examined in the ESR of the sites.

Each TBL criterion contains a statement that indicates the desired goal in selecting a site for a wastewater treatment facility in the SENOB area. The criteria are evaluated and assigned a rating of 1, 2, or 3, with 3 indicating the greatest suitability for a treatment facility, and 1 being least suitable.

Once all the criteria have been evaluated and ratings assigned according to the performance of each candidate site, a total score is assigned by adding the ratings for each criterion. The result is a rating value for each of the three main topic categories (environmental, social-community, and economic) for each candidate site, as well as a total rating value for each site. This rating system provides a clear, simple, and objective evaluation of the criteria and allows for direct comparison of the performance of each candidate site.

The public and the CALWMC have indicated that social, economic, and environmental topics should be given equal weights in TBL analyses. Within each of the three topic areas, however, weights must be assigned to compensate for unequal numbers of criteria, and to reflect the importance of the individual criteria to facility siting. These “criteria weights” are shown on Table 15, presented later in this report.

2.2 Analysis criteria and results

Environment

The following criteria were used to evaluate the environmental impacts:

- geotechnical development constraints,
- hydrology and water quality,
- vegetation,
- wildlife and wildlife habitat, and
- total energy use.

Geotechnical development constraints

The main goal of this analysis criterion is to minimize seismic, liquefaction, and slope instability risk, and to ensure presence of satisfactory soils to support a treatment facility at each candidate site. Each site option is assessed based on three rating categories:

- 1= Considerable geotechnical development constraints,
- 2= Minor geotechnical development constraints, and
- 3= No identified geotechnical development constraints.

In assessing geotechnical development constraints, indicators such as soil bearing conditions, settlement concerns, site drainage constraints, and soil behaviour during seismic loading were considered. The presence of faults and the risks they may pose were carefully reviewed as part of the geotechnical assessment.

Geotechnical suitability information was gathered using the BC Ministry of Energy, Mines and Petroleum Resources’ Quaternary geology mapping of Greater Victoria (Monahan et al. 2000). This information was supplemented by an examination of historical aerial photographs and site visits by C.N. Ryzuk and Associates to assess the sites’ geotechnical properties and construction conditions. The geology and soils of all of the sites are adequate for constructing a wastewater facility, though care must be exercised in design and construction to avoid erosion or stability concerns.

Table 1 Geotechnical development constraints

Candidate site	Rating
Finnerty-Arbutus	2
Cedar Hill Corner	2
UVic Fields	2

Hydrology and water quality

The main goal of this criterion is to minimize adverse effects of construction at the candidate treatment facility sites on hydrology and surface water quality, assuming the use of standard construction techniques to avoid such effects. Each site option is assessed based on three rating categories, where:

- 1 = Substantial effect on hydrology or water quality during construction,
- 2 = Moderate effect on hydrology or water quality during construction, and
- 3 = No effect on hydrology or water quality during construction.

The ratings consider short term effects during construction, because there are no identified long term operations effects on hydrology or water quality. These effects include direct treatment facility and ancillary facility construction effects on watercourses, or erosion and sedimentation

events that could affect downstream water. The ratings are based on field inspections of the sites and review of available maps and reports on hydrology of the study area.

Table 2 Potential hydrological and water quality effects

Candidate site	Rating
Finnerty-Arbutus	3
Cedar Hill Corner	2
UVic Fields	3

Vegetation

The fundamental goal of this criterion is to minimize the area of native plant communities that will need to be removed for the construction of the wastewater treatment facility and ancillary facilities. The assessment of each treatment facility site option is based on three rating categories:

- 1= 1 ha or more of red-listed plant communities would be removed,
- 2= Between 0.25 and 1 ha of red-listed plant communities would be removed, and
- 3= Less than 0.25 ha of red-listed plant communities would be removed.

Southern Vancouver Island’s native plant communities are considered threatened, or “red-listed”, by the British Columbia Conservation Data Centre. Candidate sites that require less removal of red listed plant communities are favourable. The ratings are based on review of maps and reports, and the conduct of field inspections.

Table 3 Potential vegetation effects

Candidate site	Rating
Finnerty-Arbutus	1
Cedar Hill Corner	2
UVic Fields	3

Wildlife and wildlife habitat

The main goal is to minimize the area of wildlife habitat that needs to be removed for the construction of the wastewater treatment facility and ancillary facilities. Each site option is assessed based on three rating categories, namely:

- 1= 1 ha or more of forested wildlife habitat would be removed,
- 2= Between 0.25 and 1 ha of forested wildlife habitat would be removed, and
- 3= Less than 0.25 ha of forested wildlife habitat would be removed.

Mature and old forests support important wildlife habitat functions, including reproduction (such as wildlife trees), security (such as coarse woody debris and dense shrub cover), and foraging and thermal habitat attributes. The structural attributes of mature and old forest are important for a variety of native wildlife species, including mammals, amphibians, birds, and invertebrates. Candidate sites that require less removal of forested wildlife habitat are favourable. Reports, field inspections, and review of maps and orthoimagery were used to support the analysis.

Table 4 Potential wildlife and wildlife habitat effects

Candidate site	Rating
Finnerty-Arbutus	1
Cedar Hill Corner	2
UVic Fields	3

Total energy use

The key goal of this analysis criterion is to minimize the total energy used to operate a wastewater treatment facility. The assessment of each treatment facility site option is based on three rating categories that describe how many kilowatt-hours (kWh) of energy is required to treat a cubic metre (m³) of wastewater:

- 1= High energy consumption (more than 1.0 kWh/m³,
- 2= Moderate energy consumption (0.65 to 1.0 kWh/m³)*, and
- 3= Minimal energy consumption (less than 0.65 kWh/m³).

Energy is required to:

- pump wastewater from Penrhyn Pump Station,
- pump wastewater to the facility,
- treat the wastewater, and
- pump sludge from the facility.

The energy required for pumping operations increases with a treatment facility site's distance horizontally and vertically from the existing sewer main (the East Coast Interceptor). Energy requirements are affected by length of pipe (energy lost due to friction, also known as head loss) and elevation change. The power required for treatment is considered to be the same for all three plants due to identical treatment processes and anticipated volumes of treatment.

* 0.65 kWh/m³ represents the approximate amount of energy used for conventional treatment with sand filters (van Bentem, 2008).

Table 5 Total energy use evaluation

Candidate site	Energy required (kWh/m³)	Rating
Finnerty-Arbutus	0.62	3
Cedar Hill Corner	0.77	2
UVic Fields	0.78	2

Social and community

The following criteria were used to represent potential social and community impacts:

- odour,
- traffic and roads,
- visual aesthetics,
- community use,
- nuisance effects, and
- property values.

Odour

The main goal is to minimize the number of people potentially affected by odour of the treatment facility at each candidate site. The treatment facility would be designed and operated to generate no detectable odour at the property line, so the estimates in this analysis assume an odour release caused by a malfunction of the facility and backup systems.

The three rating categories for assessing the site options are:

- 1 = Many people potentially affected by odour (> 1,000),
- 2 = Some people potentially affect by odour (500 to 1,000), and
- 3 = Few people potentially affected by odour (< 500).

These ratings are based on results of odour dispersion modeling performed by Genesis Engineering Ltd., which identified a maximum likely transmission of noticeable odour under worst-case (low wind) meteorological conditions prevailing at the time of an odour release. This maximum distance is 500 m, and the scale of effect reflects total numbers of residents within 500 m of the treatment facility footprint. The number of people who would actually be affected during an odour release would be much smaller than the estimates, because only those “downwind” of the facility would notice the odour.

Table 6 Population potentially affected by odour releases

Candidate site	Population within 500 m of site	Rating
Finnerty-Arbutus	1,120	1
Cedar Hill Corner	817	2
UVic Fields	1,942	1

Traffic and Roads

The main goal of this analysis criterion is to minimize the number of vehicle trips affected by construction of the wastewater treatment facility and ancillary facilities. No traffic effects are anticipated during operation of a facility.

Each site option is assessed based on three rating categories:

- 1= Many vehicle trips potentially affected by construction disruptions (> 500,000 trips),
- 2= Some vehicle trips potentially affected by construction disruptions (250,000 to 500,000 trips), and
- 3= Few vehicle trips potentially affected by construction disruptions (<250,000 trips).

These ratings are based on an estimate of total numbers of trips potentially affected during the entire construction period. The access roads to the treatment facility and pump station sites, and the roads disturbed during construction of the ancillary pipes were included in the analysis. Traffic counts for the access roads to the treatment facility and pump station sites, namely McKenzie Avenue, Arbutus Road, and Cedar Hill Cross Road, were provided by the CRD. Seventy percent of the 24 hour traffic counts were used to estimate the number of vehicles using the roads during construction hours (7 am to 5 pm).

Traffic counts were not available for the local roads where the ancillary pipes would be constructed. To obtain this information, households adjacent to the ancillary pipes or in cul-de-sacs that would require those roads were counted from 2008 orthoimagery provided by the CRD. To determine the number of daily vehicle trips by local residents on roads affected by ancillary pipe construction, the number of affected households was multiplied by 7 (assuming an average of 10 trips per day per household, and 70% of vehicle trips occurring between 7 am and 5 pm).

It was assumed that construction would affect traffic for one third of the total construction period (for instance, when heavy truck traffic is generated). On these busy days, it was further assumed that traffic would be affected an average of half of the time for treatment facility construction, one-third of the time for pump station construction, and one-quarter of the time for the ancillary

pipe construction. Applying these assumptions, construction is expected to affect traffic for the following number of days:

- Wastewater treatment facility - 100 days,
- Pump station - 27 days, and
- Ancillary pipes - 18 days.

Many of the construction activities for the treatment facility, pump station, and ancillary pipes are expected to occur concurrently.

To determine the total number of vehicle trips affected during construction, the number of vehicle trips per day (based on traffic counts or from estimates based on household counts) was multiplied by the number of days construction is expected to affect traffic. The number vehicle trips that could be affected by the construction of the treatment facility and ancillary facilities for each candidate site are presented in Table 7.

Table 7 Total number of trips potentially affected by construction

Candidate site	Number of vehicle trips affected	Rating
Finnerty-Arbutus	366,000	2
Cedar Hill Corner	623,000	1
UVic Fields	995,000	1

The large number of potentially affected trips at the UVic Fields site reflects the larger traffic volumes on McKenzie Avenue, compared to access roads for the other two sites.

Visual aesthetics

The main goal is to minimize visual impacts of the treatment facility at each candidate site. Each site option is assessed on the basis of the following three rating categories, which consider the potential to screen the wastewater facilities to reduce visual effects:

- 1= Substantial adverse change to existing viewsheds,
- 2= Moderate adverse change to existing viewsheds, and
- 3= Little adverse change to existing viewsheds.

The visual assessment entails a subjective assessment of the changes in the attractiveness of a location as a result of construction of a wastewater treatment facility and ancillary facilities. The assessment considers the degree of landscape modification, and the compatibility of the structures with surrounding landscape features. Modifications can include the removal of existing trees and shrubs, changes to slopes and the addition of roads, buildings, lighting, and other utility structures. The effects of these visual changes on the landscape were assessed

through field visits and through the construction of digital 3-D models of the facilities at the candidate locations.

The TBL assessment considers the visual aesthetic effects of treatment on existing site conditions during construction and operation. The potential to mitigate visual impacts of locating a facility at each of the sites emphasized planting of landscape plants to provide screening. Mitigation options consider the proximity of residential areas, roads, and other vantage points.

Table 8 Potential visual aesthetics effects

Candidate site	Rating
Finnerty-Arbutus	1
Cedar Hill Corner	3
UVic Fields	2

Community use

The fundamental goal is to minimize disruption to permitted public uses at each candidate site. The three rating categories for assessing the site options are:

- 1= Considerable disruption to permitted public uses,
- 2= Some disruption to permitted public uses, and
- 3= Minimal disruption to permitted public uses.

The three sites under investigation are located in developed communities and public use of the current sites or neighbouring areas occurs. Public athletic and recreation use is permitted and encouraged at the UVic Fields site, and a bicycle and pedestrian path crosses the conceptual facility footprint. Dog walking is a popular use of the Cedar Hill Corner site, a use that is recognized and tolerated by the University of Victoria. The Finnerty-Arbutus site is posted as a no trespassing area, so the public access to this property, though common, is not considered to be a permitted use.

The ratings consider the degree of effect that the presence of a wastewater facility would have on permitted public use. Public use of the Finnerty-Arbutus property, though not permitted, occurs nonetheless and would be affected by a facility. The public could, however, continue to use the adjacent properties owned by the District of Saanich and the University of Victoria during facility construction. Dog walking could continue to occur on portions of the Cedar Hill Corner property outside of the treatment facility footprint. At the UVic Fields site, a treatment facility would require closure of the bicycle-pedestrian path, and would displace use of a grass practice field.

Table 9 Potential community use effects

Candidate site	Rating
Finnerty-Arbutus	2
Cedar Hill Corner	2
UVic Fields	1

Nuisance effects

The goal of this analysis criterion is to minimize potential nuisance effects (*i.e.*, dust, noise, vibration, and lighting) on neighbouring residential properties. Each site option is assessed on the basis of the following three rating categories:

- 1 = Many residential units affected by construction and operations nuisances (>200 units)
- 2 = Some residential units affected by construction and operations nuisances (100 to 200 units)
- 3 = Few residential units affected by construction and operations nuisances (<100 units)

The ratings consider the number of residential units within 30 m of the edge of the candidate sites or ancillary pipes. Details of the method of calculating the number of potentially affected properties are presented in Appendix A.

Ancillary facility effects would occur only during construction (with the exception of the pump station at Finnerty-Arbutus for the Cedar Hill Corner and UVic Fields sites). Most nuisance effects of the treatment facility would occur during construction, though the potential exists for light, noise, or vibration to continue during operation. The design standard for the facilities is to produce no detectable noise or vibration effects at the property line.

Table 10 Potential nuisance effects

Candidate site	Units within 30 m of:		Total units	Rating
	Candidate site boundary	Ancillary facility routes		
Finnerty-Arbutus	23	101	124	2
Cedar Hill Corner	49	186	235	1
UVic Fields	57	151	208	1

The large number of potentially affected properties for the Cedar Hill Corner and UVic Fields sites result from the great length of ancillary facility pipes required, some of which (in the case of Cedar Hill Corner) pass near to medium-density student housing.

Property values

The goal is to minimize a treatment facility's effects on value of neighbouring properties. It is important to note that there is no research that indicates how much a treatment plant would affect values of adjacent properties, or even that there is a consistent effect on property values. Hence this indicator only assumes that there could be a property value effect related to proximity to a treatment facility, visibility of the facility from a nearby property, or the potential "stigma" effect of having a treatment facility in a neighbourhood. Of the ancillary facilities, only the pump station is considered in estimating potential property value effects.†

Using these assumptions the assessment of each treatment facility site option is based on three rating categories:

- 1 = Many properties could experience property value effects (> 50),
- 2 = Several properties could experience property value effects (20 to 50), and
- 3 = Few properties could experience property value effects (< 20).

Table 11 Residential properties that could experience value effects

Candidate site	Attached residences	Detached residences	Total	Rating
Finnerty-Arbutus	0	14	14	3
Cedar Hill Corner	25	25	50	2
UVic Fields	42	14	56	1

Economic

The following criteria were used to evaluate the potential economic impacts of a wastewater facility:

- capital cost (excluding land),
- operating cost,
- land cost, and
- resource recovery potential.

Capital cost (excluding land)

The main goal of this analysis criterion is to minimize the capital cost (excluding land) of the project. The assessment of each treatment facility site option is based on three rating categories:

† Other wastewater pump stations in the CRD have been shown to have no measurable effect on the value of properties—even immediate neighbours.

- 1= \$141 to \$149 million,
- 2= \$134 to \$141 million, and
- 3= \$126 to \$134 million.

This factor considers the difference in construction costs for a treatment facility and necessary ancillary facilities, and does not take land acquisition into account. The capital cost figures were provided by the CRD. Table 12 presents the estimated capital costs and subsequent rating for each candidate site.

Table 12 Capital cost (excluding land)

Candidate site	Estimated capital cost	Rating
Finnerty-Arbutus	\$126.4 million	3
Cedar Hill Corner	\$149.1 million	1
UVic Fields	\$146.1 million	1

Operating cost

The fundamental goal of this criterion is to minimize the cost of operating the treatment and ancillary facilities. The following three rating categories are applied:

- 1= \$2.4 to \$2.6 million per year,
- 2= \$2.2 to \$2.4 million per year, and
- 3= \$2 to \$2.2 million per year.

Facility operating costs differ among the three candidate sites because two of the sites are located at higher elevation and require pumping of wastewater to the treatment facility. The operating cost figures were provided by the CRD. Table 13 presents the estimated annual operating costs and the subsequent rating for each candidate site.

Table 13 Operating cost

Candidate site	Operating cost (per year)	Rating
Finnerty-Arbutus	\$2.1 million	3
Cedar Hill Corner	\$2.5 million	1
UVic Fields	\$2.4 million	1

Land cost

The main goal is to minimize land costs associated with the proposed treatment facility. The land cost associated with building a wastewater treatment facility is an important economic factor. At the time this study was conducted, land cost information was not available for Cedar Hill Corner or UVic Fields so this criterion could not be completed for this analysis. To

maintain the mathematical integrity of the TBL evaluation, all three candidate sites were assigned a value of “2”. This value will be amended if necessary when the land costs are estimated.

Resource recovery potential

The main goal of this analysis criterion is to maximize the potential use of reclaimed water and recovered energy from the proposed treatment facility. The resource recovery potential differs for each candidate site and is assessed on the basis of three rating categories:

- 1= Few potential opportunities for resource recovery nearby,
- 2= Several potential opportunities for resource recovery nearby, and
- 3= Many potential opportunities for resource recovery nearby.

Water for non-potable use and heat energy can be recovered from wastewater. In this analysis, locations in the SENOB study area that have the potential to use recovered heat energy or treated water from the treatment facility were identified using land use classifications. These areas are termed resource recovery opportunity areas. The various land use classes of the SENOB study area were rated high, moderate, or low, depending on their potential for the use of either treated water or recovered energy. As distance increases from the site to the resource recovery opportunity area, the cost of installing pipes and other infrastructure to utilize the recovered resources also increases. The rating system considers proximity of potential resource users to treatment facility sites. The ratings for each site are presented in Table 14.

Table 14 Resource recovery potential

Candidate site	Rating
Finnerty-Arbutus	2
Cedar Hill Corner	2
UVic Fields	3

Weighting

Environment, social-community, and economic topics were weighed equally in the analysis, each given a weight of 100 points. The 100 points were distributed among the criteria in each topic. The criteria that were considered more important to site selection decisions were assigned a greater proportion of the 100 points (Table 15).

Rating results

Table 15 presents the topics, criteria, ratings, and weightings for each site. The highest possible score a site could receive is 900 points, which would be attained if a site scores a “3” for every criterion. The rating results are interpreted and compared in Section 3 of this report.

Table 15 Triple Bottom Line Evaluation of Candidate Sites

Topic	Criteria and goals		Rating categories	Ratings			Criteria Weight	Topic Weight
				Finnerty-Arbutus	Cedar Hill Corner	UVic Fields		
ENVIRONMENT	Geotechnical development constraints Minimize effects of seismic and liquefaction risk, slope instability, and surficial material.	1 2 3	Considerable geotechnical development constraints. Minor geotechnical development constraints. No identified geotechnical development constraints.	2	2	2	15.00	100
	Hydrology and water quality Minimize effect on hydrology and surface water quality.	1 2 3	Substantial effect on hydrology or water quality during construction. Moderate effect on hydrology or water quality during construction. No effect on hydrology or water quality during construction.	3	2	3	15.00	
	Vegetation Minimize the removal of red-listed plant communities.	1 2 3	1 ha or more of red-listed plant communities would be removed. Between 0.25 and 1 ha of red-listed plant communities would be removed. Less than 0.25 ha of red-listed plant communities would be removed.	1	2	3	25.00	
	Wildlife Minimize the removal of forested wildlife habitat.	1 2 3	1 ha or more of forested wildlife habitat would be removed. Between 0.25 and 1 ha of forested wildlife habitat would be removed. Less than 0.25 ha of forested wildlife habitat would be removed.	1	2	3	25.00	
	Total energy use Minimize total energy use during facility operation.	1 2 3	High energy consumption (> 1 kWh/m3). Moderate energy consumption (0.65 - 1 kWh/m3). Minimal energy consumption (< 0.65 kWh/m3).	3	2	2	20.00	
SOCIAL AND COMMUNITY	Odour Minimize the number of people affected by odour.	1 2 3	Many people potentially affected by odour (>500). Some people potentially affected by odour (100-500). Few people potentially affected by odour (<100).	1	2	1	16.67	100
	Traffic and roads Minimize the number of road users impacted by construction.	1 2 3	Many road users potentially affected by construction disruptions (> 500,000 trips). Some road users potentially affected by construction disruptions (250,000 to 500,000 trips). Few road users potentially affected by construction disruptions (< 250,000 trips).	2	1	1	16.67	
	Visual aesthetics Minimize visual impacts.	1 2 3	Limited potential to mitigate most visual impacts. Potential to mitigate most visual impacts. Potential for no visual impacts after mitigation.	1	3	2	16.67	
	Community use Minimize disruption to permitted public uses.	1 2 3	Considerable disruption to permitted public uses. Some disruption to permitted public uses. Minimal disruption to permitted public uses.	2	2	1	16.67	
	Nuisance effects Minimize nuisance effects, such as dust, noise, vibration, and lighting, on neighbouring properties.	1 2 3	Many people affected by construction and operations nuisances (>100). Some people affected by construction and operations nuisances (>20-100). Few people affected by construction and operations nuisances (<20).	2	1	1	16.67	
	Property values Minimize effects on value of neighbouring properties.	1 2 3	Several properties likely to experience property value effects. Few properties likely to experience property value effects. No properties likely to experience property value effects.	3	2	1	16.67	
ECONOMIC	Capital cost (excluding land) Minimize the capital cost (excluding land) of the project.	1 2 3	141 to 149 million 134 to 141 million 126 to 134 million	3	1	1	40.00	100
	Operating cost Minimize the operating cost of the project.	1 2 3	2.4 to 2.6 million per year 2.2 to 2.4 million per year 2 to 2.2 million per year	3	1	1	30.00	
	Land cost Minimize land costs.	1 2 3	TBD TBD TBD	2	2	2	15.00	
	Resource recovery potential Maximize potential to use recovered energy or water.	1 2 3	Few potential opportunities for resource recovery nearby. Several potential opportunities for resource recovery nearby. Many potential opportunities for resource recovery nearby.	2	2	3	15.00	
Total weighted score out of a possible 900 points				638	513	527		

3.0 INTERPRETATION AND CONCLUSIONS

This triple bottom line analysis measures and compares the performance of the candidate wastewater treatment sites. The criteria are designed to assist decision makers in evaluating important considerations in siting a wastewater treatment facility. Invariably, there are tradeoffs that need to be considered. This section interprets the results of the triple bottom line analysis and discusses some of the tradeoffs for each candidate site. Figure 2 graphically compares each site's performance environmentally, socially, and economically.

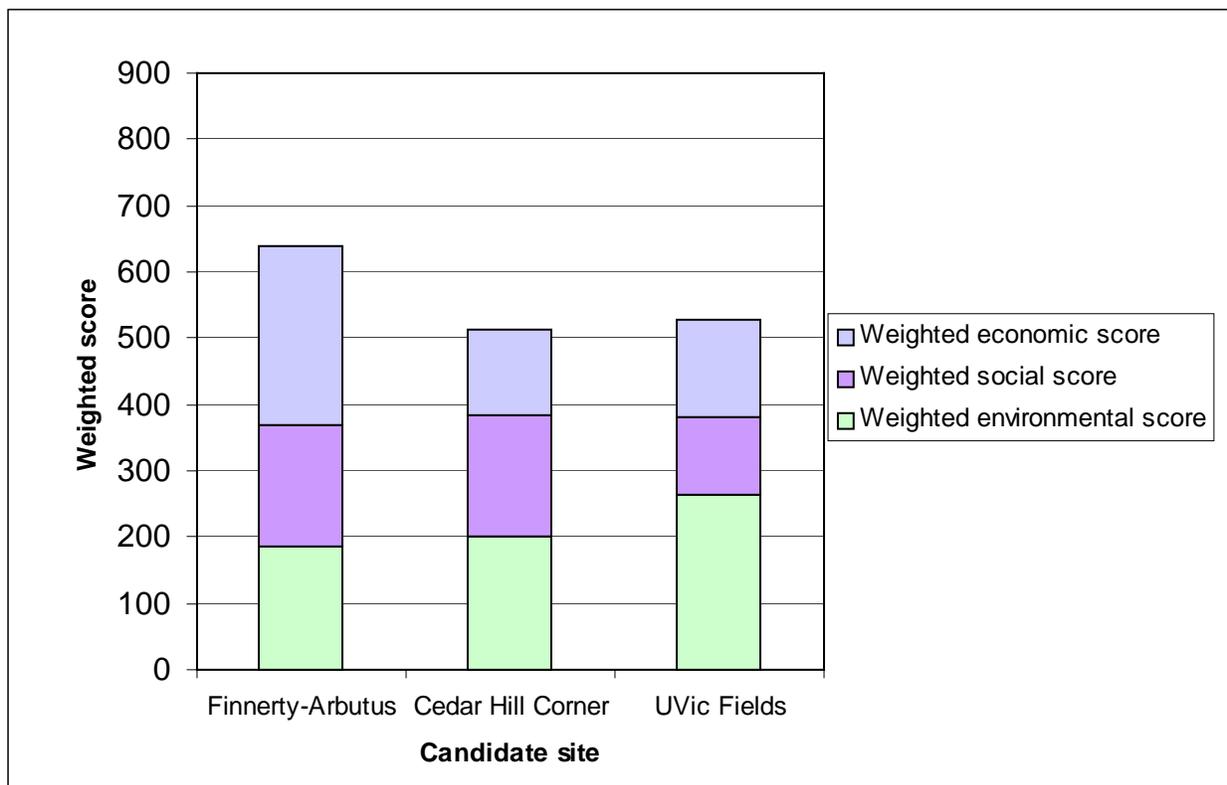


Figure 2 Triple bottom line comparison of candidate sites

3.1 Finnerty-Arbutus property

The Finnerty-Arbutus site performed the best overall in the analysis (Figure 2). Economically the site received the highest rating because it requires the fewest ancillary facilities and has the lowest operational costs. Socially, although this site is used for recreation by residents in the neighbourhood, it is not a permitted use of the site, a circumstance reflected in the ratings. The forested character of the site would assist in reducing visual impacts and other nuisance effects. Environmentally, the site received the lowest rating because the site currently supports second growth forest whereas the other two candidate sites are already cleared of native vegetation.

Enhanced mitigation that could improve rating. If the facility footprint were moved to the southeast, onto land owned by the District of Saanich that has lower ecological values, the environmental rating for vegetation and wildlife would improve to a “2.”

3.2 Cedar Hill Corner property

The Cedar Hill Corner property performed the worst overall in the analysis (Figure 2). Environmentally and socially, the site performed low to moderately well. The site is already cleared, but the environmental scores were reduced because the ancillary pipes are routed through mature forest in Upper Hobbs Creek drainage and the pump station is sited on the Finnerty-Arbutus property. Both facilities would require clearing of forested areas. Socially, the community could expect some traffic, community use, and nuisance effects. The site received the lowest economic score because of the higher capital and operating costs associated with the pump station and additional ancillary pipes, and a lower potential for resource recovery than at other candidate sites.

Enhanced mitigation that could improve rating. If the ancillary facility pipes required to serve the Cedar Hill Corner site were to be re-routed south along the Haro Road right-of-way to Cedar Hill Road, thereby avoiding a crossing of Upper Hobbs Creek drainage, the ratings for hydrology and water quality, vegetation, and wildlife would improve.

3.3 UVic Fields property

The UVic Fields property ranked second overall in the analysis. The site received the highest environmental score because it is already cleared. Little additional vegetation would need to be cleared to accommodate the ancillary pipes. However, the site received the lowest social score, mainly because of the proximity of housing to the site. Local residents could be affected more by traffic, visual aesthetics, community use, nuisance effects, and property value changes than at the other two sites. Economically, the site received a low score because of higher expected capital and operating costs for the pump station and ancillary pipes. The UVic Fields site is considered to have the greatest potential for resource recovery, because it is near the University of Victoria.

Enhanced mitigation that could improve rating. Re-orientation of the facility footprint to move the structures further from housing would improve the ratings for visual aesthetics and property value effects. If such changes to facility siting could avoid effects on Wallace Field and permit continued use of the bicycle-pedestrian path, then community use ratings would also improve.

3.4 Effects of enhanced mitigation

If the “enhanced mitigation” measures described in sections 3.1, 3.2, and 3.3 are applied, the scores of the sites change (Figure 3). The Cedar Hill Corner site moves into second place,

slightly ahead of UVic Fields. Finnerty-Arbutus, however, retains the highest TBL scores, mainly because of its dominance in the economic category.

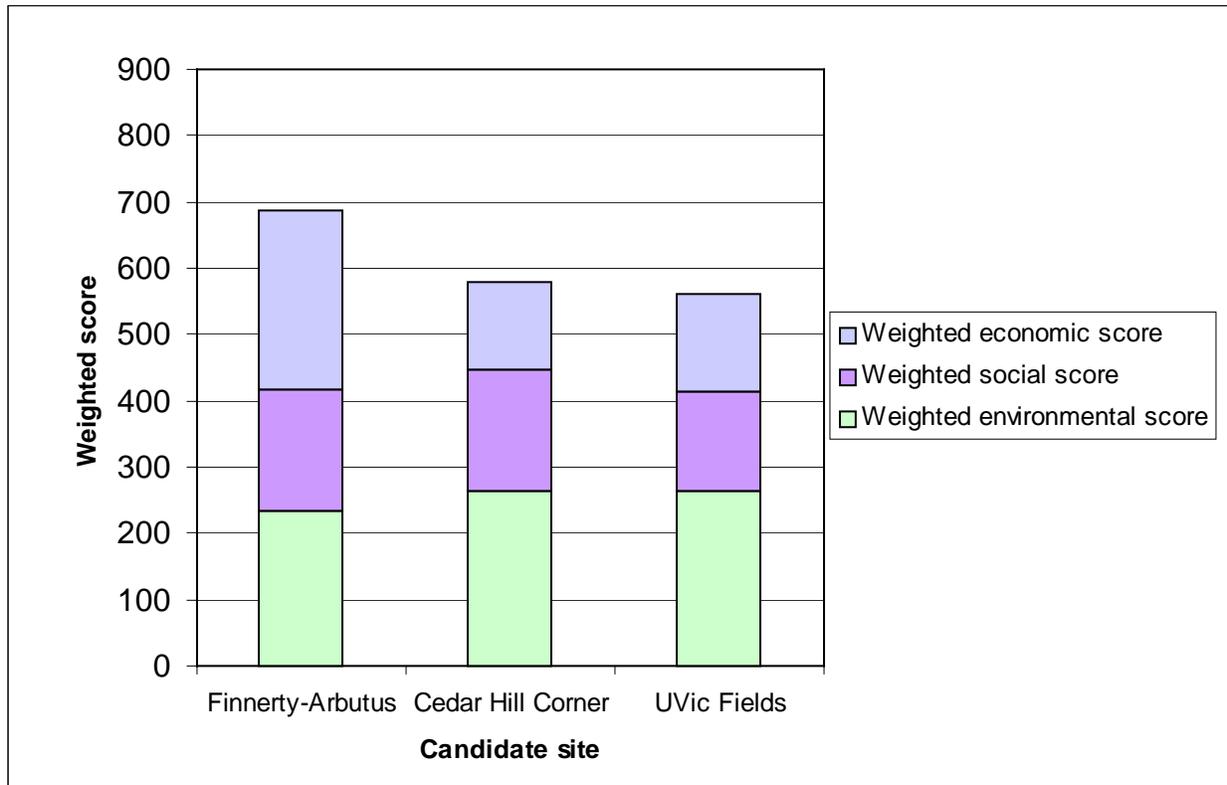


Figure 3 Triple bottom line comparison of candidate sites, using “enhanced mitigation”

3.5 Conclusions

The TBL analysis leads to several conclusions:

- a. Despite its relatively poor environmental performance, the Finnerty-Arbutus site continues to achieve higher overall scores than the other two sites due to its lower economic costs (both capital and operating) and fewer social impacts.
- b. Applying mitigation measures changes the absolute scores of the three sites, but Finnerty-Arbutus retains its high rank. Mitigation should be applied regardless of which site is selected, to minimize project impacts.
- c. The ancillary facilities add substantially to the economic, environmental, and social impacts of the Cedar Hill Corner and UVic Fields sites.

d. Even if the land costs of the Cedar Hill Corner or UVic Fields sites prove to be remarkably low, they are unlikely to offset the high costs of additional ancillary facilities and annual operations.

e. When the CRD's marine studies are completed and the outfall location can be determined, some change in effects and ratings may occur. These effects, however, would apply equally to all three candidate sites, and would not affect the relative results.

f. If the Finnerty-Arbutus site is determined to be the preferred treatment facility site, an investigation of the feasibility of moving all or a part of the facility onto the adjacent Saanich-owned parcel should be conducted. This relocation has been recommended by participants in the public involvement program and by biologists involved in the ESR and TBL analyses.

The findings of this TBL analysis are intended to support the selection of a preferred site for a wastewater facility. Other sources of information—from the public, other technical studies, and the ESR—may complement the decision process.

4.0 REFERENCES

A.van Bentem, C. Petri, P. Schyns 2008. *Membrane Bioreactors: Operation & Results of A MBR Wastewater Treatment Plant.*

Monahan, P.A., Levson, V.M., Henderson, P. and Sy, A. 2000. *Quaternary Geological Map of Greater Victoria.* British Columbia Geological Survey, Ministry of Energy and Mines, Geoscience map 2000-2. Available online:
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APPENDIX A

Finnerty-Arbutus Adjacent Properties--Nuisance effects

	Detached res.	Attached res.	School	Daycare	Total
Candidate site:	7	15	0	1	23
Outfall	32	0	1	0	33
SDPP	62	6	0	0	68
Total	101	21	1	1	124

Uvic Fields

	Detached res.	Attached res.	School	Daycare	Total
Candidate site:	13	44	0	0	57
Outfall/Forcemain	65	16	1	1	83
SDPP	62	6	0	0	68
Total	140	66	1	1	208

Cedar Hill Corner

	Detached res.	Attached res.	School	Daycare	Total
Candidate site:	26	23	0	0	49
Outfall/Forcemain	26	90	1	1	118
SDPP	62	6	0	0	68
Total	114	119	1	1	235



Memorandum

203 - 830 Shamrock St., Victoria, British Columbia, Canada V8X 2V1 Phone (250) 592-8500 Fax (250) 592-1633

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

	<p>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.</p>
3. Queen Alexandra fields	<p>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.</p>
4. Saanich-owned Arbutus property	<p>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.</p>
5. UVic Entrance	<p>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.</p>
6. McKenzie frontage at UVic	<p>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.</p>
7. Parking lot 1	<p>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.</p>
8. Cadboro Gyro Park	<p>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</p>

	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



**FIRST NATION ENGAGEMENT CHART
UPDATE 22 JULY 2009**

First Nation	Status	Interests Identified to Date	Engagement on other Issues	Next Steps
Songhees	Consultation MOU signed	<ul style="list-style-type: none"> • Use of federal Crown land if any • Impacts to the foreshore • Protection of natural resources • Any outfall located near Chatham and Discovery Islands • Affects on marine species • Affects on archaeological sites • Adequate sewage capacity for Songhees lands including future Treaty Settlement Land • Would like to take part in archaeological work near any new outfall in the Saanich East area • Why are homes in Queenswood area still on septic systems? 	<ul style="list-style-type: none"> • Regional Growth Strategy • E&N rail trail 	<p>Continue Meeting to gather interests.</p> <p>Next meeting August 20</p>
Esquimalt	Consultation MOU signed	<ul style="list-style-type: none"> • Meaningful participation in the project and concerns about the timelines for input • Impacts on the environment including the foreshore and marine species 	<ul style="list-style-type: none"> • Sewer infrastructure • Regional Growth Strategy • E&N rail trail 	<p>Next meeting: provide written update for all issues that don't involve Crown land.</p>

<p>Beecher Bay</p>	<p>Consultation MOU signed</p>	<ul style="list-style-type: none"> • Location of any outfall near Albert Head • Use of Crown land for sewage treatment in the Western Communities • Want equitable access to service if/when it is available in the area 	<ul style="list-style-type: none"> • Sea to sea greenbelt • Beecher Bay sewage treatment plant 	<p>Continue Meeting to gather interests.</p> <p>Next meeting: August 20</p>
<p>Tsawout</p>	<p>Information package provided</p>	<ul style="list-style-type: none"> • Identified that they have no interests in Saanich East location. • May have concerns about the extension of the Finnerty Cove outfall affect on fishing and marine species • Affects of discharges into inland water bodies 	<ul style="list-style-type: none"> • Expansion of service agreement • Partnering on foreshore restoration • Tsawout sewage treatment plant 	<p>Briefing with Chief and Council on wastewater project</p>
<p>Saanich Tribes</p> <ul style="list-style-type: none"> • Tsartlip • Tseycum • Pauquachin 	<p>Information package provided</p>			<p>Continue to forward information packages and be prepared to provide information</p>