

APPENDIX

A ADVISORY COMMITTEE MEETING MINUTES, COMMUNITY AND FIRST NATIONS CONSULTATION

Minutes of the meeting of the Liquid Waste Management Plan (LWMP) Joint Technical and Public Advisory Committees (TACPAC) Meeting #1 held on Tuesday, November 13, 2018 in the Comox Valley Regional District Boardroom located at 600 Comox Road, Courtenay, BC, commencing at 9:00am

PRESENT:	A. Habkirk, Chair and Facilitator	
	P. Nash, LWMP Project Coordinator	
	M. Rutten, General Manager of Engineering Services	CVRD
	K. La Rose, Senior Manager of Water/Wastewater Services	CVRD
	M. Imrie, Manager of Wastewater Services	CVRD
	C. Wile, Manager of Operational Communications	CVRD
	J. Boguski, Branch Assistant – Engineering Services	CVRD
	A. Gibb, WSP	WSP
	A. Bennett, WSP	WSP
	W. Cole-Hamilton, City of Courtenay Councilor	PAC
	M. Swift, Town of Comox Councilor	PAC
	A. Hamir, Lazo North (Electoral Area B) Director	PAC
	C. McColl, K'ómoks First Nation	PAC/TAC
	T. Ennis, Comox Valley Conservation Partnership	PAC
	A. Gower, Comox Valley Chamber of Commerce	PAC
	A. Munro, BC Shellfish Growers Association	PAC
	S. Wood, Comox Business Improvement Association	PAC
	S. Carey, Courtenay Resident Representative	PAC
	K. Niemi, Courtenay Resident Representative	PAC
	K. VanVelzen, Comox Resident Representative	PAC
	D. Jacquest, Comox Resident Representative	PAC
	R. Craig, Comox Resident Representative	PAC
	M. Holm, Area B Resident Representative	PAC
	M. Lang, Area B Resident Representative	PAC
	L. Aitken, Area B Resident Representative (Observer)	PAC
	B. Vroom, Ministry of Environment	TAC
	D. Cherry, VIHA	TAC
	P. Kumar, VIHA	TAC
	R. O'Grady, City of Courtenay Engineering	TAC
	S. Ashfield, Town of Comox Engineering	TAC
	G. Bonekamp, Department of National Defence Engineering	TAC

ITEMS:

The committee met for the introductory Liquid Waste Management Plan Joint Technical and Public Advisory Committees meeting to review the LWMP process.

November 13, 2018 LWMP Joint TACPAC meeting agenda.

ITEM, TIME	DESCRIPTION	OWNER
1.1	Call to Order The meeting was called to order at 9:00	Allison Habkirk
1.2	Welcome Marc Rutten, the CVRD GM of infrastructure, gave the welcome and opening remarks	Marc Rutten
1.3	Introductions Brief round the table	Allison
1.4	Description of CVRD Wastewater System Kris gave a detailed PowerPoint presentation about the history of the CVRD wastewater system. <ul style="list-style-type: none"> Special emphasis was given to the history of the forcemain along Willemar bluffs noting; <ul style="list-style-type: none"> The pipe was installed according to the standards of the day The concrete pipe itself is in good condition, had no leaks detected and has many years of service life left. The erosion of the sane banks of the Willmar bluffs prompted the placement of rip rap at the base of the bluffs The rip rap stopped the bank erosion but lead to sand loss on the beach, exposing pipes sections Rock gabions were placed to cover the pipe These gabions are nearing the end of their life 	Kris La Rose
1.5	Purpose – why are we here? Kris gave a quick summary of the three issues to be addressed by the LWMP; <ul style="list-style-type: none"> Conveyance – find the best way to resolve the environmental risk along Willemar Bluff and the conveyance capacity limitations Treatment – deciding the capacity and effluent quality requirements of future treatment upgrades Resource Recovery – identifying possibilities for beneficial recovery and re-use of resources from wastewater Process- How are we going to do it? An LWMP process.	Kris La Rose
	A ten minute break was taken at 10:30	
1.6	Expectations of the BC Ministry of Environment Bryan gave a brief talk outlining the Ministry of Environments view on the LWMP process <ul style="list-style-type: none"> They congratulate the CVRD on embarking on it, and getting the TACPAC organized Key technical focus is to ensure that the requirements environmental regulations, in particular the Municipal Wastewater Regulation, will be met by the adopted solutions The importance of a robust and thorough public engagement process The Ministry will likely not attend future TACPAC meetings, but will be working with the CVRD staff and consultants throughout the process 	Bryan Vroom, MoE

1.7	<p>Public consultation in the LWMP process</p> <p>Christianne gave an overview of how the public engagement will work</p> <ul style="list-style-type: none"> • Intent is to give the public as much information, and seek as much input as reasonably practical. • The proposed Goals, Options developed by the TACPAC will go to public review via facilitated sessions and online feedback, and then come back to the TACPAC for consideration before decision making • After the final decisions, public will be informed via open houses and online to explain the direction being taken 	Christianne Wiles
1.8	<p>Implementation of the LWMP process</p> <p>Paul gave a brief overview of</p> <ul style="list-style-type: none"> • The three stage structure of the LWMP as a Systems Approach” to problem solving • Final approved plan includes borrowing authority to enable construction of the works • How the TACPAC functions for making decisions/recommendations • How the recommendations go to the Comox Valley Sewage Commission for adoption • 	Paul Nash
1.9	<p>Presentation by Technical Consultants WSP Inc</p> <p>Al Gibb from WSP gave an overview of their background and role in this LWMP</p> <ul style="list-style-type: none"> • Extensive experience with LWMP’s in BC • WSP (previously OPUS Dayton & Knight) has done work on the • Noted that WSP did the conceptual design and cost estimates for the Comox #2 pump station in 2017, and also developed some alternatives to it. • For this LWMP they will be doing the <ul style="list-style-type: none"> ○ Technical analysis ○ Cost estimating ○ Report preparation 	WSP
1.10	<p>The road map for 2018 and 2019 Stage 1&2 LWMP.</p> <p>Paul gave the outline of how the LWMP will play out over 2018 and 2019</p> <ul style="list-style-type: none"> • Will be a combined Stage 1 and 2 process • Plan to have decision made in Q3 of 2019 and report completed and submitted to MoE by end of the 2019. • Once the Conveyance option is decided upon, it may be split out of the LWMP process to enable expedited implementation • 	Paul Nash
1.11	<p>Preview of Meeting #2</p> <p>The meeting will develop the aspirational goals of the community, to be used in developing and evaluating the options.</p> <p>Committee members were asked to bring their ideas, and review an community Plans, such as OCP’s that they think are relevant to the LWMP process.</p>	Paul & Allison

1.12	Round Table discussion A very brief question period was held	Allison Habkirk
1.13	Adjournment The meeting was adjourned at 12pm	Allison Habkirk

Summary of TACPAC meeting schedule

TACPAC Meeting #	Theme	Purpose
1. Nov 13 , 2018	Introduction	Introductions, explain process and purpose
2. Nov 23, 2018	Goals	Develop Goals
3. Dec 11, 2018		Review and recommend Goals
4. Jan 17, 2019 (TBC)	Long List Options	Develop long list Options
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6. Mar 21		Evaluate to shortlist, recommend Options for detailed study,
7. June 13	Short List Options	Discuss studies of shortlist options, evaluate to preferred option(s)
8. June 27		Review evaluation, final recommendation of preferred options
9. Oct TBD	LWMP Report	Review draft Stg 1 and 2 report
10. Nov TBD		Approve Stg 1 and 2 Report

GENERAL:

The next LWMP Joint TACPAC meeting will be held on November 23, 2018 commencing at 9:00am in the Comox Valley Regional District Boardroom.

TERMINATION:

The meeting terminated at 12:00pm

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TERMINATION:

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Minutes of the meeting of the Liquid Waste Management Plan (LWMP) Joint Technical and Public Advisory Committees (TACPAC) Meeting #2 held on Friday, November 23, 2018 in the Comox Valley Regional District Boardroom located at 600 Comox Road, Courtenay, BC, commencing at 9:00am

PRESENT:

A. Habkirk, Chair and Facilitator	
P. Nash, LWMP Project Coordinator	
M. Rutten, General Manager of Engineering Services	CVRD
K. La Rose, Senior Manager of Water/Wastewater Services	CVRD
M. Imrie, Manager of Wastewater Services	CVRD
C. Wile, Manager of External Relations	CVRD
J. Boguski, Branch Assistant – Engineering Services	CVRD
A. Idris, Engineering Analyst	CVRD
A. Bennett,	WSP
W. Cole-Hamilton, City of Courtenay Councillor	PAC
K. Grant, Town of Comox Councillor	PAC
A. Hamir, Lazo North (Electoral Area B) Director	PAC
C. McColl, K'ómoks First Nation	PAC/TAC
T. Ennis, Comox Valley Conservation Partnership	PAC
D. Winterburn, BC Shellfish Growers Association	PAC
S. Wood, Comox Business Improvement Association	PAC
S. Carey, Courtenay Resident Representative	PAC
T. Serviz, Courtenay Resident Representative	PAC
K. Niemi, Courtenay Resident Representative	PAC
K. vanVelzen, Comox Resident Representative	PAC
D. Jacquest, Comox Resident Representative	PAC
R. Craig, Comox Resident Representative	PAC
M. Holm, Area B Resident Representative	PAC
M. Lang, Area B Resident Representative	PAC
L. Aitken, Area B Resident Representative (Observer)	PAC
J. Steel, Area B Resident Representative (Observer)	PAC
D. Cherry, VIHA	TAC
P. Kumar, VIHA	TAC
R. O'Grady, City of Courtenay Engineering	TAC
S. Ashfield, Town of Comox Engineering	TAC
G. Bonekamp, Department of National Defence Engineering	TAC
A. Bissinger, Department of National Defence (Observer)	TAC

ITEMS:

ITEM	DESCRIPTION	OWNER
2.1	Call to Order. Opening remarks by Kris La Rose: <ul style="list-style-type: none"> CVRD respects and honors the time commitment that each member of the committee is making to participate in our process and that in return, we are committed to sincere engagement and a transparent planning process. 	Allison, Kris

ITEM	DESCRIPTION	OWNER
2.1	<ul style="list-style-type: none"> There has been a lot of study work, analysis and design done for certain elements of the possible works, our intention is for that work to support rather than constrain the planning process. 	Allison, Kris
2.2	<p>Review of Minutes of Meeting #1 & LWMP Roadmap</p> <p>Clarification of minutes;</p> <ul style="list-style-type: none"> Section 1.8: change “How the recommendation got to the Comox Valley Sewage Commission for <i>adoption</i>” to “How the recommendation got to the Comox Valley Sewage Commission for <i>consideration</i>”. (K. van Velzen). <p>Paul reviewed the roadmap, noting the Ministry of Environment position that proper managing of wastewater is “not optional”.</p>	Allison & Paul
2.3	<p>Wastewater 101 – Fundamentals of Wastewater Treatment.</p> <ul style="list-style-type: none"> Aline gave a thorough outline of wastewater treatment. 	WSP
2.4	<p>Regulatory Framework.</p> <ul style="list-style-type: none"> Treatment standards for different discharge environments was included in the wastewater 101 presentation. Of note that standards for some reclaimed water uses align with standards for ocean discharge. 	WSP
2.5	<p>Goals – what are they and how will we use them?</p> <p>Paul outlined the framework of the evaluation system and definitions of:</p> <ul style="list-style-type: none"> LWMP components (conveyance, treatment, resource recovery), Objectives – functions which must be achieved for each component, Options – different projects that can achieve the objectives, Goals – aspirational goals for things other than the objectives, “Low Cost” is an aspirational goal, Actions – ways to meet or move towards the goals, Evaluation – how well does an option address the goals? <p>The “best” option is the one that achieves all the objectives and as many of the goals as possible.</p>	Paul
2.6	<p>Initial public feedback;</p> <p>Christianne presented results of Phase 1 public consultation conducted over summer and fall:</p> <ul style="list-style-type: none"> 22 participants at the summer workshops, 104 responses to online survey, Excellent attendance at the November 6 and 8 Open House at the Comox Valley Water Pollution Control Centre (CVWPCC) – 110 people. <p>Major themes:</p> <ul style="list-style-type: none"> Concern about negatively impacting the environment, Importance of long term planning and making sound decisions now, Importance of moving forward quickly due to risks of ageing infrastructure. 	Christianne

ITEM	DESCRIPTION	OWNER
2.7	<p>Examples of award winning, goal-driven projects (videos)</p> <p>Conveyance – Marwayne, AB</p> <ul style="list-style-type: none"> Noted that while this was a conveyance project, the funding and FCM award received were for the “neighborhood redevelopment” that took place in concert with the conveyance project <p>Treatment – Sechelt BC</p> <ul style="list-style-type: none"> Noted that this project was the result of community-set goals to treat to high standards and pursue resource recovery. The reclaimed water is not yet being used. Resource Recovery – Cranbrook BC (video) (case study) 	Paul
2.8	<p>Committee Exercise – brainstorming the goals. PAC, TAC and Staff</p> <ul style="list-style-type: none"> Categories for the goals: <ul style="list-style-type: none"> Technical/functional, Cost/affordability, Economic benefit, Environmental benefit, Social benefit. <p>A five minute “written brainstorming” session was held for each of the three LWMP components, with goals being written on sticky notes and posted to the flip charts. The final count was 168 goals distributed as:</p> <ul style="list-style-type: none"> Conveyance 67, Treatment 54, Resource Recovery 47. <p>The goals were sorted and grouped ready for voting over the lunch break.</p>	Allison
2.9	<p>Comparison of committee goals to official plan goals.</p> <p>CVRD Staff reviewed the major planning documents for goals and policies related to wastewater:</p> <ul style="list-style-type: none"> Official Community Plan’s, Regional Growth Strategy, Comox Valley Sustainability Strategy, Climate Action Revenue Incentive Program. <p>Results of this are attached to the minutes as Table 1(A) through Table 1 (C).</p>	Paul
2.10	<p>Turning the goals into the evaluation system.</p> <p>Explanation of the evaluation matrix as a guide for decision making.</p> <p><i>*Note for clarity that the example scoring shown for the Comox No.2 Pump Station Project was merely to illustrate how the evaluation system functions. It does not represent the actual evaluation of this project.</i></p>	
	Lunch Break	
2.11	<p>Prioritising the goals.</p> <ul style="list-style-type: none"> Ranking of the cost and benefit goals by PAC members, Ranking of the functional goals by the TAC members. <p>Ranking was performed by a numerical voting system, with different colours representing PAC and TAC members.</p>	Allison

	There were too many goals and votes to be tallied at the meeting, this was done offline.	
ITEM	DESCRIPTION	OWNER
2.12	<p>Preview of;</p> <ul style="list-style-type: none"> Public Workshops (Phase 2 of consultation) on November 27 and 28, 2018: <ul style="list-style-type: none"> Public review of draft goals and objectives. TACPAC #3 on December 11, 2018: <ul style="list-style-type: none"> Review of public feedback, make recommendation on goals. 	Allison
2.13	<p>Round Table discussion and Q&A.</p> <p>The following summarises the pertinent questions and answers for the meeting:</p> <ul style="list-style-type: none"> Water use at the CVWPCC was reduced by a third over the last two years due to recycling water at enclosed water uses. However, we recognize there is still room for improvement (M. Imrie). How are pathogens disinfected at the CVRD Compost Facility? (W. Cole-Hamilton) <ul style="list-style-type: none"> The composting process and the disinfection is controlled by controlling the temperature. High temperature for a set period of time kills pathogens. (M. Imrie) Are the categories set in stone or is there room for making changes in them? Is there an opportunity for committee members to come up with more goals? (R. O’Grady) <ul style="list-style-type: none"> These are starting points to focus our ideas and save the committee some time. However, if there are good goals to be added, there is room for change. We would like to make the December 11 meeting the deadline for coming up with new goals unless a ‘game changer’ idea comes up later than that date. This is to ensure the process stays focused and on schedule. (A. Habkirk and P. Nash) What was the basis to create the categories? Surprised to see “economic benefits” in the list. (A. Hamir) <ul style="list-style-type: none"> These categories are a variation of standard practice. The ‘economic benefits’ category is there to identify potential economic benefits that are typically not directly associated with wastewater systems. (P. Nash) Economic benefits can also include economic impacts such as impacts of options that may potentially hinder economic benefits would be evaluated. (K. La Rose) What is the point of achieving advanced levels of treatment (such as the one by Sechelt) if no opportunities for use exist? (W. Cole-Hamilton) <ul style="list-style-type: none"> The main value is only achieved if the water is indeed reused. The opportunities do exist, but have not yet been pursued, for various reasons. Nevertheless, significant grant funding (up to 50 per cent) was achieved in part due to setting high 	Allison

	goals for innovation and treatment performance and then meeting them. (P. Nash)	
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ITEM	DESCRIPTION	OWNER
2.13	<ul style="list-style-type: none"> Does this goal setting exercise include future/potential service areas in the region (e.g. South Sewer)? (R. O'Grady) <ul style="list-style-type: none"> ➤ Let us focus on existing service areas for now. (K. La Rose) Is there collaboration between the municipalities on the sewer plans/projects? (S.Carey) <ul style="list-style-type: none"> ➤ Yes, member municipalities and the CVRD work together collaboratively in different levels (Sewage Advisory Committees, Advisory groups on staff level...etc.). (K. La Rose) Social Health context can be considered as social benefit from a public health needs perspective. (R. O'Grady) Is there a second chance for these rankings? (K. VanVelzen) <ul style="list-style-type: none"> ➤ Yes, options ranking can be reviewed if members feel the need for reconsideration. (A.Hebkirk and P. Nash) High quality effluent is important because of the especially sensitive nature of the local environment. (T. Ennis) <p>In addition to the main requirements for achieving a certain level of effluent quality, the province asks for an Environmental Impact Study to determine the impact of effluent discharge to the local environment. (A. Bennet)</p>	Allison
2.14	<p>Meeting Schedule Change.</p> <p>Note schedule change for TACPAC Meeting # 4, from Thursday, January 17, 2019 to Thursday, January 24, 2019, 9:00 am to 2:00pm, at the CVRD Boardroom.</p>	
2.15	<p>CVRD Wastewater Facilities Tour for PAC members.</p> <p>A familiarization tour of the CVRD facilities will be held on two dates;</p> <ol style="list-style-type: none"> 1. Tuesday 3 Dec, 9am -12, starting at CVRD office 2. Friday 7th Dec 9am -12, starting at CVRD office 	
2.16	<p>Next Meeting.</p> <p>The next LWMP Joint TACPAC meeting will be held on December 11, 2018 commencing at 9:00am at the Native Sons Hall, Lower Lodge Room, 360 Cliffe Ave, Courtenay, BC.</p>	
2.17	<p>Adjournment</p> <p>The meeting adjourned at 2:00pm</p>	Allison

Attachments

TABLE 1: SUMMARY OF WASTEWATER RELATED GOALS FROM MAJOR PLANNING DOCUMENTS	6
TABLE 1(A): CONSOLIDATED REFERENCE POLICY FROM MAJOR PLANNING DOCUMENTS, CONVEYANCE	7
TABLE 1(B): CONSOLIDATED REFERENCE POLICY FROM MAJOR PLANNING DOCUMENTS, TREATMENT ...	9
TABLE 1(C): CONSOLIDATED REFERENCE POLICY FROM MAJOR PLANNING DOCUMENTS, RESOURCE ...	
RECOVERY	11
TABLE 2 (A): GROUPED GOALS AND VOTING RESULTS, FOR CONVEYANCE.....	12
TABLE 2 (B): GROUPED GOALS AND VOTING RESULTS, FOR TREATMENT	13
TABLE 2 (C): GROUPED GOALS AND VOTING RESULTS, FOR RESOURCE RECOVERY	14
TABLE 3 (A): ALL GOALS AND GROUPINGS AS WRITTEN, FOR CONVEYANCE	15
TABLE 3 (B): ALL GOALS AND GROUPINGS AS WRITTEN FOR TREATMENT.....	18
TABLE 3 (C): ALL GOALS AND GROUPINGS AS WRITTEN FOR RESOURCE RECOVERY	20

Tables 1(A) – 1(C) were consolidated from the major planning documents listed below;

- City of Courtenay Official Community Plan ([Courtenay OCP](#))
- Town of Comox Official Community Plan ([Comox OCP](#))
- Comox Valley Regional Growth Strategy ([Comox Valley RGS](#))
- Comox Valley Sustainability Strategy ([Comox Valley SS](#))
- CVRD Climate Action Revenue Incentive Public Report for 2017([CVRD CARIP](#))

TABLE 1: SUMMARY OF WASTEWATER RELATED GOALS FROM MAJOR PLANNING DOCUMENTS

Category	Goal
Technical/Functional	Alternate Trunk Sewer Networks
	Treatment to Tertiary or Reuse Level
	Waste to Resources
Affordability	Reduce Capital Costs
	Low Operating Costs
	Funding through DCC's
Economic Benefits	Vibrant Local Economy
	Increased Agriculture, Reclaimed Water for Agriculture
Environmental Benefits	Reduce Greenhouse Gases
	Energy Conservation
	Renewable Energy, Energy from Waste Sources
	Green Buildings
	Protect, Conserve and Restore Ecosystems
Social Benefits	Public Health Needs
	Recreation Trails as part of New Developments

TABLE 1(A): CONSOLIDATED REFERENCE POLICY FROM MAJOR PLANNING DOCUMENTS, CONVEYANCE

Conveyance		
Technical/Functional Goals	Environmental Goals	Affordability/Economic Benefits/Social Benefits Goals
<i>Courtenay OCP Sec 6.3. (Page 65):</i> For major new developments, the City shall consider the downstream capacity of existing sewer mains to ensure adequate capacity.	<i>Courtenay OCP Sec 10.2. (Page 139) Goals:</i> To reduce the City's annual community-wide greenhouse gas emissions 20 per cent below the 2007 levels by 2020, with an incremental reduction target of two per cent per year between 2010 and 2020 by: reducing average energy demand per home by 20 per cent and reduce energy demand for businesses by nine per cent per square meter by 2020, making public sector buildings (and other operations) carbon neutral by 2012.	<i>CVRD RGS (Page 56) Objective 5D-2:</i> New development will replace and/or upgrade aging sewer infrastructure or provide cash-in-lieu contributions for such upgrades through Development Cost Charges or similar financial contributions.
<i>Courtenay OCP Sec 6.3. (Page 65):</i> The City through the development of a Master Sewer Strategy will develop strategies to facilitate providing alternative trunk networks and systems to transport effluent to treatment facilities.	<i>Courtenay OCP Sec 10.3. (Page 144) Objective 4:</i> To use and promote a 'design with nature' approach in the provision of energy and design of buildings and infrastructure to make use of ecological processes before employing heavily engineered approaches. This includes minimizing the use of non-renewable energy and resources by increasing the use of low GHG emitting and efficient renewable energy supply systems and resources.	<i>Courtenay OCP Sec 2.2.2. Goal 5 (Page 22):</i> Provide affordable, effective and efficient services and infrastructure that conserves land, water and energy resources.
<i>Comox OCP Sec 2.4.5. (Page 95) Policy:</i> The Town will operate a sewerage collection system that will discharge into the main trunk sewers and waste water treatment operated by the CVRD. The Town does not envision the need for waste water treatment or disposal within the Town's boundaries.	<i>Town of Comox OCP Sec 1.7. Table 2 (Page 19):</i> Encourage reduced energy consumption and greenhouse gas emissions as a long term sustainability community value.	<i>Courtenay OCP Sec 4.11.1 (Page 54):</i> Moving forward, the City must balance its traditional roles with new pressures to continue to expand and increase its responsibilities for community programs within a budget that is accepted by the taxpayers of the City.

Conveyance		
Technical/Functional Goals	Environmental Goals	Affordability/Economic Benefits/Social Benefits Goals
<i>CARIP (Page 9):</i> Community-Wide Actions Proposed for 2018: Install updated odour control measures at the Comox Valley Water Pollution Control Centre; Construction of Hudson and Greenwood Trunk gravity sewer mains.	<i>Town of Comox OCP Sec 2.3.11 (Page 76):</i> Under the BC Climate Action Charter, the town of Comox agreed to develop strategies and take actions to achieve the following goals: Being Carbon neutral in respect of their operations by 2012; Measuring and reporting on their community's GHG emissions profile	<i>Courtenay OCP Sec 2.1.7. (Page 13):</i> Design with nature, employing energy-conservation principles, emphasizing sustainability, enhancing the natural beauty, and protecting wildlife habitat; and support agriculture as an industry in the Valley.
	<i>CVRD RGS Sec 3.2 Goal5 (Page 21):</i> provide affordable, effective and efficient services and infrastructure that conserves land, water and energy resources.	<i>CVRD RGS Sec 3.1 Vision (Page 20):</i> As stewards of the environment, local governments, the K'omoks First Nation, public agencies, residents, businesses and community and non-governmental organizations will work collaboratively to conserve and enhance land, water and energy resources and ensure a vibrant local economy and productive working landscapes.
	<p><i>CVSS (Page 5):</i> Climate sustainability target: The Comox Valley will reduce overall Greenhouse Gas Emissions by 80 per cent from 2007 levels by 2050. Rationale: This target calls for action on reducing use of fossil fuels and increasing the use of alternative energy sources.</p> <p><i>CVSS (Page 45) Goal 3.1:</i> Reduce energy consumption and greenhouse gas emissions in municipal infrastructure. Objective 3.1.1: Increase energy efficiency in public works infrastructure systems and equipment.</p> <p><i>CVSS (Page 86) Goal 5.2, CARIP (Page 86- 90) Goal 5.2:</i> Conserve and restore ecosystems.</p> <p><i>CARIP (Page 3):</i> Current GHG reduction Targets: 20 per cent reduction in corporate GHG emissions by 2020;</p>	<i>CVRD RGS (Page 56) Objective 5-D:</i> Encourage sewage management approaches and technologies that respond to public health needs and maximize existing infrastructure.

TABLE 1(B): CONSOLIDATED REFERENCE POLICY FROM MAJOR PLANNING DOCUMENTS, TREATMENT

Treatment		
Technical/Functional Goals	Environmental Goals	Affordability/Economic Benefits/Social Benefits Goals
<i>Comox OCP Sec 2.4.5. (Page 95) Policy c:</i> The Town will operate a sewerage collection system that will discharge into the main trunk sewers and waste water treatment operated by the CVRD. The Town does not envision the need for waste water treatment or disposal within the Town's boundaries.	<i>Courtenay OCP Sec 10.3. (Page 144) Objective 4:</i> To use and promote a 'design with nature' approach in the provision of energy and design of buildings and infrastructure to make use of ecological processes before employing heavily engineered approaches. This includes minimizing the use of non-renewable energy and resources by increasing the use of low GHG emitting and efficient renewable energy supply systems and resources.	<i>CVRD RGS (Page 56) Objective 5D-2:</i> New development will replace and/or upgrade aging sewer infrastructure or provide cash-in-lieu contributions for such upgrades through Development Cost Charges or similar financial contributions.
<i>CARIP (Page 9):</i> Community-Wide Actions Proposed for 2018: Install updated odour control measures at the Comox Valley Water Pollution Control Centre; Construction of Hudson and Greenwood Trunk gravity sewer mains	<i>Town of Comox OCP Sec 1.7. Table 2 (Page 19):</i> Encourage reduced energy consumption and greenhouse gas emissions as a long term sustainability community value.	<i>Courtenay OCP Sec 2.2.2. Goal 5 (Page 22):</i> Provide affordable, effective and efficient services and infrastructure that conserves land, water and energy resources.
<i>CVSS (Page 7) Water sustainability target:</i> The Comox Valley will reduce Non-Agricultural water use by 50 per cent per capita by 2050. All wastewater treatment in the Comox Valley will be to tertiary or reuse level by 2050. Rationale: Tertiary wastewater treatment provides a higher level of environmental protection and creates opportunities to reuse water rather than further use of the fresh water supply	<i>CVSS (Page 8):</i> Ecosystems sustainability target: 100 per cent sensitive ecosystems and riparian areas are protected and managed to maintain stable health and productivity by 2050. Rationale: The Courtenay Estuary and the Region's rivers are ecologically significant. This target reflects the importance of protecting green space for habitat and ecosystem services. 70 per cent of degraded ecosystems that are critical for the health of watersheds. Riparian areas and endangered species habitats are restored by 2050	<i>Courtenay OCP Sec 4.11.1 (Page 54):</i> Moving forward, the City must balance its traditional roles with new pressures to continue to expand and increase its responsibilities for community programs within a budget that is accepted by the taxpayers of the City.

Treatment		
Technical/Functional Goals	Environmental Goals	Affordability/Economic Benefits/Social Benefits Goals
<p><i>CVSS (Page 58) Goal 3.5:</i> Liquid waste is handled to minimize negative impacts and to turn wastes into resources.</p> <p>Objective 3.5.1: All wastewater is treated to standards that protect the environment and facilitate non-potable reuse where appropriate.</p> <p>Target: 100 per cent of new or upgraded wastewater treatment plants that provide reclaimed water for non-potable uses by 2050.</p>	<p><i>CVSS (Page 45) Goal 3.1:</i> Reduce energy consumption and greenhouse gas emissions in municipal infrastructure.</p>	<p><i>Courtenay OCP Sec 2.1.7. (Page 13):</i> Design with nature, employing energy-conservation principles, emphasizing sustainability, enhancing the natural beauty, and protecting wildlife habitat; and support agriculture as an industry in the Valley.</p>
<p><i>CVSS (Page 66) Goal 3.8:</i> Principles of industrial or business ecology networks are integrated into mixed-use and industrial areas through planning and infrastructure design as a way of turning wastes into resources.</p>		<p><i>CVRD RGS Sec 3.1 Vision (Page 20):</i> As stewards of the environment, local governments, the K'omoks First Nation, public agencies, residents, businesses and community and non-governmental organizations will work collaboratively to conserve and enhance land, water and energy resources and ensure a vibrant local economy and productive working landscapes.</p>
		<p><i>CVRD RGS (Page 56) Objective 5-D:</i> Encourage sewage management approaches and technologies that respond to public health needs and maximize existing infrastructure.</p>

TABLE 1(C): CONSOLIDATED REFERENCE POLICY FROM MAJOR PLANNING DOCUMENTS, RESOURCE RECOVERY

Resource Recovery		
Technical/Functional Goals	Environmental Goals	Affordability/Economic Benefits/Social Benefits
<i>CVSS (Page 7): Water sustainability target:</i> The Comox Valley will reduce Non-Agricultural water use by 50 per cent per capita by 2050. All wastewater treatment in the Comox Valley will be to tertiary or reuse level by 2050. Rationale: Tertiary wastewater treatment provides a higher level of environmental protection and creates opportunities to reuse water rather than further use of the fresh water supply.	<i>Courtenay OCP Sec 10.3. (Page 144) Objective 4:</i> The City will work towards integrating infrastructure systems to address multiple low-environmental impact objectives. This includes exploring how to maximize opportunities for harvesting waste heat or generating energy from water and/or wastewater and promote the use of grey water reuse systems in new construction and rainwater capture in all homes.	<i>CVRD RGS (Page 56) Objective 5D-2:</i> New development will replace and/or upgrade aging sewer infrastructure or provide cash-in-lieu contributions for such upgrades through Development Cost Charges or similar financial contributions.
<i>CVSS (Page 58) Goal 3.5:</i> Liquid waste is handled to minimize negative impacts and to turn wastes into resources. Objective 3.5.1: All wastewater is treated to standards that protect the environment and facilitate non-potable reuse where appropriate. Target: 100 per cent of new or upgraded wastewater treatment plants that provide reclaimed water for non-potable uses by 2050.	<i>CVRD RGS (Page 76): Objective 8E:</i> Plan for renewable energy generation; Policy 8E-1. Encourage efforts to increase the use of cost competitive renewable energy. Policy 8E-2. Encourage efforts to increase the use of cost competitive district energy systems. Policy: 8E-3. In reviewing OCPs consider inclusion of cost competitive renewable energy generation policies and development permit guidelines.	<i>Courtenay OCP Sec 2.2.2. Goal 5 (Page 22):</i> Provide affordable, effective and efficient services and infrastructure that conserves land, water and energy resources. Courtenay OCP Sec 4.11.1 (Page 54): Moving forward, the City must balance its traditional roles with new pressures to continue to expand and increase its responsibilities for community programs within a budget that is accepted by the taxpayers of the City.
<i>CVSS (Page 66) Goal 3.8:</i> Principles of industrial or business ecology networks are integrated into mixed-use and industrial areas through planning and infrastructure design as a way of turning wastes into resources.	<i>CARIP (Page 2): Corporate Actions Taken in 2017:</i> Corporate carbon neutral commitment to purchase credits to offset emissions. Corporate Actions Proposed for 2018: Assessment of additional energy conservation measures at recreation facilities; Initiate update of 2011 Corporate Energy Plan.	<i>CVRD RGS (Page 56) Objective 5D-3:</i> Promote eco-industrial development that turns wastes into resources.

TABLE 2(A): GROUPED GOALS AND VOTING RESULTS, FOR CONVEYANCE

Component	Conveyance	PAC Voting						TAC Voting					
		Green Dots	Pink Dots	Yellow Dots	Total Dots	Score	% of Total	Green Dots	Red Dots	Yellow Dots	Total Dots	Score	% of Total
Category	Grouping as Voted	5	3	1				5	3	1			
Technical	Resiliency to Climate Change, Natural Disasters and Seasonal Impacts	7	3	1	11	45	10.7%	3	2	0	5	21	12.1%
	Enhance operational resilience	4	5	4	13	39	9.2%	5	0	1	6	26	15.0%
	Maximize use of existing infrastructure	5	3	2	10	36	8.5%	2	2	2	6	18	10.4%
	Plan for long term	3	5	0	8	30	7.1%	6	2	0	8	36	20.8%
	Innovation in Design	0	2	6	8	12	2.8%	0	0	4	4	4	2.3%
	Technical Total				50	162	38.4%				29	105	60.7%
Affordability	Minimize lifecycle costs	5	3	3	11	37	8.8%	2	1	1	4	14	8.1%
	Long Term financial Implications	5	2	3	10	34	8.1%	0	1	0	1	3	1.7%
	Affordability Total				21	71	16.8%				5	17	9.8%
Economic Benefits	Maximize local economic benefits	0	3	4	7	13	3.1%	0	0	2	2	2	1.2%
	Economic Total				7	13	3.1%				2	2	1.2%
Environment Benefits	Minimize impacts to sensitive environment	8	3	1	12	50	11.8%	0	4	0	4	12	6.9%
	Mitigate climate change impacts	2	6	3	11	31	7.3%	1	3	1	5	15	8.7%
	Environmental Total				23	81	19.2%				9	27	15.6%
Social Benefits	Minimize noise and odour impacts	8	3	2	13	51	12.1%	0	1	2	3	5	2.9%
	Maximize community and recreational infrastructure	2	5	8	15	33	7.8%	0	0	4	4	4	2.3%
	Maximize public health benefit	0	2	5	7	11	2.6%	2	0	3	5	13	7.5%
	Social Total				35	95	22.5%				12	22	12.7%
All Categories	Grand Total				136	422	100.0 %				57	173	100.0%

TABLE 2(B): GROUPED GOALS AND VOTING RESULTS, FOR TREATMENT

Component	Treatment	PAC Voting						TAC Voting					
		Green Dots	Pink Dots	Yellow Dots	Total Dots	Score	% of Total	Green Dots	Red Dots	Yellow Dots	Total Dots	Score	% of Total
Category	Grouping as Voted	5	3	1				5	3	1			
Technical	Minimize risk of failures/spills	8	7	0	15	61	15.2%	3	3		6	24	13.9%
	Plan for future - population, technology, climate	9	7	1	17	67	16.7%	5	1	0	6	28	16.2%
	Technical Total				32	128	31.9%				12	52	30.1%
Affordability	Minimize lifecycle costs	4	6	8	18	46	11.5%	3	5	0	8	30	17.3%
	Asset management			2	2	2	0.5%	2	2	2	6	18	10.4%
	Allocation of costs between existing and new users	1	1	4	6	12	3.0%	1	2	3	6	14	8.1%
	Maximize Opportunity for Grants	2	9	6	17	43	10.7%	0	4	1	5	13	7.5%
	Affordability total				43	103	25.7%				25	75	43.4%
Economic Benefits	<i>no goals written</i>						0.0%						0.0%
	Economic Total				0	0	0.0%				0	0	0.0%
Environment Benefits	Public awareness about what" not to flush"			1	1	1	0.2%	0	0	0	0	0	0.0%
	Maximize opportunity for partnership	0	4	5	9	17	4.2%	0	0	3	3	3	1.7%
	Maximize effluent quality	11	6	4	21	77	19.2%	4	1	0	5	23	13.3%
	Environmental Total				31	95	23.7%				8	26	15.0%
Social Benefit	Reduce odour from plant	8	2	2	12	48	12.0%	3	0	2	5	17	9.8%
	Only use existing location - no multiple treatment facilities		1		1	3	0.7%	0	0	0	0	0	0.0%
	Maximize opportunity for community amenity at plant	1	3	10	14	24	6.0%	0	0	3	3	3	1.7%
	Social Total				27	75	18.7%				3	20	11.6%
All Categories	Grand total				133	401	100%				48	173	100%

TABLE 2(C): GROUPED GOALS AND VOTING RESULTS, FOR RESOURCE RECOVERY

Component	Resource Recovery	PAC Voting						TAC Voting					
		Green Dots	Pink Dots	Yellow Dots	Total Dots	Score	% of Total	Green Dots	Red Dots	Yellow Dots	Total Dots	Score	% of Total
Category	Grouping as Voted	5	3	1				5	3	1			
Technical	Focus on technologies that are reliable	3	0	1	4	16	4.4%	0	1	0	1	3	2.1%
	Meet Prov. regulatory requirements	0	1	0	1	3	0.8%	2	1	0	3	13	9.0%
	Anticipate future demand for RR	0	0	4	4	4	1.1%	0	0	1	1	1	0.7%
	Ostara (struvite) nutrient recovery	0	1	0	1	3	0.8%	0	0	0	0	0	0.0%
	Build capacity for options, partnerships for future R. Recovery	2	1	4	7	17	4.7%	0	0	0	0	0	0.0%
	Invite medical cannabis greenhouses on-site public-private-partnership	0	1	2	3	5	1.4%	0	0	3	3	3	2.1%
	Microbial lab /research centre	1	1	3	5	11	3.0%				0	0	0.0%
	Technical Total				25	59	16.2%				8	20	13.8%
Affordability	To be cost neutral as a minimum	0	1	0	1	3	0.8%	2	0	0	2	10	6.9%
	Use life cycle costs/NPV	5	4	0	9	37	10.2%	4	2	2	8	28	19.3%
	Energy/Heat recovery	12	5	4	21	79	21.7%	2	2	0	4	16	11.0%
	Productive Use of reclaimed water	12	5	1	18	76	20.9%	2	1	1	4	14	9.7%
	Reduce costs, efficiency in operations, reuse resources at plant	1		1	2	6	1.6%	0	0	0	0	0	0.0%
	Grant Funding eligibility	2	7	1	10	32	8.8%	2	1	0	3	13	9.0%
	Affordability Total				61	233	64.0%				21	81	55.9%
Economic Benefits						0	0.0%					0	0.0%
	Economic Total				0	0	0.0%					0	0.0%
Environment Benefits	Reduce GHG/carbon neutrality	1	6	0	7	23	6.3%	1	1	0	2	8	5.5%
	Recovery for bio-plastics and resins	0	2	2	4	8	2.2%	0	1	0	1	3	2.1%
	Third party utilization (EOI requests)	0	0	7	7	7	1.9%	1	1	2	4	10	6.9%
	Environmental Total				18	38	10.4%				7	21	14.5%
Social Benefit	Public health issues considered for any reclaimed water	0	0	1	1	1	0.3%	2	0	1	3	11	7.6%
	Partnership with university for research	2	4	2	8	24	6.6%	0	2	0	2	6	4.1%
	Educate public on Skyrocket (composted biosolids)	1	0	4	5	9	2.5%	1	0	1	2	6	4.1%
	Social Total				14	34	9.3%				7	23	15.9%
All	Grand Total				118	364	100%				43	145	100%

TABLE 3(A): ALL GOALS AND GROUPINGS AS WRITTEN, FOR CONVEYANCE

Category	Goals As Written	Grouped Goal
Technical	Long Term Solutions	Plan for long term
	Incorporate capacity for future growth	
	Think to the next 50 years	
	Ensure capacity for long term growth	
	Must be able to incorporate future government requirements	
	Eliminate need for Comox #2 Pump Station at planned location	
	Consider the entire region	
	Consider Climate Change over 75 years (rising sea level, Puntledge water flows, ...etc.) impact on all new construction	Resiliency to Climate Change, natural disasters and seasonal impacts
	Conveyance is reliant to natural disasters (flood, earthquakes, etc.)	
	Consider seismic impacts	
	Consider climate change impacts	
	Innovation in design	Innovation in Design
	Efficiency	
	Gravity if possible, sustainable and reduced energy	Optimize Use of Existing Infrastructure
	Growth/capacity	
	Maximize opportunity for resource recovery (in conveyance)	
	Build to enhance current infrastructure	
	Maximize use of existing infrastructure that is deemed in good condition and minimal risk (reduced costs)	
	Minimize damage to existing infrastructure (example avoid cutting up recently paved roads) when installing new conveyancing.	
	use existing roads/ROW's to convey to new regional treatment and disposal facilities	
	Reduce infiltration and inflow so that Courtenay and Jane Place pump stations have longer lives before the next upgrade is needed	
	Flow buffering capacity	
	Reduce flow in existing conveyance system by introducing regional treatment facilities	
	Decentralize treatment in outlying areas to limit conveyance to centralized system (e.g. in south and north)	
	Eliminate risks	Enhance operational resilience
	Increase redundancy (decrease critical points of failure)	
	Ensure ability to maintain	
	Redundancy	

Category	Goals As Written	Grouped Goal
Technical	Maximize reliability	Enhance operational resilience
	Enhance reliability	
Affordability	Cost effective with high level of efficiency	Consider Lifecycle Costs
	Value vs cost - use value to quantify decisions	
	Minimize life cycle costs	
	Lifecycle budgeting adhered to	
	Full lifecycle costs	
	Minimize life cycle costs	
	Asset management planning for all conveyance	Develop Asset Management Plan
	Asset management considerations	
Economic Benefits	Economic benefit to the community	Maximize local economic benefits
	Local employment in installation	
Environmental Benefits	Forcemain (regardless of useable life left) out of estuary	Minimize impacts to sensitive environment
	Relocate all conveyance from everywhere in K'omoks Estuary	
	Relocate conveyance away from Willemar bluffs	
	Minimise environmental risk	
	Consider the environment	
	Protect Baynes Sound from discharge	
	Use abandoned Willemar bluff line to reduce shoreline erosion	
	Relocate conveyance lines from beneath Courtenay River	
	Energy Efficient	Mitigate climate change impacts
	Consider sustainability	
	No net-negative climate change impacts in building and operating conveyance	
Social Benefit	No infrastructure in well-dependent neighborhoods	Minimize infrastructure and operating impacts to residents
	Lowest possible noise and odour	
	Least disruption to residences	
	Minimize disruption to neighborhoods/communities due to new infrastructure	
	Combine new "pipe" with foot/bike bridge	Maximize community and recreational infrastructure
	Contribute to trails/parks/green spaces for public use	
	Bike trails when any new roadwork on main thoroughfares required	
	Bike/walking trails on right of way	
	Multi-use trail/sidewalk if conveyance requires road reconstruction. e.g. sidewalk on Comox Hill	
	Leave amenities like trails and sidewalks after construction e.g. Dryden Hudson trails	
	Net positive benefit for residents e.g. bike/walk lanes	

Category	Goals As Written	Grouped Goal
Social Benefit	Maximize opportunity for community benefit	Maximize community and recreational infrastructure
	Connect the sewer system to densely populated areas, small lots with poor soil conditions and old failing septic fields. It provides a health benefit. Areas Croteau beach, Arden, Mission Hill, Royston and South region	Consider public health benefits

TABLE 3(B): ALL GOALS AND GROUPINGS AS WRITTEN FOR TREATMENT

Category	Goals As Written	Grouped Goal
Technical	Reduce risk of failure	Ensure system integrity
	Take proactive approach to maintenance to eliminate [accidental] discharge to ecosystem	
	Maximize reliability	
	Ensure timely, realistic actions are plausible	
	Don't go much higher than provincial and federal regulatory standards	Avoid achieving effluent quality much higher than currently required
	Meet required standards	
	Add disinfection to the current plant	
	Divert flows from Courtenay and Comox pump stations and create tertiary (MBR) facilities at Bill Moore Park and Comox golf course	Plan for future - population, technology, climate
	Resilient to changing conditions/events	
	Have capacity to absorb doubling of population	
	Incorporate best practices	
	Plan for accommodating future technologies	
	Invest in quality processes and technologies for long term value	
	Plan for future demand	
	Like Cranbrook, use proven technology in innovative ways since leading edge tech can be troublesome	
	Consider new technology and do away with current plant	
	Innovation to achieve GMF grants	
Affordability	Long term lifecycle costs	Minimize lifecycle costs
	Efficiency	
	Capacity/growth	
	Net Present Value (NPV)	
	Sustainable for long term	
	Ensure fairness of costs between new and future users (DCC/CICC)	Allocation of costs between existing and new users
	Asset management	Asset management
	Maximum opportunity for grants	Maximum opportunity for grants
Economic Benefits	Residents in Area B receive economic partnership with shellfish industry (treatment opportunity for boating polluters)	Consider economic partnership and eco-asset approach
	Treatment relies on an eco-asset approach to achieve better treatment at a lower cost with environmental benefits.	

Environmental Benefits	Public awareness about what" not to flush"	Public awareness about flushing habits
	Increase service area to include homes in Area B Croteau Beach and Arden	Extend service boundary to include select new areas
	Treat to the highest quality	Maximize effluent quality
	Treat to the highest standard available	
	Achieve highest possible standards for post-treatment	
	Incorporate most up to date technologies	
	Treatment to eliminate pharmaceuticals	
	Treatment to eliminate micro plastics	
	Eliminate viruses	
	Disinfection	
	Surpass minimum regulatory requirements by 10 per cent	
	Treat to exceed minimum standards	
Social Benefit	Stop being sued due to odours	Resolve odour issues at the plant
	Use the highest level of technology to deal with noise and odour	
	No odours	
	No odours	
	Examine affordable ways to reduce impacts of plant - like odours- on neighbours	
	No negative impacts on neighbours that don't receive sewer service	
	Reduce odours to neighbour standards	
	Odours	
	Only use existing location - no multiple treatment facilities	No multiple treatment facilities
	Social determinants of health	Health
	Think of the plant area as a park, a destination	Maximize opportunity for community amenities at plant
	Look for amenities that can be offered the neighborhood, to ease conflict. E.g. water for irrigation or fire protection	
	Enhanced relationships with community (school trips/parkland)	Engage in educating the public about the treatment System
	Partner with SD 71 for k-12 educational training (childhood leads to behavioural change and appreciation of what taxes are used for)	
	Increase public access and education opportunities	
	Education/skills training opportunities	
	Improve public perception of BC's wastewater treatment practices	

TABLE 3(C): ALL GOALS AND GROUPINGS AS WRITTEN FOR RESOURCE RECOVERY

Category	Goals As Written	Grouped Goal
Technical	Like Cranbrook, focus on technologies that are reliable	Focus on technologies that are reliable
	Meet provincial regulatory requirements	Meet provincial regulatory requirements
	Anticipate future demand for recovered resources	Anticipate future demand for recovered resources
	Ostara (struvite) nutrient recovery	
	Build capacity for options and partnerships to recover in future	
	Microbial lab that could conduct research (research centre)	Research opportunities
Affordability	To be cost neutral as a minimum	Use life cycle costs/NPV
	Minimise life cycle costs	
	Reduce capital cost	
	Life cycle costing to factor in potential benefits in future marketing of recovered resource	
	Use energy generated to reduce operational costs	Energy/Heat recovery
	Use to lower our energy footprint	
	Heat recovery for plant	
	Solar panels for power	
	Recover heat to reduce heating costs for buildings at the treatment plant	
	Reclaim heat to reduce operations costs	
	Energy recovery	
	Capture heat energy in conveyance	
	Capture kinetic energy in conveyance	
	Use recovered heat for commercial greenhouses	
	Could treated water be diverted from outfall to market farms along the Queen's Ditch during growing season?	Economically productive use of reclaimed water
	Encourage agricultural activity in Comox Lazo Area B close to the plant from treated water	
	Use the water for purple pipe irrigation	
	Deliver reclaimed water to agriculture	
	Reclaimed water for agricultural use rather than drawing more irrigation water from the Tsolum	
	Research options for using treated water for agriculture	
	Water golf courses	
	Use reclaimed water in municipal parks areas	
	Ducks Unlimited/Comox Bay Farm	
	Recover water to standard that prevents facility from using potable water	
	Water municipal holdings	

Category	Goals As Written	Grouped Goal
Affordability	Restoration of wetlands/water reuse	Economically productive use of reclaimed water
	Reclaim as much of the resource as possible	
	Maximum use of all final product water and solids	
	Groundwater disposal can be supplemental by resource recovery to irrigate Bill Moore park and Comox golf course	
	Maximize plant water recovery, reduce costs	
	reclaimed water to residential and agriculture	
	Use public spaces with reduced site footprints for groundwater disposal opportunities and resource recovery use	
	Reduce costs, efficiency in operations, reuse at plant	
	Funding eligibility	Funding eligibility
Economic Benefits	Invite medical cannabis greenhouses on-site public-private-partnership	PPP
	Compost tourism	Tourism
Environmental Benefits	Reduce GHG/ carbon neutrality	Reduce GHG/ carbon neutrality
	Incorporate plans that work in our climate (for storage)	
	Recovery for bio-plastics and resins	
	Third party utilization (EOI requests)	third party utilization (EOI requests)
Social Benefit	Public health issues considered for any reclaimed water	Consider public health
	Social determinants of health	
	Partnership with university for research recovery	Public outreach and education
	Educate public on skyrocket (composted biosolids)	

Minutes of the meeting of the Liquid Waste Management Plan (LWMP) Joint Technical and Public Advisory Committees (TACPAC) Meeting #2 held on Friday, November 23, 2018 in the Comox Valley Regional District Boardroom located at 600 Comox Road, Courtenay, BC, commencing at 9:00am

PRESENT:

A. Habkirk, Chair and Facilitator	
P. Nash, LWMP Project Coordinator	
M. Rutten, General Manager of Engineering Services	CVRD
K. La Rose, Senior Manager of Water/Wastewater Services	CVRD
M. Imrie, Manager of Wastewater Services	CVRD
C. Wile, Manager of External Relations	CVRD
J. Boguski, Branch Assistant – Engineering Services	CVRD
A. Idris, Engineering Analyst	CVRD
A. Bennett,	WSP
W. Cole-Hamilton, City of Courtenay Councillor	PAC
K. Grant, Town of Comox Councillor	PAC
A. Hamir, Lazo North (Electoral Area B) Director	PAC
C. McColl, K'ómoks First Nation	PAC/TAC
T. Ennis, Comox Valley Conservation Partnership	PAC
D. Winterburn, BC Shellfish Growers Association	PAC
S. Wood, Comox Business Improvement Association	PAC
S. Carey, Courtenay Resident Representative	PAC
T. Serviz, Courtenay Resident Representative	PAC
K. Niemi, Courtenay Resident Representative	PAC
K. vanVelzen, Comox Resident Representative	PAC
D. Jacquest, Comox Resident Representative	PAC
R. Craig, Comox Resident Representative	PAC
M. Holm, Area B Resident Representative	PAC
M. Lang, Area B Resident Representative	PAC
L. Aitken, Area B Resident Representative (Observer)	PAC
J. Steel, Area B Resident Representative (Observer)	PAC
D. Cherry, VIHA	TAC
P. Kumar, VIHA	TAC
R. O'Grady, City of Courtenay Engineering	TAC
S. Ashfield, Town of Comox Engineering	TAC
G. Bonekamp, Department of National Defence Engineering	TAC
A. Bissinger, Department of National Defence (Observer)	TAC

ITEMS:

ITEM	DESCRIPTION	OWNER
2.1	Call to Order. Opening remarks by Kris La Rose: <ul style="list-style-type: none"> CVRD respects and honors the time commitment that each member of the committee is making to participate in our process and that in return, we are committed to sincere engagement and a transparent planning process. 	Allison, Kris

ITEM	DESCRIPTION	OWNER
2.1	<ul style="list-style-type: none"> There has been a lot of study work, analysis and design done for certain elements of the possible works, our intention is for that work to support rather than constrain the planning process. 	Allison, Kris
2.2	<p>Review of Minutes of Meeting #1 & LWMP Roadmap</p> <p>Clarification of minutes;</p> <ul style="list-style-type: none"> Section 1.8: change “How the recommendation got to the Comox Valley Sewage Commission for <i>adoption</i>” to “How the recommendation got to the Comox Valley Sewage Commission for <i>consideration</i>”. (K. van Velzen). <p>Paul reviewed the roadmap, noting the Ministry of Environment position that proper managing of wastewater is “not optional”.</p>	Allison & Paul
2.3	<p>Wastewater 101 – Fundamentals of Wastewater Treatment.</p> <ul style="list-style-type: none"> Aline gave a thorough outline of wastewater treatment. 	WSP
2.4	<p>Regulatory Framework.</p> <ul style="list-style-type: none"> Treatment standards for different discharge environments was included in the wastewater 101 presentation. Of note that standards for some reclaimed water uses align with standards for ocean discharge. 	WSP
2.5	<p>Goals – what are they and how will we use them?</p> <p>Paul outlined the framework of the evaluation system and definitions of:</p> <ul style="list-style-type: none"> LWMP components (conveyance, treatment, resource recovery), Objectives – functions which must be achieved for each component, Options – different projects that can achieve the objectives, Goals – aspirational goals for things other than the objectives, “Low Cost” is an aspirational goal, Actions – ways to meet or move towards the goals, Evaluation – how well does an option address the goals? <p>The “best” option is the one that achieves all the objectives and as many of the goals as possible.</p>	Paul
2.6	<p>Initial public feedback;</p> <p>Christianne presented results of Phase 1 public consultation conducted over summer and fall:</p> <ul style="list-style-type: none"> 22 participants at the summer workshops, 104 responses to online survey, Excellent attendance at the November 6 and 8 Open House at the Comox Valley Water Pollution Control Centre (CVWPCC) – 110 people. <p>Major themes:</p> <ul style="list-style-type: none"> Concern about negatively impacting the environment, Importance of long term planning and making sound decisions now, Importance of moving forward quickly due to risks of ageing infrastructure. 	Christianne

ITEM	DESCRIPTION	OWNER
2.7	<p>Examples of award winning, goal-driven projects (videos)</p> <p>Conveyance – Marwayne, AB</p> <ul style="list-style-type: none"> Noted that while this was a conveyance project, the funding and FCM award received were for the “neighborhood redevelopment” that took place in concert with the conveyance project <p>Treatment – Sechelt BC</p> <ul style="list-style-type: none"> Noted that this project was the result of community-set goals to treat to high standards and pursue resource recovery. The reclaimed water is not yet being used. Resource Recovery – Cranbrook BC (video) (case study) 	Paul
2.8	<p>Committee Exercise – brainstorming the goals. PAC, TAC and Staff</p> <ul style="list-style-type: none"> Categories for the goals: <ul style="list-style-type: none"> Technical/functional, Cost/affordability, Economic benefit, Environmental benefit, Social benefit. <p>A five minute “written brainstorming” session was held for each of the three LWMP components, with goals being written on sticky notes and posted to the flip charts. The final count was 168 goals distributed as:</p> <ul style="list-style-type: none"> Conveyance 67, Treatment 54, Resource Recovery 47. <p>The goals were sorted and grouped ready for voting over the lunch break.</p>	Allison
2.9	<p>Comparison of committee goals to official plan goals.</p> <p>CVRD Staff reviewed the major planning documents for goals and policies related to wastewater:</p> <ul style="list-style-type: none"> Official Community Plan’s, Regional Growth Strategy, Comox Valley Sustainability Strategy, Climate Action Revenue Incentive Program. <p>Results of this are attached to the minutes as Table 1(A) through Table 1 (C).</p>	Paul
2.10	<p>Turning the goals into the evaluation system.</p> <p>Explanation of the evaluation matrix as a guide for decision making.</p> <p><i>*Note for clarity that the example scoring shown for the Comox No.2 Pump Station Project was merely to illustrate how the evaluation system functions. It does not represent the actual evaluation of this project.</i></p>	
	Lunch Break	
2.11	<p>Prioritising the goals.</p> <ul style="list-style-type: none"> Ranking of the cost and benefit goals by PAC members, Ranking of the functional goals by the TAC members. <p>Ranking was performed by a numerical voting system, with different colours representing PAC and TAC members.</p>	Allison

	There were too many goals and votes to be tallied at the meeting, this was done offline.	
ITEM	DESCRIPTION	OWNER
2.12	<p>Preview of;</p> <ul style="list-style-type: none"> Public Workshops (Phase 2 of consultation) on November 27 and 28, 2018: <ul style="list-style-type: none"> Public review of draft goals and objectives. TACPAC #3 on December 11, 2018: <ul style="list-style-type: none"> Review of public feedback, make recommendation on goals. 	Allison
2.13	<p>Round Table discussion and Q&A.</p> <p>The following summarises the pertinent questions and answers for the meeting:</p> <ul style="list-style-type: none"> Water use at the CVWPCC was reduced by a third over the last two years due to recycling water at enclosed water uses. However, we recognize there is still room for improvement (M. Imrie). How are pathogens disinfected at the CVRD Compost Facility? (W. Cole-Hamilton) <ul style="list-style-type: none"> The composting process and the disinfection is controlled by controlling the temperature. High temperature for a set period of time kills pathogens. (M. Imrie) Are the categories set in stone or is there room for making changes in them? Is there an opportunity for committee members to come up with more goals? (R. O'Grady) <ul style="list-style-type: none"> These are starting points to focus our ideas and save the committee some time. However, if there are good goals to be added, there is room for change. We would like to make the December 11 meeting the deadline for coming up with new goals unless a 'game changer' idea comes up later than that date. This is to ensure the process stays focused and on schedule. (A. Habkirk and P. Nash) What was the basis to create the categories? Surprised to see "economic benefits" in the list. (A. Hamir) <ul style="list-style-type: none"> These categories are a variation of standard practice. The 'economic benefits' category is there to identify potential economic benefits that are typically not directly associated with wastewater systems. (P. Nash) Economic benefits can also include economic impacts such as impacts of options that may potentially hinder economic benefits would be evaluated. (K. La Rose) What is the point of achieving advanced levels of treatment (such as the one by Sechelt) if no opportunities for use exist? (W. Cole-Hamilton) <ul style="list-style-type: none"> The main value is only achieved if the water is indeed reused. The opportunities do exist, but have not yet been pursued, for various reasons. Nevertheless, significant grant funding (up to 50 per cent) was achieved in part due to setting high 	Allison

	goals for innovation and treatment performance and then meeting them. (P. Nash)	
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ITEM	DESCRIPTION	OWNER
2.13	<ul style="list-style-type: none"> Does this goal setting exercise include future/potential service areas in the region (e.g. South Sewer)? (R. O’Grady) <ul style="list-style-type: none"> ➤ Let us focus on existing service areas for now. (K. La Rose) Is there collaboration between the municipalities on the sewer plans/projects? (S.Carey) <ul style="list-style-type: none"> ➤ Yes, member municipalities and the CVRD work together collaboratively in different levels (Sewage Advisory Committees, Advisory groups on staff level...etc.). (K. La Rose) Social Health context can be considered as social benefit from a public health needs perspective. (R. O’Grady) Is there a second chance for these rankings? (K. VanVelzen) <ul style="list-style-type: none"> ➤ Yes, options ranking can be reviewed if members feel the need for reconsideration. (A.Hebkirk and P. Nash) High quality effluent is important because of the especially sensitive nature of the local environment. (T. Ennis) <p>In addition to the main requirements for achieving a certain level of effluent quality, the province asks for an Environmental Impact Study to determine the impact of effluent discharge to the local environment. (A. Bennet)</p>	Allison
2.14	<p>Meeting Schedule Change.</p> <p>Note schedule change for TACPAC Meeting # 4, from Thursday, January 17, 2019 to Thursday, January 24, 2019, 9:00 am to 2:00pm, at the CVRD Boardroom.</p>	
2.15	<p>CVRD Wastewater Facilities Tour for PAC members.</p> <p>A familiarization tour of the CVRD facilities will be held on two dates;</p> <ol style="list-style-type: none"> 1. Tuesday 3 Dec, 9am -12, starting at CVRD office 2. Friday 7th Dec 9am -12, starting at CVRD office 	
2.16	<p>Next Meeting.</p> <p>The next LWMP Joint TACPAC meeting will be held on December 11, 2018 commencing at 9:00am at the Native Sons Hall, Lower Lodge Room, 360 Cliffe Ave, Courtenay, BC.</p>	
2.17	<p>Adjournment</p> <p>The meeting adjourned at 2:00pm</p>	Allison

Attachments

TABLE 1: SUMMARY OF WASTEWATER RELATED GOALS FROM MAJOR PLANNING DOCUMENTS	6
TABLE 1(A): CONSOLIDATED REFERENCE POLICY FROM MAJOR PLANNING DOCUMENTS, CONVEYANCE	7
TABLE 1(B): CONSOLIDATED REFERENCE POLICY FROM MAJOR PLANNING DOCUMENTS, TREATMENT ...	9
TABLE 1(C): CONSOLIDATED REFERENCE POLICY FROM MAJOR PLANNING DOCUMENTS, RESOURCE ...	
RECOVERY	11
TABLE 2 (A): GROUPED GOALS AND VOTING RESULTS, FOR CONVEYANCE.....	12
TABLE 2 (B): GROUPED GOALS AND VOTING RESULTS, FOR TREATMENT	13
TABLE 2 (C): GROUPED GOALS AND VOTING RESULTS, FOR RESOURCE RECOVERY	14
TABLE 3 (A): ALL GOALS AND GROUPINGS AS WRITTEN, FOR CONVEYANCE	15
TABLE 3 (B): ALL GOALS AND GROUPINGS AS WRITTEN FOR TREATMENT.....	18
TABLE 3 (C): ALL GOALS AND GROUPINGS AS WRITTEN FOR RESOURCE RECOVERY	20

Tables 1(A) – 1(C) were consolidated from the major planning documents listed below;

- City of Courtenay Official Community Plan ([Courtenay OCP](#))
- Town of Comox Official Community Plan ([Comox OCP](#))
- Comox Valley Regional Growth Strategy ([Comox Valley RGS](#))
- Comox Valley Sustainability Strategy ([Comox Valley SS](#))
- CVRD Climate Action Revenue Incentive Public Report for 2017([CVRD CARIP](#))

TABLE 1: SUMMARY OF WASTEWATER RELATED GOALS FROM MAJOR PLANNING DOCUMENTS

Category	Goal
Technical/Functional	Alternate Trunk Sewer Networks
	Treatment to Tertiary or Reuse Level
	Waste to Resources
Affordability	Reduce Capital Costs
	Low Operating Costs
	Funding through DCC's
Economic Benefits	Vibrant Local Economy
	Increased Agriculture, Reclaimed Water for Agriculture
Environmental Benefits	Reduce Greenhouse Gases
	Energy Conservation
	Renewable Energy, Energy from Waste Sources
	Green Buildings
	Protect, Conserve and Restore Ecosystems
Social Benefits	Public Health Needs
	Recreation Trails as part of New Developments

TABLE 1(A): CONSOLIDATED REFERENCE POLICY FROM MAJOR PLANNING DOCUMENTS, CONVEYANCE

Conveyance		
Technical/Functional Goals	Environmental Goals	Affordability/Economic Benefits/Social Benefits Goals
<i>Courtenay OCP Sec 6.3. (Page 65):</i> For major new developments, the City shall consider the downstream capacity of existing sewer mains to ensure adequate capacity.	<i>Courtenay OCP Sec 10.2. (Page 139) Goals:</i> To reduce the City's annual community-wide greenhouse gas emissions 20 per cent below the 2007 levels by 2020, with an incremental reduction target of two per cent per year between 2010 and 2020 by: reducing average energy demand per home by 20 per cent and reduce energy demand for businesses by nine per cent per square meter by 2020, making public sector buildings (and other operations) carbon neutral by 2012.	<i>CVRD RGS (Page 56) Objective 5D-2:</i> New development will replace and/or upgrade aging sewer infrastructure or provide cash-in-lieu contributions for such upgrades through Development Cost Charges or similar financial contributions.
<i>Courtenay OCP Sec 6.3. (Page 65):</i> The City through the development of a Master Sewer Strategy will develop strategies to facilitate providing alternative trunk networks and systems to transport effluent to treatment facilities.	<i>Courtenay OCP Sec 10.3. (Page 144) Objective 4:</i> To use and promote a 'design with nature' approach in the provision of energy and design of buildings and infrastructure to make use of ecological processes before employing heavily engineered approaches. This includes minimizing the use of non-renewable energy and resources by increasing the use of low GHG emitting and efficient renewable energy supply systems and resources.	<i>Courtenay OCP Sec 2.2.2. Goal 5 (Page 22):</i> Provide affordable, effective and efficient services and infrastructure that conserves land, water and energy resources.
<i>Comox OCP Sec 2.4.5. (Page 95) Policy:</i> The Town will operate a sewerage collection system that will discharge into the main trunk sewers and waste water treatment operated by the CVRD. The Town does not envision the need for waste water treatment or disposal within the Town's boundaries.	<i>Town of Comox OCP Sec 1.7. Table 2 (Page 19):</i> Encourage reduced energy consumption and greenhouse gas emissions as a long term sustainability community value.	<i>Courtenay OCP Sec 4.11.1 (Page 54):</i> Moving forward, the City must balance its traditional roles with new pressures to continue to expand and increase its responsibilities for community programs within a budget that is accepted by the taxpayers of the City.

Conveyance		
Technical/Functional Goals	Environmental Goals	Affordability/Economic Benefits/Social Benefits Goals
<i>CARIP (Page 9):</i> Community-Wide Actions Proposed for 2018: Install updated odour control measures at the Comox Valley Water Pollution Control Centre; Construction of Hudson and Greenwood Trunk gravity sewer mains.	<i>Town of Comox OCP Sec 2.3.11 (Page 76):</i> Under the BC Climate Action Charter, the town of Comox agreed to develop strategies and take actions to achieve the following goals: Being Carbon neutral in respect of their operations by 2012; Measuring and reporting on their community's GHG emissions profile	<i>Courtenay OCP Sec 2.1.7. (Page 13):</i> Design with nature, employing energy-conservation principles, emphasizing sustainability, enhancing the natural beauty, and protecting wildlife habitat; and support agriculture as an industry in the Valley.
	<i>CVRD RGS Sec 3.2 Goal5 (Page 21):</i> provide affordable, effective and efficient services and infrastructure that conserves land, water and energy resources.	<i>CVRD RGS Sec 3.1 Vision (Page 20):</i> As stewards of the environment, local governments, the K'omoks First Nation, public agencies, residents, businesses and community and non-governmental organizations will work collaboratively to conserve and enhance land, water and energy resources and ensure a vibrant local economy and productive working landscapes.
	<i>CVSS (Page 5):</i> Climate sustainability target: The Comox Valley will reduce overall Greenhouse Gas Emissions by 80 per cent from 2007 levels by 2050. Rationale: This target calls for action on reducing use of fossil fuels and increasing the use of alternative energy sources.	<i>CVRD RGS (Page 56) Objective 5-D:</i> Encourage sewage management approaches and technologies that respond to public health needs and maximize existing infrastructure.
	<i>CVSS (Page 45) Goal 3.1:</i> Reduce energy consumption and greenhouse gas emissions in municipal infrastructure. Objective 3.1.1: Increase energy efficiency in public works infrastructure systems and equipment.	
	<i>CVSS (Page 86) Goal 5.2, CARIP (Page 86- 90) Goal 5.2:</i> Conserve and restore ecosystems.	
	<i>CARIP (Page 3):</i> Current GHG reduction Targets: 20 per cent reduction in corporate GHG emissions by 2020;	

TABLE 1(B): CONSOLIDATED REFERENCE POLICY FROM MAJOR PLANNING DOCUMENTS, TREATMENT

Treatment		
Technical/Functional Goals	Environmental Goals	Affordability/Economic Benefits/Social Benefits Goals
<i>Comox OCP Sec 2.4.5. (Page 95) Policy c:</i> The Town will operate a sewerage collection system that will discharge into the main trunk sewers and waste water treatment operated by the CVRD. The Town does not envision the need for waste water treatment or disposal within the Town's boundaries.	<i>Courtenay OCP Sec 10.3. (Page 144) Objective 4:</i> To use and promote a 'design with nature' approach in the provision of energy and design of buildings and infrastructure to make use of ecological processes before employing heavily engineered approaches. This includes minimizing the use of non-renewable energy and resources by increasing the use of low GHG emitting and efficient renewable energy supply systems and resources.	<i>CVRD RGS (Page 56) Objective 5D-2:</i> New development will replace and/or upgrade aging sewer infrastructure or provide cash-in-lieu contributions for such upgrades through Development Cost Charges or similar financial contributions.
<i>CARIP (Page 9):</i> Community-Wide Actions Proposed for 2018: Install updated odour control measures at the Comox Valley Water Pollution Control Centre; Construction of Hudson and Greenwood Trunk gravity sewer mains	<i>Town of Comox OCP Sec 1.7. Table 2 (Page 19):</i> Encourage reduced energy consumption and greenhouse gas emissions as a long term sustainability community value.	<i>Courtenay OCP Sec 2.2.2. Goal 5 (Page 22):</i> Provide affordable, effective and efficient services and infrastructure that conserves land, water and energy resources.
<i>CVSS (Page 7) Water sustainability target:</i> The Comox Valley will reduce Non-Agricultural water use by 50 per cent per capita by 2050. All wastewater treatment in the Comox Valley will be to tertiary or reuse level by 2050. Rationale: Tertiary wastewater treatment provides a higher level of environmental protection and creates opportunities to reuse water rather than further use of the fresh water supply	<i>CVSS (Page 8):</i> Ecosystems sustainability target: 100 per cent sensitive ecosystems and riparian areas are protected and managed to maintain stable health and productivity by 2050. Rationale: The Courtenay Estuary and the Region's rivers are ecologically significant. This target reflects the importance of protecting green space for habitat and ecosystem services. 70 per cent of degraded ecosystems that are critical for the health of watersheds. Riparian areas and endangered species habitats are restored by 2050	<i>Courtenay OCP Sec 4.11.1 (Page 54):</i> Moving forward, the City must balance its traditional roles with new pressures to continue to expand and increase its responsibilities for community programs within a budget that is accepted by the taxpayers of the City.

Treatment		
Technical/Functional Goals	Environmental Goals	Affordability/Economic Benefits/Social Benefits Goals
<p><i>CVSS (Page 58) Goal 3.5:</i> Liquid waste is handled to minimize negative impacts and to turn wastes into resources.</p> <p>Objective 3.5.1: All wastewater is treated to standards that protect the environment and facilitate non-potable reuse where appropriate.</p> <p>Target: 100 per cent of new or upgraded wastewater treatment plants that provide reclaimed water for non-potable uses by 2050.</p>	<p><i>CVSS (Page 45) Goal 3.1:</i> Reduce energy consumption and greenhouse gas emissions in municipal infrastructure.</p>	<p><i>Courtenay OCP Sec 2.1.7. (Page 13):</i> Design with nature, employing energy-conservation principles, emphasizing sustainability, enhancing the natural beauty, and protecting wildlife habitat; and support agriculture as an industry in the Valley.</p>
<p><i>CVSS (Page 66) Goal 3.8:</i> Principles of industrial or business ecology networks are integrated into mixed-use and industrial areas through planning and infrastructure design as a way of turning wastes into resources.</p>		<p><i>CVRD RGS Sec 3.1 Vision (Page 20):</i> As stewards of the environment, local governments, the K'omoks First Nation, public agencies, residents, businesses and community and non-governmental organizations will work collaboratively to conserve and enhance land, water and energy resources and ensure a vibrant local economy and productive working landscapes.</p>
		<p><i>CVRD RGS (Page 56) Objective 5-D:</i> Encourage sewage management approaches and technologies that respond to public health needs and maximize existing infrastructure.</p>

TABLE 1(C): CONSOLIDATED REFERENCE POLICY FROM MAJOR PLANNING DOCUMENTS, RESOURCE RECOVERY

Resource Recovery		
Technical/Functional Goals	Environmental Goals	Affordability/Economic Benefits/Social Benefits
<i>CVSS (Page 7): Water sustainability target:</i> The Comox Valley will reduce Non-Agricultural water use by 50 per cent per capita by 2050. All wastewater treatment in the Comox Valley will be to tertiary or reuse level by 2050. Rationale: Tertiary wastewater treatment provides a higher level of environmental protection and creates opportunities to reuse water rather than further use of the fresh water supply.	<i>Courtenay OCP Sec 10.3. (Page 144) Objective 4:</i> The City will work towards integrating infrastructure systems to address multiple low-environmental impact objectives. This includes exploring how to maximize opportunities for harvesting waste heat or generating energy from water and/or wastewater and promote the use of grey water reuse systems in new construction and rainwater capture in all homes.	<i>CVRD RGS (Page 56) Objective 5D-2:</i> New development will replace and/or upgrade aging sewer infrastructure or provide cash-in-lieu contributions for such upgrades through Development Cost Charges or similar financial contributions.
<i>CVSS (Page 58) Goal 3.5:</i> Liquid waste is handled to minimize negative impacts and to turn wastes into resources. Objective 3.5.1: All wastewater is treated to standards that protect the environment and facilitate non-potable reuse where appropriate. Target: 100 per cent of new or upgraded wastewater treatment plants that provide reclaimed water for non-potable uses by 2050.	<i>CVRD RGS (Page 76): Objective 8E:</i> Plan for renewable energy generation; Policy 8E-1. Encourage efforts to increase the use of cost competitive renewable energy. Policy 8E-2. Encourage efforts to increase the use of cost competitive district energy systems. Policy: 8E-3. In reviewing OCPs consider inclusion of cost competitive renewable energy generation policies and development permit guidelines.	<i>Courtenay OCP Sec 2.2.2. Goal 5 (Page 22):</i> Provide affordable, effective and efficient services and infrastructure that conserves land, water and energy resources. Courtenay OCP Sec 4.11.1 (Page 54): Moving forward, the City must balance its traditional roles with new pressures to continue to expand and increase its responsibilities for community programs within a budget that is accepted by the taxpayers of the City.
<i>CVSS (Page 66) Goal 3.8:</i> Principles of industrial or business ecology networks are integrated into mixed-use and industrial areas through planning and infrastructure design as a way of turning wastes into resources.	<i>CARIP (Page 2): Corporate Actions Taken in 2017:</i> Corporate carbon neutral commitment to purchase credits to offset emissions. Corporate Actions Proposed for 2018: Assessment of additional energy conservation measures at recreation facilities; Initiate update of 2011 Corporate Energy Plan.	<i>CVRD RGS (Page 56) Objective 5D-3:</i> Promote eco-industrial development that turns wastes into resources.

TABLE 2(A): GROUPED GOALS AND VOTING RESULTS, FOR CONVEYANCE

Component	Conveyance	PAC Voting						TAC Voting					
		Green Dots	Pink Dots	Yellow Dots	Total Dots	Score	% of Total	Green Dots	Red Dots	Yellow Dots	Total Dots	Score	% of Total
Category	Grouping as Voted	5	3	1				5	3	1			
Technical	Resiliency to Climate Change, Natural Disasters and Seasonal Impacts	7	3	1	11	45	10.7%	3	2	0	5	21	12.1%
	Enhance operational resilience	4	5	4	13	39	9.2%	5	0	1	6	26	15.0%
	Maximize use of existing infrastructure	5	3	2	10	36	8.5%	2	2	2	6	18	10.4%
	Plan for long term	3	5	0	8	30	7.1%	6	2	0	8	36	20.8%
	Innovation in Design	0	2	6	8	12	2.8%	0	0	4	4	4	2.3%
	Technical Total				50	162	38.4%				29	105	60.7%
Affordability	Minimize lifecycle costs	5	3	3	11	37	8.8%	2	1	1	4	14	8.1%
	Long Term financial Implications	5	2	3	10	34	8.1%	0	1	0	1	3	1.7%
	Affordability Total				21	71	16.8%				5	17	9.8%
Economic Benefits	Maximize local economic benefits	0	3	4	7	13	3.1%	0	0	2	2	2	1.2%
	Economic Total				7	13	3.1%				2	2	1.2%
Environment Benefits	Minimize impacts to sensitive environment	8	3	1	12	50	11.8%	0	4	0	4	12	6.9%
	Mitigate climate change impacts	2	6	3	11	31	7.3%	1	3	1	5	15	8.7%
	Environmental Total				23	81	19.2%				9	27	15.6%
Social Benefits	Minimize noise and odour impacts	8	3	2	13	51	12.1%	0	1	2	3	5	2.9%
	Maximize community and recreational infrastructure	2	5	8	15	33	7.8%	0	0	4	4	4	2.3%
	Maximize public health benefit	0	2	5	7	11	2.6%	2	0	3	5	13	7.5%
	Social Total				35	95	22.5%				12	22	12.7%
All Categories	Grand Total				136	422	100.0 %				57	173	100.0%

TABLE 2(B): GROUPED GOALS AND VOTING RESULTS, FOR TREATMENT

Component	Treatment	PAC Voting						TAC Voting					
		Green Dots	Pink Dots	Yellow Dots	Total Dots	Score	% of Total	Green Dots	Red Dots	Yellow Dots	Total Dots	Score	% of Total
Category	Grouping as Voted	5	3	1				5	3	1			
Technical	Minimize risk of failures/spills	8	7	0	15	61	15.2%	3	3		6	24	13.9%
	Plan for future - population, technology, climate	9	7	1	17	67	16.7%	5	1	0	6	28	16.2%
	Technical Total				32	128	31.9%				12	52	30.1%
Affordability	Minimize lifecycle costs	4	6	8	18	46	11.5%	3	5	0	8	30	17.3%
	Asset management			2	2	2	0.5%	2	2	2	6	18	10.4%
	Allocation of costs between existing and new users	1	1	4	6	12	3.0%	1	2	3	6	14	8.1%
	Maximize Opportunity for Grants	2	9	6	17	43	10.7%	0	4	1	5	13	7.5%
	Affordability total				43	103	25.7%				25	75	43.4%
Economic Benefits	<i>no goals written</i>						0.0%						0.0%
	Economic Total				0	0	0.0%				0	0	0.0%
Environment Benefits	Public awareness about what" not to flush"			1	1	1	0.2%	0	0	0	0	0	0.0%
	Maximize opportunity for partnership	0	4	5	9	17	4.2%	0	0	3	3	3	1.7%
	Maximize effluent quality	11	6	4	21	77	19.2%	4	1	0	5	23	13.3%
	Environmental Total				31	95	23.7%				8	26	15.0%
Social Benefit	Reduce odour from plant	8	2	2	12	48	12.0%	3	0	2	5	17	9.8%
	Only use existing location - no multiple treatment facilities		1		1	3	0.7%	0	0	0	0	0	0.0%
	Maximize opportunity for community amenity at plant	1	3	10	14	24	6.0%	0	0	3	3	3	1.7%
	Social Total				27	75	18.7%				3	20	11.6%
All Categories	Grand total				133	401	100%				48	173	100%

TABLE 2(C): GROUPED GOALS AND VOTING RESULTS, FOR RESOURCE RECOVERY

Component	Resource Recovery	PAC Voting						TAC Voting					
		Green Dots	Pink Dots	Yellow Dots	Total Dots	Score	% of Total	Green Dots	Red Dots	Yellow Dots	Total Dots	Score	% of Total
Category	Grouping as Voted	5	3	1				5	3	1			
Technical	Focus on technologies that are reliable	3	0	1	4	16	4.4%	0	1	0	1	3	2.1%
	Meet Prov. regulatory requirements	0	1	0	1	3	0.8%	2	1	0	3	13	9.0%
	Anticipate future demand for RR	0	0	4	4	4	1.1%	0	0	1	1	1	0.7%
	Ostara (struvite) nutrient recovery	0	1	0	1	3	0.8%	0	0	0	0	0	0.0%
	Build capacity for options, partnerships for future R. Recovery	2	1	4	7	17	4.7%	0	0	0	0	0	0.0%
	Invite medical cannabis greenhouses on-site public-private-partnership	0	1	2	3	5	1.4%	0	0	3	3	3	2.1%
	Microbial lab /research centre	1	1	3	5	11	3.0%				0	0	0.0%
	Technical Total				25	59	16.2%				8	20	13.8%
Affordability	To be cost neutral as a minimum	0	1	0	1	3	0.8%	2	0	0	2	10	6.9%
	Use life cycle costs/NPV	5	4	0	9	37	10.2%	4	2	2	8	28	19.3%
	Energy/Heat recovery	12	5	4	21	79	21.7%	2	2	0	4	16	11.0%
	Productive Use of reclaimed water	12	5	1	18	76	20.9%	2	1	1	4	14	9.7%
	Reduce costs, efficiency in operations, reuse resources at plant	1		1	2	6	1.6%	0	0	0	0	0	0.0%
	Grant Funding eligibility	2	7	1	10	32	8.8%	2	1	0	3	13	9.0%
	Affordability Total				61	233	64.0%				21	81	55.9%
Economic Benefits						0	0.0%					0	0.0%
	Economic Total				0	0	0.0%					0	0.0%
Environment Benefits	Reduce GHG/carbon neutrality	1	6	0	7	23	6.3%	1	1	0	2	8	5.5%
	Recovery for bio-plastics and resins	0	2	2	4	8	2.2%	0	1	0	1	3	2.1%
	Third party utilization (EOI requests)	0	0	7	7	7	1.9%	1	1	2	4	10	6.9%
	Environmental Total				18	38	10.4%				7	21	14.5%
Social Benefit	Public health issues considered for any reclaimed water	0	0	1	1	1	0.3%	2	0	1	3	11	7.6%
	Partnership with university for research	2	4	2	8	24	6.6%	0	2	0	2	6	4.1%
	Educate public on Skyrocket (composted biosolids)	1	0	4	5	9	2.5%	1	0	1	2	6	4.1%
	Social Total				14	34	9.3%				7	23	15.9%
All	Grand Total				118	364	100%				43	145	100%

TABLE 3(A): ALL GOALS AND GROUPINGS AS WRITTEN, FOR CONVEYANCE

Category	Goals As Written	Grouped Goal
Technical	Long Term Solutions	Plan for long term
	Incorporate capacity for future growth	
	Think to the next 50 years	
	Ensure capacity for long term growth	
	Must be able to incorporate future government requirements	
	Eliminate need for Comox #2 Pump Station at planned location	
	Consider the entire region	
	Consider Climate Change over 75 years (rising sea level, Puntledge water flows, ...etc.) impact on all new construction	Resiliency to Climate Change, natural disasters and seasonal impacts
	Conveyance is reliant to natural disasters (flood, earthquakes, etc.)	
	Consider seismic impacts	
	Consider climate change impacts	
	Innovation in design	Innovation in Design
	Efficiency	
	Gravity if possible, sustainable and reduced energy	Optimize Use of Existing Infrastructure
	Growth/capacity	
	Maximize opportunity for resource recovery (in conveyance)	
	Build to enhance current infrastructure	
	Maximize use of existing infrastructure that is deemed in good condition and minimal risk (reduced costs)	
	Minimize damage to existing infrastructure (example avoid cutting up recently paved roads) when installing new conveyancing.	
	use existing roads/ROW's to convey to new regional treatment and disposal facilities	
	Reduce infiltration and inflow so that Courtenay and Jane Place pump stations have longer lives before the next upgrade is needed	
	Flow buffering capacity	
	Reduce flow in existing conveyance system by introducing regional treatment facilities	
	Decentralize treatment in outlying areas to limit conveyance to centralized system (e.g. in south and north)	
	Eliminate risks	Enhance operational resilience
	Increase redundancy (decrease critical points of failure)	
	Ensure ability to maintain	
	Redundancy	

Category	Goals As Written	Grouped Goal
Technical	Maximize reliability	Enhance operational resilience
	Enhance reliability	
Affordability	Cost effective with high level of efficiency	Consider Lifecycle Costs
	Value vs cost - use value to quantify decisions	
	Minimize life cycle costs	
	Lifecycle budgeting adhered to	
	Full lifecycle costs	
	Minimize life cycle costs	
	Asset management planning for all conveyance	Develop Asset Management Plan
	Asset management considerations	
Economic Benefits	Economic benefit to the community	Maximize local economic benefits
	Local employment in installation	
Environmental Benefits	Forcemain (regardless of useable life left) out of estuary	Minimize impacts to sensitive environment
	Relocate all conveyance from everywhere in K'omoks Estuary	
	Relocate conveyance away from Willemar bluffs	
	Minimise environmental risk	
	Consider the environment	
	Protect Baynes Sound from discharge	
	Use abandoned Willemar bluff line to reduce shoreline erosion	
	Relocate conveyance lines from beneath Courtenay River	
	Energy Efficient	Mitigate climate change impacts
	Consider sustainability	
	No net-negative climate change impacts in building and operating conveyance	
Social Benefit	No infrastructure in well-dependent neighborhoods	Minimize infrastructure and operating impacts to residents
	Lowest possible noise and odour	
	Least disruption to residences	
	Minimize disruption to neighborhoods/communities due to new infrastructure	
	Combine new "pipe" with foot/bike bridge	Maximize community and recreational infrastructure
	Contribute to trails/parks/green spaces for public use	
	Bike trails when any new roadwork on main thoroughfares required	
	Bike/walking trails on right of way	
	Multi-use trail/sidewalk if conveyance requires road reconstruction. e.g. sidewalk on Comox Hill	
	Leave amenities like trails and sidewalks after construction e.g. Dryden Hudson trails	
	Net positive benefit for residents e.g. bike/walk lanes	

Category	Goals As Written	Grouped Goal
Social Benefit	Maximize opportunity for community benefit	Maximize community and recreational infrastructure
	Connect the sewer system to densely populated areas, small lots with poor soil conditions and old failing septic fields. It provides a health benefit. Areas Croteau beach, Arden, Mission Hill, Royston and South region	Consider public health benefits

TABLE 3(B): ALL GOALS AND GROUPINGS AS WRITTEN FOR TREATMENT

Category	Goals As Written	Grouped Goal
Technical	Reduce risk of failure	Ensure system integrity
	Take proactive approach to maintenance to eliminate [accidental] discharge to ecosystem	
	Maximize reliability	
	Ensure timely, realistic actions are plausible	
	Don't go much higher than provincial and federal regulatory standards	Avoid achieving effluent quality much higher than currently required
	Meet required standards	
	Add disinfection to the current plant	
	Divert flows from Courtenay and Comox pump stations and create tertiary (MBR) facilities at Bill Moore Park and Comox golf course	Plan for future - population, technology, climate
	Resilient to changing conditions/events	
	Have capacity to absorb doubling of population	
	Incorporate best practices	
	Plan for accommodating future technologies	
	Invest in quality processes and technologies for long term value	
	Plan for future demand	
	Like Cranbrook, use proven technology in innovative ways since leading edge tech can be troublesome	
	Consider new technology and do away with current plant	
	Innovation to achieve GMF grants	
Affordability	Long term lifecycle costs	Minimize lifecycle costs
	Efficiency	
	Capacity/growth	
	Net Present Value (NPV)	
	Sustainable for long term	
	Ensure fairness of costs between new and future users (DCC/CICC)	Allocation of costs between existing and new users
	Asset management	Asset management
	Maximum opportunity for grants	Maximum opportunity for grants
Economic Benefits	Residents in Area B receive economic partnership with shellfish industry (treatment opportunity for boating polluters)	Consider economic partnership and eco-asset approach
	Treatment relies on an eco-asset approach to achieve better treatment at a lower cost with environmental benefits.	

Environmental Benefits	Public awareness about what" not to flush"	Public awareness about flushing habits
	Increase service area to include homes in Area B Croteau Beach and Arden	Extend service boundary to include select new areas
	Treat to the highest quality	Maximize effluent quality
	Treat to the highest standard available	
	Achieve highest possible standards for post-treatment	
	Incorporate most up to date technologies	
	Treatment to eliminate pharmaceuticals	
	Treatment to eliminate micro plastics	
	Eliminate viruses	
	Disinfection	
	Surpass minimum regulatory requirements by 10 per cent	
	Treat to exceed minimum standards	
Social Benefit	Stop being sued due to odours	Resolve odour issues at the plant
	Use the highest level of technology to deal with noise and odour	
	No odours	
	No odours	
	Examine affordable ways to reduce impacts of plant - like odours- on neighbours	
	No negative impacts on neighbours that don't receive sewer service	
	Reduce odours to neighbour standards	
	Odours	
	Only use existing location - no multiple treatment facilities	No multiple treatment facilities
	Social determinants of health	Health
	Think of the plant area as a park, a destination	Maximize opportunity for community amenities at plant
	Look for amenities that can be offered the neighborhood, to ease conflict. E.g. water for irrigation or fire protection	
	Enhanced relationships with community (school trips/parkland)	Engage in educating the public about the treatment System
	Partner with SD 71 for k-12 educational training (childhood leads to behavioural change and appreciation of what taxes are used for)	
	Increase public access and education opportunities	
	Education/skills training opportunities	
	Improve public perception of BC's wastewater treatment practices	

TABLE 3(C): ALL GOALS AND GROUPINGS AS WRITTEN FOR RESOURCE RECOVERY

Category	Goals As Written	Grouped Goal
Technical	Like Cranbrook, focus on technologies that are reliable	Focus on technologies that are reliable
	Meet provincial regulatory requirements	Meet provincial regulatory requirements
	Anticipate future demand for recovered resources	Anticipate future demand for recovered resources
	Ostara (struvite) nutrient recovery	
	Build capacity for options and partnerships to recover in future	
	Microbial lab that could conduct research (research centre)	Research opportunities
Affordability	To be cost neutral as a minimum	Use life cycle costs/NPV
	Minimise life cycle costs	
	Reduce capital cost	
	Life cycle costing to factor in potential benefits in future marketing of recovered resource	
	Use energy generated to reduce operational costs	Energy/Heat recovery
	Use to lower our energy footprint	
	Heat recovery for plant	
	Solar panels for power	
	Recover heat to reduce heating costs for buildings at the treatment plant	
	Reclaim heat to reduce operations costs	
	Energy recovery	
	Capture heat energy in conveyance	
	Capture kinetic energy in conveyance	
	Use recovered heat for commercial greenhouses	
	Could treated water be diverted from outfall to market farms along the Queen's Ditch during growing season?	Economically productive use of reclaimed water
	Encourage agricultural activity in Comox Lazo Area B close to the plant from treated water	
	Use the water for purple pipe irrigation	
	Deliver reclaimed water to agriculture	
	Reclaimed water for agricultural use rather than drawing more irrigation water from the Tsolum	
	Research options for using treated water for agriculture	
	Water golf courses	
	Use reclaimed water in municipal parks areas	
	Ducks Unlimited/Comox Bay Farm	
	Recover water to standard that prevents facility from using potable water	
	Water municipal holdings	

Category	Goals As Written	Grouped Goal
Affordability	Restoration of wetlands/water reuse	Economically productive use of reclaimed water
	Reclaim as much of the resource as possible	
	Maximum use of all final product water and solids	
	Groundwater disposal can be supplemental by resource recovery to irrigate Bill Moore park and Comox golf course	
	Maximize plant water recovery, reduce costs	
	reclaimed water to residential and agriculture	
	Use public spaces with reduced site footprints for groundwater disposal opportunities and resource recovery use	
	Reduce costs, efficiency in operations, reuse at plant	
	Funding eligibility	Funding eligibility
Economic Benefits	Invite medical cannabis greenhouses on-site public-private-partnership	PPP
	Compost tourism	Tourism
Environmental Benefits	Reduce GHG/ carbon neutrality	Reduce GHG/ carbon neutrality
	Incorporate plans that work in our climate (for storage)	
	Recovery for bio-plastics and resins	
	Third party utilization (EOI requests)	third party utilization (EOI requests)
Social Benefit	Public health issues considered for any reclaimed water	Consider public health
	Social determinants of health	
	Partnership with university for research recovery	Public outreach and education
	Educate public on skyrocket (composted biosolids)	

Minutes of the meeting of the Liquid Waste Management Plan (LWMP) Joint Technical and Public Advisory Committees (TACPAC) Meeting #3 held on Tuesday, December 11, 2018 at the Native Sons Hall located at 360 Cliffe Ave, Courtenay, BC, commencing at 9:00am

PRESENT:	A. Habkirk, Chair and Facilitator	
	P. Nash, LWMP Project Coordinator	
	M. Rutten, General Manager of Engineering Services	CVRD
	M. Imrie, Manager of Wastewater Services	CVRD
	C. Wile, Manager of External Relations	CVRD
	J. Boguski, Branch Assistant – Engineering Services	CVRD
	A. Idris, Engineering Analyst	CVRD
	A. Bennett	WSP
	W. Bayless	WSP
	M. Swift, Town of Comox Councillor	PAC
	A. Hamir, Lazo North (Electoral Area B) Director	PAC
	C. McColl, K'ómoks First Nation	PAC/TAC
	T. Ennis, Comox Valley Conservation Partnership	PAC
	D. Winterburn, BC Shellfish Growers Association	PAC
	S. Wood, Comox Business Improvement Association	PAC
	S. Carey, Courtenay Resident Representative	PAC
	T. Serviz, Courtenay Resident Representative	PAC
	K. vanVelzen, Comox Resident Representative	PAC
	D. Jacquest, Comox Resident Representative	PAC
	R. Craig, Comox Resident Representative	PAC
	M. Holm, Area B Resident Representative	PAC
	M. Lang, Area B Resident Representative	PAC
	L. Aitken, Area B Resident Representative (Observer)	PAC
	D. Cherry, VIHA	TAC
	R. O'Grady, City of Courtenay Engineering	TAC
	S. Ashfield, Town of Comox Engineering	TAC
	G. Bonekamp, Department of National Defence Engineering	TAC

ITEMS:

ITEM	DESCRIPTION	OWNER
3.1	Call to Order.	Allison Habkirk
3.2	<p>Presentation by WSP – Planning Horizons</p> <p>Walt Bayless presented on effluent discharge criteria and regulations, reclaimed water regulations and planning horizons. The floor opened for questions after the presentation</p> <ul style="list-style-type: none"> Why not build to over-capacity? (P. Nash) <ul style="list-style-type: none"> Too large of pipe creates flow issues where the waste cannot flow fast enough to keep solids in suspension, also the sewage can become septic. The operational costs of building to over-capacity are also greater. (W. Bayless) 	Walt Bayless

ITEM	DESCRIPTION	OWNER
3.2	<ul style="list-style-type: none"> • Are costs the reason for not twinning the sewer transmission mains? (T. Servizi) <ul style="list-style-type: none"> ○ Typically that decision is driven by money, also necessity. • At what point does climate change rising sea levels take over Jane Place and Beaufort Ave? (D. Jacquest) <ul style="list-style-type: none"> ○ A possible solution is to intercept earlier in the conveyance and move Jane Place to higher elevation. Then Beaufort properties may need to be locally serviced. • Would locally servicing Beaufort Ave be the municipality of Comox's issue? How long until sea levels rise? (D. Jacquest) <ul style="list-style-type: none"> ○ Yes it would be Comox's issue to locally service Beaufort Ave. We don't know the exact timeline or effect of the sea level rising to Jane Place. However, potential effects of climate change should be considered. (W. Bayless) • Courtenay may be worse off with climate change because of the rivers leading to the sea. Moving forward we need to consider those risks. (D. Jacquest) City of Courtenay is currently working on climate change mitigation and asset protection. In conjunction with this, the City is working to obtain provincial grant funding for these projects. (R. O'Grady) 	Walt Bayless
3.3	<p>Presentation by Paul Nash – Goals and Options Results</p> <ul style="list-style-type: none"> • Is this weighting process fair? Because one person could put all their votes on one topic. (K. van Velzen) <ul style="list-style-type: none"> ○ The results are being reported to you as they were recorded. ○ If the committee feels it is warranted, we can refine the results today as a group. (P. Nash) • There are more PAC votes than TAC votes, are they equally represented? (T. Servizi) <ul style="list-style-type: none"> ○ The TAC and PAC votes were recorded and kept separately on purpose. It is true that there were more PAC members who voted than there were TAC members. Considerations were made in terms of which committees vote should carry more weighting depending on goal category when the proposed percentages for each goal and goal category was developed. For instance, the votes from the TAC members' carry more weight than the PAC members' votes for the Technical goals. On the other hand, PAC members' votes carry more weight for the Social Benefits goals as they better understand the community's needs and interests. (P. Nash) • Will we amend Official Community Plans if necessary to obtain goals? (D. Jacquest) <ul style="list-style-type: none"> ○ Potentially, but that does not seem necessary at this point. (P. Nash) • Is asset management required for the LWMP? (A. Gower) <ul style="list-style-type: none"> ○ No, but it is a requirement to obtain grant funding in the future. (R. O'Grady) 	Paul Nash

ITEM	DESCRIPTION	OWNER
3.3	<ul style="list-style-type: none"> • How does governance fit in to the LWMP? (R. O’Grady) <ul style="list-style-type: none"> ○ Those issues sit outside of the LWMP. Whether or not changes happen may or may not affect this process. (P. Nash) • The LWMP should clearly outline the scope and boundary of the service. (R. O’ Grady) • If we have to plan for 50 years, should we not be planning for new governance structure and boundary expansions? Should the LWMP consider long term flows from outside the current sewer service such as Area B and South Sewer project area?(R. Craig) <ul style="list-style-type: none"> ○ The adaptability goal would be critical for the system whereby it can easily be expanded in the future should capacity expansion be required for service area expansion or to accommodate growth. Expansions would have to be known for reasonable planning. (W. Bayless) • The Regional Growth Strategy outlines expansion nodes. Council members need to push the agenda of community expansion in order to more accurately plan. (A. Gower) • This committee should remain technical and focused on the current service area not attempt to predict the future. (M. Rutten) • Consultants determine the size of pipes, pumps and the treatment plant. My understanding is that this committee’s mandate was to explore options for best solutions for conveyance, treatment and resource recovery aspects of the wastewater treatment system and not to concern itself with the technical and governance structure details. (M. Imrie) 	Paul Nash
3.4	<p>Christianne Wile presented – Public Feedback on the Goals</p> <ul style="list-style-type: none"> • Were there any goals identified in the public sessions? (K. Van Velzen) <ul style="list-style-type: none"> ○ Yes, but there were no goals that differed significantly from what was presented. Some participants wanted to bring forward potential solutions but the time for gathering that input will be at the next round of workshops when we discuss the long list. • Are the public engagement results expected to improve? Should we be doing anything different?(S. Wood) <ul style="list-style-type: none"> ○ PAC members can connect with their networks to help engage the public. We are utilizing our online engagement tools along with public workshops and promoting through online, radio and newspaper., (C. Wile) • What would you consider a significant sample of public engagement? (M. Swift) <ul style="list-style-type: none"> ○ There is no industry standard for this type of community engagement. However, PAC members are representative of their communities and we look to you to tell us if you are comfortable with these results based on what you are hearing in your networks. 	Christianne Wile

ITEM	DESCRIPTION	OWNER
3.4	<ul style="list-style-type: none"> How often are we going to engage the community? (A. Hamir) <ul style="list-style-type: none"> We have planned to have three more engagement opportunities, for the long list results, short list results, and preferred option. (C. Wile) This may be too much of a time commitment to ask the public to attend multiple workshops and take part in online consultation activities. Is it possible to skip the long list development stage and engage the public only in the shortlist stage? (A. Hamir) <ul style="list-style-type: none"> Engaging the public only in the shortlisting of goals is something we can certainly consider if that is what the committee wants. However, we advise that we allow the public an opportunity to engage with us on the long list in the event there are options that may be brought forward which have not been considered. We have had lots of input from the public so far, it is expected that more responses will come further along in this process. (C. Wile) Public input is screened in the same manner as input from the committee. (P. Nash) <p>In terms of numbers, it is important to keep in mind that regardless of how many people take part in these public workshops or online consultation, the sample is not totally random and therefore cannot be projected as a representative of the general public. (D. Jacquest)</p>	Christianne Wile
3.5	Break	
3.6	<p>Evaluation of the Goals Matrix - Conveyance</p> <p>Paul Nash presented the initial results from scoring of the treatment, conveyance and resource recovery goals.</p> <ul style="list-style-type: none"> It is important from the Chamber of Commerce's perspective to look at the affordability goal category from the lens of economic benefits as local consultants and contractors contribute to affordability of the system through localized equipment and staff, property taxes, utility taxes, etc. (A. Gower) The significant bump up of the affordability weightings is concerning. (M. Lang) Under the environmental group, it should be considered that there are some regulated requirements set in place. (A. Gower) We are concerned about bumping up the proposed weighting of affordability goal category while down grading the proposed weighting for environmental benefits category. (D. Winterburn) <ul style="list-style-type: none"> This matrix is a guideline and should not be viewed as set in stone. We need to come to an agreement in advance to determine what is considered to be a tie (example: +/- 20 per cent). (A. Habkirk) Should we add a goal to emphasize benefit to local businesses? One example being local construction/consulting jobs. <p>The committee engaged in a discussion about how to redistribute the weightings of the conveyance goals. Proposed changes were voted on by a show of hands. The proposed weightings, as presented, and the final weightings, as decided, are shown in the attached tables.</p>	Paul Nash

ITEM	DESCRIPTION	OWNER
3.6	In the discussion about weightings, the technical consultants advised the TACPAC that scoring is not the final arbiter of the “Winning Option”. For this system, if two options are within ten per cent, they should be considered as a tie, and then carefully compared to each other to make a decision.	Paul Nash
3.7	<p>Due to running out of time the committee was unable to discuss the weightings of the treatment and resource recovery goals and this task was determined to be completed at the next CVSS LWMP Joint TACPAC meeting commencing January 24, 2018 at the Comox Valley Regional District Boardroom. The January 24, 2018 meeting will be extended to 3:00pm in order to complete all agenda items.</p> <p>There was not sufficient time to visit the compost facility during the December 4 and 7, 2018 sewer system tours. A new tour date of the compost facility will take place Tuesday, January 15, 2019, from 10:00am to 12:00pm. The tour will start and end at the CVRD Boardroom. Members are asked to RSVP by email to jboguski@comoxvalleyrd.ca no later than Monday, January 7, 2019.</p> <p>Delegates were encouraged to consider their ideas for conveyance, treatment and resource recovery over the holidays, and bring them to the January 24 meeting.</p>	
3.8	Meeting adjourned at 12:05pm	

Attachments:

Table of Revised Conveyance Goals

Table of final Conveyance Evaluation System

CONVEYANCE – Consolidation of Goals

Category	Goals and Category	PAC %	TAC %	Proposed Revised Goals	Public %	Proposed Final %	Description, Comment
Technical	Resiliency to climate change, natural disasters and seasonal impacts	11%	12%	Resilience to External Factors	10%	15%	Includes climate change, natural disasters, seasonal impact
	Enhance operational resilience	9%	15%	Resilience to Internal Factors	10%	15%	Operational simplicity and reliability, minimise risk of failure
	Maximize use of existing infrastructure	9%	10%	Maximize use of existing infrastructure & road ROW's	6%	0%	This is not an end goal in itself, but an action to achieve other goals , such as reducing capital cost and project complexity
	Plan for long term	7%	21%	Long term solution	10%	10%	Provides asset life, and possibly capacity, beyond the minimum planning horizon.
				Flexibility to accommodate future changes		5%	Technical consultants to elaborate
	Innovation in Design	3%	2%	Innovation	8%	0%	This not an end goal in itself, but is an action to achieve other goals, such as attract grant funding, or reduce operational complexity.
Technical Total		38%	61%		44%	45%	
Affordability	Minimize lifecycle costs	9%	8%	Minimize lifecycle cost	7%	14%	Net present value of capital, operational and replacement cost, period is to the planning horizon
	Long Term financial Implications	8%	2%	Long term value	0%	4%	Provides asset life and capacity beyond the design planning horizon
				Attract grant funding	8%	0%	This is an action to offset capital cost, but needs to be evaluated separately as there is a probability factor involved. Offset = grant% x capital cost x probability
Affordability Total		17%	10%		15%	18%	
Economic Benefits	Maximize local economic benefits	3%	1%		0%	0%	Not a focus at all of the Conveyance component
Economic Total	Benefit to local business	3%	1%		0%	2%	
Environment Benefits	Minimize impacts, and risk of impacts, to sensitive environment	12%	7%	Minimize risk of impacts to sensitive environment	10%	12%	Example action - remove forcemain from estuary, but must also consider risks/impact of new location
	Mitigate climate change impacts (Energy and GHG's)	7%	9%	Minimize resource consumption and carbon footprint	9%	6%	Reduce use of external resources, e.g. energy, chemicals. Most energy reductions reduce GHG's, but not all GHG reductions reduce energy.
Environment Total		19%	16%		19%	18%	
Social Benefit	Minimize noise and odour impacts	12%	3%	Minimize noise, odour and visual impacts in operation	6%	10%	

				Minimize community disruption during construction	9%	3%	
	Maximize community and recreational infrastructure	8%	2%	Maximize community and recreational amenity value	7%	4%	Best example is recreational trails above a pipeline, but there might be other opportunities
	Maximize public health benefit	3%	8%	Maximize public health benefit		0%	Include this in the specification for this component, relates to Internal resilience- risk of failure
Social Total		23%	13%		22%	17%	
Grand Total		100%	100%		100%	100%	

Proposed Final Goal and Evaluation Matrix – Conveyance

Component	Conveyance	
Category	Proposed Revised Goals	Proposed %
Technical	Resilience to External Factors	15
	Resilience to Internal Factors	15
	Long term solution	10
	Flexibility to accommodate future changes	5
Technical Total		45%
Affordability	Minimize Lifecycle Cost	14
	Long Term Value	4
	Attract Grant Funding (evaluate to offset capital cost)	0
Affordability Total		18%
Economic Benefits		0
Economic Total		2%
Environmental Benefits	Minimize risk of impacts to sensitive environment	12
	Mitigate climate change impacts (Energy, and GHG's)	6
Environmental Total		18%
Social Benefit	Minimize noise, odour and visual impacts in operation	10
	Minimize community disruption during construction	3
	Maximize community and recreational amenity value	4
Social Total		17%
Grand Total		100%

Minutes of the meeting of the Liquid Waste Management Plan (LWMP) Joint Technical and Public Advisory Committees (TACPAC) Meeting #3 held on Tuesday, December 11, 2018 at the Native Sons Hall located at 360 Cliffe Ave, Courtenay, BC, commencing at 9:00am

PRESENT:	A. Habkirk, Chair and Facilitator	
	P. Nash, LWMP Project Coordinator	
	M. Rutten, General Manager of Engineering Services	CVRD
	M. Imrie, Manager of Wastewater Services	CVRD
	C. Wile, Manager of External Relations	CVRD
	J. Boguski, Branch Assistant – Engineering Services	CVRD
	A. Idris, Engineering Analyst	CVRD
	A. Bennett	WSP
	W. Bayless	WSP
	M. Swift, Town of Comox Councillor	PAC
	A. Hamir, Lazo North (Electoral Area B) Director	PAC
	C. McColl, K'ómoks First Nation	PAC/TAC
	T. Ennis, Comox Valley Conservation Partnership	PAC
	D. Winterburn, BC Shellfish Growers Association	PAC
	S. Wood, Comox Business Improvement Association	PAC
	S. Carey, Courtenay Resident Representative	PAC
	T. Serviz, Courtenay Resident Representative	PAC
	K. vanVelzen, Comox Resident Representative	PAC
	D. Jacquest, Comox Resident Representative	PAC
	R. Craig, Comox Resident Representative	PAC
	M. Holm, Area B Resident Representative	PAC
	M. Lang, Area B Resident Representative	PAC
	L. Aitken, Area B Resident Representative (Observer)	PAC
	D. Cherry, VIHA	TAC
	R. O'Grady, City of Courtenay Engineering	TAC
	S. Ashfield, Town of Comox Engineering	TAC
	G. Bonekamp, Department of National Defence Engineering	TAC

ITEMS:

ITEM	DESCRIPTION	OWNER
3.1	Call to Order.	Allison Habkirk
3.2	<p>Presentation by WSP – Planning Horizons</p> <p>Walt Bayless presented on effluent discharge criteria and regulations, reclaimed water regulations and planning horizons. The floor opened for questions after the presentation</p> <ul style="list-style-type: none"> Why not build to over-capacity? (P. Nash) <ul style="list-style-type: none"> Too large of pipe creates flow issues where the waste cannot flow fast enough to keep solids in suspension, also the sewage can become septic. The operational costs of building to over-capacity are also greater. (W. Bayless) 	Walt Bayless

ITEM	DESCRIPTION	OWNER
3.2	<ul style="list-style-type: none"> • Are costs the reason for not twinning the sewer transmission mains? (T. Servizi) <ul style="list-style-type: none"> ○ Typically that decision is driven by money, also necessity. • At what point does climate change rising sea levels take over Jane Place and Beaufort Ave? (D. Jacquest) <ul style="list-style-type: none"> ○ A possible solution is to intercept earlier in the conveyance and move Jane Place to higher elevation. Then Beaufort properties may need to be locally serviced. • Would locally servicing Beaufort Ave be the municipality of Comox's issue? How long until sea levels rise? (D. Jacquest) <ul style="list-style-type: none"> ○ Yes it would be Comox's issue to locally service Beaufort Ave. We don't know the exact timeline or effect of the sea level rising to Jane Place. However, potential effects of climate change should be considered. (W. Bayless) • Courtenay may be worse off with climate change because of the rivers leading to the sea. Moving forward we need to consider those risks. (D. Jacquest) City of Courtenay is currently working on climate change mitigation and asset protection. In conjunction with this, the City is working to obtain provincial grant funding for these projects. (R. O'Grady) 	Walt Bayless
3.3	<p>Presentation by Paul Nash – Goals and Options Results</p> <ul style="list-style-type: none"> • Is this weighting process fair? Because one person could put all their votes on one topic. (K. van Velzen) <ul style="list-style-type: none"> ○ The results are being reported to you as they were recorded. ○ If the committee feels it is warranted, we can refine the results today as a group. (P. Nash) • There are more PAC votes than TAC votes, are they equally represented? (T. Servizi) <ul style="list-style-type: none"> ○ The TAC and PAC votes were recorded and kept separately on purpose. It is true that there were more PAC members who voted than there were TAC members. Considerations were made in terms of which committees vote should carry more weighting depending on goal category when the proposed percentages for each goal and goal category was developed. For instance, the votes from the TAC members' carry more weight than the PAC members' votes for the Technical goals. On the other hand, PAC members' votes carry more weight for the Social Benefits goals as they better understand the community's needs and interests. (P. Nash) • Will we amend Official Community Plans if necessary to obtain goals? (D. Jacquest) <ul style="list-style-type: none"> ○ Potentially, but that does not seem necessary at this point. (P. Nash) • Is asset management required for the LWMP? (A. Gower) <ul style="list-style-type: none"> ○ No, but it is a requirement to obtain grant funding in the future. (R. O'Grady) 	Paul Nash

ITEM	DESCRIPTION	OWNER
3.3	<ul style="list-style-type: none"> • How does governance fit in to the LWMP? (R. O’Grady) <ul style="list-style-type: none"> ○ Those issues sit outside of the LWMP. Whether or not changes happen may or may not affect this process. (P. Nash) • The LWMP should clearly outline the scope and boundary of the service. (R. O’ Grady) • If we have to plan for 50 years, should we not be planning for new governance structure and boundary expansions? Should the LWMP consider long term flows from outside the current sewer service such as Area B and South Sewer project area?(R. Craig) <ul style="list-style-type: none"> ○ The adaptability goal would be critical for the system whereby it can easily be expanded in the future should capacity expansion be required for service area expansion or to accommodate growth. Expansions would have to be known for reasonable planning. (W. Bayless) • The Regional Growth Strategy outlines expansion nodes. Council members need to push the agenda of community expansion in order to more accurately plan. (A. Gower) • This committee should remain technical and focused on the current service area not attempt to predict the future. (M. Rutten) • Consultants determine the size of pipes, pumps and the treatment plant. My understanding is that this committee’s mandate was to explore options for best solutions for conveyance, treatment and resource recovery aspects of the wastewater treatment system and not to concern itself with the technical and governance structure details. (M. Imrie) 	Paul Nash
3.4	<p>Christianne Wile presented – Public Feedback on the Goals</p> <ul style="list-style-type: none"> • Were there any goals identified in the public sessions? (K. Van Velzen) <ul style="list-style-type: none"> ○ Yes, but there were no goals that differed significantly from what was presented. Some participants wanted to bring forward potential solutions but the time for gathering that input will be at the next round of workshops when we discuss the long list. • Are the public engagement results expected to improve? Should we be doing anything different?(S. Wood) <ul style="list-style-type: none"> ○ PAC members can connect with their networks to help engage the public. We are utilizing our online engagement tools along with public workshops and promoting through online, radio and newspaper., (C. Wile) • What would you consider a significant sample of public engagement? (M. Swift) <ul style="list-style-type: none"> ○ There is no industry standard for this type of community engagement. However, PAC members are representative of their communities and we look to you to tell us if you are comfortable with these results based on what you are hearing in your networks. 	Christianne Wile

ITEM	DESCRIPTION	OWNER
3.4	<ul style="list-style-type: none"> • How often are we going to engage the community? (A. Hamir) <ul style="list-style-type: none"> ○ We have planned to have three more engagement opportunities, for the long list results, short list results, and preferred option. (C. Wile) • This may be too much of a time commitment to ask the public to attend multiple workshops and take part in online consultation activities. Is it possible to skip the long list development stage and engage the public only in the shortlist stage? (A. Hamir) <ul style="list-style-type: none"> ○ Engaging the public only in the shortlisting of goals is something we can certainly consider if that is what the committee wants. However, we advise that we allow the public an opportunity to engage with us on the long list in the event there are options that may be brought forward which have not been considered. We have had lots of input from the public so far, it is expected that more responses will come further along in this process. (C. Wile) ○ Public input is screened in the same manner as input from the committee. (P. Nash) <p>In terms of numbers, it is important to keep in mind that regardless of how many people take part in these public workshops or online consultation, the sample is not totally random and therefore cannot be projected as a representative of the general public. (D. Jacquest)</p>	Christianne Wile
3.5	Break	
3.6	<p>Evaluation of the Goals Matrix - Conveyance</p> <p>Paul Nash presented the initial results from scoring of the treatment, conveyance and resource recovery goals.</p> <ul style="list-style-type: none"> • It is important from the Chamber of Commerce's perspective to look at the affordability goal category from the lens of economic benefits as local consultants and contractors contribute to affordability of the system through localized equipment and staff, property taxes, utility taxes, etc. (A. Gower) • The significant bump up of the affordability weightings is concerning. (M. Lang) • Under the environmental group, it should be considered that there are some regulated requirements set in place. (A. Gower) • We are concerned about bumping up the proposed weighting of affordability goal category while down grading the proposed weighting for environmental benefits category. (D. Winterburn) <ul style="list-style-type: none"> ○ This matrix is a guideline and should not be viewed as set in stone. We need to come to an agreement in advance to determine what is considered to be a tie (example: +/- 20 per cent). (A. Habkirk) • Should we add a goal to emphasize benefit to local businesses? One example being local construction/consulting jobs. <p>The committee engaged in a discussion about how to redistribute the weightings of the conveyance goals. Proposed changes were voted on by a show of hands. The proposed weightings, as presented, and the final weightings, as decided, are shown in the attached tables.</p>	Paul Nash

ITEM	DESCRIPTION	OWNER
3.6	In the discussion about weightings, the technical consultants advised the TACPAC that scoring is not the final arbiter of the “Winning Option”. For this system, if two options are within ten per cent, they should be considered as a tie, and then carefully compared to each other to make a decision.	Paul Nash
3.7	<p>Due to running out of time the committee was unable to discuss the weightings of the treatment and resource recovery goals and this task was determined to be completed at the next CVSS LWMP Joint TACPAC meeting commencing January 24, 2018 at the Comox Valley Regional District Boardroom. The January 24, 2018 meeting will be extended to 3:00pm in order to complete all agenda items.</p> <p>There was not sufficient time to visit the compost facility during the December 4 and 7, 2018 sewer system tours. A new tour date of the compost facility will take place Tuesday, January 15, 2019, from 10:00am to 12:00pm. The tour will start and end at the CVRD Boardroom. Members are asked to RSVP by email to jboguski@comoxvalleyrd.ca no later than Monday, January 7, 2019.</p> <p>Delegates were encouraged to consider their ideas for conveyance, treatment and resource recovery over the holidays, and bring them to the January 24 meeting.</p>	
3.8	Meeting adjourned at 12:05pm	

Attachments:

Table of Revised Conveyance Goals

Table of final Conveyance Evaluation System

CONVEYANCE – Consolidation of Goals

Category	Goals and Category	PAC %	TAC %	Proposed Revised Goals	Public %	Proposed Final %	Description, Comment
Technical	Resiliency to climate change, natural disasters and seasonal impacts	11%	12%	Resilience to External Factors	10%	15%	Includes climate change, natural disasters, seasonal impact
	Enhance operational resilience	9%	15%	Resilience to Internal Factors	10%	15%	Operational simplicity and reliability, minimise risk of failure
	Maximize use of existing infrastructure	9%	10%	Maximize use of existing infrastructure & road ROW's	6%	0%	This is not an end goal in itself, but an action to achieve other goals , such as reducing capital cost and project complexity
	Plan for long term	7%	21%	Long term solution	10%	10%	Provides asset life, and possibly capacity, beyond the minimum planning horizon.
				Flexibility to accommodate future changes		5%	Technical consultants to elaborate
	Innovation in Design	3%	2%	Innovation	8%	0%	This not an end goal in itself, but is an action to achieve other goals, such as attract grant funding, or reduce operational complexity.
Technical Total		38%	61%		44%	45%	
Affordability	Minimize lifecycle costs	9%	8%	Minimize lifecycle cost	7%	14%	Net present value of capital, operational and replacement cost, period is to the planning horizon
	Long Term financial Implications	8%	2%	Long term value	0%	4%	Provides asset life and capacity beyond the design planning horizon
				Attract grant funding	8%	0%	This is an action to offset capital cost, but needs to be evaluated separately as there is a probability factor involved. Offset = grant% x capital cost x probability
Affordability Total		17%	10%		15%	18%	
Economic Benefits	Maximize local economic benefits	3%	1%		0%	0%	Not a focus at all of the Conveyance component
Economic Total	Benefit to local business	3%	1%		0%	2%	
Environment Benefits	Minimize impacts, and risk of impacts, to sensitive environment	12%	7%	Minimize risk of impacts to sensitive environment	10%	12%	Example action - remove forcemain from estuary, but must also consider risks/impact of new location
	Mitigate climate change impacts (Energy and GHG's)	7%	9%	Minimize resource consumption and carbon footprint	9%	6%	Reduce use of external resources, e.g. energy, chemicals. Most energy reductions reduce GHG's, but not all GHG reductions reduce energy.
Environment Total		19%	16%		19%	18%	
Social Benefit	Minimize noise and odour impacts	12%	3%	Minimize noise, odour and visual impacts in operation	6%	10%	

				Minimize community disruption during construction	9%	3%	
	Maximize community and recreational infrastructure	8%	2%	Maximize community and recreational amenity value	7%	4%	Best example is recreational trails above a pipeline, but there might be other opportunities
	Maximize public health benefit	3%	8%	Maximize public health benefit		0%	Include this in the specification for this component, relates to Internal resilience- risk of failure
Social Total		23%	13%		22%	17%	
Grand Total		100%	100%		100%	100%	

Proposed Final Goal and Evaluation Matrix – Conveyance

Component	Conveyance	
Category	Proposed Revised Goals	Proposed %
Technical	Resilience to External Factors	15
	Resilience to Internal Factors	15
	Long term solution	10
	Flexibility to accommodate future changes	5
Technical Total		45%
Affordability	Minimize Lifecycle Cost	14
	Long Term Value	4
	Attract Grant Funding (evaluate to offset capital cost)	0
Affordability Total		18%
Economic Benefits		0
Economic Total		2%
Environmental Benefits	Minimize risk of impacts to sensitive environment	12
	Mitigate climate change impacts (Energy, and GHG's)	6
Environmental Total		18%
Social Benefit	Minimize noise, odour and visual impacts in operation	10
	Minimize community disruption during construction	3
	Maximize community and recreational amenity value	4
Social Total		17%
Grand Total		100%

Minutes of the meeting of the Liquid Waste Management Plan (LWMP) Joint Technical and Public Advisory Committees (TACPAC) Meeting #4 held on Thursday, January 24, 2019 at the Comox Valley Regional District (CVRD) Boardroom, commencing at 9:00am.

PRESENT:	A. Habkirk, Chair and Facilitator	
	P. Nash, LWMP Project Coordinator	
	K. La Rose, Senior Manager of Water/Wastewater	CVRD
	M. Imrie, Manager of Wastewater Services	CVRD
	J. Boguski, Branch Assistant – Engineering Services	CVRD
	A. Idris, Engineering Analyst	CVRD
	A. Gibb	WSP
	N. Tousi	WSP
	W. Bayless	WSP
	K. Grant, Town of Comox Councillor	PAC
	W. Cole-Hamilton, City of Courtenay Councillor	PAC
	C. McColl, K'ómoks First Nation	PAC/TAC
	T. Ennis, Comox Valley Conservation Partnership	PAC
	A. Munro, BC Shellfish Growers Association	PAC
	S. Wood, Comox Business Improvement Association	PAC
	A. Gower, Comox Valley Chamber of Commerce	PAC
	S. Carey, Courtenay Resident Representative	PAC
	T. Serviz, Courtenay Resident Representative	PAC
	J. Beks, Courtenay Resident Representative	PAC
	K. vanVelzen, Comox Resident Representative	PAC
	D. Jacquest, Comox Resident Representative	PAC
	R. Craig, Comox Resident Representative	PAC
	M. Holm, Area B Resident Representative	PAC
	M. Lang, Area B Resident Representative	PAC
	A. Pitcher, City of Courtenay Engineering (observer)	
	R. O'Grady, City of Courtenay Engineering	TAC
	S. Ashfield, Town of Comox Engineering	TAC
	A. Bissinger, Department of National Defence Engineering	TAC

ITEMS:

ITEM	DESCRIPTION	OWNER
4.1	Call to Order Allison called the meeting to order at 9:00am	Allison Habkirk
4.2	Review of Minutes of Meeting #3 There were no alterations to the minutes	Allison Habkirk
4.3	Turning the Goals into an Evaluation System - Treatment Component (continuation of unfinished agenda item from Meeting #3) The committee engaged in a discussion about how to finalize the weightings of the treatment goals. Each category was reviewed separately <ul style="list-style-type: none"> Technical: It was agreed that the goal of “Provides Asset Life and Capacity Beyond the Planning Horizon” was not a meaningful goal. The 10 per cent of the 30 per cent for technical was redistributed by adding five per cent 	Paul Nash

ITEM	DESCRIPTION	OWNER																																								
4.3	<p>each to “Resiliency to External Factors” and “Resiliency to Internal Factors”. This kept the technical category at 30 per cent of the total.</p> <ul style="list-style-type: none">● Affordability: With the wide variation in weighting from the PAC (26 per cent), TAC (43 per cent) and public (14 per cent) it was agreed to take the middle and assign 30 per cent to this category, with all of it being on the minimize life cycle costs category.● Economic Benefits: It was agreed that this category remain at zero weighting.● Social Benefits: The scores varied from the PAC (22 per cent) TAC (13 per cent) and public (21 per cent) and it was proposed by the Project Coordinator to have this category at 20 per cent. In discussion by the TACPAC, two further changes were made to this category.<ul style="list-style-type: none">a. It was agreed that odour control should be done to industry best practice, regardless of the treatment option chosen. Thus it is elevated to become a mandatory requirement and is no longer a weighted evaluation criteria.b. The 10 per cent weighting for the odour control goal was redistributed by giving five per cent to Environmental Benefit and leaving Social Benefit at 15 per cent.c. It was decided to leave the Social Benefit category as one non-specific goal, to be evaluated by the PAC.● Environmental Benefits: The original weighting for this category was PAC (20 per cent) TAC (13 per cent) and public (27 per cent) It was proposed to have this category at 20 per cent with the split being 10 per cent for “Quality of Treatment Exceeds Current Standards” and five per cent each for “Remove Artificial (Emerging) Contaminants” and “Mitigate Climate Change Impacts”. It was decided that the five per cent being added from the Social Benefit category should be applied to the “Quality of Treatment Exceeds Current Standards” goal to bring that criteria to 15 per cent, and the total for the Environmental Benefits category to 25 per cent. <p>The TACPAC reached a consensus decision, with the categories summarized below, and the goal weightings as detailed in Attachment No.1 “Finalized Goals and Evaluation – Treatment”</p> <table><tr><th colspan="5">Component: Treatment</th></tr><tr><th>Category</th><th>Initial PAC Ranking (%)</th><th>Initial TAC Ranking (%)</th><th>Public Ranking (%)</th><th>Final TACPAC Ranking (%)</th></tr><tr><td>Technical</td><td>32</td><td>30</td><td>40</td><td>30</td></tr><tr><td>Affordability</td><td>26</td><td>44</td><td>14</td><td>30</td></tr><tr><td>Economic Benefit</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>Environmental Benefit</td><td>20</td><td>13</td><td>25</td><td>25</td></tr><tr><td>Social Benefit</td><td>22</td><td>13</td><td>21</td><td>15</td></tr><tr><td>Total</td><td>100%</td><td>100%</td><td>100%</td><td>100%</td></tr></table>	Component: Treatment					Category	Initial PAC Ranking (%)	Initial TAC Ranking (%)	Public Ranking (%)	Final TACPAC Ranking (%)	Technical	32	30	40	30	Affordability	26	44	14	30	Economic Benefit	0	0	0	0	Environmental Benefit	20	13	25	25	Social Benefit	22	13	21	15	Total	100%	100%	100%	100%	Paul Nash
Component: Treatment																																										
Category	Initial PAC Ranking (%)	Initial TAC Ranking (%)	Public Ranking (%)	Final TACPAC Ranking (%)																																						
Technical	32	30	40	30																																						
Affordability	26	44	14	30																																						
Economic Benefit	0	0	0	0																																						
Environmental Benefit	20	13	25	25																																						
Social Benefit	22	13	21	15																																						
Total	100%	100%	100%	100%																																						

ITEM	DESCRIPTION	OWNER
4.3	<p>Motion: that the TACPAC recommends the LWMP Goals and Evaluation for Treatment to the Comox Valley Sewerage Commission for consideration.</p> <p>Moved: R. O’Grady</p> <p>CARRIED</p>	Paul Nash
4.4	<p>Turning the Goals into an Evaluation System – Resource Recovery Component (continuation of unfinished agenda item from Meeting #3)</p> <p>The committee engaged in a discussion about how to finalize the weightings of the Resource Recovery goals. Each category was reviewed separately. It was noted that there were some discrepancies in the category scores as some of the goals that were voted on were actually end uses, rather than true goals. These goals were removed from the list and the remaining scores re-scaled to get to 100 per cent.</p> <p>There were also some differences in the goals as presented and ranked by the public. For each category, a finalized set of goals and weightings were proposed by the project coordinator as being the best representation of the various goals and rankings, and the TACPAC discussed potential changes from that basis.</p> <ul style="list-style-type: none"> Technical: This category had initially been weighted as 14 per cent (PAC), 17 per cent (TAC) and 30 per cent (public). It was proposed to have this category as 25 per cent, with goals being “Commercially Available Technology” (10 per cent), “Anticipate Future Demand for Resources” at five per cent, and “Improve Performance of Treatment Plant” at 10 per cent. “Resiliency to Internal Factors” had no initial weighting. After discussion, the TACPAC agreed to redistribute five per cent from “Improve Performance” to “Resiliency to Internal Factors” (operational simplicity, reliability and minimizing risk of spills), with the Technical category remaining at 25 per cent. Affordability: With the wide variation in weighting from the PAC (71 per cent), TAC (64 per cent) and public (20 per cent) it was proposed to have this at 50 per cent. The high rankings for the PAC and TAC are due to re-scaling. The ideas put forward on how and where to use reclaimed water and heat are potential actions, but are not actually evaluation criteria. Removing these from the total left the affordability goals with a high proportion of the remaining votes. The reasons why the public score was much lower is that their ranking system was different from that used by the TACPAC, and that it made it impossible to assign such a high ranking. The TACPAC agreed with the proposal to assign 50 per cent to this category, in recognition that the main factor is that an option is worth it. Within the goals, it was decided to remove the goal “Cost Neutral as a Minimum”, and re-allocate its 10 per cent weighting to the “Minimize Lifecycle Costs” goal. This was in recognition that a cost neutral requirement may eliminate many or even all options, and some benefits are social rather than revenue based. In removing this goal, it was agreed that there be a specifically identified revenue component of the life cycle cost calculation. Economic Benefits: Even though the PAC and TAC scored this at zero, the public scored it at eight per cent, and it was agreed that there is merit to having some score in this category, recognizing that the use of reclaimed 	Paul Nash

ITEM	DESCRIPTION	OWNER																																								
4.4	<p>water for agriculture has the potential to grow the local economy, as has been done at several other BC towns. This category was assigned five per cent</p> <ul style="list-style-type: none">• Environmental Benefits: The original weighting for this category was PAC (14 per cent) TAC (eight per cent) and public (22 per cent) It was proposed to have this category at 15 per cent with the split being five per cent each for “Energy Efficiency and GHG Reductions”, “Habitat Restoration or Enhancement” and “Displacement of Potable Water Use” and these weightings were accepted by the TACPAC.• Social Benefits: This category originally contained a goal of “Public Health Issues Considered for any Reclaimed Water” and it was noted that this is effectively a mandatory requirement, not an evaluation criteria. The remaining goal within the social category was “Ability to Maintain Irrigation of Public Parks and Gardens during Water Restrictions”. After some discussion it was agreed to re-word this to “Ability to Maintain Irrigation of Critical Public infrastructure during Drought Conditions” and assign a score of five per cent to this goal. <p>The TACPAC reached a consensus decision, with the categories summarized below, and the goal weightings as detailed in Attachment No.2 “Finalized Goals and Evaluation – Resource Recovery”</p> <table><tr><th colspan="5">Component: Resource Recovery</th></tr><tr><th>Category</th><th>Initial PAC Ranking</th><th>Initial TAC Ranking*</th><th>Public Ranking**</th><th>Final TACPAC Ranking</th></tr><tr><td>Technical</td><td>14</td><td>17</td><td>25 (31)</td><td>25</td></tr><tr><td>Affordability</td><td>71</td><td>65</td><td>33 (20)</td><td>50</td></tr><tr><td>Economic Benefit</td><td>0</td><td>0</td><td>7 (8)</td><td>5</td></tr><tr><td>Environmental Benefit</td><td>14</td><td>8</td><td>18 (22)</td><td>15</td></tr><tr><td>Social Benefit</td><td>1</td><td>10</td><td>17 (20)</td><td>5</td></tr><tr><td>Total</td><td>100 per cent</td><td>100 per cent</td><td>100 per cent</td><td>100 per cent</td></tr></table> <p>*The sum of the scores for the TAC rankings as presented was 102 due to round-off errors, which are corrected here.</p> <p>**The initial scores presented to the TACPAC for the public rankings had an arithmetic error, whereby the affordability category did not have two of the four goals in the summation, which led to it being undervalued. The corrected numbers are shown here, with the original presented numbers in parentheses.</p> <p>Finally, in evaluating the resource recovery options, it is not like conveyance and treatment where a preferred option must be selected and implemented. Processing of biosolids in some manner is mandatory, so this resource recovery action happens regardless of cost or desirability. For the other options, resource recovery is entirely discretionary, so it could be that none, or several of the options are selected. The evaluation criteria is intended to determine whether it is worth it, based on the balance of costs and benefits. Noting that there can be some overlap between treatment and resource recovery options, it may be that some costs or benefits are not captured completely by the resource recovery evaluation, or that a change in treatment process achieves or enables certain options by default. These factors will be considered during the options evaluation.</p>	Component: Resource Recovery					Category	Initial PAC Ranking	Initial TAC Ranking*	Public Ranking**	Final TACPAC Ranking	Technical	14	17	25 (31)	25	Affordability	71	65	33 (20)	50	Economic Benefit	0	0	7 (8)	5	Environmental Benefit	14	8	18 (22)	15	Social Benefit	1	10	17 (20)	5	Total	100 per cent	100 per cent	100 per cent	100 per cent	Paul Nash
Component: Resource Recovery																																										
Category	Initial PAC Ranking	Initial TAC Ranking*	Public Ranking**	Final TACPAC Ranking																																						
Technical	14	17	25 (31)	25																																						
Affordability	71	65	33 (20)	50																																						
Economic Benefit	0	0	7 (8)	5																																						
Environmental Benefit	14	8	18 (22)	15																																						
Social Benefit	1	10	17 (20)	5																																						
Total	100 per cent	100 per cent	100 per cent	100 per cent																																						

ITEM	DESCRIPTION	OWNER
4.4	<p>Motion: that the TACPAC recommends the LWMP Goals and Evaluation for Resource Recovery to the Comox Valley Sewerage Commission for consideration.</p> <p>Moved: R. O’Grady</p> <p>CARRIED</p>	Paul Nash
	Break	
4.5	<p>Operational Update - Wet Weather Flows in December and January.</p> <p>Mike Imrie explained that there were high flows during the winter period, though not at the level that would cause an overflow in the system. Even so, the operators are always worried during wet weather high flow, as the loss of a pump could lead to capacity limitations.</p> <p>He also addressed some confusion relating to a media story about the CVRD needing to deploy a “standby pump” – this was related to the potable water system and was not a wastewater issue.</p>	Mike Imrie
4.6	<p>Technical Update - Understanding Dry and Wet Weather Flows for Wastewater Planning.</p> <p>Al gave a presentation about wet and dry weather flows and how these factor into planning for conveyance and treatment upgrades. The target ratio for wet to dry weather flow is 2:1 and the CVRD currently sits at about 3:1. It is difficult to reduce these wet weather flows, and the responsibility for that lays with the municipalities, not the CVRD. Most communities in coastal BC are over 2:1.</p> <p>The hydraulic components of the conveyance and treatment systems must be sized to handle the present and future peak wet weather flows.</p>	Al Gibb, WSP
4.7	<p>Review of the Options Study and Evaluation Process</p> <p>In the interests of time, this agenda item was passed over and not presented</p>	Paul Nash
4.8	<p>Long List Options – Treatment</p> <p>Al presented the four conceptual treatment options which are detailed in Attachment No.3 “Long List Options – Treatment”.</p> <ol style="list-style-type: none"> 1. Secondary treatment of flows up to 2xADWF (Average Dry Weather Flow) 2. Secondary treatment of all flows 3. Advanced treatment of flows up to 2xADWF 4. Advanced treatment of all flows <p>The difference between “flow up to 2xADWF” and “all flow” is that excess flow above 2xADWF bypasses the biological part of the treatment process and are re-combined before disinfection. In the “all flow” configuration, there is no bypass, and the biological and advanced treatment trains must be designed to handle all flows.</p> <p>All options included the addition of UV disinfection, but in discussion it was noted that there are other means of disinfection and there has been no decision yet on the type of disinfection.</p> <p>Alex Munro, representing the BC Shellfish Growers Association, raised the question about disinfection of norovirus, a human virus that can infect shellfish farms. While most disinfection is based on measurements of fecal coliforms and E.Coli, there are no specific requirements relating to viruses. The question of disinfection efficacy for norovirus will be looked into as part of the conceptual study of treatment options.</p>	Al Gibb, WSP

ITEM	DESCRIPTION	OWNER
4.8	It was explained that while there are many different specific treatment technologies, they can all fall within one of the four conceptual options, and there is no need to go into further detail at this stage. With the one change noted for disinfection, the TACPAC approved this Long List to go to public review.	Al Gibb, WSP
4.9	<p>Long List Options – Resource Recovery</p> <p>Al presented the conceptual resource recovery options which are detailed in Attachment No.4 “Long Lost Options – Resource Recovery”.</p> <ol style="list-style-type: none"> 1. Reclaimed water 2. Heat recovery 3. Production of biogas (from anaerobic digestion) 4. Beneficial use of treated biosolids 5. Extraction of nitrogen and phosphorus for fertilizer pellets (struvite) 6. Hydro-electric energy recovery <p>It was highlighted that some of these options – particularly biogas and struvite – are scale dependent, and need a population larger than the CVRD to be technically and economically practical. However, the evolution of new technologies may change this. It was noted in discussion that hydro-electric energy recovery is unlikely to be cost effective, given that there is no significant head drop available at the plant.</p> <p>There was a question about the refining of bio-plastics from the wastewater. Paul Nash explained that this is being done in Europe, but only at plants that serve more than two million people. The processes can only be done at very large scale.</p> <p>Noting these caveats, the TACPAC approved this long list to go to public review</p>	Al Gibb, WSP
	Lunch Break	
4.10	<p>Long List Options – Conveyance</p> <p>Walt presented the conceptual conveyance options, detailed in Attachment 5 “Long List Options – Conveyance”, which fall into six broad categories.</p> <ol style="list-style-type: none"> 1. Estuary alignment – a new forcemain within or along the Comox Estuary foreshore, but then over Lazo hill to the Comox Valley Water Pollution Control Centre (CVWPCC). There are three variations in this category. 2. Overland alignments through Comox, and away from the estuary. These involve high pressure upgrades to the pump stations. There are two variations in this category. 3. Tunneling alignments, using “micro-tunneling” to go through the hills instead of over them. The intention is to minimize pumping head and avoid high pressure upgrades. There are three variations in this category. 4. North side concept – a new forcemain from Courtenay around the north side of Comox to the CVWPCC, and a new, separate forcemain from Comox/Jane Place to the CVWPCC. 5. Decentralized treatment – a new treatment plant in Courtenay and conveyance of the treated effluent to the Cape Lazo outfall. Conveyance routes are similar to options one, two, and four. 6. Deep marine concept – all new subsea forcemain located on the sea floor in the deepest part of the estuary, continuing out into deep water in the Salish Sea to avoid Willemar Bluffs, and coming back onshore to the CVWPCC. 	Walt Bayless, WSP

ITEM	DESCRIPTION	OWNER
4.10	<p>After explaining all the options, Walt stated that WSP's view is that option five is not cost effective due to the cost of building a new treatment plant, conveyance of the treated effluent, and the increased costs of operating two treatment plants.</p> <p>WSP's view is also that option six, the deep marine concept, is not technically viable due to the seafloor topography.</p> <p>WSP recommend that conveyance options five and six be dropped from the long list and not be studied further.</p> <p>Noting WSP's recommendation, the TACPAC approved this list, as presented, to go to public review, with explanation given to the public as to why options five and six are being dropped.</p>	Walt Bayless, WSP
4.11	<p>Preview of TACPAC #5, Friday, February 8, 2019</p> <p>A quick look at the purpose of meeting # 5;</p> <ul style="list-style-type: none"> a) To review public feedback on the long list options. b) Consider any additions or deletions and finalize the list. c) Recommendation of long list(s) to Comox Valley Sewerage Commission. 	Paul Nash
4.12	<p>Round Table Discussion.</p> <p>In the interests of time, there was no round table discussion</p>	
4.13	Adjournment – the meeting was adjourned at 2:55pm	

Attachments

1. Finalized Goals and Evaluation – Treatment
2. Finalized Goals and Evaluation – Resource Recovery
3. Long List Options – Treatment
4. Long List Options – Resource Recovery
5. Long List Options – Conveyance

Attachment 1: Treatment Goals and Evaluation

Treatment- Consolidation of Goals

Category	Grouping (edited)	PAC %	TAC %	Proposed Revised Goals	Public %	Final% as voted	Description, Comment
Technical	Plan for future – climate change			Resilience to External Factors	10	10	Includes climate change, natural disasters, seasonal impact
	Minimize risk of failures/spills	15	14	Resilience to Internal Factors	0	15	Operational simplicity and reliability, minimize risk of failure/spills
				Maximize use of existing infrastructure and road ROW's	5	0	This is not an end goal in itself, but an action to achieve other goals, such as reducing capital cost and project complexity
				Flexibility to accommodate future changes	9	5	Technical Consultants to elaborate
	Plan for future - population	17	16	Provides asset life and capacity beyond the planning horizon	16	0	Some elements may have very long design lives, but they must all meet the minimum design horizon. Any benefits beyond that are captured in the life cycle cost analysis
Technical Total		32%	30%		40%	30%	
Affordability	Minimize lifecycle costs	12	17	Minimize Lifecycle Cost and Asset Management Needs	6	30	Net present value of capital, operational and replacement cost, period is to the planning horizon
	Asset management	1	11			0	Included in life cycle cost as "replacement"
	Allocation of costs between existing and new users	3	8			0	This applies regardless of the treatment solution being implemented, and is part of the financial analysis.
	Maximum opportunity for grants	10	8	Attract Grant Funding	8	0	This is an action to offset capital cost, and is included in the life-cycle cost analysis. But the LWMP guideline require that it be calculated and presented separately, for a grant and “no-grant” scenario.
Affordability Total		26%	44%		14%	30%	
Economic Benefits		0	0			0	External economic benefits are not a focus for treatment
Economic Total		0%	0%		0%	0%	
Environment Benefits	Public awareness about what" not to flush"	0	0				This is a management/education issue, regardless of treatment Options
	Maximize effluent quality	20	13	Quality of treatment exceeds current standards	9	15	Degree to which BOD and TSS removal is better than regulatory standards
				Remove artificial contaminants (e.g. pharmaceuticals, microplastics)	8	5	Neither of these are regulated I effluent, and are not likely to be for at least another decade, but can be removed with available technology
				Mitigate climate change impacts (Energy, and GHG's)	8	5	Most energy reductions reduce GHG's, but not all GHG reductions reduce energy.
Environment Total		20%	13%		25%	25%	

Social Benefit	Reduce odour from plant	12	9	Minimize noise and odour in long term operation	8	0	Elevated to a mandatory requirement for all treatment options to include odour control to industry best practice
	Maximize opportunity for partnership	4	2	Partnership Opportunity	7	0	If partnerships are desired, they can be pursued independently of Options, but Proponents can also be encouraged to bring them forward
	Maximize opportunity for community amenity at plant	6	2	Maximize opportunity for community amenity at/around plant	6	0	Could be education or even quasi-recreation facilities, such as an external viewpoint over the plant.
	General social benefit			Specifics intentionally left undefined		15	The TACPAC replaced the partnership and community amenity goals with this one general goal, which could include any type of social benefit
Social Total		22%	13%		21%	15%	
Grand Total		100 %	100%		100%	100%	

Final Goal and Evaluation Matrix – Treatment

Category	Goals	Weighting%
Technical	Resilience to External Factors	10
	Resilience to Internal Factors	15
	Flexibility to accommodate future changes	5
Technical Total		30%
Affordability	Minimize Lifecycle Cost	30
Affordability Total		30%
Economic Benefits	None	0
Economic Total		0%
Environmental Benefits	Quality of treatment exceeds current standards	15
	Remove artificial contaminants	5
	Mitigate climate change impacts	5
Environmental Total		25%
Social Benefit	General social benefit	15
Social Total		15%
Grand Total		100%

Attachment 2: Resource Recovery Goals

Resource Recovery – Consolidation of Goals

Category	Grouping (edited)	PAC %	TAC %	Proposed Revised Goals	Public %	Final% as voted	Description, Comment
Technical	Like Cranbrook, focus on technologies that are reliable	10	3	Commercially available technology	8	10	Want to avoid "inventing" something, but some RR technologies may still require pilot testing
	Meet provincial regulatory requirements	1	13				A pass/fail criteria as far as RR is concerned
	Anticipate future demand for recovered resources	3	1	Anticipate future demand for resources	8	5	Part of the "market study" for the RR opportunities
				Resiliency to internal factors		5	Operational simplicity and reliability, minimize risk of failure/spills
				Improve performance of treatment plant	9	5	Some reclaimed water treatment processes may help achieve other performance goals
Technical Total		14%	17%		25%	25%	
Affordability	to be cost neutral as a minimum	2	10	Maximize revenue or cost offset	8	0	Revenue to be incorporated as a specific line item of life cycle cost
	Use life cycle costs/NPV	22	27	Minimize life cycle cost	8	30	Net present value of capital, operational and replacement cost, and revenue, period is to the planning horizon
	Grant Funding eligibility	19	13	Potential for Grant Funding	9	10	Will require a detailed assessment of current and likely grant opportunities, to then assess Options
	Build capacity for options and partnerships to recover costs in future	28	15	Potential for external partnerships	8	10	The partner is more than just a pay-for product customer, they may contribute to the capital cost of the project.
Affordability Total		71%	65%		33%	50%	
Economic Benefits		0	0	Grow the local economy	7	5	Recognition that use of reclaimed water for agriculture can grow the local economy
Economic Total		0%	0%		7%	5%	
Environment Benefits	Reduce GHG/carbon neutrality	14	8	Energy efficiency and GHG reductions	9	5	Most energy reductions reduce GHG's, but not all GHG reductions reduce energy.
	Habitat Restoration or enhancement			Habitat restoration or enhancement	9	5	Use of reclaimed water for this purpose
				Displacement of potable water		5	Only achievable where there is specific displacement of existing uses
Environment Total		14%	8%		18%	15%	

Social Benefit	Public health issues considered for any reclaimed water	1	10		10		Is a specification that any reclaimed water option must meet, so not an evaluation criteria
				Ability to maintain irrigation of critical public infrastructure during drought conditions	7	5	A definite community benefit if it prevents damage to playing fields, perennial gardens etc
Social Total		1%	10%		17%	5%	
Grand Total		100%	100%		100%	100%	

Final Goal and Evaluation Matrix – Resource Recovery

Category	Goals	Weighting%
Technical	Commercially available technology	10
	Resiliency to internal factors	5
	Anticipate future demand for resources	5
	Improve performance of treatment plant	5
Technical Total		25
Affordability	Maximize revenue or cost offset	10
	Minimize life cycle cost	20
	Potential for Grant Funding	10
	Potential for external partnerships	10
Affordability Total		50
Economic Benefits	Grow the local economy	5
Economic Total		5
Environmental Benefits	Energy efficiency and GHG reductions	5
	Habitat restoration or enhancement	5
	Displacement of potable water	5
Environmental Total		15
Social Benefit	Ability to maintain irrigation of critical public facilities during drought conditions.	5
Social Total		5
Grand Total		100%

PRELIMINARY WASTEWATER TREATMENT LONG LIST OPTIONS
FOR DISCUSSION ONLY

COMOX VALLEY REGIONAL DISTRICT LIQUID WASTE MANAGEMENT PLAN

JANUARY 18, 2019



WASTEWATER TREATMENT OPTIONS

Overview

The wastewater treatment options presented here are based on the level of treatment to be implemented (i.e., the effluent quality that will be produced). This is the level of analysis that is appropriate for a Liquid Waste Management Plan (LWMP). More detailed engineering analysis is then undertaken in feasibility and predesign studies (normally following completion of the LWMP), to select and size the treatment processes that will be used to achieve the recommended effluent standards.

Other aspects of wastewater treatment included in LWMPs typically include identification of wastewater treatment service areas (present and future), and the number and location of treatment facilities. For the CVRD LWMP, the study area is based on the service areas for the existing Comox Valley Water Pollution Control Centre (CVWPCC), namely the Town of Comox, the City of Courtenay, and Canadian Forces Base Comox.

The CVWPCC is a secondary treatment facility located at 445 Brent Road in Comox, that is owned and operated by the Comox Valley Regional District (CVRD). Treated wastewater is discharged from the CVWPCC to the Strait of Georgia through a submerged outfall pipe with diffuser that extends 2,825 metres from shore near Cape Lazo, with the outfall terminus 60 metres below the water surface at low tide.

Location and Number of Treatment Facilities

In some LWMPs, sites for one or more new treatment facilities must be selected. Identifying one or more locations for a new wastewater treatment plant is a challenging undertaking. One of the challenges is to identify a suitable location for a new outfall discharge; among other things, this requires a right-of-way for the land section of the outfall from the treatment plant site to the water's edge, where the marine (submerged) section of the outfall pipe begins. The discharge itself is preferably located far from shore in deep water, so that swimming beaches and shellfish beds are not impacted. It is often practical to begin with identification of one or more feasible locations for an outfall discharge, and then identify potential sites for treatment facilities that are within a reasonable distance of the outfall location, and where a feasible route for the land section of the outfall can be developed. Environmental Impact Studies of the receiving environment are required when selecting the location of the outfall discharge; these studies typically consider receiving water ecology and use (marine flora and fauna, recreational use, etc.), local currents, prevailing winds, expected migration and dilution of the discharge plume, etc. The environmental impacts of construction (e.g. in the intertidal zone) must also be evaluated and mitigated.

The costs and benefits of a single wastewater treatment plant versus several smaller plants located throughout a service area (sometimes referred to as “distributed treatment”) have been extensively evaluated in British Columbia at a number of locations (e.g., the Greater Victoria area, North Vancouver, and a number of smaller communities such as Powell River). In general, the evaluations have resulted in selection of the single treatment plant approach, due to the significantly higher costs associated with construction and operation of multiple treatment facilities, and the difficulties associated with finding multiple locations for treatment plants and outfall discharges that are acceptable to local residents and that meet all of the technical and regulatory requirements.

As mentioned earlier, a single existing wastewater treatment facility (located at Brent Road near Cape Lazo) and outfall serves the communities of Courtenay and Comox as well as CFB Comox. The existing treatment plant site has adequate unused area for major expansion of the facilities in future as required. Attempting to locate a site for a second treatment facility within the existing service area would be very difficult, partly due to the challenges associated with finding a suitable location for a second outfall to deep water. In this case, there is no apparent driver for constructing additional

treatment plants and outfalls to serve the Comox/Courtenay/CFB area, and consequently this does not form part of the wastewater treatment options analysis.

It is possible that a location may be identified within the service area where there is potential for significant use of reclaimed water (e.g., for irrigation or other purposes); in this case, it may be feasible to locate a water reclamation facility near the user(s) of reclaimed water, and direct a portion of the untreated wastewater to that location, thereby reducing the wastewater load to the CVWPCC at Brent Road. This possibility will be explored in the Resource Recovery part of the LWMP.

Costs of Wastewater Treatment

The costs of constructing wastewater treatment facilities have risen dramatically in recent years. Capital costs for constructing new facilities can sometimes be partially offset by grants from senior government. However, ongoing operating and maintenance (O&M) and replacement (asset management) costs are entirely borne by the local government. In general, the higher the effluent standards, the greater the capital and ongoing O&M costs of treatment. In general, it is more economical to have a single treatment plant, unless the service area is relatively large with development concentrated in nodes that are far apart.

For the purposes of the LWMP, it is important to carefully consider the capital and O&M costs of wastewater treatment, since these costs are borne by taxpayers. Therefore, it is essential to balance the desire for implementing the highest treatment standards possible with the financial resources available to the community; this particularly applies to O&M costs, which are not eligible for grant funding and fall entirely on local taxpayers.

Emerging Contaminants

Emerging Contaminants have been defined as “*Constituents, which have been identified in water, that are considered for regulatory action pending the development of additional information on health and environmental impacts*” (from Metcalf & Eddy, 2014). Examples of Emerging Contaminants may include pharmaceutically active compounds (e.g., antibiotics), endocrine disrupting compounds that affect natural hormones in animals and humans, personal care products, and disinfection byproducts. Many of these products are known to be potentially harmful, but much remains to be learned about their behavior in the environment, and potential methods of treatment. As it stands, domestic wastewater treatment plants are not specifically designed to remove this type of contaminant, although some may be degraded or transformed in the treatment processes, and some may be incorporated into the waste solids.

According to Water Research Foundation Fact Sheet (2016): *Detecting a compound in water does not mean that adverse health effects will occur or are likely. In general, no relationships have been established between pharmaceuticals in water at environmental levels and adverse effects in human. Strategies for preventing endocrine disrupting compounds (EDCs) and pharmaceuticals and personal care products (PPCPs) from entering water supplies include improved wastewater treatment and other source water protection strategies. Once EDCs and PPCPs have entered a utility’s water supply, no single treatment process can remove them all due to their wide range of physicochemical properties. In general, both conventional and advanced water treatment systems have the capability to reduce the concentration of EDCs and PPCPs in water to some degree, though removal by conventional treatment processes is limited. Advanced treatment processes such as nanofiltration, reverse osmosis, and activated carbon are more effective but can be expensive and energy-intensive.*

Metals may also be a concern where they accumulate to toxic concentrations. Domestic wastewater treatment plants are not designed to remove metals from the wastewater stream. However, it has been shown that many of the so-called “heavy metals” tend to associate with solid particles in water. Thus removal of suspended solids from wastewater will result in at least partial removal of these associated metals as well (the solids must also be dealt with but are much less in volume than the wastewater stream).

Microplastics have recently been identified as a concern as well. According to Water Research Foundation (2018): *Studies have found that WWTPs removed between 90-99% of microplastics (<0.5 cm), with most being captured in the sludge. However, when dealing with large volumes of effluent, even a small concentration of microplastics being released can result in a significant contribution to the environment. Current research indicates that the microplastics in the environment has not caused adverse effects on aquatic wildlife as opposed to macroplastics, which can cause physical harm to fish-eating birds, aquatic mammals, reptiles and fish. If it is shown that microplastics should be removed from effluent, filtration is likely the best treatment, though more research on removal of microplastics, particularly for sizes smaller than 300 μ m, is needed.*

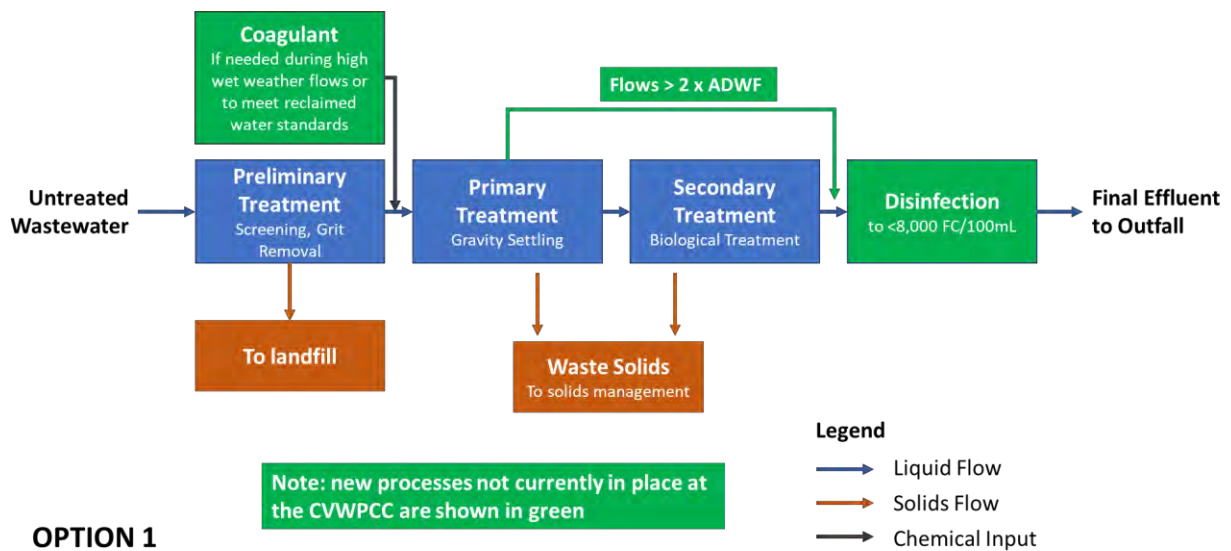
Options for Treatment

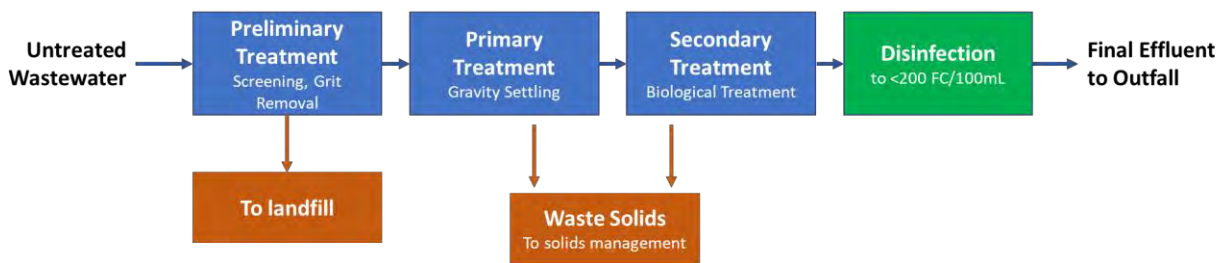
For the purposes of Stage 1 of the LWMP, four options for treatment were identified for discussion with the TAC/PAC. The four options are based on the effluent quality to be produced as stated at the beginning of this discussion, and are presented as concepts for planning of future expansions and/or upgrades. Option 1 would be to meet the provincial and federal discharge standards; these standards have been developed to protect the receiving environment, and the provincial regulation allows the regulating body to impose additional standards in specific cases where this is shown to be needed to protect the environment. Options 2, 3 and 4 are based on voluntarily enhancing effluent quality beyond what is required by the regulations. Options 1 through 4 are described on the following pages. Note that Option 2 describes the current configuration of the CVWPCC, with the addition of disinfection.

Long-List Option No. 1	Meet Regulatory Discharge Standards
Description	<p>Option 1 would meet federal and provincial regulatory requirements for secondary treatment with discharge to open marine waters (the CVWPCC outfall extends 2,825 metres from shore at Cape Lazo into the Strait of Georgia and the discharge diffuser is 60 metres below water at low tide). As with the other options, an updated Environmental Impact Study (EIS) would be required to identify any additional treatment requirements that might be needed to address protection of the receiving environment according to provincial regulations. If the EIS did not identify any additional requirements beyond what is required to meet the secondary treatment discharge standards set out in the B.C. Municipal Wastewater Regulation (MWR) and the Canada Wastewater Systems Effluent Regulations (WSER), the following treatment and discharge standards would apply to Option 1:</p> <p>MWR</p> <p>Secondary treatment for flows up to two times average dry weather flow (2xADWF):</p> <ul style="list-style-type: none"> • 5-day Biochemical Oxygen Demand (BOD₅): max. day 45 mg/L • total suspended solids (TSS): max. day 45 mg/L • pH 6 to 9 • ammonia concentration does not cause chronic toxicity at the edge of the initial dilution zone (IDZ) <p>Primary treatment for flows in excess of 2xADWF (interim):</p> <ul style="list-style-type: none"> • 5-day Biochemical Oxygen Demand (BOD₅): max. day 130 mg/L • total suspended solids (TSS): max. day 130 mg/L • note that if flows are > 2xADWF during a storm or equivalent snowmelt event with a less than 5-year return period, a discharger must (have a liquid waste management plan or specific study and implement the plan's or study's measures. <p>WSER</p> <ul style="list-style-type: none"> • 5-day Biochemical Oxygen Demand (BOD₅): monthly avg. not to exceed 25 mg/L • total suspended solids (TSS): monthly avg. not to exceed 25 mg/L • total residual chlorine < 0.02 mg/L • un-ionized ammonia < 1.25 mg N/L at 15°C • note that the WSER standards apply to the combined discharge – this may require chemical addition to enhance primary treatment or other measures to ensure that the secondary treatment bypass does not cause the combined effluent to exceed the WSER discharge standards for BOD₅ and TSS <p>An EIS was completed for the CVWPCC discharge in 2010; this showed that disinfection of the effluent to achieve a fecal coliform count of less than 8000/100 mL in the CVWPCC discharge would be required to protect local shellfish resources outside the initial dilution zone (IDZ). Disinfection to this standard was assumed for Option 1.</p> <p>Note that plant data from 2013 to 2017 show that the number of days when flows exceeded 2xADWF ranged from 0 days (2013) to 31 days (2015) – over the 5 years of record, flow exceeded 2xADWF on a total of 58 days (the total volume of flow greater than 2xADWF represented only about 1% of the total plant flow over that period)</p>
Advantages	Disadvantages
<ul style="list-style-type: none"> • meets regulatory requirements for discharge to open marine waters • avoids the cost of subjecting relatively infrequent high wet weather flows to secondary treatment 	<ul style="list-style-type: none"> • flows in excess of 2xADWF would bypass secondary treatment and so would not receive biological treatment

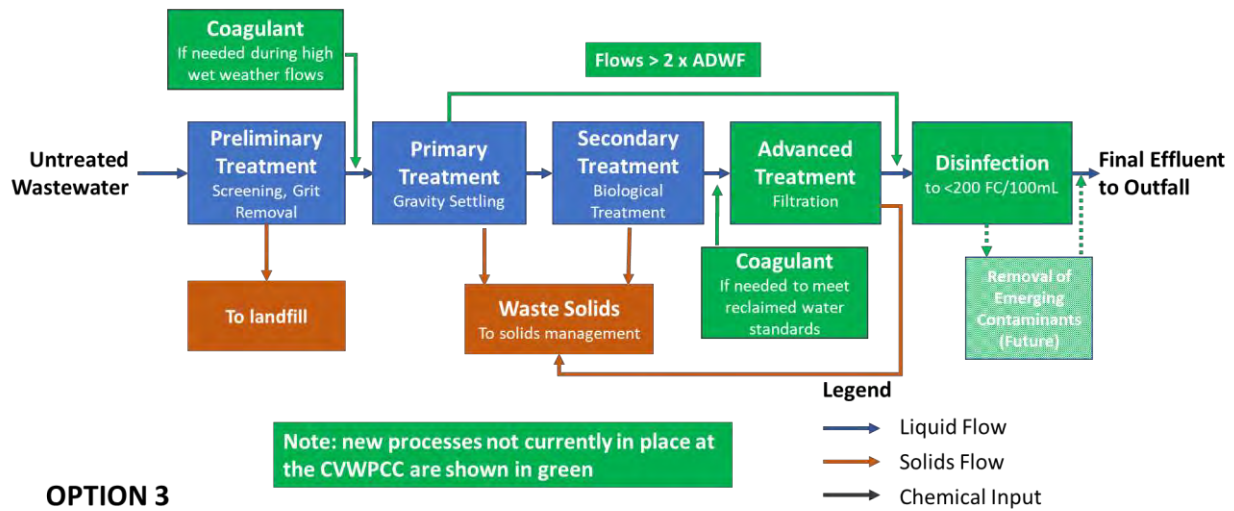
- coagulating chemicals can be added to enhance primary treatment if needed when flows exceed 2xADWF
- includes disinfection to protect shellfish resources outside the IDZ

Process Schematic for Option 1



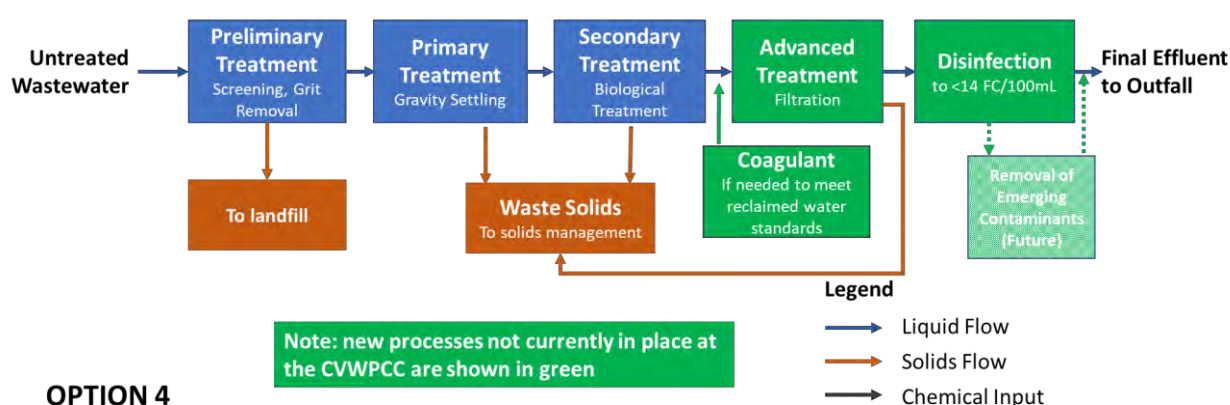
Long-List Option No. 2	Provide Secondary Treatment for all Flows			
Description	<p>Option 2 is similar to Option 1, except that there would be no wet weather bypass of flows in excess of 2xADWF around secondary treatment. For Option 2, the entire plant influent flow would pass through secondary treatment (this is the current configuration of the CVWPCC). As with the other options, an updated Environmental Impact Study (EIS) would be required to identify any additional treatment requirements that might be needed to address protection of the receiving environment. For Option 2, it was assumed that the disinfection process would be designed to achieve recreational standards (i.e. 200 FC/100 mL) in the undiluted effluent. The following treatment and discharge standards would apply to Option 2.</p> <p>Secondary treatment for the entire plant flow:</p> <ul style="list-style-type: none"> • 5-day Biochemical Oxygen Demand (BOD₅): max. day 45 mg/L, monthly avg. not to exceed 25 mg/L • total suspended solids (TSS): max. day 45 mg/L, monthly avg. not to exceed 25 mg/L • pH 6 to 9 • ammonia concentration does not cause chronic toxicity at the edge of the initial dilution zone (IDZ) • total residual chlorine < 0.02 mg/L • un-ionized ammonia < 1.25 mg N/L at 15°C • disinfection - fecal coliforms not to exceed 200 FC/1900 mL 			
	<table border="1"> <thead> <tr> <th>Advantages</th><th>Disadvantages</th></tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> • exceeds regulatory requirements for discharge to open marine waters • entire plant flow is subjected to secondary (biological) treatment • includes enhanced disinfection to protect shellfish resources • effluent meets standards for reclaimed water use for lower exposure potential </td><td> <ul style="list-style-type: none"> • secondary treatment must be sized accommodate all wet weather flows, increasing capital and operating costs compared to Option 1 </td></tr> </tbody> </table>	Advantages	Disadvantages	<ul style="list-style-type: none"> • exceeds regulatory requirements for discharge to open marine waters • entire plant flow is subjected to secondary (biological) treatment • includes enhanced disinfection to protect shellfish resources • effluent meets standards for reclaimed water use for lower exposure potential
Advantages	Disadvantages			
<ul style="list-style-type: none"> • exceeds regulatory requirements for discharge to open marine waters • entire plant flow is subjected to secondary (biological) treatment • includes enhanced disinfection to protect shellfish resources • effluent meets standards for reclaimed water use for lower exposure potential 	<ul style="list-style-type: none"> • secondary treatment must be sized accommodate all wet weather flows, increasing capital and operating costs compared to Option 1 			
<p>Process Schematic for Option 2</p>  <pre> graph LR A[Untreated Wastewater] -- Liquid Flow --> B[Preliminary Treatment Screening, Grit Removal] B -- Liquid Flow --> C[Primary Treatment Gravity Settling] C -- Liquid Flow --> D[Secondary Treatment Biological Treatment] D -- Liquid Flow --> E[Disinfection to <200 FC/100mL] E -- Liquid Flow --> F[Final Effluent to Outfall] B -- Solids Flow --> G[To landfill] C -- Solids Flow --> H[Waste Solids To solids management] D -- Solids Flow --> H </pre> <p>OPTION 2</p> <p>Note: new processes not currently in place at the CVWPCC are shown in green</p> <p>Legend</p> <ul style="list-style-type: none"> → Liquid Flow → Solids Flow → Chemical Input 				

Process Schematic for Option 3



Long-List Option No. 4	Advanced Treatment for all Flows
Description	<p>Option 4 would incorporate the same preliminary, primary, secondary, and advanced treatment processes as Option 3. However, for Option 4, the entire plant influent flow would pass through advanced filtration to enhance removal of suspended solids. As with the other options, an updated Environmental Impact Study (EIS) would be required to identify any additional treatment requirements that might be needed to address protection of the receiving environment. For Option 4, it was assumed that the disinfection process would be designed to achieve shellfish standards (i.e. 14 FC/100 mL) in the undiluted effluent, and disinfection could be increased to meet the reclaimed water standards for greater exposure potential (<1FC<100mL) if desired. The following treatment and discharge standards would apply to Option 4.</p> <p>Advanced treatment for the entire plant flow:</p> <ul style="list-style-type: none"> • 5-day Biochemical Oxygen Demand (BOD₅): max. day 10 mg/L, avg. 5 mg/L • total suspended solids (TSS): max. day 10 mg/L, avg. 5 mg/L • pH 6 to 9 • ammonia concentration does not cause chronic toxicity at the edge of the initial dilution zone (IDZ) • total residual chlorine < 0.02 mg/L • un-ionized ammonia < 1.25 mg N/L at 15°C • disinfection - fecal coliforms not to exceed 14 FC/100 mL • future addition of processes that are proven for removal of emerging contaminants at municipal wastewater plants
Advantages	Disadvantages
<ul style="list-style-type: none"> • exceeds regulatory requirements for discharge to open marine waters • entire plant flow is subjected to advanced treatment • includes enhanced disinfection to protect shellfish resources • effluent meets standards for reclaimed water use for greater exposure potential 	<ul style="list-style-type: none"> • higher capital and operating costs than Options 1, 2 and 3 • higher operational costs if treating reclaimed water to greater exposure potential standard

Process Schematic for Option 4



PRELIMINARY RESOURCE RECOVERY LONG LIST OPTIONS
FOR DISCUSSION ONLY

COMOX VALLEY REGIONAL DISTRICT LIQUID WASTE MANAGEMENT PLAN

JANUARY 18, 2019



RESOURCE RECOVERY OPTIONS

Overview

In recent years, there has been an increasing emphasis on recovery of resources that can be extracted from the wastewater stream or that can be produced during treatment. In British Columbia, the success of applications for grant funding assistance from senior government for design and construction of wastewater conveyance and treatment facilities often depend in part upon inclusion of resource recovery, which may include the following:

- use of reclaimed effluent for irrigation or other purposes;
- installation of heat exchangers in the wastewater stream for heating and cooling of buildings;
- production of biogas (methane) through treatment of waste solids, which can be used in combustion facilities designed for cogeneration of electrical power and heat or in boilers for hot water heating systems;
- use of digested waste solids as a natural solid conditioner/fertilizer, and/or use of waste solids as a feedstock to produce compost for household or commercial use;
- production of mineral pellets rich in nitrogen and phosphorus (struvite) for use as fertilizer; and
- use of hydroelectric turbines to generate electrical power from the outfall discharge.

The feasibility of the various resource recovery option must be carefully evaluated. The design and installation of resource recovery facilities can add substantially to the capital and operating costs of wastewater treatment facilities. If there are no potential customers for the recovered resources or if those customers are located far from the recovery location, investment in resource recovery may be inadvisable. Each situation must be evaluated on its own merits, beginning with identification of potential uses and users of the reclaimed resources. Brief discussions of each resource recovery option in the context of the CVRD LWMP are presented below.

Reclaimed Water

Some of the wastewater treatment options (namely Options 3 and 4) are designed to produce effluent quality that meets the requirements for use of reclaimed water. For Options 1 and 2, if one or more uses for reclaimed water are identified, the appropriate amount of secondary treated effluent can be diverted to a dedicated filtration and disinfection system to produce reclaimed water. As set out in the Municipal Wastewater regulation, it is required to maintain a chlorine residual in the reclaimed water at the point of use *unless the addition of chlorine will detrimentally impact flora or fauna, or at the point of use fecal coliforms remain below levels set in municipal effluent quality requirements for reclaimed water, and users are adequately informed regarding appropriate use of the reclaimed water.* Disinfection of reclaimed water is normally accomplished through the addition of sodium hypochlorite (bleach).

Production of reclaimed water adds to the cost of treatment, so it is important to identify the potential market for this resource. It is normally cost effective to use a portion of the treated effluent for non-potable applications within the treatment plant itself (e.g., for equipment sprays, washdown water, landscape irrigation, etc.). This typically represents a relatively small portion of the total wastewater flow, but it does offset use of potable water at the plant. A small amount of reclaimed effluent is currently used at the CVWPCC for washdown in enclosed areas. Opportunities for expanding use of reclaimed water within the plant should be considered during design of future upgrades.

Offsite applications may represent opportunities for use of larger amounts of reclaimed water (irrigation, industrial use, or stream and wetlands augmentation). The economics of offsite use depend heavily on the distance from the reclaimed water production facility to the user. Other factors include the seasonal pattern of demand for water, the cost of alternative water sources, and the water quality requirements of the potential user.

In cases where a significant potential user of reclaimed water has been identified but the distance between the main wastewater treatment plant and the user makes the project unfeasible for economic reasons, it may be possible to locate a relatively small water reclamation plant near the user and divert some of the untreated wastewater to that location for treatment and use. The feasibility of this will depend on the amount of reclaimed water to be produced and other local factors.

Heat Recovery

Extraction of heat from the wastewater stream at pumping stations and treatment facilities for space heating of buildings is becoming more common (the same system can also be used for cooling in summer). As with reclaimed water, heat recovery for use onsite at wastewater treatment facilities is generally the most feasible from a cost standpoint. Use of this type of system can be considered for incorporation into future upgrades at the CVWPCC.

If a potential user or users of heat is located near the pumping station or wastewater treatment plant, it may be feasible to expand the system to export heat to a nearby specific user (an example of such a system is in place at the Saanich Peninsula wastewater treatment plant, where heat is extracted from the effluent for use at an adjacent municipal swimming pool). In some cases, if there is high density development near the treatment plant, it may be feasible to install a District Heating System that circulates recovered heat through a heating loop for use by multiple customers. Due to the cost involved in installing a District Heating System, it is preferred if there is a year-round demand for the recovered heat (e.g., swimming pool, commercial laundry).

Production of Biogas

At larger wastewater treatment plants (service population of at least 50,000 to 100,000 people), it may prove economical to install anaerobic digestion facilities for treatment of waste solids. Anaerobic digesters reduce the amount of solids and produce methane gas that can be scrubbed and then used in cogeneration engines for production of combined heat and electrical power for use at the treatment plant, or the gas may be cleaned to the required standard for sale to the local natural gas utility. Anaerobic digestion is not currently practiced at the CVWPCC, and economies of scale mean that it would not be economical at present. This may be considered in future as a possible resource recovery strategy when the plant service population increases.

Beneficial Use of Treated Solids

Where digestion of waste solids is practiced at wastewater treatment plants, the solids product of digestion can be used as a solid conditioner and natural fertilizer, provided that it meets all of the required regulatory standards. Land spreading of treated biosolids to fertilize agricultural land, for reforestation, and for reclamation of disturbed sites is commonly practiced in British Columbia; however, this can be a costly undertaking, depending on the transportation distance to the biosolids use site and the topography of the site. In some cases there has been public resistance to land spreading of biosolids, due mainly to concerns over odours and the presence of potentially harmful substances.

The CVWPCC dewateres waste solids and transports the dewatered cake to a nearby site for use as a composting feedstock. This does not require digestion prior to composting, and it produces a product called SkyRocket that is much more marketable than dewatered biosolids. Production of Class A compost (SkyRocket) as practiced by the CVRD allows sale of the compost product to householders and commercial users. Proceeds from the sale of compost help to offset operating costs for solids handling. This is a sustainable strategy for beneficial use of treated wastewater solids as long as the local market can absorb the compost.

Extraction of Nitrogen and Phosphorus for Fertilizer Pellets

Depending on the treatment processes used, some wastewater treatment plants produce relatively low-volume side streams of high-strength wastewater that would normally be routed back to join the plant influent wastewater for treatment (e.g., water produced as a result of dewatering digested waste solids or waste biological solids from biological nutrient removal processes). For these high-strength side streams it is in some cases economical to extract nitrogen and phosphorus in a small treatment reactor that causes precipitation of a mineral called magnesium ammonium phosphate, commonly referred to as struvite. The struvite pellets can be marketed as a commercial fertilizer, offsetting the production and use of chemical fertilizers. This would not be feasible at the CVWPCC at present, due to economies of scale and the treatment processes currently in use; however, it could be considered for use in future.

Hydroelectric Turbine for Generation of Electrical Power at Outfall

In some cases where there is a large elevation difference between the treatment plant and the receiving water (i.e., the land section of the outfall has a steep downward slope), it is possible to install a small hydroelectric turbine to generate electricity. In our experience, this is not cost-effective at smaller plants, even if there is a large head loss available on the discharge to drive the turbine. In the case of the CVWPCC where there is minimal head loss under certain tidal conditions and effluent pumping is required, this type of energy recovery is unlikely to be a viable option.

Summary

In general, the most cost-effective resource recovery option for the LWMP is likely to be ongoing (and possibly expanded) use of reclaimed water for non-potable applications at the CVWPCC, and potentially for offsite use as well, if one or more users can be identified. In future when upgrades to the treatment facilities are undertaken, the addition of other resource recovery processes can be considered; this may include extraction of heat from the effluent for space heating (and cooling), struvite crystallization for fertilizer production, and eventually anaerobic digestion for generation of biogas when the service population grows to make this economically feasible or new technologies make this economically viable for smaller plants. Technologies for treatment of wastewater and waste solids are continually evolving, and research and development are ongoing. Design of future upgrades at the CVWPCC should be undertaken with this in mind, so that new facilities for resource recovery can be added to the plant without major disruptions or modifications to the existing facilities at that time.

PRELIMINARY CONVEYANCE LONG LIST OPTIONS
FOR DISCUSSION ONLY

COMOX VALLEY REGIONAL DISTRICT LIQUID WASTE MANAGEMENT PLAN

JANUARY 18, 2019



CONVEYANCE OPTIONS

Overview

The conveyance options presented here were brainstormed based on the location of the existing infrastructure, environmental and regulatory limitations, existing hydraulics of the Comox Valley Sewer System (CVSS) and typical hydraulic constraints associated with sewerage pumping. This is the level of analysis that is appropriate for Stage 1 of a Liquid Waste Management Plan (LWMP). More detailed engineering conceptual analysis such as a feasibility study is then undertaken for the shortlisted options as part of Stage 2 LWMP, to enable selection of the preferred option. After the LWMP, predesign studies are carried out to size and design the components of the infrastructure comprising the system that optimizes conveyance in the CVSS.

The CVSS serves the Town of Comox, the City of Courtenay, and the Canadian Forces Base Comox. It consists of the Comox Valley Water Pollution Control Centre (CVWPCC), six pump stations of varying size and criticality, and the associated piping network. Two sewer main systems discharge at the CVWPCC:

- North Side System consisting of
 - Hudson Trunk
 - Greenwood Trunk
 - CFB Comox gravity main
 - CFB Comox Pump Station
 - Colby Road Pump Station
- Foreshore System consisting of
 - Courtenay Pump Station
 - K'omoks First Nation Pump Station
 - Jane Place Pump Station
 - Foreshore forcemain along Comox Harbour
 - HMCS Quadra Pump Station and forcemain
 - Foreshore forcemain along Willemar Bluffs

Recent upgrades to the North Side system include the design and installation of the Hudson Trunk and Greenwood Trunk. These gravity sewer mains service the northwest corner of the CVSS and tie-in to the existing CFB Comox gravity sewer main.

The foreshore system is currently at capacity and the section of the sewer main along Willemar Bluffs requires abandonment/removal. The objective of the Conveyance Component of this LWMP is to identify the optimal relocation and upgrade plan for the entire Foreshore System for long-term planning purposes.

Existing Infrastructure Capacity and Condition

The existing Courtenay and Jane Place Pump Stations are approaching their hydraulic capacities and are also reaching the end of their useful life due to aging infrastructure.

As such, regardless of the conveyance option selected, there will likely be a need for renovation and capacity expansion at these two pump stations. However, if the selected alignment has significantly higher discharge pressures than at present, it will trigger a conversion of Courtenay and/or Jane Place PS to high pressure pumping stations. This brings additional design and cost considerations over and above renovation and capacity expansion, and may lead to a complete replacement pump station, rather than a renovation.

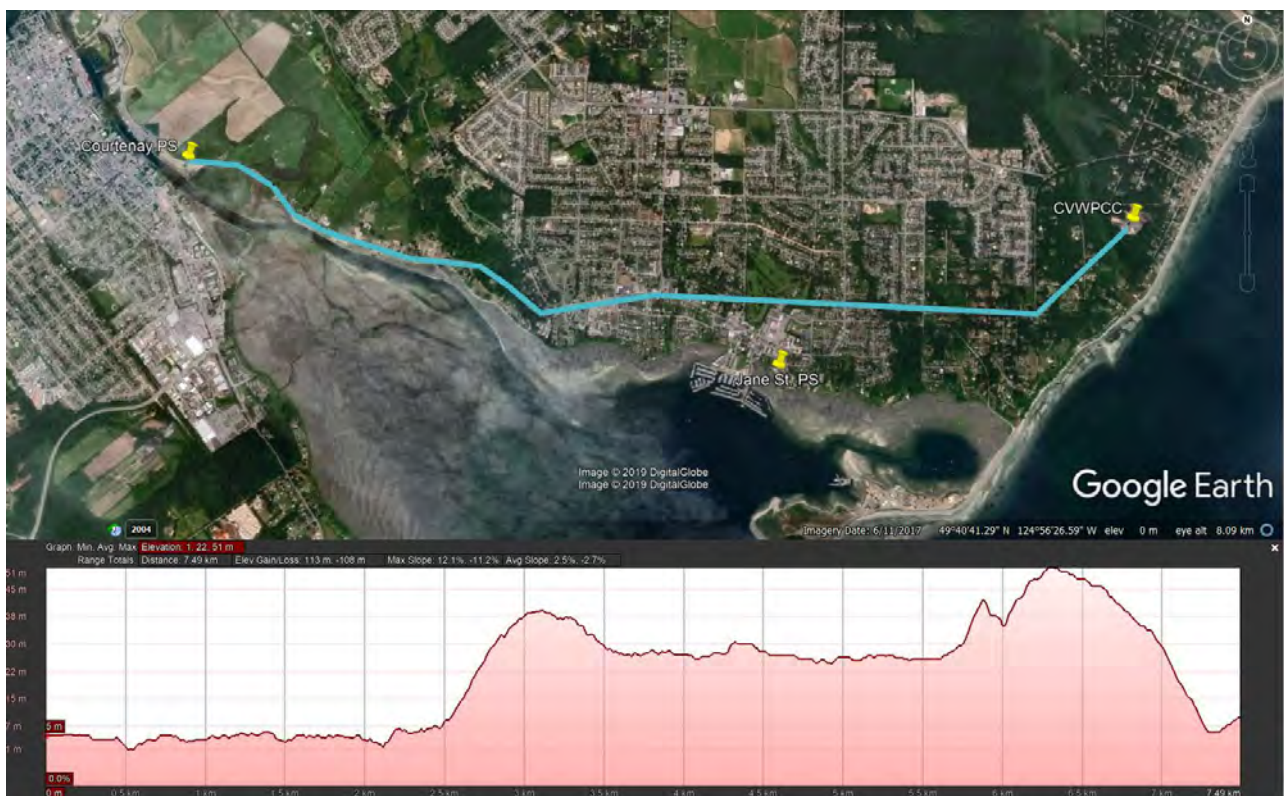
For the purpose of the LWMP, it is essential to consider the above, as even a low-pressure conveyance system will require some renovations and equipment upgrades to the existing pump stations, however these works would likely be achieved within the existing structure.

Options Boundaries and Limiting Factors

The location and number of pump stations depend on the location of the wastewater treatment plant and outfall, which are both fixed, and the hydraulics of the system, which is limited by the topography of the service area.

There are two high elevation sections within the Foreshore system of the CVSS; one at Comox Road, and one at Lazo Road, as shown on the figure below. For the purpose of the LWMP, any overland conveyance option will need to overcome the two high elevation locations within the CVSS. The overland routes are defined as any option not in the estuary or along the shoreline of the estuary. The hydraulics of the conveyance system will depend on the alignment selected. As such, multiple alignment alternatives are discussed within each option that may significantly vary in hydraulic requirements.

A sub-category of the overland routes involves the use of tunnels to convey the sewer through the hills rather than over them, and thus minimize the elevation of the pipe, compared to conventional overland forcemains. Tunneling alignment also have the advantage of being independent of surface features and road alignments. These options are referred to as “Tunneling Options” and two types have been considered, one using the tunnels as forcemains, and the second using the tunnels as gravity flow tunnels, or combinations of the two.

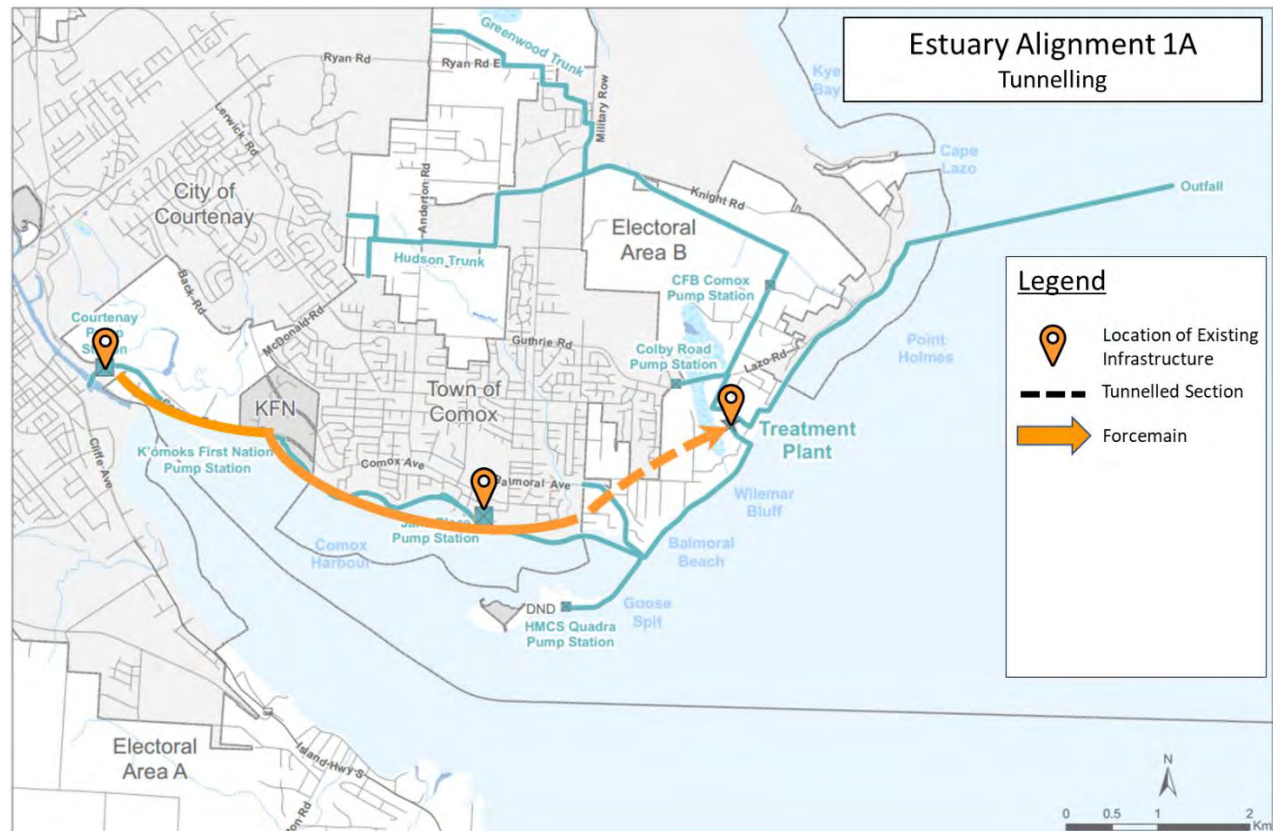


Source: Google Earth

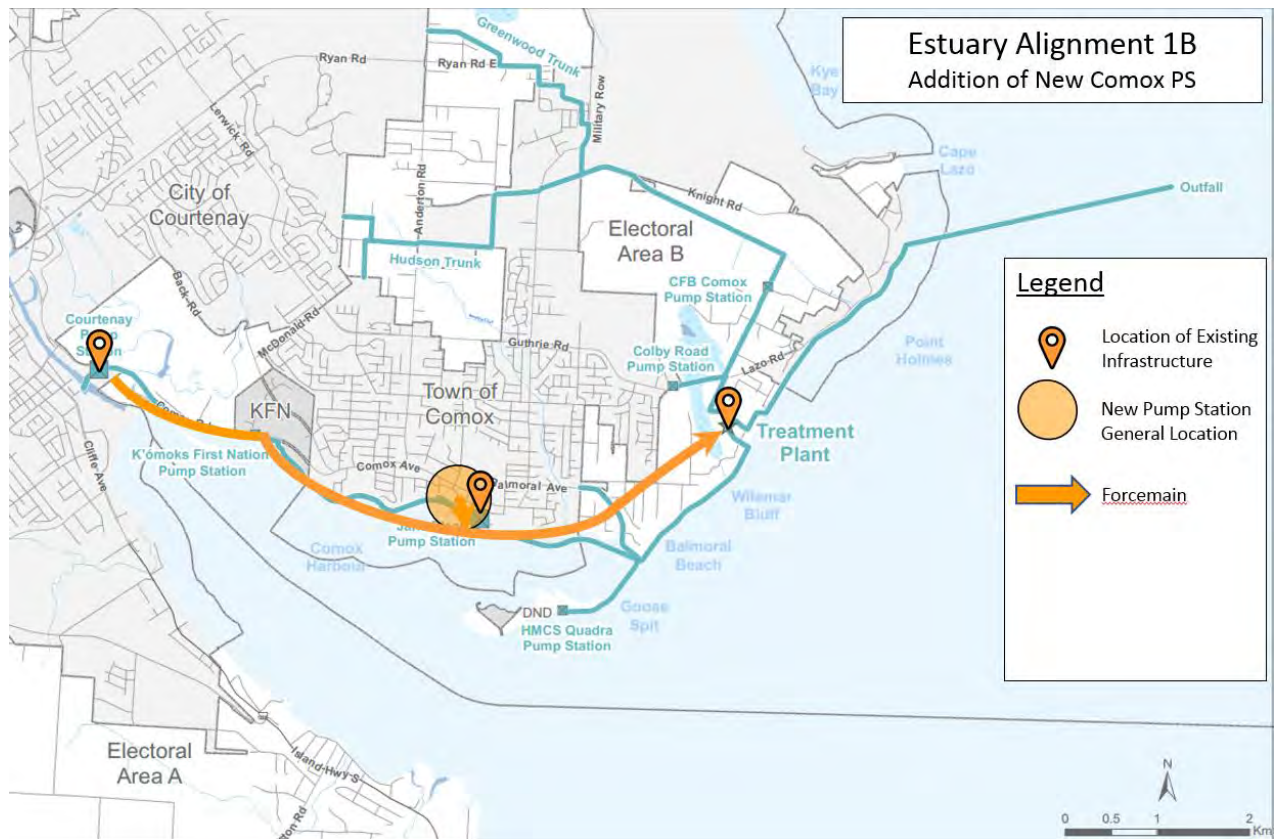
Long-List Option No. 1	Estuary Alignment												
Description	<p>This alignment would involve installation of a new forcemain within or along the Comox harbour foreshore. The forcemain would transition to an overland pipe between Comox and the Lazo Road height of land. To convey the sewage over the Lazo Road height of land the following options are suitable:</p> <p>A. The forcemain from Courtenay PS would continue directly to the CVWPCC such that there is no in-line pump station; however, a tunnel through the Lazo Road height of land would be used to reduce the required pressures in the system. Pending the tunnel elevation, a new pump station may be required in the general vicinity of the existing Jane Place PS. In which case, the existing Jane Place PS would be repurposed as a small subdivision pump station.</p> <table border="1"> <tr> <th>Advantages</th><th>Disadvantages</th></tr> <tr> <td> Potentially limited hydraulic changes to existing pump stations hydraulics subject to tunnel elevation. Minimizes construction of a forcemain through Comox. Only involves 2 large pump stations. </td><td> Involves work along and potentially in the estuary, including environmentally and archaeologically sensitive areas. Elevated maintenance and risk management needs due to proximity to marine environment. Elevated construction and operational risk associated with a tunnel. </td></tr> </table> <p>B. The forcemain from Courtenay PS would continue directly to the CVWPCC such that there is no in-line pump station. In order to overcome the Lazo Road height of land, Courtenay PS would be upgraded to ensure the forcemain pressure is sufficiently high. As a result, the existing Jane Place PS would not be able to cope with this higher hydraulic requirement and therefore a new high head pump station would be required in the general vicinity of the existing Jane Place PS. This new facility would convey raw sewage into the forcemain between Courtenay PS and the CVWPCC. The existing Jane Place PS would be repurposed as a small subdivision pump station.</p> <table border="1"> <tr> <th>Advantages</th><th>Disadvantages</th></tr> <tr> <td> Minimizes construction of a forcemain through Comox. 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The elevation of the new pump station would have to be low enough to permit the Jane Place PS to hydraulically connect.</p> <table border="1"> <tr> <th>Advantages</th><th>Disadvantages</th></tr> <tr> <td> Minimize hydraulic changes to existing Courtenay and Jane Place PSs. Maximize useful life of existing foreshore forcemain. Minimizes construction of a forcemain through Comox. </td><td> Pump in series and single point of complete failure of sewage conveyance system. Involves operation and maintenance of 3 large pump station, one of high criticality. </td></tr> </table>	Advantages	Disadvantages	Potentially limited hydraulic changes to existing pump stations hydraulics subject to tunnel elevation. Minimizes construction of a forcemain through Comox. Only involves 2 large pump stations.	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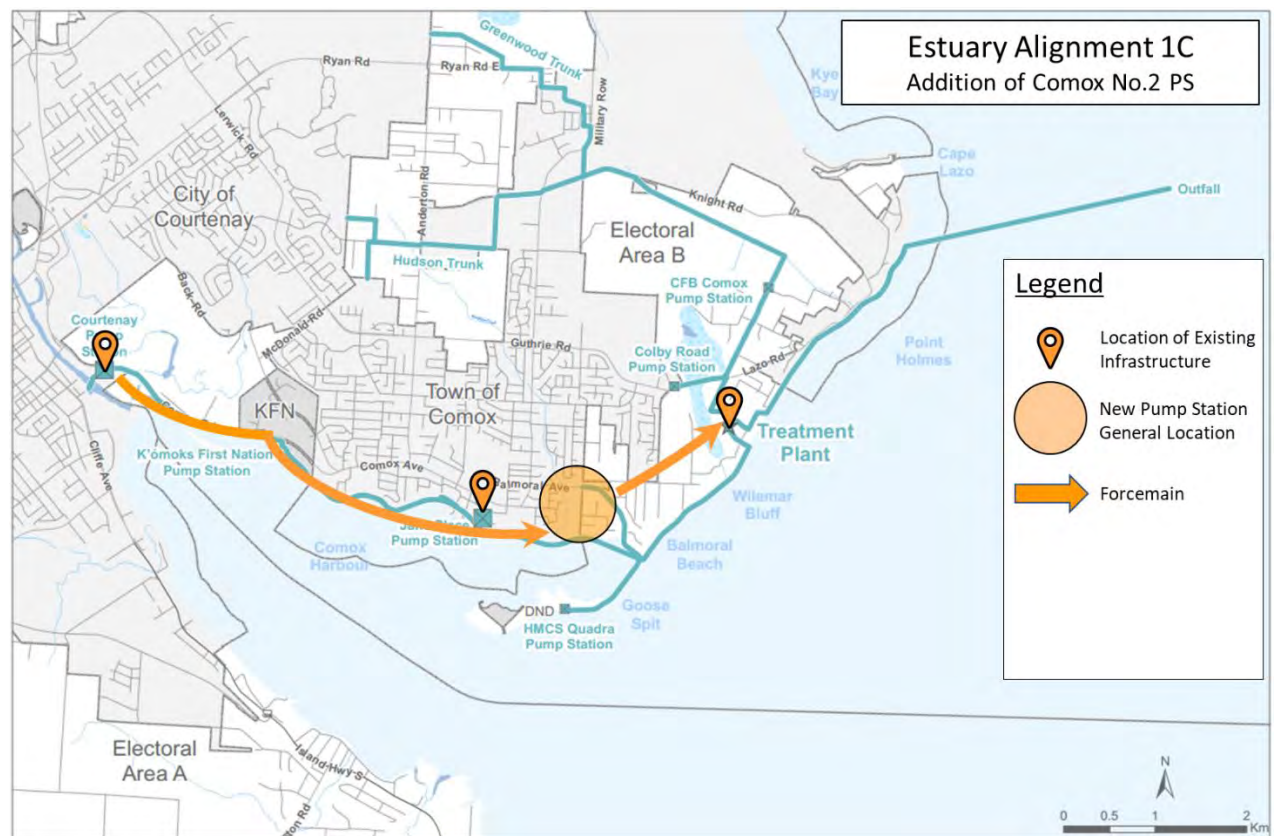
Option 1A



Option 1B



Option 1C

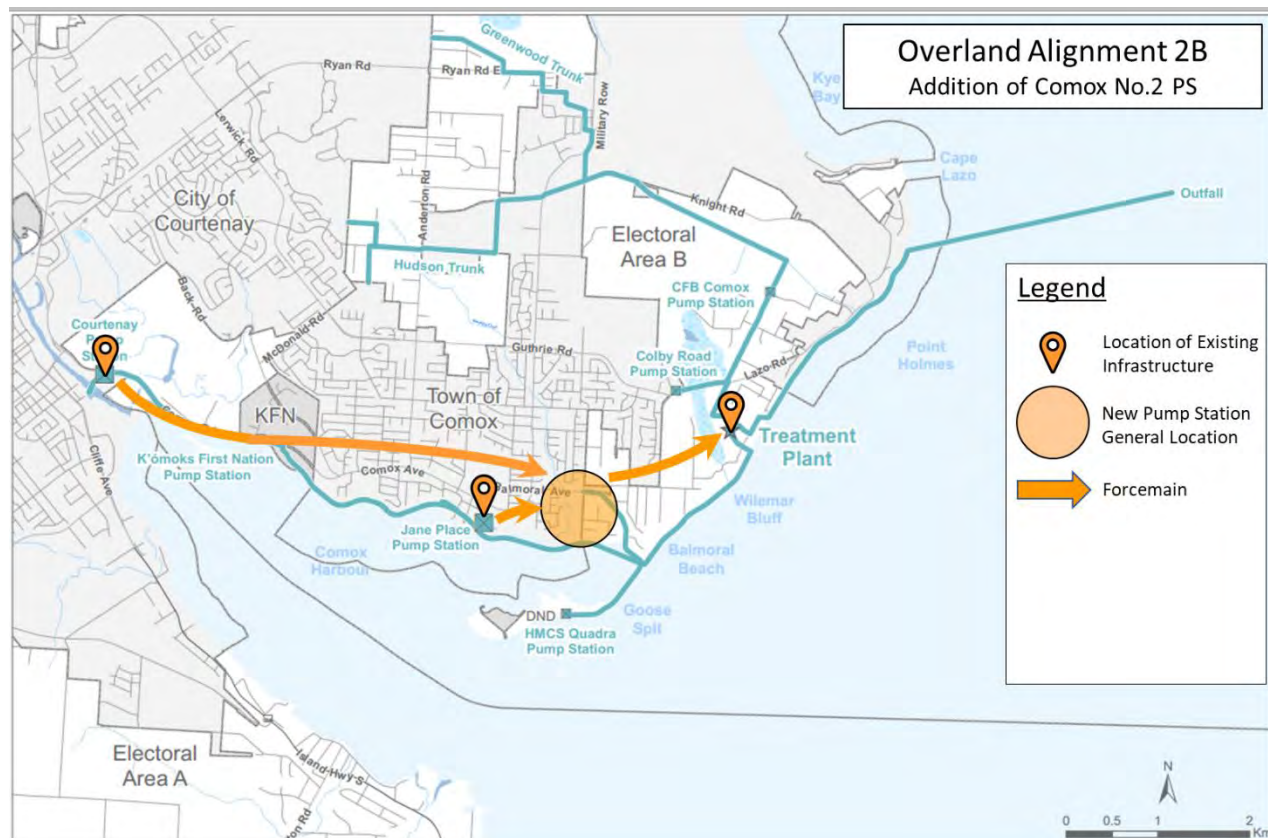


Long-List Option No. 2	Overland Alignments								
Description	<p>This alignment would involve installation of a new forcemain overland from Courtenay pump station towards the CVWPCC. This forcemain would pass over the Comox Road hill. Due to the change in discharge pressure a significant upgrade or rebuild would be required at the Courtenay Pump Station. Several routing options are available including:</p> <p>A. The forcemain from Courtenay PS would continue directly to the CVWPCC such that there is no in-line pump station. In order to overcome both the Comox Road hill and the Lazo Road height of land, the Courtenay PS would be upgraded to ensure forcemain pressure is sufficiently high. As a result, the existing Jane Place PS would not be able to cope with this higher hydraulic requirement and therefore a new high head pump station would be required in the general vicinity of the existing Jane Place PS. This new facility would convey raw sewage into the forcemain between Courtenay PS and the CVWPCC. The existing Jane Place PS would be repurposed as a small subdivision pump station.</p> <table border="1"> <tr> <th>Advantages</th><th>Disadvantages</th></tr> <tr> <td>No pipe in the estuary mitigating environmental and archaeological risks. All pipe and structures on-land to maximize maintenance accessibility. Only involves 2 large pump stations (Jane Place PS repurposed as local facility only).</td><td>Significant hydraulic changes to the Courtenay PS and Jane Place PS. Construction of new conveyance system through an area with significant existing infrastructure.</td></tr> </table> <p>B. The forcemain from Courtenay PS would convey raw sewage over the Comox Road hill and down into a new pump station, connected in series, somewhere between the Glacier View Drive/Comox Road and Lazo Road heights of land. The elevation of the new pump station would need to be at an elevation to suit the existing discharge pressures from the Jane Place PS. From the new pump station the raw sewage would be conveyed over the Lazo Road height of land to the CVWPCC.</p> <table border="1"> <tr> <th>Advantages</th><th>Disadvantages</th></tr> <tr> <td>No pipe in the estuary mitigating environmental and archaeological risks. All pipe and structures on-land to maximize maintenance accessibility. Minimize hydraulic changes to existing Jane Place PS.</td><td>Pump in series and single point of complete failure of sewage conveyance system. Involves operation and maintenance of 3 large pump station, one of high criticality. Significant hydraulic changes to the Courtenay PS. Construction of new conveyance system through an area with significant existing infrastructure.</td></tr> </table>	Advantages	Disadvantages	No pipe in the estuary mitigating environmental and archaeological risks. All pipe and structures on-land to maximize maintenance accessibility. Only involves 2 large pump stations (Jane Place PS repurposed as local facility only).	Significant hydraulic changes to the Courtenay PS and Jane Place PS. Construction of new conveyance system through an area with significant existing infrastructure.	Advantages	Disadvantages	No pipe in the estuary mitigating environmental and archaeological risks. All pipe and structures on-land to maximize maintenance accessibility. Minimize hydraulic changes to existing Jane Place PS.	Pump in series and single point of complete failure of sewage conveyance system. Involves operation and maintenance of 3 large pump station, one of high criticality. Significant hydraulic changes to the Courtenay PS. Construction of new conveyance system through an area with significant existing infrastructure.
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Option 2A



Option 2B



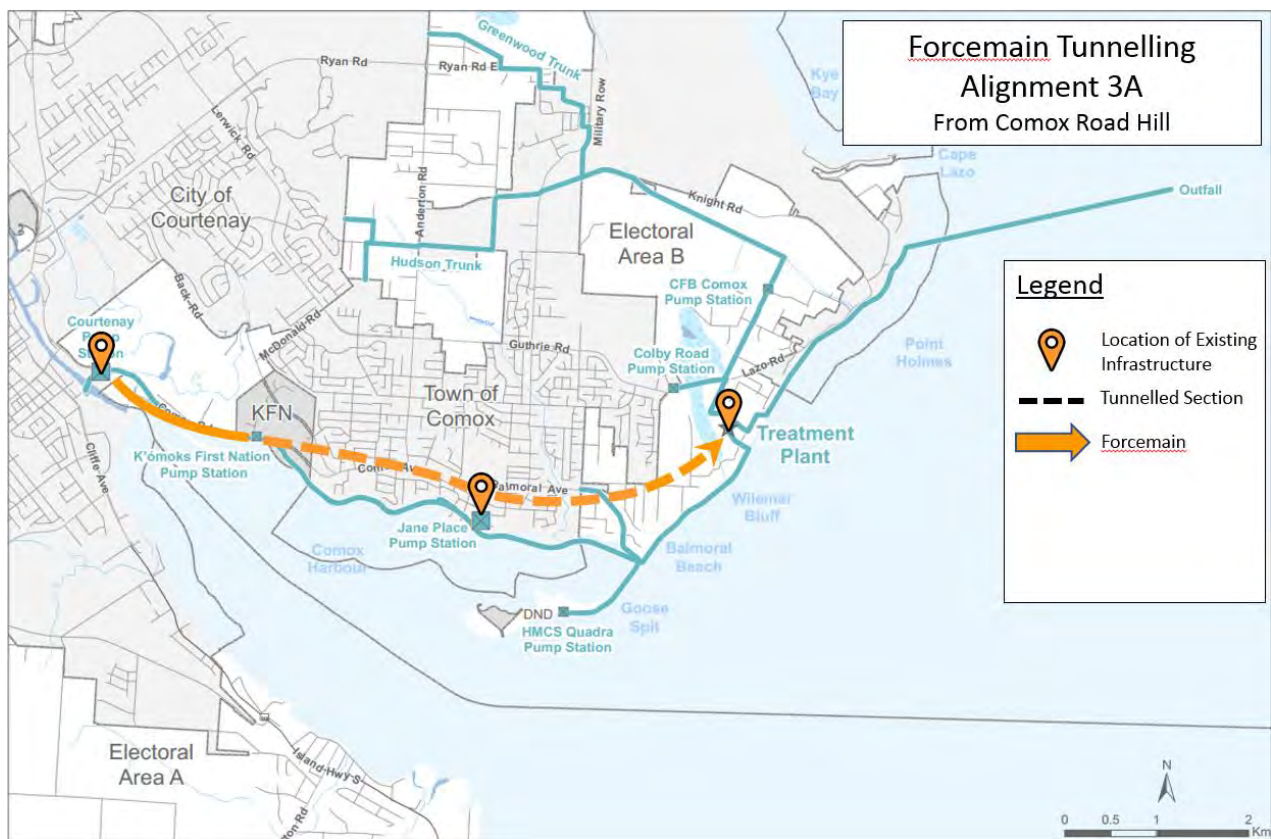
Long-List Option No. 3	Tunnelling Alignments								
Description	<p>This alignment would involve installation of a combination of new forcemains and gravity sewer mains overland from the Courtenay pump station towards the CVWPCC. The tunnel alignments would be selected to either minimize pumping requirements or where possible, utilize gravity sewer mains. The primary areas where tunnelling would be appropriate are under the Comox Rd. and Lazo Rd heights of land. Several combinations of forcemain/gravity sewer mains are described below.</p> <p>A. Sewage would be pumped from the Courtenay PS to an elevation where a tunnel would be constructed through the Comox Road hill. The forcemain would transition to an open cut installation through Comox and back to a tunnel to pass under the Lazo Road height of land and down to the CVWPCC. The Jane Place pump station could connect to the forcemain. To avoid major modifications to the Jane Place PS the tunnel elevations would have to be selected to suit the existing hydraulics of the Jane Place PS.</p> <table border="1"> <tr> <th>Advantages</th><th>Disadvantages</th></tr> <tr> <td> No pipe in the estuary mitigating environmental and archaeological risks. Reduces pressures at the existing pump stations. Significantly alleviates the high head requirements for the Courtenay PS and Jane PI PS as compared to other overland options. </td><td> Elevated costs and risks due to tunneling. Construction of new conveyance system through an area with significant existing infrastructure. </td></tr> </table> <p>B. A new open cut forcemain would be installed from Courtenay PS and would continue directly to the CVWPCC such that there is no in-line pump station. To reduce pressures a tunnel would be used for the forcemain to pass through the Lazo Road height of land. The existing Jane Place PS would likely not be able to cope with this higher hydraulic requirement and therefore a new high head pump station would be required in the general vicinity of the existing Jane Place PS. This new facility would convey raw sewage into the forcemain between Courtenay PS and the CVWPCC. The existing Jane Place PS would be repurposed as a small subdivision pump station. If the tunnel elevation is sufficiently low, the existing Jane Place PS would be suitable.</p> <table border="1"> <tr> <th>Advantages</th><th>Disadvantages</th></tr> <tr> <td> No pipe in the estuary mitigating environmental and archaeological risks. All pipe and structures on-land to maximize maintenance accessibility. Alleviates some of the high head requirements as compared to other overland options. </td><td> Construction of new conveyance system through an area with significant existing infrastructure. Higher upgrade requirements at the Jane Place PS as compared to the other tunnel options. </td></tr> </table>	Advantages	Disadvantages	No pipe in the estuary mitigating environmental and archaeological risks. Reduces pressures at the existing pump stations. Significantly alleviates the high head requirements for the Courtenay PS and Jane PI PS as compared to other overland options.	Elevated costs and risks due to tunneling. Construction of new conveyance system through an area with significant existing infrastructure.	Advantages	Disadvantages	No pipe in the estuary mitigating environmental and archaeological risks. All pipe and structures on-land to maximize maintenance accessibility. Alleviates some of the high head requirements as compared to other overland options.	Construction of new conveyance system through an area with significant existing infrastructure. Higher upgrade requirements at the Jane Place PS as compared to the other tunnel options.
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Description

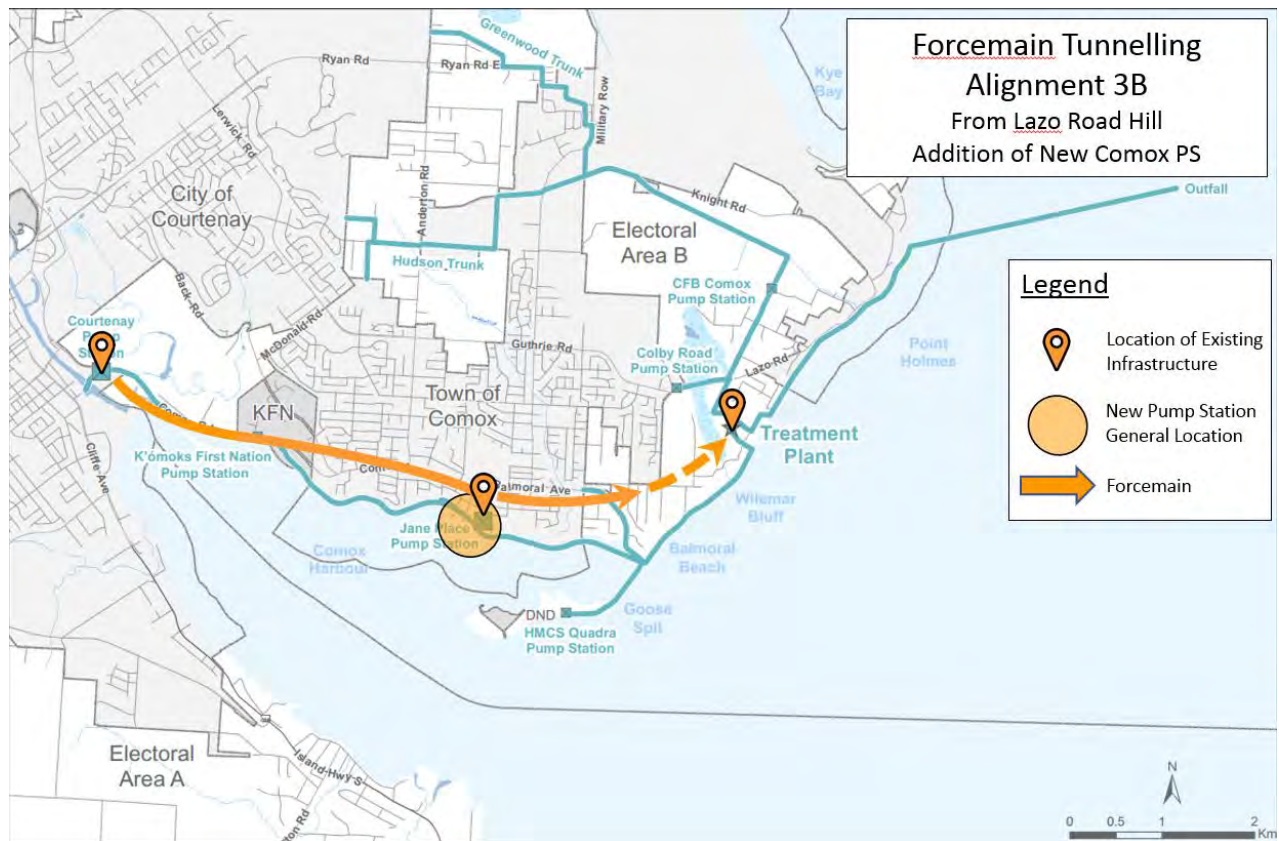
C. A new open cut forcemain would be installed from Courtenay PS and would continue directly to the CVWPCC such that there is no in-line pump station. To reduce pressures a gravity sewer main tunnel would be used to pass through the Lazo Road height of land. Depending on the tunnel elevation the existing Jane Place PS may not require replacement to a high head pump station. The alignment options for the gravity sewer main would be restricted to those which accommodate the required slope. The Jane Place pump station would connect to the gravity sewer main through a new forcemain. The tie-in location would be governed by the gravity sewer main alignment.

Advantages	Disadvantages
No pipe in the estuary mitigating environmental and archaeological risks. All pipe and structures on-land to maximize maintenance accessibility. Alleviates some of the high head requirements for the Courtenay PS and most of the high head requirements for the Jane Place PS as compared to other overland options.	Construction of new conveyance system through an area with significant existing infrastructure. Gravity sewer main alignment must follow a specific slope which is dependent on the topography. Gravity sewer mains are larger diameter as compared to forcemains for the same flow.

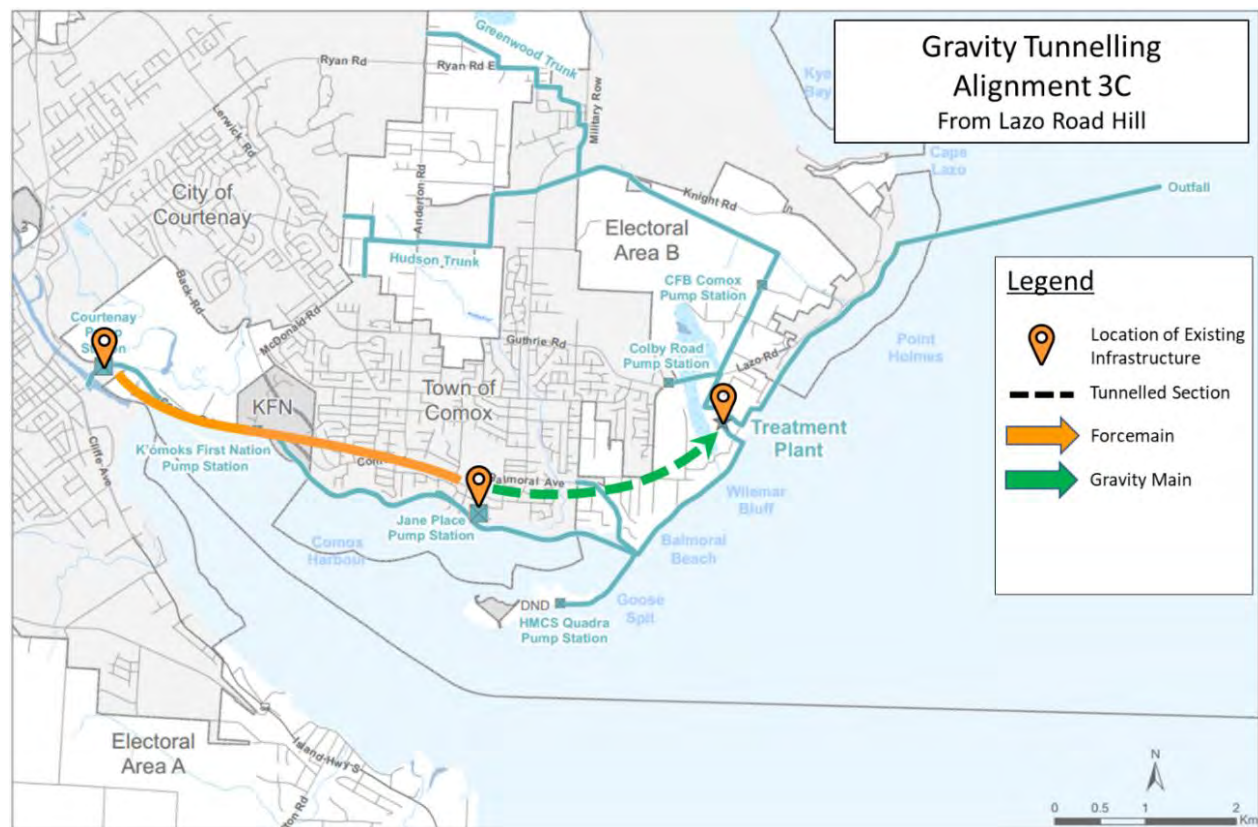
Option 3A



Option 3B



Option 3C



Long-List Option No. 4	North Side Concept			
Description	<p>In this concept, raw sewage would be pumped from the location of the existing Courtenay PS along the north side of the CVSS, and directly from the location of the existing Jane Pump Station to the CVWPCC.</p> <p>Courtenay PS would potentially be required to pump sewage to the CVWPCC over the highest elevation of East Courtenay hill (El. 73 m) in a forcemain. Jane Place PS would be required to pump sewage to the CVWPCC over the Lazo hill (El. 51 m) in a forcemain. The two forcemains will combine west of the Lazo hill and one common forcemain will convey the raw sewage to the CVWPCC. Alternately, the two alignments can continue separately over Lazo hill to the CVWPCC. Regardless of the alignment over Lazo hill, this option would trigger a high head upgrade at both the Courtenay and Jane PS, leading to the requirement for a rebuild of both pump stations.</p>			
	<table border="1"> <thead> <tr> <th>Advantages</th><th>Disadvantages</th></tr> </thead> <tbody> <tr> <td> <p>Only involves 2 large pump stations (Jane Place PS repurposed as local facility only) Pump Stations operating in parallels as opposed to in series, minimizing need for a sophisticated control system.</p> <p>Avoids construction in areas with significant infrastructure development.</p> <p>No pipe in the estuary mitigating environmental and archaeological risks.</p> <p>All pipe and structures on-land to maximize maintenance accessibility.</p> </td><td> <p>Construction for the linear assets required along two separate alignments within the CVSS, increasing construction disturbance.</p> <p>Operating two partially separate high pressure forcemain networks.</p> <p>The North Side of Glacier View Drive is at a significant higher elevation than that of the South Side (73 m vs 39 m).</p> </td></tr> </tbody> </table>	Advantages	Disadvantages	<p>Only involves 2 large pump stations (Jane Place PS repurposed as local facility only) Pump Stations operating in parallels as opposed to in series, minimizing need for a sophisticated control system.</p> <p>Avoids construction in areas with significant infrastructure development.</p> <p>No pipe in the estuary mitigating environmental and archaeological risks.</p> <p>All pipe and structures on-land to maximize maintenance accessibility.</p>
Advantages	Disadvantages			
<p>Only involves 2 large pump stations (Jane Place PS repurposed as local facility only) Pump Stations operating in parallels as opposed to in series, minimizing need for a sophisticated control system.</p> <p>Avoids construction in areas with significant infrastructure development.</p> <p>No pipe in the estuary mitigating environmental and archaeological risks.</p> <p>All pipe and structures on-land to maximize maintenance accessibility.</p>	<p>Construction for the linear assets required along two separate alignments within the CVSS, increasing construction disturbance.</p> <p>Operating two partially separate high pressure forcemain networks.</p> <p>The North Side of Glacier View Drive is at a significant higher elevation than that of the South Side (73 m vs 39 m).</p>			

Option 4



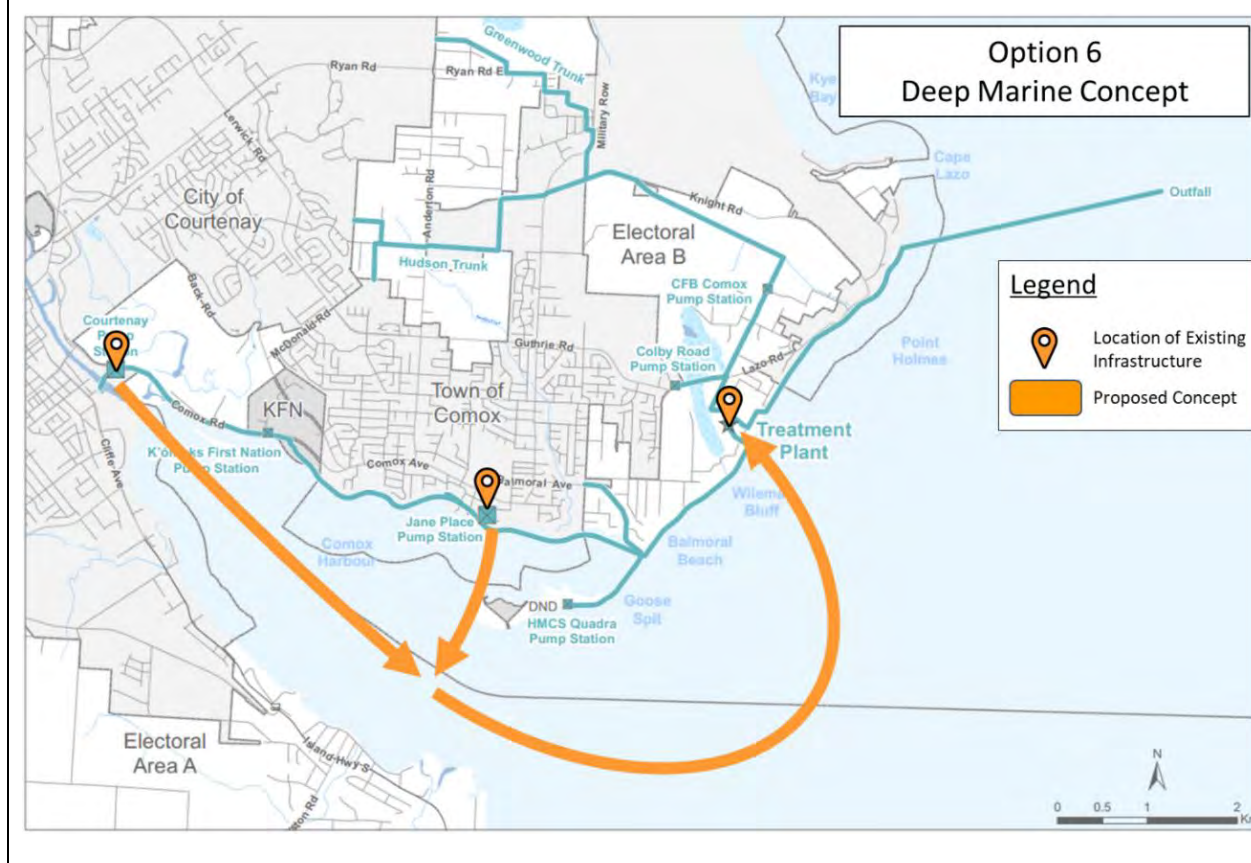
Long-List Option No. 5	Decentralized Treatment Concept			
Description	<p>In this option, an additional wastewater treatment plant would be constructed in close proximity to the location of the existing Courtenay PS to treat the sewage collected and currently conveyed by the Courtenay PS.</p> <p>Due to the location of the outfall, the effluent of a decentralized wastewater treatment plant would have to be conveyed to the location of the existing outfall for discharge. Alignments for the conveyance of the effluent discharge are similar to those discussed within Options 1, 2, and 4, and include estuary, overland, tunnelled, and north side alignments.</p> <p>The sewage collected at the Jane PS will be conveyed to the existing CVWPCC for treatment using an overland or tunnelled option. Overland options would still require a new pump station for the Jane Place PS, and subject to the length and depth of the tunnelled option a new pump station in Comox maybe required.</p>			
	<table border="1"> <thead> <tr> <th>Advantages</th><th>Disadvantages</th></tr> </thead> <tbody> <tr> <td> <p>Eliminates the need for conveyance of Courtenay's raw sewage through the CVSS to the CVWPCC.</p> <p>Alleviate capacity-driven upgrade requirements at the CVWPCC.</p> </td><td> <p>Requires the need for conveyance of the decentralized WWTP effluent to the outfall using a new pumping and conveyance system.</p> <p>Significant operational burden with two wastewater treatment plants.</p> <p>Significant cost associated with the construction of a new wastewater treatment plant, and maintenance and operation of two plants.</p> <p>Still requires conveyance of raw sewage overland from Comox.</p> </td></tr> </tbody> </table>	Advantages	Disadvantages	<p>Eliminates the need for conveyance of Courtenay's raw sewage through the CVSS to the CVWPCC.</p> <p>Alleviate capacity-driven upgrade requirements at the CVWPCC.</p>
Advantages	Disadvantages			
<p>Eliminates the need for conveyance of Courtenay's raw sewage through the CVSS to the CVWPCC.</p> <p>Alleviate capacity-driven upgrade requirements at the CVWPCC.</p>	<p>Requires the need for conveyance of the decentralized WWTP effluent to the outfall using a new pumping and conveyance system.</p> <p>Significant operational burden with two wastewater treatment plants.</p> <p>Significant cost associated with the construction of a new wastewater treatment plant, and maintenance and operation of two plants.</p> <p>Still requires conveyance of raw sewage overland from Comox.</p>			

Option 5



Long-List Option No. 6		Deep Marine Concept
Description	In this option, raw sewage would be pumped from the location of the existing Courtenay and Jane Pump Station to the CWPCC. The forcemain will be sited in deep water, placed on the sea-floor and only buried where there is less than 3m water depth at low tide. This option would require a deeper marine forcemain from Courtenay PS to the CVWPCC, with a forcemain from the Jane PS connecting into the forcemain in the estuary.	
Advantages		Disadvantages
Minimizing pumping head and system pressure No new overland piping. Eliminate sewage pipes in the Comox Harbour foreshore.		Challenging constructability and maintenance. Environmental risk in case of a spill as sewage pipes are still in the estuary. Requires pipe from Jane PS to tie-in within the estuary which passes through sensitive environmental, ecological, and archaeological habitat. Difficult repair and maintenance as pipe is submerged.

Option 6



Minutes of the meeting of the Liquid Waste Management Plan (LWMP) Joint Technical and Public Advisory Committees (TACPAC) Meeting #4 held on Thursday, January 24, 2019 at the Comox Valley Regional District (CVRD) Boardroom, commencing at 9:00am.

PRESENT:	A. Habkirk, Chair and Facilitator	
	P. Nash, LWMP Project Coordinator	
	K. La Rose, Senior Manager of Water/Wastewater	CVRD
	M. Imrie, Manager of Wastewater Services	CVRD
	J. Boguski, Branch Assistant – Engineering Services	CVRD
	A. Idris, Engineering Analyst	CVRD
	A. Gibb	WSP
	N. Tousi	WSP
	W. Bayless	WSP
	K. Grant, Town of Comox Councillor	PAC
	W. Cole-Hamilton, City of Courtenay Councillor	PAC
	C. McColl, K'ómoks First Nation	PAC/TAC
	T. Ennis, Comox Valley Conservation Partnership	PAC
	A. Munro, BC Shellfish Growers Association	PAC
	S. Wood, Comox Business Improvement Association	PAC
	A. Gower, Comox Valley Chamber of Commerce	PAC
	S. Carey, Courtenay Resident Representative	PAC
	T. Serviz, Courtenay Resident Representative	PAC
	J. Beks, Courtenay Resident Representative	PAC
	K. vanVelzen, Comox Resident Representative	PAC
	D. Jacquest, Comox Resident Representative	PAC
	R. Craig, Comox Resident Representative	PAC
	M. Holm, Area B Resident Representative	PAC
	M. Lang, Area B Resident Representative	PAC
	A. Pitcher, City of Courtenay Engineering (observer)	
	R. O'Grady, City of Courtenay Engineering	TAC
	S. Ashfield, Town of Comox Engineering	TAC
	A. Bissinger, Department of National Defence Engineering	TAC

ITEMS:

ITEM	DESCRIPTION	OWNER
4.1	Call to Order Allison called the meeting to order at 9:00am	Allison Habkirk
4.2	Review of Minutes of Meeting #3 There were no alterations to the minutes	Allison Habkirk
4.3	Turning the Goals into an Evaluation System - Treatment Component (continuation of unfinished agenda item from Meeting #3) The committee engaged in a discussion about how to finalize the weightings of the treatment goals. Each category was reviewed separately <ul style="list-style-type: none"> Technical: It was agreed that the goal of "Provides Asset Life and Capacity Beyond the Planning Horizon" was not a meaningful goal. The 10 per cent of the 30 per cent for technical was redistributed by adding five per cent 	Paul Nash

ITEM	DESCRIPTION	OWNER																																								
4.3	<p>each to “Resiliency to External Factors” and “Resiliency to Internal Factors”. This kept the technical category at 30 per cent of the total.</p> <ul style="list-style-type: none">● Affordability: With the wide variation in weighting from the PAC (26 per cent), TAC (43 per cent) and public (14 per cent) it was agreed to take the middle and assign 30 per cent to this category, with all of it being on the minimize life cycle costs category.● Economic Benefits: It was agreed that this category remain at zero weighting.● Social Benefits: The scores varied from the PAC (22 per cent) TAC (13 per cent) and public (21 per cent) and it was proposed by the Project Coordinator to have this category at 20 per cent. In discussion by the TACPAC, two further changes were made to this category.<ul style="list-style-type: none">a. It was agreed that odour control should be done to industry best practice, regardless of the treatment option chosen. Thus it is elevated to become a mandatory requirement and is no longer a weighted evaluation criteria.b. The 10 per cent weighting for the odour control goal was redistributed by giving five per cent to Environmental Benefit and leaving Social Benefit at 15 per cent.c. It was decided to leave the Social Benefit category as one non-specific goal, to be evaluated by the PAC.● Environmental Benefits: The original weighting for this category was PAC (20 per cent) TAC (13 per cent) and public (27 per cent) It was proposed to have this category at 20 per cent with the split being 10 per cent for “Quality of Treatment Exceeds Current Standards” and five per cent each for “Remove Artificial (Emerging) Contaminants” and “Mitigate Climate Change Impacts”. It was decided that the five per cent being added from the Social Benefit category should be applied to the “Quality of Treatment Exceeds Current Standards” goal to bring that criteria to 15 per cent, and the total for the Environmental Benefits category to 25 per cent. <p>The TACPAC reached a consensus decision, with the categories summarized below, and the goal weightings as detailed in Attachment No.1 “Finalized Goals and Evaluation – Treatment”</p> <table><tr><th colspan="5">Component: Treatment</th></tr><tr><th>Category</th><th>Initial PAC Ranking (%)</th><th>Initial TAC Ranking (%)</th><th>Public Ranking (%)</th><th>Final TACPAC Ranking (%)</th></tr><tr><td>Technical</td><td>32</td><td>30</td><td>40</td><td>30</td></tr><tr><td>Affordability</td><td>26</td><td>44</td><td>14</td><td>30</td></tr><tr><td>Economic Benefit</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>Environmental Benefit</td><td>20</td><td>13</td><td>25</td><td>25</td></tr><tr><td>Social Benefit</td><td>22</td><td>13</td><td>21</td><td>15</td></tr><tr><td>Total</td><td>100%</td><td>100%</td><td>100%</td><td>100%</td></tr></table>	Component: Treatment					Category	Initial PAC Ranking (%)	Initial TAC Ranking (%)	Public Ranking (%)	Final TACPAC Ranking (%)	Technical	32	30	40	30	Affordability	26	44	14	30	Economic Benefit	0	0	0	0	Environmental Benefit	20	13	25	25	Social Benefit	22	13	21	15	Total	100%	100%	100%	100%	Paul Nash
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ITEM	DESCRIPTION	OWNER
4.3	<p>Motion: that the TACPAC recommends the LWMP Goals and Evaluation for Treatment to the Comox Valley Sewerage Commission for consideration.</p> <p>Moved: R. O’Grady</p> <p>CARRIED</p>	Paul Nash
4.4	<p>Turning the Goals into an Evaluation System – Resource Recovery Component (continuation of unfinished agenda item from Meeting #3)</p> <p>The committee engaged in a discussion about how to finalize the weightings of the Resource Recovery goals. Each category was reviewed separately. It was noted that there were some discrepancies in the category scores as some of the goals that were voted on were actually end uses, rather than true goals. These goals were removed from the list and the remaining scores re-scaled to get to 100 per cent.</p> <p>There were also some differences in the goals as presented and ranked by the public. For each category, a finalized set of goals and weightings were proposed by the project coordinator as being the best representation of the various goals and rankings, and the TACPAC discussed potential changes from that basis.</p> <ul style="list-style-type: none"> Technical: This category had initially been weighted as 14 per cent (PAC), 17 per cent (TAC) and 30 per cent (public). It was proposed to have this category as 25 per cent, with goals being “Commercially Available Technology” (10 per cent), “Anticipate Future Demand for Resources” at five per cent, and “Improve Performance of Treatment Plant” at 10 per cent. “Resiliency to Internal Factors” had no initial weighting. After discussion, the TACPAC agreed to redistribute five per cent from “Improve Performance” to “Resiliency to Internal Factors” (operational simplicity, reliability and minimizing risk of spills), with the Technical category remaining at 25 per cent. Affordability: With the wide variation in weighting from the PAC (71 per cent), TAC (64 per cent) and public (20 per cent) it was proposed to have this at 50 per cent. The high rankings for the PAC and TAC are due to re-scaling. The ideas put forward on how and where to use reclaimed water and heat are potential actions, but are not actually evaluation criteria. Removing these from the total left the affordability goals with a high proportion of the remaining votes. The reasons why the public score was much lower is that their ranking system was different from that used by the TACPAC, and that it made it impossible to assign such a high ranking. The TACPAC agreed with the proposal to assign 50 per cent to this category, in recognition that the main factor is that an option is worth it. Within the goals, it was decided to remove the goal “Cost Neutral as a Minimum”, and re-allocate its 10 per cent weighting to the “Minimize Lifecycle Costs” goal. This was in recognition that a cost neutral requirement may eliminate many or even all options, and some benefits are social rather than revenue based. In removing this goal, it was agreed that there be a specifically identified revenue component of the life cycle cost calculation. Economic Benefits: Even though the PAC and TAC scored this at zero, the public scored it at eight per cent, and it was agreed that there is merit to having some score in this category, recognizing that the use of reclaimed 	Paul Nash

ITEM	DESCRIPTION	OWNER																																								
4.4	<p>water for agriculture has the potential to grow the local economy, as has been done at several other BC towns. This category was assigned five per cent</p> <ul style="list-style-type: none">• Environmental Benefits: The original weighting for this category was PAC (14 per cent) TAC (eight per cent) and public (22 per cent) It was proposed to have this category at 15 per cent with the split being five per cent each for “Energy Efficiency and GHG Reductions”, “Habitat Restoration or Enhancement” and “Displacement of Potable Water Use” and these weightings were accepted by the TACPAC.• Social Benefits: This category originally contained a goal of “Public Health Issues Considered for any Reclaimed Water” and it was noted that this is effectively a mandatory requirement, not an evaluation criteria. The remaining goal within the social category was “Ability to Maintain Irrigation of Public Parks and Gardens during Water Restrictions”. After some discussion it was agreed to re-word this to “Ability to Maintain Irrigation of Critical Public infrastructure during Drought Conditions” and assign a score of five per cent to this goal. <p>The TACPAC reached a consensus decision, with the categories summarized below, and the goal weightings as detailed in Attachment No.2 “Finalized Goals and Evaluation – Resource Recovery”</p> <table><tr><th colspan="5">Component: Resource Recovery</th></tr><tr><th>Category</th><th>Initial PAC Ranking</th><th>Initial TAC Ranking*</th><th>Public Ranking**</th><th>Final TACPAC Ranking</th></tr><tr><td>Technical</td><td>14</td><td>17</td><td>25 (31)</td><td>25</td></tr><tr><td>Affordability</td><td>71</td><td>65</td><td>33 (20)</td><td>50</td></tr><tr><td>Economic Benefit</td><td>0</td><td>0</td><td>7 (8)</td><td>5</td></tr><tr><td>Environmental Benefit</td><td>14</td><td>8</td><td>18 (22)</td><td>15</td></tr><tr><td>Social Benefit</td><td>1</td><td>10</td><td>17 (20)</td><td>5</td></tr><tr><td>Total</td><td>100 per cent</td><td>100 per cent</td><td>100 per cent</td><td>100 per cent</td></tr></table> <p>*The sum of the scores for the TAC rankings as presented was 102 due to round-off errors, which are corrected here.</p> <p>**The initial scores presented to the TACPAC for the public rankings had an arithmetic error, whereby the affordability category did not have two of the four goals in the summation, which led to it being undervalued. The corrected numbers are shown here, with the original presented numbers in parentheses.</p> <p>Finally, in evaluating the resource recovery options, it is not like conveyance and treatment where a preferred option must be selected and implemented. Processing of biosolids in some manner is mandatory, so this resource recovery action happens regardless of cost or desirability. For the other options, resource recovery is entirely discretionary, so it could be that none, or several of the options are selected. The evaluation criteria is intended to determine whether it is worth it, based on the balance of costs and benefits. Noting that there can be some overlap between treatment and resource recovery options, it may be that some costs or benefits are not captured completely by the resource recovery evaluation, or that a change in treatment process achieves or enables certain options by default. These factors will be considered during the options evaluation.</p>	Component: Resource Recovery					Category	Initial PAC Ranking	Initial TAC Ranking*	Public Ranking**	Final TACPAC Ranking	Technical	14	17	25 (31)	25	Affordability	71	65	33 (20)	50	Economic Benefit	0	0	7 (8)	5	Environmental Benefit	14	8	18 (22)	15	Social Benefit	1	10	17 (20)	5	Total	100 per cent	100 per cent	100 per cent	100 per cent	Paul Nash
Component: Resource Recovery																																										
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ITEM	DESCRIPTION	OWNER
4.4	<p>Motion: that the TACPAC recommends the LWMP Goals and Evaluation for Resource Recovery to the Comox Valley Sewerage Commission for consideration.</p> <p>Moved: R. O’Grady</p> <p>CARRIED</p>	Paul Nash
	Break	
4.5	<p>Operational Update - Wet Weather Flows in December and January.</p> <p>Mike Imrie explained that there were high flows during the winter period, though not at the level that would cause an overflow in the system. Even so, the operators are always worried during wet weather high flow, as the loss of a pump could lead to capacity limitations.</p> <p>He also addressed some confusion relating to a media story about the CVRD needing to deploy a “standby pump” – this was related to the potable water system and was not a wastewater issue.</p>	Mike Imrie
4.6	<p>Technical Update - Understanding Dry and Wet Weather Flows for Wastewater Planning.</p> <p>Al gave a presentation about wet and dry weather flows and how these factor into planning for conveyance and treatment upgrades. The target ratio for wet to dry weather flow is 2:1 and the CVRD currently sits at about 3:1. It is difficult to reduce these wet weather flows, and the responsibility for that lays with the municipalities, not the CVRD. Most communities in coastal BC are over 2:1.</p> <p>The hydraulic components of the conveyance and treatment systems must be sized to handle the present and future peak wet weather flows.</p>	Al Gibb, WSP
4.7	<p>Review of the Options Study and Evaluation Process</p> <p>In the interests of time, this agenda item was passed over and not presented</p>	Paul Nash
4.8	<p>Long List Options – Treatment</p> <p>Al presented the four conceptual treatment options which are detailed in Attachment No.3 “Long List Options – Treatment”.</p> <ol style="list-style-type: none"> 1. Secondary treatment of flows up to 2xADWF (Average Dry Weather Flow) 2. Secondary treatment of all flows 3. Advanced treatment of flows up to 2xADWF 4. Advanced treatment of all flows <p>The difference between “flow up to 2xADWF” and “all flow” is that excess flow above 2xADWF bypasses the biological part of the treatment process and are re-combined before disinfection. In the “all flow” configuration, there is no bypass, and the biological and advanced treatment trains must be designed to handle all flows.</p> <p>All options included the addition of UV disinfection, but in discussion it was noted that there are other means of disinfection and there has been no decision yet on the type of disinfection.</p> <p>Alex Munro, representing the BC Shellfish Growers Association, raised the question about disinfection of norovirus, a human virus that can infect shellfish farms. While most disinfection is based on measurements of fecal coliforms and E.Coli, there are no specific requirements relating to viruses. The question of disinfection efficacy for norovirus will be looked into as part of the conceptual study of treatment options.</p>	Al Gibb, WSP

ITEM	DESCRIPTION	OWNER
4.8	It was explained that while there are many different specific treatment technologies, they can all fall within one of the four conceptual options, and there is no need to go into further detail at this stage. With the one change noted for disinfection, the TACPAC approved this Long List to go to public review.	Al Gibb, WSP
4.9	<p>Long List Options – Resource Recovery</p> <p>Al presented the conceptual resource recovery options which are detailed in Attachment No.4 “Long Lost Options – Resource Recovery”.</p> <ol style="list-style-type: none"> 1. Reclaimed water 2. Heat recovery 3. Production of biogas (from anaerobic digestion) 4. Beneficial use of treated biosolids 5. Extraction of nitrogen and phosphorus for fertilizer pellets (struvite) 6. Hydro-electric energy recovery <p>It was highlighted that some of these options – particularly biogas and struvite – are scale dependent, and need a population larger than the CVRD to be technically and economically practical. However, the evolution of new technologies may change this. It was noted in discussion that hydro-electric energy recovery is unlikely to be cost effective, given that there is no significant head drop available at the plant.</p> <p>There was a question about the refining of bio-plastics from the wastewater. Paul Nash explained that this is being done in Europe, but only at plants that serve more than two million people. The processes can only be done at very large scale.</p> <p>Noting these caveats, the TACPAC approved this long list to go to public review</p>	Al Gibb, WSP
	Lunch Break	
4.10	<p>Long List Options – Conveyance</p> <p>Walt presented the conceptual conveyance options, detailed in Attachment 5 “Long List Options – Conveyance”, which fall into six broad categories.</p> <ol style="list-style-type: none"> 1. Estuary alignment – a new forcemain within or along the Comox Estuary foreshore, but then over Lazo hill to the Comox Valley Water Pollution Control Centre (CVWPCC). There are three variations in this category. 2. Overland alignments through Comox, and away from the estuary. These involve high pressure upgrades to the pump stations. There are two variations in this category. 3. Tunneling alignments, using “micro-tunneling” to go through the hills instead of over them. The intention is to minimize pumping head and avoid high pressure upgrades. There are three variations in this category. 4. North side concept – a new forcemain from Courtenay around the north side of Comox to the CVWPCC, and a new, separate forcemain from Comox/Jane Place to the CVWPCC. 5. Decentralized treatment – a new treatment plant in Courtenay and conveyance of the treated effluent to the Cape Lazo outfall. Conveyance routes are similar to options one, two, and four. 6. Deep marine concept – all new subsea forcemain located on the sea floor in the deepest part of the estuary, continuing out into deep water in the Salish Sea to avoid Willemar Bluffs, and coming back onshore to the CVWPCC. 	Walt Bayless, WSP

ITEM	DESCRIPTION	OWNER
4.10	<p>After explaining all the options, Walt stated that WSP's view is that option five is not cost effective due to the cost of building a new treatment plant, conveyance of the treated effluent, and the increased costs of operating two treatment plants.</p> <p>WSP's view is also that option six, the deep marine concept, is not technically viable due to the seafloor topography.</p> <p>WSP recommend that conveyance options five and six be dropped from the long list and not be studied further.</p> <p>Noting WSP's recommendation, the TACPAC approved this list, as presented, to go to public review, with explanation given to the public as to why options five and six are being dropped.</p>	Walt Bayless, WSP
4.11	<p>Preview of TACPAC #5, Friday, February 8, 2019</p> <p>A quick look at the purpose of meeting # 5;</p> <ul style="list-style-type: none"> a) To review public feedback on the long list options. b) Consider any additions or deletions and finalize the list. c) Recommendation of long list(s) to Comox Valley Sewerage Commission. 	Paul Nash
4.12	<p>Round Table Discussion.</p> <p>In the interests of time, there was no round table discussion</p>	
4.13	Adjournment – the meeting was adjourned at 2:55pm	

Attachments

1. Finalized Goals and Evaluation – Treatment
2. Finalized Goals and Evaluation – Resource Recovery
3. Long List Options – Treatment
4. Long List Options – Resource Recovery
5. Long List Options – Conveyance

Attachment 1: Treatment Goals and Evaluation

Treatment- Consolidation of Goals

Category	Grouping (edited)	PAC %	TAC %	Proposed Revised Goals	Public %	Final% as voted	Description, Comment
Technical	Plan for future – climate change			Resilience to External Factors	10	10	Includes climate change, natural disasters, seasonal impact
	Minimize risk of failures/spills	15	14	Resilience to Internal Factors	0	15	Operational simplicity and reliability, minimize risk of failure/spills
				Maximize use of existing infrastructure and road ROW's	5	0	This is not an end goal in itself, but an action to achieve other goals, such as reducing capital cost and project complexity
				Flexibility to accommodate future changes	9	5	Technical Consultants to elaborate
	Plan for future - population	17	16	Provides asset life and capacity beyond the planning horizon	16	0	Some elements may have very long design lives, but they must all meet the minimum design horizon. Any benefits beyond that are captured in the life cycle cost analysis
Technical Total		32%	30%		40%	30%	
Affordability	Minimize lifecycle costs	12	17	Minimize Lifecycle Cost and Asset Management Needs	6	30	Net present value of capital, operational and replacement cost, period is to the planning horizon
	Asset management	1	11			0	Included in life cycle cost as "replacement"
	Allocation of costs between existing and new users	3	8			0	This applies regardless of the treatment solution being implemented, and is part of the financial analysis.
	Maximum opportunity for grants	10	8	Attract Grant Funding	8	0	This is an action to offset capital cost, and is included in the life-cycle cost analysis. But the LWMP guideline require that it be calculated and presented separately, for a grant and “no-grant” scenario.
Affordability Total		26%	44%		14%	30%	
Economic Benefits		0	0			0	External economic benefits are not a focus for treatment
Economic Total		0%	0%		0%	0%	
Environment Benefits	Public awareness about what" not to flush"	0	0				This is a management/education issue, regardless of treatment Options
	Maximize effluent quality	20	13	Quality of treatment exceeds current standards	9	15	Degree to which BOD and TSS removal is better than regulatory standards
				Remove artificial contaminants (e.g. pharmaceuticals, microplastics)	8	5	Neither of these are regulated I effluent, and are not likely to be for at least another decade, but can be removed with available technology
				Mitigate climate change impacts (Energy, and GHG's)	8	5	Most energy reductions reduce GHG's, but not all GHG reductions reduce energy.
Environment Total		20%	13%		25%	25%	

Social Benefit	Reduce odour from plant	12	9	Minimize noise and odour in long term operation	8	0	Elevated to a mandatory requirement for all treatment options to include odour control to industry best practice
	Maximize opportunity for partnership	4	2	Partnership Opportunity	7	0	If partnerships are desired, they can be pursued independently of Options, but Proponents can also be encouraged to bring them forward
	Maximize opportunity for community amenity at plant	6	2	Maximize opportunity for community amenity at/around plant	6	0	Could be education or even quasi-recreation facilities, such as an external viewpoint over the plant.
	General social benefit			Specifics intentionally left undefined		15	The TACPAC replaced the partnership and community amenity goals with this one general goal, which could include any type of social benefit
Social Total		22%	13%		21%	15%	
Grand Total		100%	100%		100%	100%	

Final Goal and Evaluation Matrix – Treatment

Category	Goals	Weighting%
Technical	Resilience to External Factors	10
	Resilience to Internal Factors	15
	Flexibility to accommodate future changes	5
Technical Total		30%
Affordability	Minimize Lifecycle Cost	30
Affordability Total		30%
Economic Benefits	None	0
Economic Total		0%
Environmental Benefits	Quality of treatment exceeds current standards	15
	Remove artificial contaminants	5
	Mitigate climate change impacts	5
Environmental Total		25%
Social Benefit	General social benefit	15
Social Total		15%
Grand Total		100%

Attachment 2: Resource Recovery Goals

Resource Recovery – Consolidation of Goals

Category	Grouping (edited)	PAC %	TAC %	Proposed Revised Goals	Public %	Final% as voted	Description, Comment
Technical	Like Cranbrook, focus on technologies that are reliable	10	3	Commercially available technology	8	10	Want to avoid "inventing" something, but some RR technologies may still require pilot testing
	Meet provincial regulatory requirements	1	13				A pass/fail criteria as far as RR is concerned
	Anticipate future demand for recovered resources	3	1	Anticipate future demand for resources	8	5	Part of the "market study" for the RR opportunities
				Resiliency to internal factors		5	Operational simplicity and reliability, minimize risk of failure/spills
				Improve performance of treatment plant	9	5	Some reclaimed water treatment processes may help achieve other performance goals
Technical Total		14%	17%		25%	25%	
Affordability	to be cost neutral as a minimum	2	10	Maximize revenue or cost offset	8	0	Revenue to be incorporated as a specific line item of life cycle cost
	Use life cycle costs/NPV	22	27	Minimize life cycle cost	8	30	Net present value of capital, operational and replacement cost, and revenue, period is to the planning horizon
	Grant Funding eligibility	19	13	Potential for Grant Funding	9	10	Will require a detailed assessment of current and likely grant opportunities, to then assess Options
	Build capacity for options and partnerships to recover costs in future	28	15	Potential for external partnerships	8	10	The partner is more than just a pay-for product customer, they may contribute to the capital cost of the project.
Affordability Total		71%	65%		33%	50%	
Economic Benefits		0	0	Grow the local economy	7	5	Recognition that use of reclaimed water for agriculture can grow the local economy
Economic Total		0%	0%		7%	5%	
Environment Benefits	Reduce GHG/carbon neutrality	14	8	Energy efficiency and GHG reductions	9	5	Most energy reductions reduce GHG's, but not all GHG reductions reduce energy.
	Habitat Restoration or enhancement			Habitat restoration or enhancement	9	5	Use of reclaimed water for this purpose
				Displacement of potable water		5	Only achievable where there is specific displacement of existing uses
Environment Total		14%	8%		18%	15%	

Social Benefit	Public health issues considered for any reclaimed water	1	10		10		Is a specification that any reclaimed water option must meet, so not an evaluation criteria
				Ability to maintain irrigation of critical public infrastructure during drought conditions	7	5	A definite community benefit if it prevents damage to playing fields, perennial gardens etc
Social Total		1%	10%		17%	5%	
Grand Total		100%	100%		100%	100%	

Final Goal and Evaluation Matrix – Resource Recovery

Category	Goals	Weighting%
Technical	Commercially available technology	10
	Resiliency to internal factors	5
	Anticipate future demand for resources	5
	Improve performance of treatment plant	5
Technical Total		25
Affordability	Maximize revenue or cost offset	10
	Minimize life cycle cost	20
	Potential for Grant Funding	10
	Potential for external partnerships	10
Affordability Total		50
Economic Benefits	Grow the local economy	5
Economic Total		5
Environmental Benefits	Energy efficiency and GHG reductions	5
	Habitat restoration or enhancement	5
	Displacement of potable water	5
Environmental Total		15
Social Benefit	Ability to maintain irrigation of critical public facilities during drought conditions.	5
Social Total		5
Grand Total		100%

PRELIMINARY WASTEWATER TREATMENT LONG LIST OPTIONS
FOR DISCUSSION ONLY

COMOX VALLEY REGIONAL DISTRICT LIQUID WASTE MANAGEMENT PLAN

JANUARY 18, 2019



WASTEWATER TREATMENT OPTIONS

Overview

The wastewater treatment options presented here are based on the level of treatment to be implemented (i.e., the effluent quality that will be produced). This is the level of analysis that is appropriate for a Liquid Waste Management Plan (LWMP). More detailed engineering analysis is then undertaken in feasibility and predesign studies (normally following completion of the LWMP), to select and size the treatment processes that will be used to achieve the recommended effluent standards.

Other aspects of wastewater treatment included in LWMPs typically include identification of wastewater treatment service areas (present and future), and the number and location of treatment facilities. For the CVRD LWMP, the study area is based on the service areas for the existing Comox Valley Water Pollution Control Centre (CVWPCC), namely the Town of Comox, the City of Courtenay, and Canadian Forces Base Comox.

The CVWPCC is a secondary treatment facility located at 445 Brent Road in Comox, that is owned and operated by the Comox Valley Regional District (CVRD). Treated wastewater is discharged from the CVWPCC to the Strait of Georgia through a submerged outfall pipe with diffuser that extends 2,825 metres from shore near Cape Lazo, with the outfall terminus 60 metres below the water surface at low tide.

Location and Number of Treatment Facilities

In some LWMPs, sites for one or more new treatment facilities must be selected. Identifying one or more locations for a new wastewater treatment plant is a challenging undertaking. One of the challenges is to identify a suitable location for a new outfall discharge; among other things, this requires a right-of-way for the land section of the outfall from the treatment plant site to the water's edge, where the marine (submerged) section of the outfall pipe begins. The discharge itself is preferably located far from shore in deep water, so that swimming beaches and shellfish beds are not impacted. It is often practical to begin with identification of one or more feasible locations for an outfall discharge, and then identify potential sites for treatment facilities that are within a reasonable distance of the outfall location, and where a feasible route for the land section of the outfall can be developed. Environmental Impact Studies of the receiving environment are required when selecting the location of the outfall discharge; these studies typically consider receiving water ecology and use (marine flora and fauna, recreational use, etc.), local currents, prevailing winds, expected migration and dilution of the discharge plume, etc. The environmental impacts of construction (e.g. in the intertidal zone) must also be evaluated and mitigated.

The costs and benefits of a single wastewater treatment plant versus several smaller plants located throughout a service area (sometimes referred to as “distributed treatment”) have been extensively evaluated in British Columbia at a number of locations (e.g., the Greater Victoria area, North Vancouver, and a number of smaller communities such as Powell River). In general, the evaluations have resulted in selection of the single treatment plant approach, due to the significantly higher costs associated with construction and operation of multiple treatment facilities, and the difficulties associated with finding multiple locations for treatment plants and outfall discharges that are acceptable to local residents and that meet all of the technical and regulatory requirements.

As mentioned earlier, a single existing wastewater treatment facility (located at Brent Road near Cape Lazo) and outfall serves the communities of Courtenay and Comox as well as CFB Comox. The existing treatment plant site has adequate unused area for major expansion of the facilities in future as required. Attempting to locate a site for a second treatment facility within the existing service area would be very difficult, partly due to the challenges associated with finding a suitable location for a second outfall to deep water. In this case, there is no apparent driver for constructing additional

treatment plants and outfalls to serve the Comox/Courtenay/CFB area, and consequently this does not form part of the wastewater treatment options analysis.

It is possible that a location may be identified within the service area where there is potential for significant use of reclaimed water (e.g., for irrigation or other purposes); in this case, it may be feasible to locate a water reclamation facility near the user(s) of reclaimed water, and direct a portion of the untreated wastewater to that location, thereby reducing the wastewater load to the CVWPCC at Brent Road. This possibility will be explored in the Resource Recovery part of the LWMP.

Costs of Wastewater Treatment

The costs of constructing wastewater treatment facilities have risen dramatically in recent years. Capital costs for constructing new facilities can sometimes be partially offset by grants from senior government. However, ongoing operating and maintenance (O&M) and replacement (asset management) costs are entirely borne by the local government. In general, the higher the effluent standards, the greater the capital and ongoing O&M costs of treatment. In general, it is more economical to have a single treatment plant, unless the service area is relatively large with development concentrated in nodes that are far apart.

For the purposes of the LWMP, it is important to carefully consider the capital and O&M costs of wastewater treatment, since these costs are borne by taxpayers. Therefore, it is essential to balance the desire for implementing the highest treatment standards possible with the financial resources available to the community; this particularly applies to O&M costs, which are not eligible for grant funding and fall entirely on local taxpayers.

Emerging Contaminants

Emerging Contaminants have been defined as “*Constituents, which have been identified in water, that are considered for regulatory action pending the development of additional information on health and environmental impacts*” (from Metcalf & Eddy, 2014). Examples of Emerging Contaminants may include pharmaceutically active compounds (e.g., antibiotics), endocrine disrupting compounds that affect natural hormones in animals and humans, personal care products, and disinfection byproducts. Many of these products are known to be potentially harmful, but much remains to be learned about their behavior in the environment, and potential methods of treatment. As it stands, domestic wastewater treatment plants are not specifically designed to remove this type of contaminant, although some may be degraded or transformed in the treatment processes, and some may be incorporated into the waste solids.

According to Water Research Foundation Fact Sheet (2016): *Detecting a compound in water does not mean that adverse health effects will occur or are likely. In general, no relationships have been established between pharmaceuticals in water at environmental levels and adverse effects in human. Strategies for preventing endocrine disrupting compounds (EDCs) and pharmaceuticals and personal care products (PPCPs) from entering water supplies include improved wastewater treatment and other source water protection strategies. Once EDCs and PPCPs have entered a utility’s water supply, no single treatment process can remove them all due to their wide range of physicochemical properties. In general, both conventional and advanced water treatment systems have the capability to reduce the concentration of EDCs and PPCPs in water to some degree, though removal by conventional treatment processes is limited. Advanced treatment processes such as nanofiltration, reverse osmosis, and activated carbon are more effective but can be expensive and energy-intensive.*

Metals may also be a concern where they accumulate to toxic concentrations. Domestic wastewater treatment plants are not designed to remove metals from the wastewater stream. However, it has been shown that many of the so-called “heavy metals” tend to associate with solid particles in water. Thus removal of suspended solids from wastewater will result in at least partial removal of these associated metals as well (the solids must also be dealt with but are much less in volume than the wastewater stream).

Microplastics have recently been identified as a concern as well. According to Water Research Foundation (2018): *Studies have found that WWTPs removed between 90-99% of microplastics (<0.5 cm), with most being captured in the sludge. However, when dealing with large volumes of effluent, even a small concentration of microplastics being released can result in a significant contribution to the environment. Current research indicates that the microplastics in the environment has not caused adverse effects on aquatic wildlife as opposed to macroplastics, which can cause physical harm to fish-eating birds, aquatic mammals, reptiles and fish. If it is shown that microplastics should be removed from effluent, filtration is likely the best treatment, though more research on removal of microplastics, particularly for sizes smaller than 300 μm , is needed.*

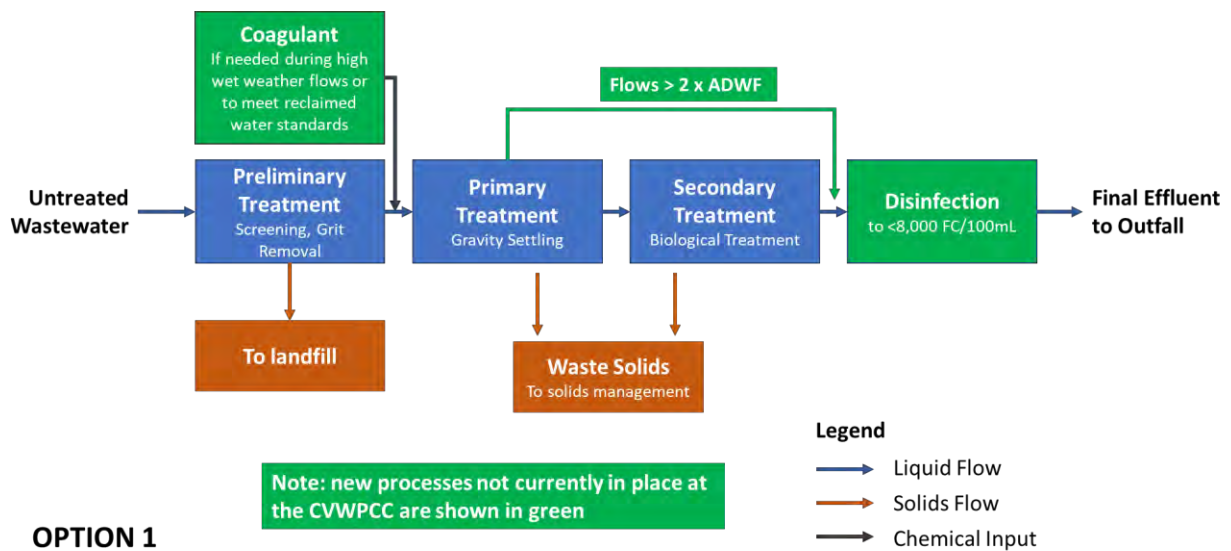
Options for Treatment

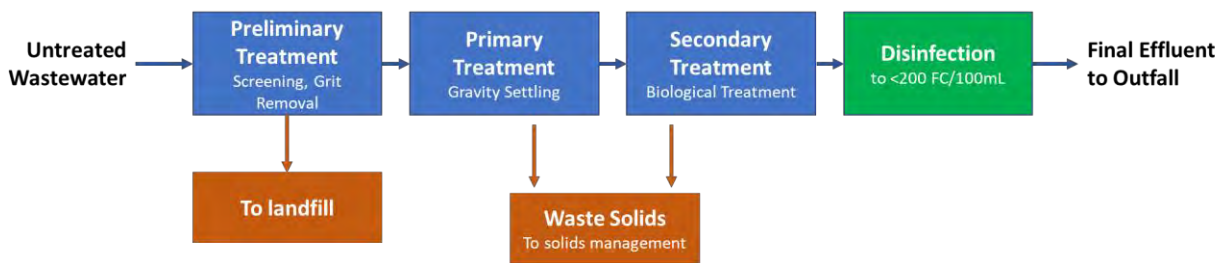
For the purposes of Stage 1 of the LWMP, four options for treatment were identified for discussion with the TAC/PAC. The four options are based on the effluent quality to be produced as stated at the beginning of this discussion, and are presented as concepts for planning of future expansions and/or upgrades. Option 1 would be to meet the provincial and federal discharge standards; these standards have been developed to protect the receiving environment, and the provincial regulation allows the regulating body to impose additional standards in specific cases where this is shown to be needed to protect the environment. Options 2, 3 and 4 are based on voluntarily enhancing effluent quality beyond what is required by the regulations. Options 1 through 4 are described on the following pages. Note that Option 2 describes the current configuration of the CVWPCC, with the addition of disinfection.

Long-List Option No. 1	Meet Regulatory Discharge Standards
Description	<p>Option 1 would meet federal and provincial regulatory requirements for secondary treatment with discharge to open marine waters (the CVWPCC outfall extends 2,825 metres from shore at Cape Lazo into the Strait of Georgia and the discharge diffuser is 60 metres below water at low tide). As with the other options, an updated Environmental Impact Study (EIS) would be required to identify any additional treatment requirements that might be needed to address protection of the receiving environment according to provincial regulations. If the EIS did not identify any additional requirements beyond what is required to meet the secondary treatment discharge standards set out in the B.C. Municipal Wastewater Regulation (MWR) and the Canada Wastewater Systems Effluent Regulations (WSER), the following treatment and discharge standards would apply to Option 1:</p> <p>MWR</p> <p>Secondary treatment for flows up to two times average dry weather flow (2xADWF):</p> <ul style="list-style-type: none"> • 5-day Biochemical Oxygen Demand (BOD₅): max. day 45 mg/L • total suspended solids (TSS): max. day 45 mg/L • pH 6 to 9 • ammonia concentration does not cause chronic toxicity at the edge of the initial dilution zone (IDZ) <p>Primary treatment for flows in excess of 2xADWF (interim):</p> <ul style="list-style-type: none"> • 5-day Biochemical Oxygen Demand (BOD₅): max. day 130 mg/L • total suspended solids (TSS): max. day 130 mg/L • note that if flows are > 2xADWF during a storm or equivalent snowmelt event with a less than 5-year return period, a discharger must (have a liquid waste management plan or specific study and implement the plan's or study's measures. <p>WSER</p> <ul style="list-style-type: none"> • 5-day Biochemical Oxygen Demand (BOD₅): monthly avg. not to exceed 25 mg/L • total suspended solids (TSS): monthly avg. not to exceed 25 mg/L • total residual chlorine < 0.02 mg/L • un-ionized ammonia < 1.25 mg N/L at 15°C • note that the WSER standards apply to the combined discharge – this may require chemical addition to enhance primary treatment or other measures to ensure that the secondary treatment bypass does not cause the combined effluent to exceed the WSER discharge standards for BOD₅ and TSS <p>An EIS was completed for the CVWPCC discharge in 2010; this showed that disinfection of the effluent to achieve a fecal coliform count of less than 8000/100 mL in the CVWPCC discharge would be required to protect local shellfish resources outside the initial dilution zone (IDZ). Disinfection to this standard was assumed for Option 1.</p> <p>Note that plant data from 2013 to 2017 show that the number of days when flows exceeded 2xADWF ranged from 0 days (2013) to 31 days (2015) – over the 5 years of record, flow exceeded 2xADWF on a total of 58 days (the total volume of flow greater than 2xADWF represented only about 1% of the total plant flow over that period)</p>
Advantages	Disadvantages
<ul style="list-style-type: none"> • meets regulatory requirements for discharge to open marine waters • avoids the cost of subjecting relatively infrequent high wet weather flows to secondary treatment 	<ul style="list-style-type: none"> • flows in excess of 2xADWF would bypass secondary treatment and so would not receive biological treatment

- coagulating chemicals can be added to enhance primary treatment if needed when flows exceed 2xADWF
- includes disinfection to protect shellfish resources outside the IDZ

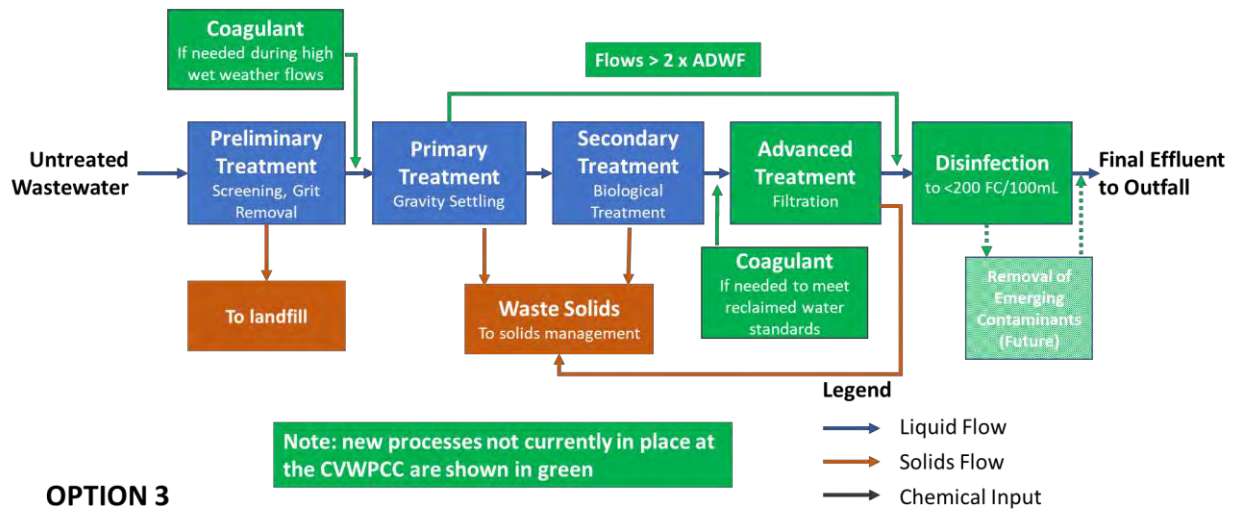
Process Schematic for Option 1



Long-List Option No. 2	Provide Secondary Treatment for all Flows			
Description	<p>Option 2 is similar to Option 1, except that there would be no wet weather bypass of flows in excess of 2xADWF around secondary treatment. For Option 2, the entire plant influent flow would pass through secondary treatment (this is the current configuration of the CVWPCC). As with the other options, an updated Environmental Impact Study (EIS) would be required to identify any additional treatment requirements that might be needed to address protection of the receiving environment. For Option 2, it was assumed that the disinfection process would be designed to achieve recreational standards (i.e. 200 FC/100 mL) in the undiluted effluent. The following treatment and discharge standards would apply to Option 2.</p> <p>Secondary treatment for the entire plant flow:</p> <ul style="list-style-type: none"> • 5-day Biochemical Oxygen Demand (BOD₅): max. day 45 mg/L, monthly avg. not to exceed 25 mg/L • total suspended solids (TSS): max. day 45 mg/L, monthly avg. not to exceed 25 mg/L • pH 6 to 9 • ammonia concentration does not cause chronic toxicity at the edge of the initial dilution zone (IDZ) • total residual chlorine < 0.02 mg/L • un-ionized ammonia < 1.25 mg N/L at 15°C • disinfection - fecal coliforms not to exceed 200 FC/1900 mL 			
	<table border="1"> <thead> <tr> <th>Advantages</th><th>Disadvantages</th></tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> • exceeds regulatory requirements for discharge to open marine waters • entire plant flow is subjected to secondary (biological) treatment • includes enhanced disinfection to protect shellfish resources • effluent meets standards for reclaimed water use for lower exposure potential </td><td> <ul style="list-style-type: none"> • secondary treatment must be sized accommodate all wet weather flows, increasing capital and operating costs compared to Option 1 </td></tr> </tbody> </table>	Advantages	Disadvantages	<ul style="list-style-type: none"> • exceeds regulatory requirements for discharge to open marine waters • entire plant flow is subjected to secondary (biological) treatment • includes enhanced disinfection to protect shellfish resources • effluent meets standards for reclaimed water use for lower exposure potential
Advantages	Disadvantages			
<ul style="list-style-type: none"> • exceeds regulatory requirements for discharge to open marine waters • entire plant flow is subjected to secondary (biological) treatment • includes enhanced disinfection to protect shellfish resources • effluent meets standards for reclaimed water use for lower exposure potential 	<ul style="list-style-type: none"> • secondary treatment must be sized accommodate all wet weather flows, increasing capital and operating costs compared to Option 1 			
<p>Process Schematic for Option 2</p>  <pre> graph LR A[Untreated Wastewater] -- Liquid Flow --> B[Preliminary Treatment
Screening, Grit Removal] B -- Liquid Flow --> C[Primary Treatment
Gravity Settling] C -- Liquid Flow --> D[Secondary Treatment
Biological Treatment] D -- Liquid Flow --> E[Disinfection
to <200 FC/100mL] E -- Liquid Flow --> F[Final Effluent to Outfall] B -- Solids Flow --> G[To landfill] C -- Solids Flow --> H[Waste Solids
To solids management] D -- Solids Flow --> H </pre> <p>OPTION 2</p> <p>Note: new processes not currently in place at the CVWPCC are shown in green</p> <p>Legend</p> <ul style="list-style-type: none"> → Liquid Flow → Solids Flow → Chemical Input 				

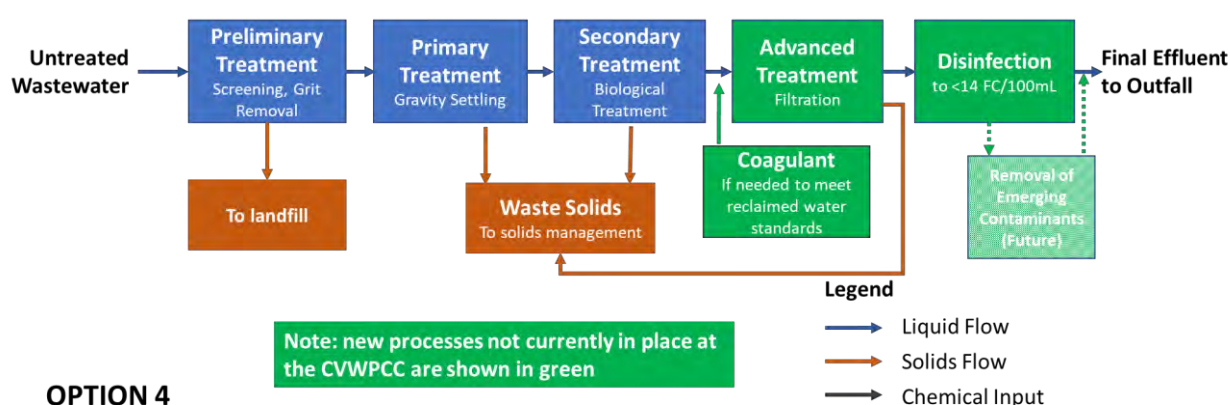
Long-List Option No. 3	Advanced Treatment for up to 2xADWF	
Description	<p>Option 3 would incorporate the same preliminary, primary and secondary treatment processes as Option 2. In addition, Option 3 would include advanced filtration of the secondary treated effluent for flows up to two times the average dry weather flow (2xADWF) to enhance removal of suspended solids. As with the other options, an updated Environmental Impact Study (EIS) would be required to identify any additional treatment requirements that might be needed to address protection of the receiving environment. For Option 3, it was assumed that the disinfection process would be designed to achieve standards for lower exposure potential (i.e. 200 FC/100 mL) in the undiluted (combined) effluent. The following treatment and discharge standards would apply to Option 3.</p> <p>Advanced treatment (filtration) for flows up to 2xADWF:</p> <ul style="list-style-type: none"> • 5-day Biochemical Oxygen Demand (BOD₅): max. day 10 mg/L, avg. 5 mg/L • total suspended solids (TSS): max. day 10 mg/L, avg. 5 mg/L • pH 6 to 9 • ammonia concentration does not cause chronic toxicity at the edge of the initial dilution zone (IDZ) • total residual chlorine < 0.02 mg/L • un-ionized ammonia < 1.25 mg N/L at 15°C • future addition of processes that are proven for removal of emerging contaminants at municipal wastewater plants <p>Primary treatment for flows in excess of 2xADWF (interim):</p> <ul style="list-style-type: none"> • 5-day Biochemical Oxygen Demand (BOD₅): max. day 130 mg/L • total suspended solids (TSS): max. day 130 mg/L • note that if flows are > 2xADWF during a storm or equivalent snowmelt event with a less than 5-year return period, a discharger must (have a liquid waste management plan or specific study and implement the plan's or study's measures. <p>Disinfection of combined effluent - fecal coliforms not to exceed 200 FC/100 mL</p> <p>note that plant data from 2013 to 2017 show that the number of days when flows exceeded 2xADWF ranged from 0 days (2013) to 31 days (2015) – over the 5 years of record, flow exceeded 2xADWF on a total of 58 days (the total volume of flow greater than 2xADWF represented only about 1% of the total plant flow over that period)</p>	
	<p>Advantages</p> <ul style="list-style-type: none"> • exceeds regulatory requirements for discharge to open marine waters • majority of plant flow is subjected to advanced treatment • includes enhanced disinfection to protect shellfish resources • combined effluent meets standards for reclaimed water use for lower exposure potential • ability to increase coagulation and disinfection to meet standards for moderate or greater exposure potential 	<p>Disadvantages</p> <ul style="list-style-type: none"> • higher capital and operating costs than Options 1 and 2 • flows > 2xADWF do not pass through advanced treatment • higher operational costs if treating reclaimed water to greater exposure potential standard

Process Schematic for Option 3



Long-List Option No. 4	Advanced Treatment for all Flows			
Description	<p>Option 4 would incorporate the same preliminary, primary, secondary, and advanced treatment processes as Option 3. However, for Option 4, the entire plant influent flow would pass through advanced filtration to enhance removal of suspended solids. As with the other options, an updated Environmental Impact Study (EIS) would be required to identify any additional treatment requirements that might be needed to address protection of the receiving environment. For Option 4, it was assumed that the disinfection process would be designed to achieve shellfish standards (i.e. 14 FC/100 mL) in the undiluted effluent, and disinfection could be increased to meet the reclaimed water standards for greater exposure potential (<1FC<100mL) if desired. The following treatment and discharge standards would apply to Option 4.</p> <p>Advanced treatment for the entire plant flow:</p> <ul style="list-style-type: none"> • 5-day Biochemical Oxygen Demand (BOD₅): max. day 10 mg/L, avg. 5 mg/L • total suspended solids (TSS): max. day 10 mg/L, avg. 5 mg/L • pH 6 to 9 • ammonia concentration does not cause chronic toxicity at the edge of the initial dilution zone (IDZ) • total residual chlorine < 0.02 mg/L • un-ionized ammonia < 1.25 mg N/L at 15°C • disinfection - fecal coliforms not to exceed 14 FC/100 mL • future addition of processes that are proven for removal of emerging contaminants at municipal wastewater plants 			
	<table border="1"> <thead> <tr> <th>Advantages</th><th>Disadvantages</th></tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> • exceeds regulatory requirements for discharge to open marine waters • entire plant flow is subjected to advanced treatment • includes enhanced disinfection to protect shellfish resources • effluent meets standards for reclaimed water use for greater exposure potential </td><td> <ul style="list-style-type: none"> • higher capital and operating costs than Options 1, 2 and 3 • higher operational costs if treating reclaimed water to greater exposure potential standard </td></tr> </tbody> </table>	Advantages	Disadvantages	<ul style="list-style-type: none"> • exceeds regulatory requirements for discharge to open marine waters • entire plant flow is subjected to advanced treatment • includes enhanced disinfection to protect shellfish resources • effluent meets standards for reclaimed water use for greater exposure potential
Advantages	Disadvantages			
<ul style="list-style-type: none"> • exceeds regulatory requirements for discharge to open marine waters • entire plant flow is subjected to advanced treatment • includes enhanced disinfection to protect shellfish resources • effluent meets standards for reclaimed water use for greater exposure potential 	<ul style="list-style-type: none"> • higher capital and operating costs than Options 1, 2 and 3 • higher operational costs if treating reclaimed water to greater exposure potential standard 			

Process Schematic for Option 4



PRELIMINARY RESOURCE RECOVERY LONG LIST OPTIONS
FOR DISCUSSION ONLY

COMOX VALLEY REGIONAL DISTRICT LIQUID WASTE MANAGEMENT PLAN

JANUARY 18, 2019



RESOURCE RECOVERY OPTIONS

Overview

In recent years, there has been an increasing emphasis on recovery of resources that can be extracted from the wastewater stream or that can be produced during treatment. In British Columbia, the success of applications for grant funding assistance from senior government for design and construction of wastewater conveyance and treatment facilities often depend in part upon inclusion of resource recovery, which may include the following:

- use of reclaimed effluent for irrigation or other purposes;
- installation of heat exchangers in the wastewater stream for heating and cooling of buildings;
- production of biogas (methane) through treatment of waste solids, which can be used in combustion facilities designed for cogeneration of electrical power and heat or in boilers for hot water heating systems;
- use of digested waste solids as a natural solid conditioner/fertilizer, and/or use of waste solids as a feedstock to produce compost for household or commercial use;
- production of mineral pellets rich in nitrogen and phosphorus (struvite) for use as fertilizer; and
- use of hydroelectric turbines to generate electrical power from the outfall discharge.

The feasibility of the various resource recovery option must be carefully evaluated. The design and installation of resource recovery facilities can add substantially to the capital and operating costs of wastewater treatment facilities. If there are no potential customers for the recovered resources or if those customers are located far from the recovery location, investment in resource recovery may be inadvisable. Each situation must be evaluated on its own merits, beginning with identification of potential uses and users of the reclaimed resources. Brief discussions of each resource recovery option in the context of the CVRD LWMP are presented below.

Reclaimed Water

Some of the wastewater treatment options (namely Options 3 and 4) are designed to produce effluent quality that meets the requirements for use of reclaimed water. For Options 1 and 2, if one or more uses for reclaimed water are identified, the appropriate amount of secondary treated effluent can be diverted to a dedicated filtration and disinfection system to produce reclaimed water. As set out in the Municipal Wastewater regulation, it is required to maintain a chlorine residual in the reclaimed water at the point of use *unless the addition of chlorine will detrimentally impact flora or fauna, or at the point of use fecal coliforms remain below levels set in municipal effluent quality requirements for reclaimed water, and users are adequately informed regarding appropriate use of the reclaimed water.* Disinfection of reclaimed water is normally accomplished through the addition of sodium hypochlorite (bleach).

Production of reclaimed water adds to the cost of treatment, so it is important to identify the potential market for this resource. It is normally cost effective to use a portion of the treated effluent for non-potable applications within the treatment plant itself (e.g., for equipment sprays, washdown water, landscape irrigation, etc.). This typically represents a relatively small portion of the total wastewater flow, but it does offset use of potable water at the plant. A small amount of reclaimed effluent is currently used at the CVWPCC for washdown in enclosed areas. Opportunities for expanding use of reclaimed water within the plant should be considered during design of future upgrades.

Offsite applications may represent opportunities for use of larger amounts of reclaimed water (irrigation, industrial use, or stream and wetlands augmentation). The economics of offsite use depend heavily on the distance from the reclaimed water production facility to the user. Other factors include the seasonal pattern of demand for water, the cost of alternative water sources, and the water quality requirements of the potential user.

In cases where a significant potential user of reclaimed water has been identified but the distance between the main wastewater treatment plant and the user makes the project unfeasible for economic reasons, it may be possible to locate a relatively small water reclamation plant near the user and divert some of the untreated wastewater to that location for treatment and use. The feasibility of this will depend on the amount of reclaimed water to be produced and other local factors.

Heat Recovery

Extraction of heat from the wastewater stream at pumping stations and treatment facilities for space heating of buildings is becoming more common (the same system can also be used for cooling in summer). As with reclaimed water, heat recovery for use onsite at wastewater treatment facilities is generally the most feasible from a cost standpoint. Use of this type of system can be considered for incorporation into future upgrades at the CVWPCC.

If a potential user or users of heat is located near the pumping station or wastewater treatment plant, it may be feasible to expand the system to export heat to a nearby specific user (an example of such a system is in place at the Saanich Peninsula wastewater treatment plant, where heat is extracted from the effluent for use at an adjacent municipal swimming pool). In some cases, if there is high density development near the treatment plant, it may be feasible to install a District Heating System that circulates recovered heat through a heating loop for use by multiple customers. Due to the cost involved in installing a District Heating System, it is preferred if there is a year-round demand for the recovered heat (e.g., swimming pool, commercial laundry).

Production of Biogas

At larger wastewater treatment plants (service population of at least 50,000 to 100,000 people), it may prove economical to install anaerobic digestion facilities for treatment of waste solids. Anaerobic digesters reduce the amount of solids and produce methane gas that can be scrubbed and then used in cogeneration engines for production of combined heat and electrical power for use at the treatment plant, or the gas may be cleaned to the required standard for sale to the local natural gas utility. Anaerobic digestion is not currently practiced at the CVWPCC, and economies of scale mean that it would not be economical at present. This may be considered in future as a possible resource recovery strategy when the plant service population increases.

Beneficial Use of Treated Solids

Where digestion of waste solids is practiced at wastewater treatment plants, the solids product of digestion can be used as a solid conditioner and natural fertilizer, provided that it meets all of the required regulatory standards. Land spreading of treated biosolids to fertilize agricultural land, for reforestation, and for reclamation of disturbed sites is commonly practiced in British Columbia; however, this can be a costly undertaking, depending on the transportation distance to the biosolids use site and the topography of the site. In some cases there has been public resistance to land spreading of biosolids, due mainly to concerns over odours and the presence of potentially harmful substances.

The CVWPCC dewateres waste solids and transports the dewatered cake to a nearby site for use as a composting feedstock. This does not require digestion prior to composting, and it produces a product called SkyRocket that is much more marketable than dewatered biosolids. Production of Class A compost (SkyRocket) as practiced by the CVRD allows sale of the compost product to householders and commercial users. Proceeds from the sale of compost help to offset operating costs for solids handling. This is a sustainable strategy for beneficial use of treated wastewater solids as long as the local market can absorb the compost.

Extraction of Nitrogen and Phosphorus for Fertilizer Pellets

Depending on the treatment processes used, some wastewater treatment plants produce relatively low-volume side streams of high-strength wastewater that would normally be routed back to join the plant influent wastewater for treatment (e.g., water produced as a result of dewatering digested waste solids or waste biological solids from biological nutrient removal processes). For these high-strength side streams it is in some cases economical to extract nitrogen and phosphorus in a small treatment reactor that causes precipitation of a mineral called magnesium ammonium phosphate, commonly referred to as struvite. The struvite pellets can be marketed as a commercial fertilizer, offsetting the production and use of chemical fertilizers. This would not be feasible at the CVWPCC at present, due to economies of scale and the treatment processes currently in use; however, it could be considered for use in future.

Hydroelectric Turbine for Generation of Electrical Power at Outfall

In some cases where there is a large elevation difference between the treatment plant and the receiving water (i.e., the land section of the outfall has a steep downward slope), it is possible to install a small hydroelectric turbine to generate electricity. In our experience, this is not cost-effective at smaller plants, even if there is a large head loss available on the discharge to drive the turbine. In the case of the CVWPCC where there is minimal head loss under certain tidal conditions and effluent pumping is required, this type of energy recovery is unlikely to be a viable option.

Summary

In general, the most cost-effective resource recovery option for the LWMP is likely to be ongoing (and possibly expanded) use of reclaimed water for non-potable applications at the CVWPCC, and potentially for offsite use as well, if one or more users can be identified. In future when upgrades to the treatment facilities are undertaken, the addition of other resource recovery processes can be considered; this may include extraction of heat from the effluent for space heating (and cooling), struvite crystallization for fertilizer production, and eventually anaerobic digestion for generation of biogas when the service population grows to make this economically feasible or new technologies make this economically viable for smaller plants. Technologies for treatment of wastewater and waste solids are continually evolving, and research and development are ongoing. Design of future upgrades at the CVWPCC should be undertaken with this in mind, so that new facilities for resource recovery can be added to the plant without major disruptions or modifications to the existing facilities at that time.

PRELIMINARY CONVEYANCE LONG LIST OPTIONS
FOR DISCUSSION ONLY

COMOX VALLEY REGIONAL DISTRICT LIQUID WASTE MANAGEMENT PLAN

JANUARY 18, 2019



CONVEYANCE OPTIONS

Overview

The conveyance options presented here were brainstormed based on the location of the existing infrastructure, environmental and regulatory limitations, existing hydraulics of the Comox Valley Sewer System (CVSS) and typical hydraulic constraints associated with sewerage pumping. This is the level of analysis that is appropriate for Stage 1 of a Liquid Waste Management Plan (LWMP). More detailed engineering conceptual analysis such as a feasibility study is then undertaken for the shortlisted options as part of Stage 2 LWMP, to enable selection of the preferred option. After the LWMP, predesign studies are carried out to size and design the components of the infrastructure comprising the system that optimizes conveyance in the CVSS.

The CVSS serves the Town of Comox, the City of Courtenay, and the Canadian Forces Base Comox. It consists of the Comox Valley Water Pollution Control Centre (CVWPCC), six pump stations of varying size and criticality, and the associated piping network. Two sewer main systems discharge at the CVWPCC:

- North Side System consisting of
 - Hudson Trunk
 - Greenwood Trunk
 - CFB Comox gravity main
 - CFB Comox Pump Station
 - Colby Road Pump Station
- Foreshore System consisting of
 - Courtenay Pump Station
 - K'omoks First Nation Pump Station
 - Jane Place Pump Station
 - Foreshore forcemain along Comox Harbour
 - HMCS Quadra Pump Station and forcemain
 - Foreshore forcemain along Willemar Bluffs

Recent upgrades to the North Side system include the design and installation of the Hudson Trunk and Greenwood Trunk. These gravity sewer mains service the northwest corner of the CVSS and tie-in to the existing CFB Comox gravity sewer main.

The foreshore system is currently at capacity and the section of the sewer main along Willemar Bluffs requires abandonment/removal. The objective of the Conveyance Component of this LWMP is to identify the optimal relocation and upgrade plan for the entire Foreshore System for long-term planning purposes.

Existing Infrastructure Capacity and Condition

The existing Courtenay and Jane Place Pump Stations are approaching their hydraulic capacities and are also reaching the end of their useful life due to aging infrastructure.

As such, regardless of the conveyance option selected, there will likely be a need for renovation and capacity expansion at these two pump stations. However, if the selected alignment has significantly higher discharge pressures than at present, it will trigger a conversion of Courtenay and/or Jane Place PS to high pressure pumping stations. This brings additional design and cost considerations over and above renovation and capacity expansion, and may lead to a complete replacement pump station, rather than a renovation.

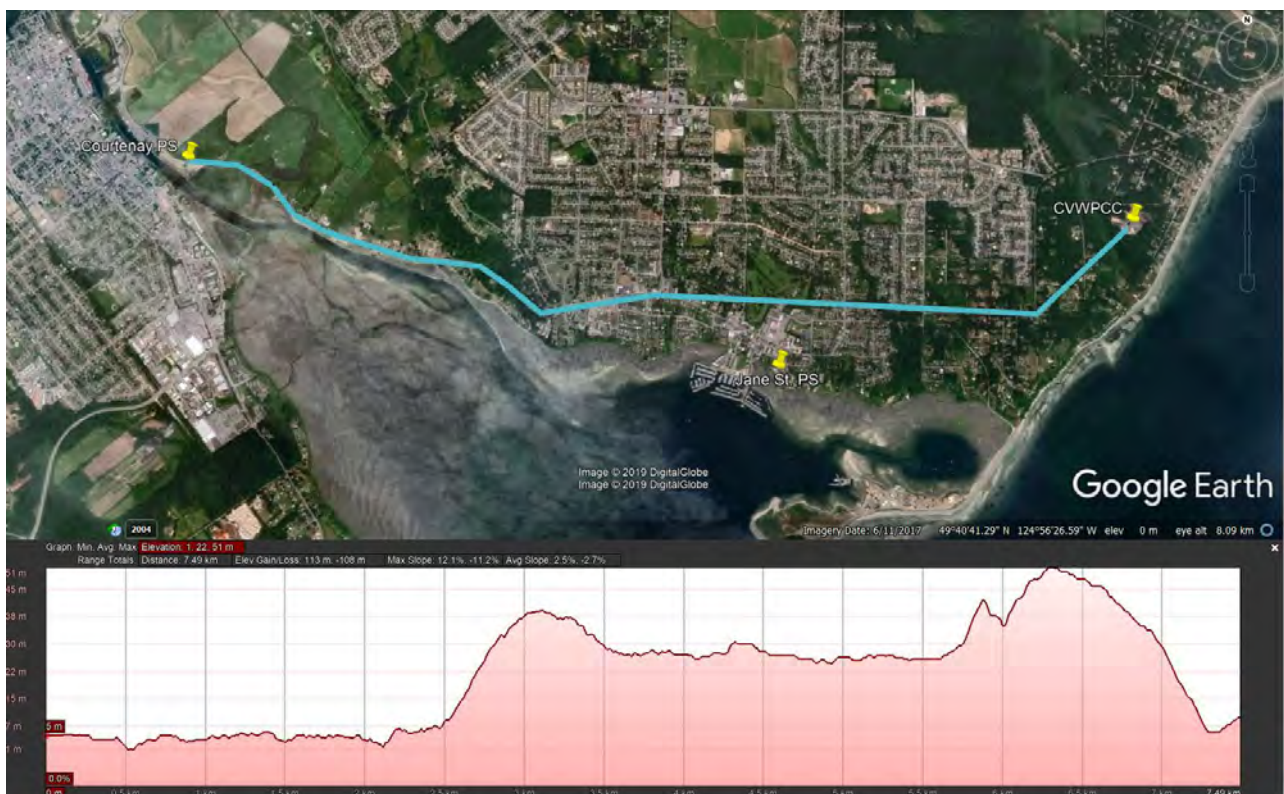
For the purpose of the LWMP, it is essential to consider the above, as even a low-pressure conveyance system will require some renovations and equipment upgrades to the existing pump stations, however these works would likely be achieved within the existing structure.

Options Boundaries and Limiting Factors

The location and number of pump stations depend on the location of the wastewater treatment plant and outfall, which are both fixed, and the hydraulics of the system, which is limited by the topography of the service area.

There are two high elevation sections within the Foreshore system of the CVSS; one at Comox Road, and one at Lazo Road, as shown on the figure below. For the purpose of the LWMP, any overland conveyance option will need to overcome the two high elevation locations within the CVSS. The overland routes are defined as any option not in the estuary or along the shoreline of the estuary. The hydraulics of the conveyance system will depend on the alignment selected. As such, multiple alignment alternatives are discussed within each option that may significantly vary in hydraulic requirements.

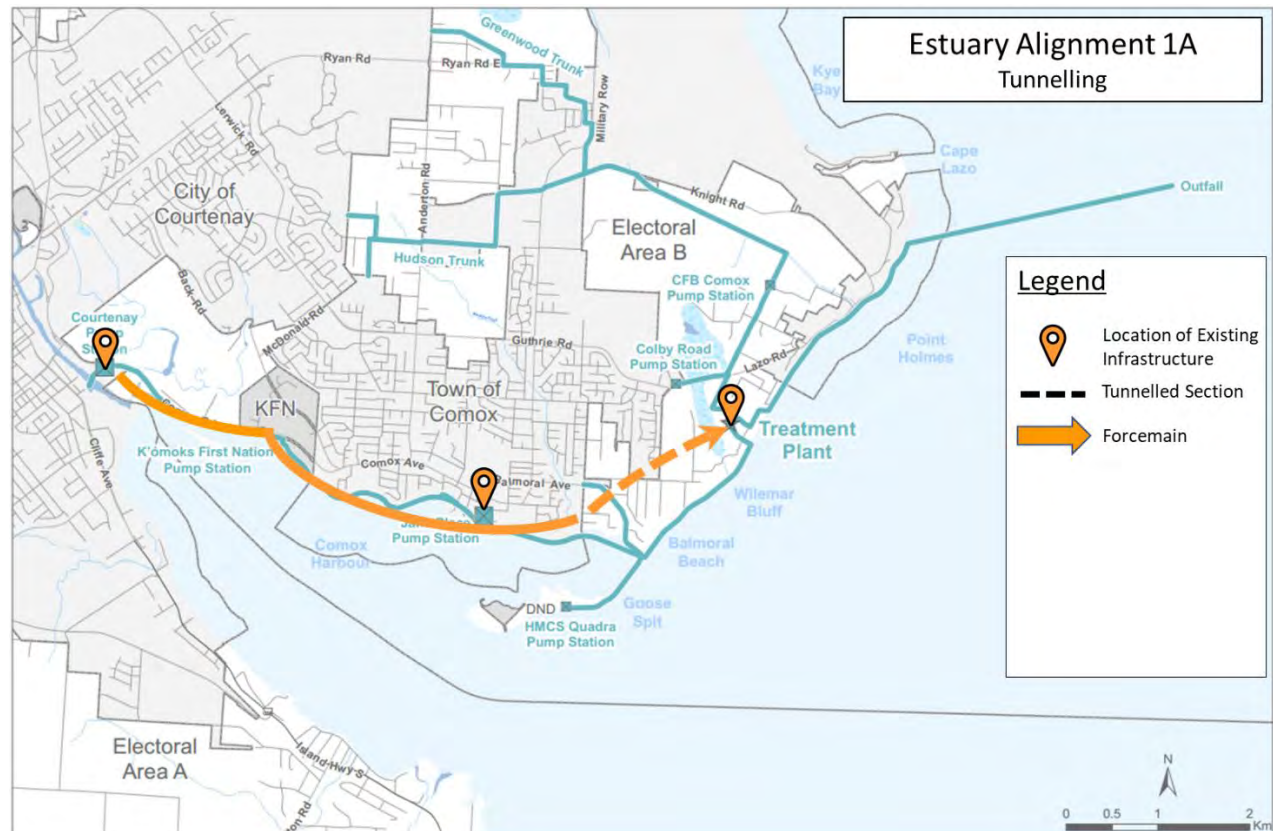
A sub-category of the overland routes involves the use of tunnels to convey the sewer through the hills rather than over them, and thus minimize the elevation of the pipe, compared to conventional overland forcemains. Tunneling alignment also have the advantage of being independent of surface features and road alignments. These options are referred to as “Tunneling Options” and two types have been considered, one using the tunnels as forcemains, and the second using the tunnels as gravity flow tunnels, or combinations of the two.



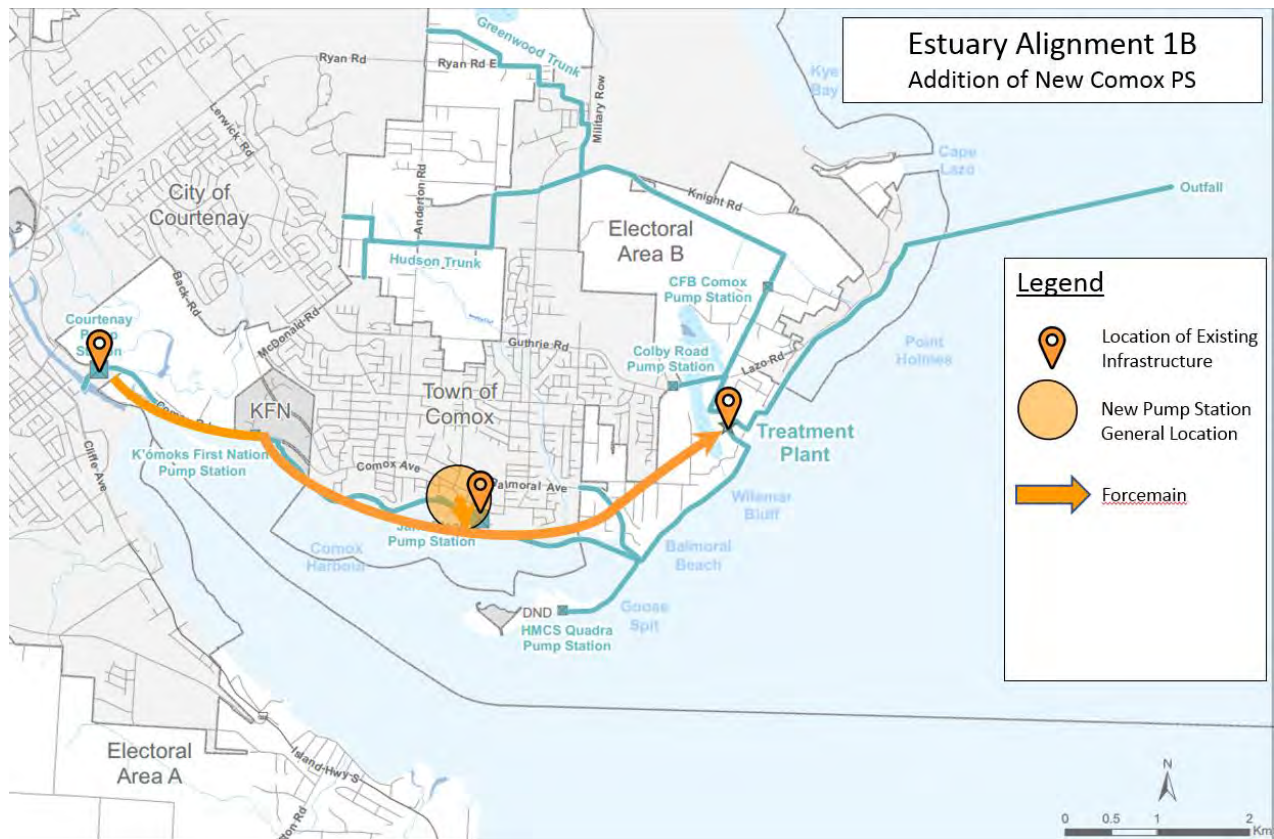
Long-List Option No. 1	Estuary Alignment												
Description	<p>This alignment would involve installation of a new forcemain within or along the Comox harbour foreshore. The forcemain would transition to an overland pipe between Comox and the Lazo Road height of land. To convey the sewage over the Lazo Road height of land the following options are suitable:</p> <p>A. The forcemain from Courtenay PS would continue directly to the CVWPCC such that there is no in-line pump station; however, a tunnel through the Lazo Road height of land would be used to reduce the required pressures in the system. Pending the tunnel elevation, a new pump station may be required in the general vicinity of the existing Jane Place PS. In which case, the existing Jane Place PS would be repurposed as a small subdivision pump station.</p> <table border="1"> <tr> <th>Advantages</th><th>Disadvantages</th></tr> <tr> <td> Potentially limited hydraulic changes to existing pump stations hydraulics subject to tunnel elevation. Minimizes construction of a forcemain through Comox. Only involves 2 large pump stations. </td><td> Involves work along and potentially in the estuary, including environmentally and archaeologically sensitive areas. Elevated maintenance and risk management needs due to proximity to marine environment. Elevated construction and operational risk associated with a tunnel. </td></tr> </table> <p>B. The forcemain from Courtenay PS would continue directly to the CVWPCC such that there is no in-line pump station. In order to overcome the Lazo Road height of land, Courtenay PS would be upgraded to ensure the forcemain pressure is sufficiently high. As a result, the existing Jane Place PS would not be able to cope with this higher hydraulic requirement and therefore a new high head pump station would be required in the general vicinity of the existing Jane Place PS. This new facility would convey raw sewage into the forcemain between Courtenay PS and the CVWPCC. The existing Jane Place PS would be repurposed as a small subdivision pump station.</p> <table border="1"> <tr> <th>Advantages</th><th>Disadvantages</th></tr> <tr> <td> Minimizes construction of a forcemain through Comox. 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The elevation of the new pump station would have to be low enough to permit the Jane Place PS to hydraulically connect.</p> <table border="1"> <tr> <th>Advantages</th><th>Disadvantages</th></tr> <tr> <td> Minimize hydraulic changes to existing Courtenay and Jane Place PSs. Maximize useful life of existing foreshore forcemain. Minimizes construction of a forcemain through Comox. </td><td> Pump in series and single point of complete failure of sewage conveyance system. Involves operation and maintenance of 3 large pump station, one of high criticality. </td></tr> </table>	Advantages	Disadvantages	Potentially limited hydraulic changes to existing pump stations hydraulics subject to tunnel elevation. Minimizes construction of a forcemain through Comox. Only involves 2 large pump stations.	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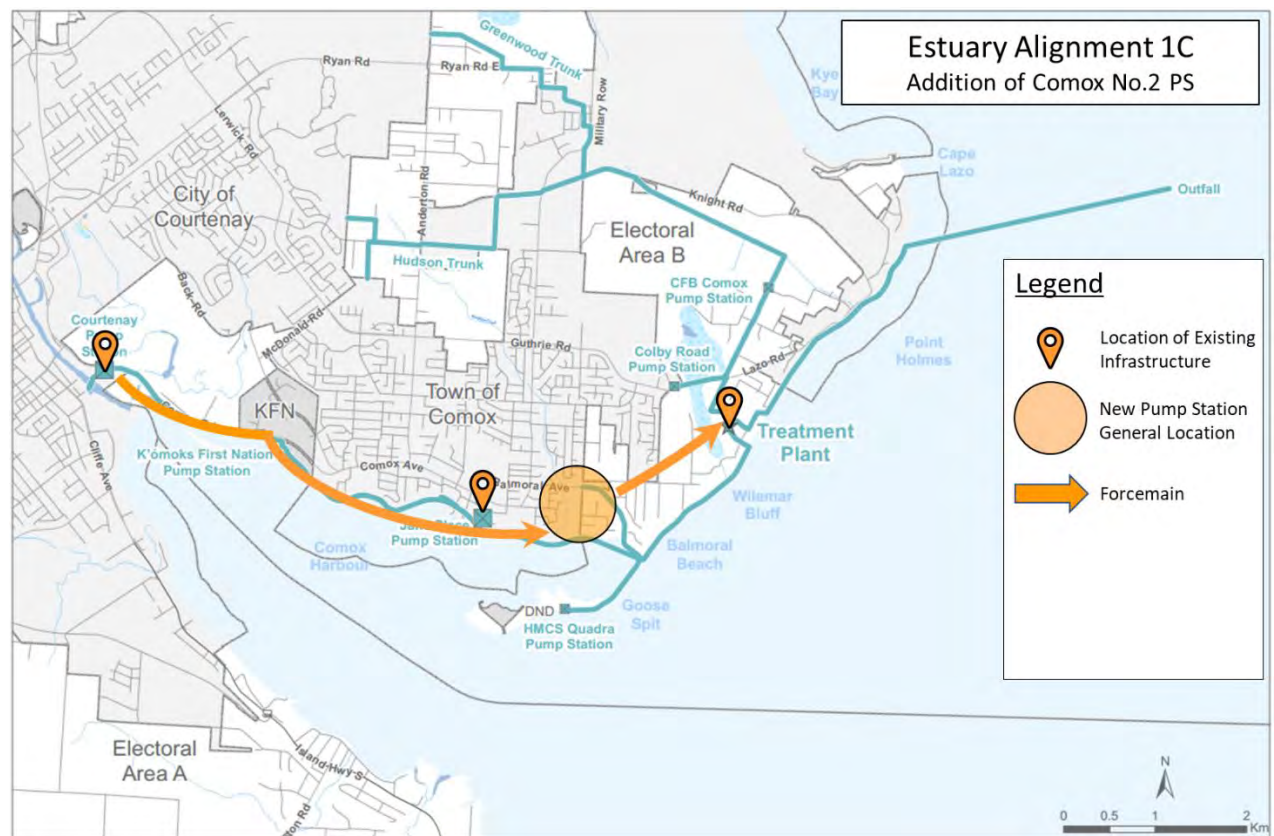
Option 1A



Option 1B



Option 1C

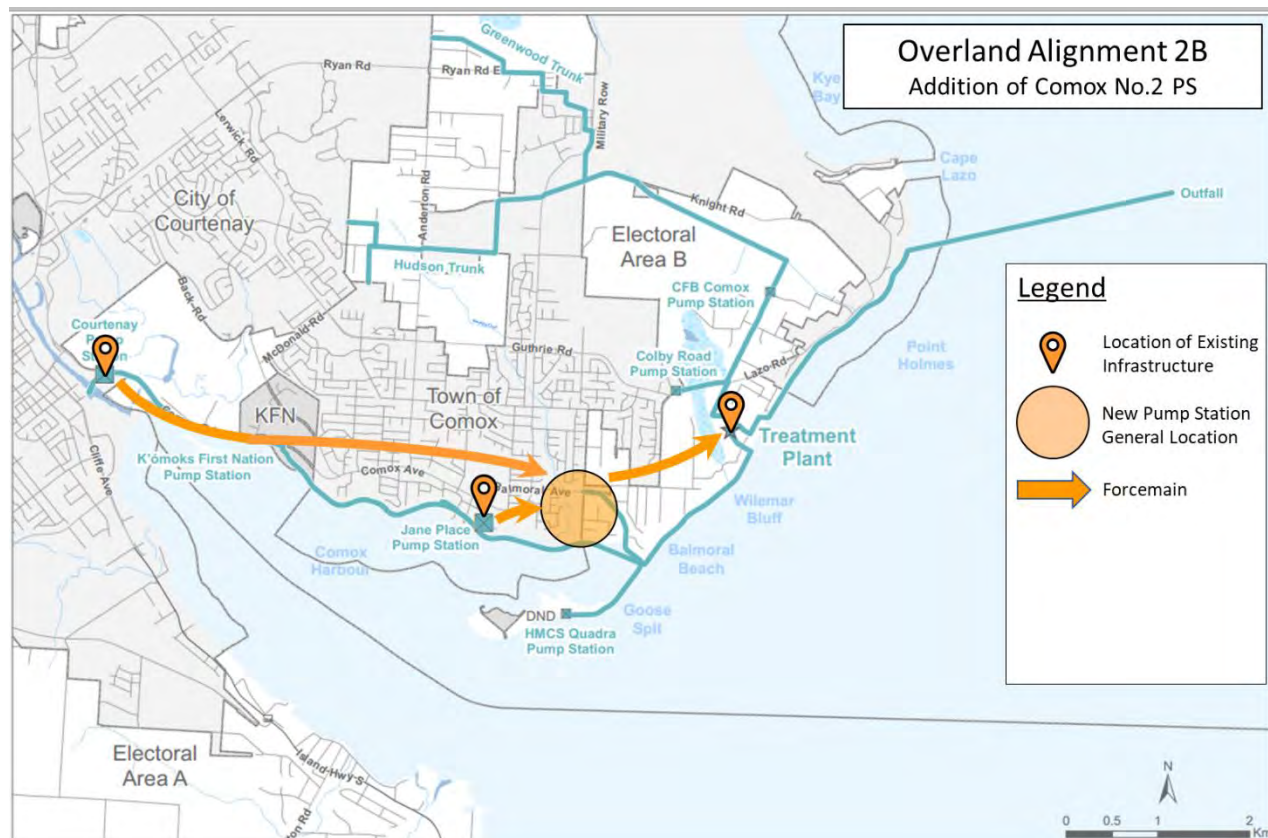


Long-List Option No. 2	Overland Alignments								
Description	<p>This alignment would involve installation of a new forcemain overland from Courtenay pump station towards the CVWPCC. This forcemain would pass over the Comox Road hill. Due to the change in discharge pressure a significant upgrade or rebuild would be required at the Courtenay Pump Station. Several routing options are available including:</p> <p>A. The forcemain from Courtenay PS would continue directly to the CVWPCC such that there is no in-line pump station. In order to overcome both the Comox Road hill and the Lazo Road height of land, the Courtenay PS would be upgraded to ensure forcemain pressure is sufficiently high. As a result, the existing Jane Place PS would not be able to cope with this higher hydraulic requirement and therefore a new high head pump station would be required in the general vicinity of the existing Jane Place PS. This new facility would convey raw sewage into the forcemain between Courtenay PS and the CVWPCC. The existing Jane Place PS would be repurposed as a small subdivision pump station.</p> <table border="1"> <tr> <th>Advantages</th><th>Disadvantages</th></tr> <tr> <td>No pipe in the estuary mitigating environmental and archaeological risks. All pipe and structures on-land to maximize maintenance accessibility. Only involves 2 large pump stations (Jane Place PS repurposed as local facility only).</td><td>Significant hydraulic changes to the Courtenay PS and Jane Place PS. Construction of new conveyance system through an area with significant existing infrastructure.</td></tr> </table> <p>B. The forcemain from Courtenay PS would convey raw sewage over the Comox Road hill and down into a new pump station, connected in series, somewhere between the Glacier View Drive/Comox Road and Lazo Road heights of land. The elevation of the new pump station would need to be at an elevation to suit the existing discharge pressures from the Jane Place PS. From the new pump station the raw sewage would be conveyed over the Lazo Road height of land to the CVWPCC.</p> <table border="1"> <tr> <th>Advantages</th><th>Disadvantages</th></tr> <tr> <td>No pipe in the estuary mitigating environmental and archaeological risks. All pipe and structures on-land to maximize maintenance accessibility. Minimize hydraulic changes to existing Jane Place PS.</td><td>Pump in series and single point of complete failure of sewage conveyance system. Involves operation and maintenance of 3 large pump station, one of high criticality. Significant hydraulic changes to the Courtenay PS. Construction of new conveyance system through an area with significant existing infrastructure.</td></tr> </table>	Advantages	Disadvantages	No pipe in the estuary mitigating environmental and archaeological risks. All pipe and structures on-land to maximize maintenance accessibility. Only involves 2 large pump stations (Jane Place PS repurposed as local facility only).	Significant hydraulic changes to the Courtenay PS and Jane Place PS. Construction of new conveyance system through an area with significant existing infrastructure.	Advantages	Disadvantages	No pipe in the estuary mitigating environmental and archaeological risks. All pipe and structures on-land to maximize maintenance accessibility. Minimize hydraulic changes to existing Jane Place PS.	Pump in series and single point of complete failure of sewage conveyance system. Involves operation and maintenance of 3 large pump station, one of high criticality. Significant hydraulic changes to the Courtenay PS. Construction of new conveyance system through an area with significant existing infrastructure.
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Option 2A



Option 2B



Long-List Option No. 3	Tunnelling Alignments								
Description	<p>This alignment would involve installation of a combination of new forcemains and gravity sewer mains overland from the Courtenay pump station towards the CVWPCC. The tunnel alignments would be selected to either minimize pumping requirements or where possible, utilize gravity sewer mains. The primary areas where tunnelling would be appropriate are under the Comox Rd. and Lazo Rd heights of land. Several combinations of forcemain/gravity sewer mains are described below.</p> <p>A. Sewage would be pumped from the Courtenay PS to an elevation where a tunnel would be constructed through the Comox Road hill. The forcemain would transition to an open cut installation through Comox and back to a tunnel to pass under the Lazo Road height of land and down to the CVWPCC. The Jane Place pump station could connect to the forcemain. To avoid major modifications to the Jane Place PS the tunnel elevations would have to be selected to suit the existing hydraulics of the Jane Place PS.</p> <table border="1"> <tr> <th>Advantages</th><th>Disadvantages</th></tr> <tr> <td> No pipe in the estuary mitigating environmental and archaeological risks. Reduces pressures at the existing pump stations. Significantly alleviates the high head requirements for the Courtenay PS and Jane PI PS as compared to other overland options. </td><td> Elevated costs and risks due to tunneling. Construction of new conveyance system through an area with significant existing infrastructure. </td></tr> </table> <p>B. A new open cut forcemain would be installed from Courtenay PS and would continue directly to the CVWPCC such that there is no in-line pump station. To reduce pressures a tunnel would be used for the forcemain to pass through the Lazo Road height of land. The existing Jane Place PS would likely not be able to cope with this higher hydraulic requirement and therefore a new high head pump station would be required in the general vicinity of the existing Jane Place PS. This new facility would convey raw sewage into the forcemain between Courtenay PS and the CVWPCC. The existing Jane Place PS would be repurposed as a small subdivision pump station. If the tunnel elevation is sufficiently low, the existing Jane Place PS would be suitable.</p> <table border="1"> <tr> <th>Advantages</th><th>Disadvantages</th></tr> <tr> <td> No pipe in the estuary mitigating environmental and archaeological risks. All pipe and structures on-land to maximize maintenance accessibility. Alleviates some of the high head requirements as compared to other overland options. </td><td> Construction of new conveyance system through an area with significant existing infrastructure. Higher upgrade requirements at the Jane Place PS as compared to the other tunnel options. </td></tr> </table>	Advantages	Disadvantages	No pipe in the estuary mitigating environmental and archaeological risks. Reduces pressures at the existing pump stations. Significantly alleviates the high head requirements for the Courtenay PS and Jane PI PS as compared to other overland options.	Elevated costs and risks due to tunneling. Construction of new conveyance system through an area with significant existing infrastructure.	Advantages	Disadvantages	No pipe in the estuary mitigating environmental and archaeological risks. All pipe and structures on-land to maximize maintenance accessibility. Alleviates some of the high head requirements as compared to other overland options.	Construction of new conveyance system through an area with significant existing infrastructure. Higher upgrade requirements at the Jane Place PS as compared to the other tunnel options.
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Description

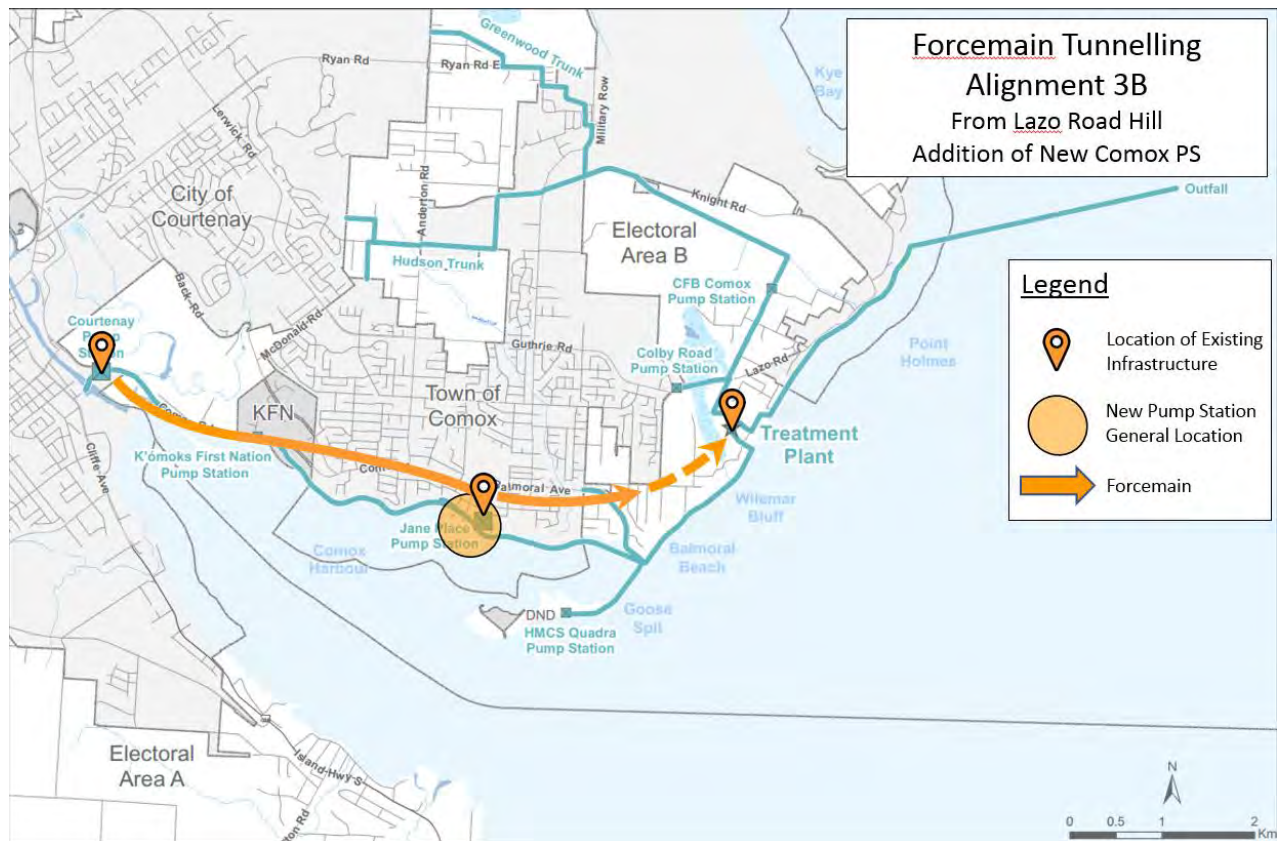
C. A new open cut forcemain would be installed from Courtenay PS and would continue directly to the CVWPCC such that there is no in-line pump station. To reduce pressures a gravity sewer main tunnel would be used to pass through the Lazo Road height of land. Depending on the tunnel elevation the existing Jane Place PS may not require replacement to a high head pump station. The alignment options for the gravity sewer main would be restricted to those which accommodate the required slope. The Jane Place pump station would connect to the gravity sewer main through a new forcemain. The tie-in location would be governed by the gravity sewer main alignment.

Advantages	Disadvantages
No pipe in the estuary mitigating environmental and archaeological risks. All pipe and structures on-land to maximize maintenance accessibility. Alleviates some of the high head requirements for the Courtenay PS and most of the high head requirements for the Jane Place PS as compared to other overland options.	Construction of new conveyance system through an area with significant existing infrastructure. Gravity sewer main alignment must follow a specific slope which is dependent on the topography. Gravity sewer mains are larger diameter as compared to forcemains for the same flow.

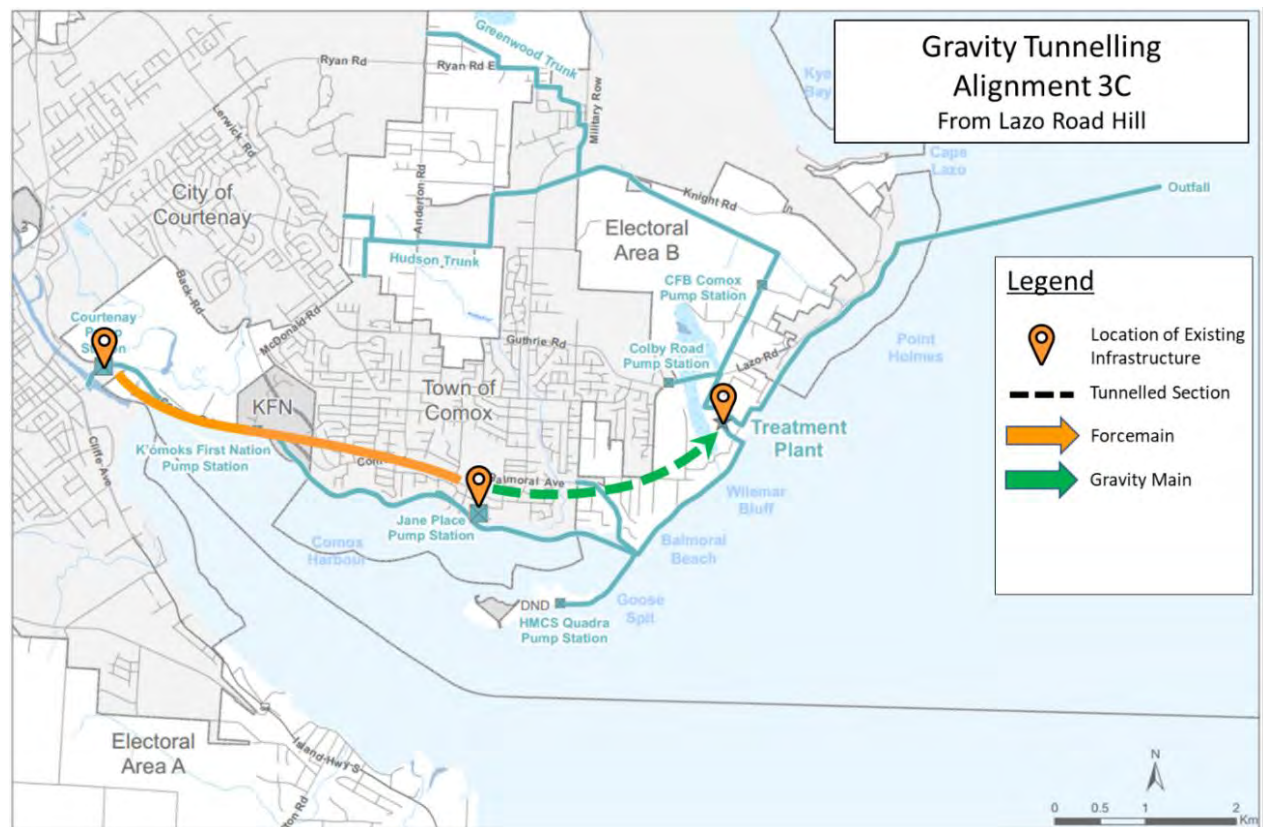
Option 3A



Option 3B



Option 3C



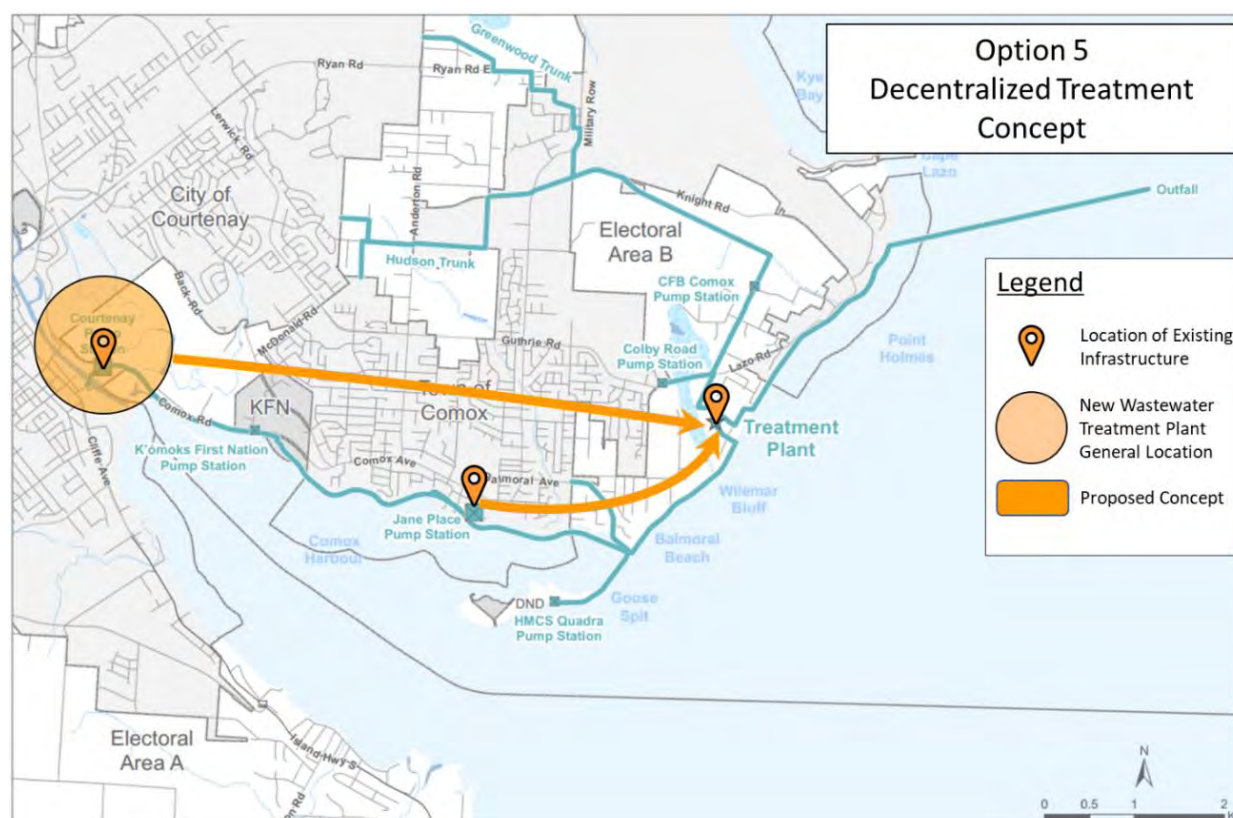
Long-List Option No. 4	North Side Concept
Description	<p>In this concept, raw sewage would be pumped from the location of the existing Courtenay PS along the north side of the CVSS, and directly from the location of the existing Jane Pump Station to the CVWPCC.</p> <p>Courtenay PS would potentially be required to pump sewage to the CVWPCC over the highest elevation of East Courtenay hill (El. 73 m) in a forcemain. Jane Place PS would be required to pump sewage to the CVWPCC over the Lazo hill (El. 51 m) in a forcemain. The two forcemains will combine west of the Lazo hill and one common forcemain will convey the raw sewage to the CVWPCC. Alternately, the two alignments can continue separately over Lazo hill to the CVWPCC. Regardless of the alignment over Lazo hill, this option would trigger a high head upgrade at both the Courtenay and Jane PS, leading to the requirement for a rebuild of both pump stations.</p>
Advantages	Disadvantages
<p>Only involves 2 large pump stations (Jane Place PS repurposed as local facility only) Pump Stations operating in parallels as opposed to in series, minimizing need for a sophisticated control system.</p> <p>Avoids construction in areas with significant infrastructure development.</p> <p>No pipe in the estuary mitigating environmental and archaeological risks.</p> <p>All pipe and structures on-land to maximize maintenance accessibility.</p>	<p>Construction for the linear assets required along two separate alignments within the CVSS, increasing construction disturbance.</p> <p>Operating two partially separate high pressure forcemain networks.</p> <p>The North Side of Glacier View Drive is at a significant higher elevation than that of the South Side (73 m vs 39 m).</p>

Option 4



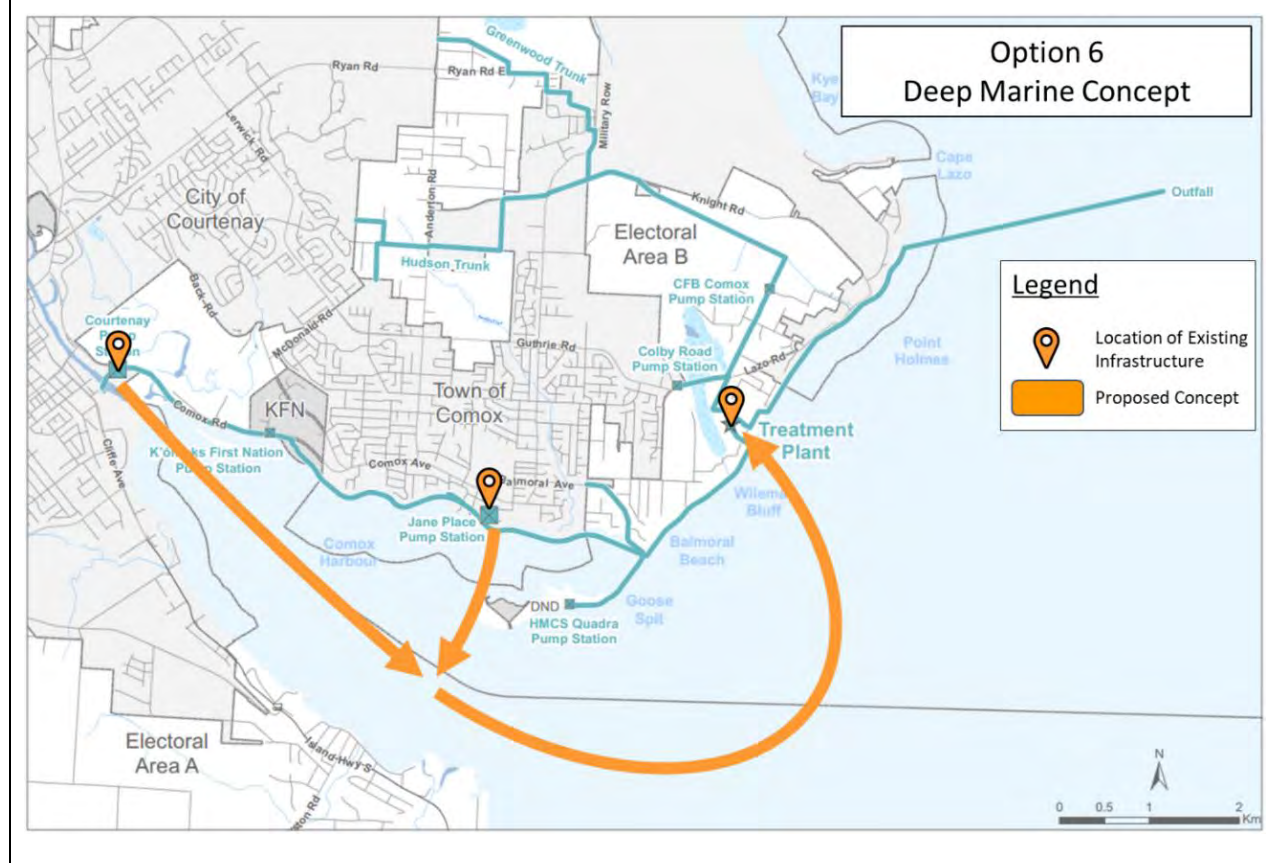
Long-List Option No. 5	Decentralized Treatment Concept			
Description	<p>In this option, an additional wastewater treatment plant would be constructed in close proximity to the location of the existing Courtenay PS to treat the sewage collected and currently conveyed by the Courtenay PS.</p> <p>Due to the location of the outfall, the effluent of a decentralized wastewater treatment plant would have to be conveyed to the location of the existing outfall for discharge. Alignments for the conveyance of the effluent discharge are similar to those discussed within Options 1, 2, and 4, and include estuary, overland, tunnelled, and north side alignments.</p> <p>The sewage collected at the Jane PS will be conveyed to the existing CVWPCC for treatment using an overland or tunnelled option. Overland options would still require a new pump station for the Jane Place PS, and subject to the length and depth of the tunnelled option a new pump station in Comox maybe required.</p>			
	<table border="1"> <thead> <tr> <th>Advantages</th><th>Disadvantages</th></tr> </thead> <tbody> <tr> <td> <p>Eliminates the need for conveyance of Courtenay's raw sewage through the CVSS to the CVWPCC.</p> <p>Alleviate capacity-driven upgrade requirements at the CVWPCC.</p> </td><td> <p>Requires the need for conveyance of the decentralized WWTP effluent to the outfall using a new pumping and conveyance system.</p> <p>Significant operational burden with two wastewater treatment plants.</p> <p>Significant cost associated with the construction of a new wastewater treatment plant, and maintenance and operation of two plants.</p> <p>Still requires conveyance of raw sewage overland from Comox.</p> </td></tr> </tbody> </table>	Advantages	Disadvantages	<p>Eliminates the need for conveyance of Courtenay's raw sewage through the CVSS to the CVWPCC.</p> <p>Alleviate capacity-driven upgrade requirements at the CVWPCC.</p>
Advantages	Disadvantages			
<p>Eliminates the need for conveyance of Courtenay's raw sewage through the CVSS to the CVWPCC.</p> <p>Alleviate capacity-driven upgrade requirements at the CVWPCC.</p>	<p>Requires the need for conveyance of the decentralized WWTP effluent to the outfall using a new pumping and conveyance system.</p> <p>Significant operational burden with two wastewater treatment plants.</p> <p>Significant cost associated with the construction of a new wastewater treatment plant, and maintenance and operation of two plants.</p> <p>Still requires conveyance of raw sewage overland from Comox.</p>			

Option 5



Long-List Option No. 6		Deep Marine Concept
Description	In this option, raw sewage would be pumped from the location of the existing Courtenay and Jane Pump Station to the CWPCC. The forcemain will be sited in deep water, placed on the sea-floor and only buried where there is less than 3m water depth at low tide. This option would require a deeper marine forcemain from Courtenay PS to the CVWPCC, with a forcemain from the Jane PS connecting into the forcemain in the estuary.	
Advantages		Disadvantages
Minimizing pumping head and system pressure No new overland piping. Eliminate sewage pipes in the Comox Harbour foreshore.		Challenging constructability and maintenance. Environmental risk in case of a spill as sewage pipes are still in the estuary. Requires pipe from Jane PS to tie-in within the estuary which passes through sensitive environmental, ecological, and archaeological habitat. Difficult repair and maintenance as pipe is submerged.

Option 6



Minutes of the meeting of the Liquid Waste Management Plan (LWMP) Joint Technical and Public Advisory Committees (TACPAC) Meeting #5 held on Friday, February 8, 2019 at the Comox Valley Regional District (CVRD) Boardroom, commencing at 9:00am.

PRESENT:

A. Habkirk, Chair and Facilitator	
P. Nash, LWMP Project Coordinator	
K. La Rose, Senior Manager of Water/Wastewater	CVRD
M. Imrie, Manager of Wastewater Services	CVRD
J. Boguski, Branch Assistant – Engineering Services	CVRD
A. Idris, Engineering Analyst	CVRD
W. Bayless	WSP
M. Swift, Town of Comox Councillor	PAC
W. Cole-Hamilton, City of Courtenay Councillor	PAC
A. Hamir, Lazo North – Electoral Area B Director	PAC
C. McColl, K'ómoks First Nation	PAC/TAC
T. Ennis, Comox Valley Conservation Partnership	PAC
D. Winterburn, BC Shellfish Growers Association	PAC
S. Wood, Comox Business Improvement Association	PAC
A. Gower, Comox Valley Chamber of Commerce	PAC
S. Carey, Courtenay Resident Representative	PAC
T. Serviz, Courtenay Resident Representative	PAC
K. Niemi, Courtenay Resident Representative	PAC
K. vanVelzen, Comox Resident Representative	PAC
D. Jacquest, Comox Resident Representative	PAC
M. Holm, Area B Resident Representative	PAC
M. Lang, Area B Resident Representative	PAC
R. O'Grady, City of Courtenay Engineering	TAC
S. Ashfield, Town of Comox Engineering	TAC
G. Bonekamp, Department of National Defence Engineering	TAC
L. Aitken, Area B Representative Alternate (Observer)	

ITEM	DESCRIPTION	OWNER
5.1	Call to Order Allison called the meeting to order at 9:10am	Allison Habkirk
5.2	Review of Minutes of Meeting #4 <ul style="list-style-type: none"> A disconnect with the agenda and report item 4.3. – K. vanVelzen A typo in the description of Treatment Option No. 2. – K. van Velzen <ul style="list-style-type: none"> The disinfection criteria reads “fecal coliforms not to exceed 200FC/1900mL”, and should be corrected to read 200FC/100mL. <p>MOTION: That the minutes of meeting #4 be adopted – A. Hamir SECONDED: M. Lang CARRIED</p>	Allison Habkirk
5.3	LWMP Process from Here Paul gave a quick overview of the remaining process for the evaluation to short list and preferred options and the LWMP report itself.	Paul Nash

ITEM	DESCRIPTION	OWNER
5.3	The meeting schedule was presented, noting that some future meeting dates may change.	Paul Nash
5.4	<p>Reclaimed Water</p> <p>Paul gave a quick presentation about the need to identify potential uses of reclaimed water as part of the resource recovery study. This is of equal importance as the technical study of producing the water.</p> <p>A brainstorming exercise was conducted to identify potential users, uses and locations for reclaimed water use. This will be incorporated with the reclaimed water options study.</p>	Paul Nash
5.5	<p>Public Feedback on Long List Options</p> <p>Kris provided an overview of the feedback sessions about the long list options.</p>	Kris La Rose
5.6	<p>Deciding the Long List –Conveyance Options</p> <ul style="list-style-type: none"> Is the proposal from Electoral Area A being considered? – M. Swift <ul style="list-style-type: none"> WSP is undertaking separate work to analyze the impacts of including sewer from the south region to the infrastructure as was mandated by the Comox Valley Sewage Commission. - K. La Rose Are other service areas (adjacent to sewer infrastructure) being considered? – A. Gower <ul style="list-style-type: none"> No, sewer system plan area is not part of the LWMP scope. – K. La Rose More clarification should be provided to the public on what stage in the process they are providing feedback on (inform, consult, and involve stages). – M. Lang <p>MOTION: That in-series pump station Options 1C and 2B be removed due to high risk – M. Lang</p> <p>SECONDED: A. Gower/A. Hamir</p> <ul style="list-style-type: none"> What are the costs and benefits of the options proposed to be removed? What is the actual risk and is it worth removing these options now? Can redundancies be implemented to mitigate the risks? – K. vanVelzen <ul style="list-style-type: none"> It would be premature to eliminate options containing Comox No. 2 Pump Station, the decision to eliminate them would open the process to criticism that not all options were considered. – K. La Rose How common are in-series pump stations implemented? – W. Cole-Hamilton <ul style="list-style-type: none"> The in-series option is avoided wherever possible. – W. Bayless <p>MOTION DEFEATED</p> <p>MOTION: In recognizing the technical consultant’s opinion as “not technically feasible”, that conveyance Option 6 be removed. – A. Gower</p> <p>SECONDED: K. Niemi</p> <p>CARRIED</p> <p>MOTION: That conveyance Options 1A, B and C be removed. – T. Ennis</p> <p>SECONDED: M. Lang/C. McColl</p> <ul style="list-style-type: none"> Discussion took place as to whether these options should be removed at this stage in the planning process. 	

ITEM	DESCRIPTION	OWNER
5.6	<ul style="list-style-type: none"> • Mitigation to the risks of Options 1A, B and C are possible but can also increase the maintenance costs and issues. – W. Bayliss • Digging along the Dyke Road raises concerns as this is an archaeological site. There are also greater spill risks and concern with the sensitive work area with regard to tides and ecosystems. • These options should be carried through the evaluation process and explored further, they could be more cost effective. – S. Ashfield • All options should be explored to build a case on decisions made to create the short list. – D. Winterburn <p>MOTION: That Option 5, decentralized treatment, be removed. – D. Jacquest</p> <ul style="list-style-type: none"> ◦ We are only looking to remove technically non-feasible options at this point. – K. La Rose <p>MOTIONS DEFEATED</p> <ul style="list-style-type: none"> • A modification to Option 4 to convey through McDonnald Road to Idiens/Hudson should be looked at. This option had previously been supported by the public. – S. Ashfield. <p>Approval by consensus to revise Option 4 to create 4A and 4B to conveyance options.</p> <p>MOTION: That Options 1 through 5, including all their variants, be forwarded to the Comox Valley Sewage Commission - A. Gower</p> <p>SECONDED: M. Lang</p> <p>CARRIED</p>	
5.7	<p>Deciding the Long List – Treatment Options</p> <p>MOTION: That all options for treatment be forwarded to the Comox Valley Sewage Commission. – M. Lang</p> <p>SECONDED: W. Cole-Hamilton</p> <ul style="list-style-type: none"> • When considering treatment options, studies should be more based on future projections of the requirements rather than historical. (Example: future temperatures and tides). – T. Enns <p>CARRIED</p>	
5.8	<p>Deciding the Long List - Resource Recovery</p> <ul style="list-style-type: none"> • The term “fertilizer pellets” should be changed to “Enhanced Nutrient Recovery” to be a more broad term. Also it should be noted that nutrient recovery is in addition to bio-solids removal to produce SkyRocket. <p>MOTION: To remove hydroelectric turbine option. – D. Jacquest</p> <p>SECONDED: R. O’Grady</p> <ul style="list-style-type: none"> • All options should be brought forward for consideration and removed later in the process if found necessary. – T. Serviz, W. Cole-Hamilton <p>MOTION DEFEATED</p> <p>MOTION: That all options for resource recovery be forwarded to the Comox Valley Sewage Commission.</p> <p>SECONDED: D. Jacquest</p> <p>CARRIED</p>	

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5.9	<p>Technical Update #4, Costing, Conveyance Hydraulics</p> <p>Walt provided an overview of the terminology and formulation of classes of cost estimates. For the long list options, estimates will be Class D – conceptual and for the short list will be Class C – indicative.</p> <p>A brief explanation of conveyance hydraulics was given, with an explanation of terminology and the meaning of a key term -“Hydraulic Grade Line”</p> <ul style="list-style-type: none"> • Market volume and volatility impact costing greatly and must be considered. – A. Gower • At what point are lifecycle costs considered? – M. Lang <ul style="list-style-type: none"> ○ They are considered in parallel with project costs. – W. Bayliss 	Walt Bayless, WSP
5.10	<p>Future meeting structure was considered. The Technical Advisory Committee will meet separately prior to TACPAC meeting No. 6, to facilitate in-depth technical discussions on the options. The summary of these discussions will be provided to the TACPAC.</p> <p>Meeting No. 6 will be extended to adjourn at 3:00pm to not rush the process.</p>	Paul Nash
5.11	The meeting adjourned at 12:05pm	

Minutes of the meeting of the Liquid Waste Management Plan (LWMP) Joint Technical and Public Advisory Committees (TACPAC) Meeting #5 held on Friday, February 8, 2019 at the Comox Valley Regional District (CVRD) Boardroom, commencing at 9:00am.

PRESENT:

A. Habkirk, Chair and Facilitator	
P. Nash, LWMP Project Coordinator	
K. La Rose, Senior Manager of Water/Wastewater	CVRD
M. Imrie, Manager of Wastewater Services	CVRD
J. Boguski, Branch Assistant – Engineering Services	CVRD
A. Idris, Engineering Analyst	CVRD
W. Bayless	WSP
M. Swift, Town of Comox Councillor	PAC
W. Cole-Hamilton, City of Courtenay Councillor	PAC
A. Hamir, Lazo North – Electoral Area B Director	PAC
C. McColl, K'ómoks First Nation	PAC/TAC
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M. Holm, Area B Resident Representative	PAC
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5.11	The meeting adjourned at 12:05pm	

Minutes of the meeting of the Liquid Waste Management Plan (LWMP) Technical Advisory Committee (TAC) Meeting #6A held on Thursday, March 21, 2019 at the Comox Valley Regional District (CVRD) Boardroom, commencing at 9:00am.

PRESENT: P. Nash, LWMP Project Coordinator
 K. La Rose, Senior Manager of Water/Wastewater CVRD
 M. Imrie, Manager of Wastewater Services CVRD
 A. Idris, Engineering Analyst CVRD
 W. Bayless WSP
 C. McColl, K'ómoks First Nation PAC/TAC
 R. O'Grady, City of Courtenay Engineering TAC
 S. Ashfield, Town of Comox Engineering TAC
 G. Bonekamp, Department of National Defence TAC

ITEM	DESCRIPTION	OWNER
6A.1	Call to Order Meeting was called to order at 9:00am	Kris La Rose
6A.2	Purpose of Meeting <ul style="list-style-type: none"> Kris explained that the purpose of this meeting is to have an in- depth discussion and evaluation of the technical aspects of the options. The results will be presented and explained to the TACPAC the next day, prior to the TACPAC scoring the remaining categories. 	Kris La Rose
6A.3	Conveyance Long List Options <ul style="list-style-type: none"> Walt gave a presentation and review of conceptual studies of conveyance options. Explanation of: <ul style="list-style-type: none"> Major assumptions. The workings of the cost model. GHG estimations. Local content. A sensitivity analysis was performed by changing some of the model parameters and observing the resulting differences in capital and short and long term operating costs. Parameters varied included: <ul style="list-style-type: none"> Energy prices. Energy consumption (by changing pump running hours). Unit costs for estuary work. Discount rate. It was noted that the same four options, 2A, 3A, 3B and 3C, seemed to stay at the top of the NPV rankings in all cases, though the order within the top four might change. 	Walt Bayless

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6A.4	<p>Evaluation of Technical Criteria</p> <p>A live spreadsheet of the evaluation system was used and the TAC members progressively scored each goal for all the options and then moved on to the next goal.</p> <p>Scoring was done by first comparing the major components of the various options, number of pump stations, lengths of pipe, etc. and some of the operational attributes that go with them.</p> <p>For each evaluation goal, there was a discussion on the major pros and cons of the options as they relate to the goal in question, putting some plus and minus values to the attributes, and then creating a scoring logic to get the scores from zero to five. It was noted that this was still a subjective process and the logic is still a guide. The final scores agreed upon did not always fit formulaically with the scoring logic.</p> <p>The scoring tables and the scoring logic are attached as Schedule A, and the final scoring is summarized below.</p> <p>(Color scale - green boxes = best; yellow/orange = intermediate; pink = worst)</p> <table><tr><th>Goal</th><th>Resilience to External Factors</th><th>Resilience to Internal Factors</th><th>Long Term Solution</th><th>Flexibility to accommodate future changes</th><th>Total</th></tr><tr><td>Weight %</td><td>15%</td><td>15%</td><td>10%</td><td>5%</td><td>45%</td></tr><tr><td>Opt. 1A</td><td>6.0</td><td>6.0</td><td>5.0</td><td>1.0</td><td>18.0</td></tr><tr><td>1B</td><td>4.5</td><td>6.0</td><td>5.0</td><td>1.0</td><td>16.5</td></tr><tr><td>1C</td><td>3.0</td><td>3.0</td><td>4.0</td><td>0.0</td><td>10.0</td></tr><tr><td>2A</td><td>10.5</td><td>9.0</td><td>5.0</td><td>3.0</td><td>27.5</td></tr><tr><td>2B</td><td>9.0</td><td>3.0</td><td>4.0</td><td>2.0</td><td>18.0</td></tr><tr><td>3A</td><td>13.5</td><td>10.5</td><td>6.0</td><td>2.0</td><td>32.0</td></tr><tr><td>3B</td><td>12.0</td><td>10.5</td><td>6.0</td><td>2.5</td><td>31.0</td></tr><tr><td>3C</td><td>15.0</td><td>12.0</td><td>6.0</td><td>4.0</td><td>37.0</td></tr><tr><td>4A</td><td>9.0</td><td>6.0</td><td>5.0</td><td>2.0</td><td>22.0</td></tr><tr><td>4B</td><td>7.5</td><td>3.0</td><td>4.0</td><td>2.5</td><td>17.0</td></tr><tr><td>5</td><td>0.0</td><td>0.0</td><td>4.0</td><td>5.0</td><td>9.0</td></tr></table> <p>The major findings from the technical evaluation were:</p> <ul style="list-style-type: none">• The estuary options are most vulnerable to climate change and sea level rise. Even though they are installed in the intertidal zone, a sufficient sea level rise would make them permanently submerged which would make repairs and future twinning very difficult.• The inline pump stations were very undesirable from an operational point of view.• The tunnel options are operationally desirable as they result in lower pumping pressures and avoid the need for a third pump station.• The north side concepts as presented, were undesirable primarily because of the very high pumping head at the Courtenay Pump Station.	Goal	Resilience to External Factors	Resilience to Internal Factors	Long Term Solution	Flexibility to accommodate future changes	Total	Weight %	15%	15%	10%	5%	45%	Opt. 1A	6.0	6.0	5.0	1.0	18.0	1B	4.5	6.0	5.0	1.0	16.5	1C	3.0	3.0	4.0	0.0	10.0	2A	10.5	9.0	5.0	3.0	27.5	2B	9.0	3.0	4.0	2.0	18.0	3A	13.5	10.5	6.0	2.0	32.0	3B	12.0	10.5	6.0	2.5	31.0	3C	15.0	12.0	6.0	4.0	37.0	4A	9.0	6.0	5.0	2.0	22.0	4B	7.5	3.0	4.0	2.5	17.0	5	0.0	0.0	4.0	5.0	9.0	Paul Nash
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	<ul style="list-style-type: none">The decentralized treatment concept was very undesirable and created a large increase in operational complexity. It was acknowledged that it also created the greatest increase in future flexibility.There was little separating the options for long term value as all the linear components have a 60 year design life. There is the possibility to reline a tunnel. The pump stations have a 25 year life, and options involving a third pump station were score slightly lower for this reason.																																																					
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6A.7	<p>Adjournment</p> <p>The meeting adjourned at 12:00 pm</p>	

Attachments:

Schedule A –Detailed Evaluation Results for Technical and Affordability Categories.

SCHEDULE A: EVALUATION RESULTS

EVALUATION SYSTEM DESCRIPTION

Category	Goal	Description, Comment	Scored by	Weight %
Technical	Resilience to External Factors	Includes climate change, natural disasters, seasonal impact	TAC	15%
	Resilience to Internal Factors	Operational simplicity and reliability, minimize risk of failure	TAC	15%
	Long Term Solution	Provides asset life, and possibly capacity, beyond the minimum planning horizon.	TAC	10%
	Flexibility to accommodate future changes	Technical Consultants to elaborate	TAC	5%
Technical Total				45%
Affordability	Minimize Lifecycle Cost	Net present value of capital, operational and replacement cost, period is to the planning horizon	CVRD	14%
	Long term Value	Provides asset life and capacity beyond the design planning horizon	TAC	4%
Affordability Total				18%
Grand Total				63%

Evaluation Results for Conveyance Options, Technical and Affordability Categories

(Color scale: green boxes = best; yellow/orange = intermediate; pink = worst)

Category	Goal	Weight %	1A	1B	1C	2A	2B	3A	3B	3C	4A	4B	5
Technical	Resilience to External Factors	15%	6.0	4.5	3.0	10.5	9.0	13.5	12.0	15.0	9.0	7.5	0.0
	Resilience to Internal Factors	15%	6.0	6.0	3.0	9.0	3.0	10.5	10.5	12.0	6.0	3.0	0.0
	Long Term Solution	10%	5.0	5.0	4.0	5.0	4.0	6.0	6.0	6.0	5.0	4.0	4.0
	Flexibility to accommodate future changes	5%	1.0	1.0	0.0	3.0	2.0	2.0	2.5	4.0	2.0	2.5	5.0
<i>Technical Total</i>		<i>45%</i>	<i>18.0</i>	<i>16.5</i>	<i>10.0</i>	<i>27.5</i>	<i>18.0</i>	<i>32.0</i>	<i>31.0</i>	<i>37.0</i>	<i>22.0</i>	<i>17.0</i>	<i>9.0</i>
Affordability	Minimize Lifecycle Cost	14%	10.6	11.4	8.9	14.0	7.0	10.5	11.8	13.1	5.4	0.0	-
	Long term Value	4%	2.0	2.0	1.6	2.0	1.6	2.4	2.4	2.4	2.0	1.6	1.6
<i>Affordability Total</i>		<i>18%</i>	<i>12.6</i>	<i>13.4</i>	<i>10.5</i>	<i>16.0</i>	<i>8.6</i>	<i>12.9</i>	<i>14.2</i>	<i>15.5</i>	<i>7.4</i>	<i>1.6</i>	<i>-</i>
<u>Grand Total</u>		<u>63%</u>	<u>30.6</u>	<u>29.9</u>	<u>20.5</u>	<u>43.5</u>	<u>26.6</u>	<u>44.9</u>	<u>45.2</u>	<u>52.5</u>	<u>29.4</u>	<u>18.6</u>	<u>-</u>

[illegible]

Evaluation by TAC												
Goal	Description	1A	1B	1C	2A	2B	3A	3B	3C	4A	4B	5
Resilience to External Factors	Includes climate change, natural disasters, seasonal impact	2	1.5	1	3.5	3	4.5	4	5	3	2.5	0
Scoring Logic	Full marks for gravity tunnel as it is most resistant to earthquakes, score zero for second WWTP, as it is vulnerable to almost everything. Deductions for longer forcemains (earthquake risk) and -2 for Estuary options (sea level rise), -1 for in-line pump station (any disturbance will have consequences magnified). No specific seasonal impacts identified for any option.											
Weight	15%	6	4.5	3	10.5	9	13.5	12	15	9	7.5	0
Resilience to Internal Factors	Operational simplicity and reliability, minimise risk of failure	2	2	1	3	1	3.5	3.5	4	2	1	0
Scoring Logic	Gravity tunnels scores best, but not full marks as it still involves pump stations and forcemains. Zero for second WWTP, as adds great complexity, -2 for Inline pump stations for risk factor, -1 for long forcemains.											
Weight	15%	6.0	6.0	3.0	9.0	3.0	10.5	10.5	12.0	6.0	3.0	0.0
Long Term Solution	Provides asset life, and possibly capacity, beyond the minimum planning horizon.	2.5	2.5	2	2.5	2	3	3	3	2.5	2	2
Scoring Logic	Options are all very close, as all the pipe/tunnel components have a 60 year design life, so score all at 2.5. The tunnels have the ability to be re-lined so add 0.5 points. - 0.5 points for the in-line pump stations as it is an additional short-life component (pump stations are 25 years)											
Weight	10%	5.0	5.0	4.0	5.0	4.0	6.0	6.0	6.0	5.0	4.0	4.0
Flexibility to accommodate future changes	Technical Consultants to elaborate	1	1	0	3	2	2	2.5	4	2	2.5	5
Scoring Logic	Second WWTP provides the greatest flexibility, as future load growth is split. Estuary pipelines provide the least. -1 for in-line pump stations. Gravity tunnel has the ability to tie in HMCS Quadra and parts of the Jane catchment directly to tunnel, so scores an extra point.											
Weight	5%	1	1.0	0.0	3.0	2.0	2.0	2.5	4.0	2.0	2.5	5.0
Total Technical Category	45%	18.0	16.5	10.0	27.5	18.0	32.0	31.0	37.0	22.0	17.0	9.0

Category	Affordability											
Goal	Description	1A	1B	1C	2A	2B	3A	3B	3C	4A	4B	5
	Capital Only (\$M)	80	57	65	45	59	80	69	66	69	84	174
	50 Year NPV (Capital + O&M) (\$m)	122	118	131	105	141	123	116	109	149	176	316
Minimize Lifecycle Cost	Net present value of capital, operational and replacement cost, period is to the planning horizon	3.8	4.1	3.2	5.0	2.5	3.8	4.2	4.7	1.9	0.0	-9.8
Scoring Logic	Lowest 50yr NPV =5, Opt 4B 50yr NPV=0, pro-rate other options, allow Opt 5 to go negative as it is off the chart compared to other options											
Weight	14%	11	11	9	14	7	11	12	13	5	0	-27
Long term Value	Provides asset life and capacity beyond the design planning horizon	2.5	2.5	2.0	2.5	2.0	3.0	3.0	3.0	2.5	2.0	2.0
Scoring Logic	Use same values as for technical criteria of long term solution											
Weight	4%	2.0	2.0	1.6	2.0	1.6	2.4	2.4	2.4	2.0	1.6	1.6
Total Affordability	18%	12.6	13.4	10.5	16.0	8.6	12.9	14.2	15.5	7.4	1.6	(25.8)

Minutes of the meeting of the Liquid Waste Management Plan (LWMP) Technical Advisory Committee (TAC) Meeting #6A held on Thursday, March 21, 2019 at the Comox Valley Regional District (CVRD) Boardroom, commencing at 9:00am.

PRESENT: P. Nash, LWMP Project Coordinator
 K. La Rose, Senior Manager of Water/Wastewater CVRD
 M. Imrie, Manager of Wastewater Services CVRD
 A. Idris, Engineering Analyst CVRD
 W. Bayless WSP
 C. McColl, K'ómoks First Nation PAC/TAC
 R. O'Grady, City of Courtenay Engineering TAC
 S. Ashfield, Town of Comox Engineering TAC
 G. Bonekamp, Department of National Defence TAC

ITEM	DESCRIPTION	OWNER
6A.1	Call to Order Meeting was called to order at 9:00am	Kris La Rose
6A.2	Purpose of Meeting <ul style="list-style-type: none"> Kris explained that the purpose of this meeting is to have an in- depth discussion and evaluation of the technical aspects of the options. The results will be presented and explained to the TACPAC the next day, prior to the TACPAC scoring the remaining categories. 	Kris La Rose
6A.3	Conveyance Long List Options <ul style="list-style-type: none"> Walt gave a presentation and review of conceptual studies of conveyance options. Explanation of: <ul style="list-style-type: none"> Major assumptions. The workings of the cost model. GHG estimations. Local content. A sensitivity analysis was performed by changing some of the model parameters and observing the resulting differences in capital and short and long term operating costs. Parameters varied included: <ul style="list-style-type: none"> Energy prices. Energy consumption (by changing pump running hours). Unit costs for estuary work. Discount rate. It was noted that the same four options, 2A, 3A, 3B and 3C, seemed to stay at the top of the NPV rankings in all cases, though the order within the top four might change. 	Walt Bayless

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6A.4	<p>Evaluation of Technical Criteria</p> <p>A live spreadsheet of the evaluation system was used and the TAC members progressively scored each goal for all the options and then moved on to the next goal.</p> <p>Scoring was done by first comparing the major components of the various options, number of pump stations, lengths of pipe, etc. and some of the operational attributes that go with them.</p> <p>For each evaluation goal, there was a discussion on the major pros and cons of the options as they relate to the goal in question, putting some plus and minus values to the attributes, and then creating a scoring logic to get the scores from zero to five. It was noted that this was still a subjective process and the logic is still a guide. The final scores agreed upon did not always fit formulaically with the scoring logic.</p> <p>The scoring tables and the scoring logic are attached as Schedule A, and the final scoring is summarized below.</p> <p>(Color scale - green boxes = best; yellow/orange = intermediate; pink = worst)</p> <table><tr><th>Goal</th><th>Resilience to External Factors</th><th>Resilience to Internal Factors</th><th>Long Term Solution</th><th>Flexibility to accommodate future changes</th><th>Total</th></tr><tr><td>Weight %</td><td>15%</td><td>15%</td><td>10%</td><td>5%</td><td>45%</td></tr><tr><td>Opt. 1A</td><td>6.0</td><td>6.0</td><td>5.0</td><td>1.0</td><td>18.0</td></tr><tr><td>1B</td><td>4.5</td><td>6.0</td><td>5.0</td><td>1.0</td><td>16.5</td></tr><tr><td>1C</td><td>3.0</td><td>3.0</td><td>4.0</td><td>0.0</td><td>10.0</td></tr><tr><td>2A</td><td>10.5</td><td>9.0</td><td>5.0</td><td>3.0</td><td>27.5</td></tr><tr><td>2B</td><td>9.0</td><td>3.0</td><td>4.0</td><td>2.0</td><td>18.0</td></tr><tr><td>3A</td><td>13.5</td><td>10.5</td><td>6.0</td><td>2.0</td><td>32.0</td></tr><tr><td>3B</td><td>12.0</td><td>10.5</td><td>6.0</td><td>2.5</td><td>31.0</td></tr><tr><td>3C</td><td>15.0</td><td>12.0</td><td>6.0</td><td>4.0</td><td>37.0</td></tr><tr><td>4A</td><td>9.0</td><td>6.0</td><td>5.0</td><td>2.0</td><td>22.0</td></tr><tr><td>4B</td><td>7.5</td><td>3.0</td><td>4.0</td><td>2.5</td><td>17.0</td></tr><tr><td>5</td><td>0.0</td><td>0.0</td><td>4.0</td><td>5.0</td><td>9.0</td></tr></table> <p>The major findings from the technical evaluation were:</p> <ul style="list-style-type: none">• The estuary options are most vulnerable to climate change and sea level rise. Even though they are installed in the intertidal zone, a sufficient sea level rise would make them permanently submerged which would make repairs and future twinning very difficult.• The inline pump stations were very undesirable from an operational point of view.• The tunnel options are operationally desirable as they result in lower pumping pressures and avoid the need for a third pump station.• The north side concepts as presented, were undesirable primarily because of the very high pumping head at the Courtenay Pump Station.	Goal	Resilience to External Factors	Resilience to Internal Factors	Long Term Solution	Flexibility to accommodate future changes	Total	Weight %	15%	15%	10%	5%	45%	Opt. 1A	6.0	6.0	5.0	1.0	18.0	1B	4.5	6.0	5.0	1.0	16.5	1C	3.0	3.0	4.0	0.0	10.0	2A	10.5	9.0	5.0	3.0	27.5	2B	9.0	3.0	4.0	2.0	18.0	3A	13.5	10.5	6.0	2.0	32.0	3B	12.0	10.5	6.0	2.5	31.0	3C	15.0	12.0	6.0	4.0	37.0	4A	9.0	6.0	5.0	2.0	22.0	4B	7.5	3.0	4.0	2.5	17.0	5	0.0	0.0	4.0	5.0	9.0	Paul Nash
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Evaluation Results for Conveyance Options, Technical and Affordability Categories

(Color scale: green boxes = best; yellow/orange = intermediate; pink = worst)

Category	Goal	Weight %	1A	1B	1C	2A	2B	3A	3B	3C	4A	4B	5
Technical	Resilience to External Factors	15%	6.0	4.5	3.0	10.5	9.0	13.5	12.0	15.0	9.0	7.5	0.0
	Resilience to Internal Factors	15%	6.0	6.0	3.0	9.0	3.0	10.5	10.5	12.0	6.0	3.0	0.0
	Long Term Solution	10%	5.0	5.0	4.0	5.0	4.0	6.0	6.0	6.0	5.0	4.0	4.0
	Flexibility to accommodate future changes	5%	1.0	1.0	0.0	3.0	2.0	2.0	2.5	4.0	2.0	2.5	5.0
<i>Technical Total</i>		<i>45%</i>	<i>18.0</i>	<i>16.5</i>	<i>10.0</i>	<i>27.5</i>	<i>18.0</i>	<i>32.0</i>	<i>31.0</i>	<i>37.0</i>	<i>22.0</i>	<i>17.0</i>	<i>9.0</i>
Affordability	Minimize Lifecycle Cost	14%	10.6	11.4	8.9	14.0	7.0	10.5	11.8	13.1	5.4	0.0	-
	Long term Value	4%	2.0	2.0	1.6	2.0	1.6	2.4	2.4	2.4	2.0	1.6	1.6
<i>Affordability Total</i>		<i>18%</i>	<i>12.6</i>	<i>13.4</i>	<i>10.5</i>	<i>16.0</i>	<i>8.6</i>	<i>12.9</i>	<i>14.2</i>	<i>15.5</i>	<i>7.4</i>	<i>1.6</i>	<i>-</i>
<u>Grand Total</u>		<u>63%</u>	<u>30.6</u>	<u>29.9</u>	<u>20.5</u>	<u>43.5</u>	<u>26.6</u>	<u>44.9</u>	<u>45.2</u>	<u>52.5</u>	<u>29.4</u>	<u>18.6</u>	<u>-</u>

[illegible]

Evaluation by TAC												
Goal	Description	1A	1B	1C	2A	2B	3A	3B	3C	4A	4B	5
Resilience to External Factors	Includes climate change, natural disasters, seasonal impact	2	1.5	1	3.5	3	4.5	4	5	3	2.5	0
Scoring Logic	Full marks for gravity tunnel as it is most resistant to earthquakes, score zero for second WWTP, as it is vulnerable to almost everything. Deductions for longer forcemains (earthquake risk) and -2 for Estuary options (sea level rise), -1 for in-line pump station (any disturbance will have consequences magnified). No specific seasonal impacts identified for any option.											
Weight	15%	6	4.5	3	10.5	9	13.5	12	15	9	7.5	0
Resilience to Internal Factors	Operational simplicity and reliability, minimise risk of failure	2	2	1	3	1	3.5	3.5	4	2	1	0
Scoring Logic	Gravity tunnels scores best, but not full marks as it still involves pump stations and forcemains. Zero for second WWTP, as adds great complexity, -2 for Inline pump stations for risk factor, -1 for long forcemains.											
Weight	15%	6.0	6.0	3.0	9.0	3.0	10.5	10.5	12.0	6.0	3.0	0.0
Long Term Solution	Provides asset life, and possibly capacity, beyond the minimum planning horizon.	2.5	2.5	2	2.5	2	3	3	3	2.5	2	2
Scoring Logic	Options are all very close, as all the pipe/tunnel components have a 60 year design life, so score all at 2.5. The tunnels have the ability to be re-lined so add 0.5 points. - 0.5 points for the in-line pump stations as it is an additional short-life component (pump stations are 25 years)											
Weight	10%	5.0	5.0	4.0	5.0	4.0	6.0	6.0	6.0	5.0	4.0	4.0
Flexibility to accommodate future changes	Technical Consultants to elaborate	1	1	0	3	2	2	2.5	4	2	2.5	5
Scoring Logic	Second WWTP provides the greatest flexibility, as future load growth is split. Estuary pipelines provide the least. -1 for in-line pump stations. Gravity tunnel has the ability to tie in HMCS Quadra and parts of the Jane catchment directly to tunnel, so scores an extra point.											
Weight	5%	1	1.0	0.0	3.0	2.0	2.0	2.5	4.0	2.0	2.5	5.0
Total Technical Category	45%	18.0	16.5	10.0	27.5	18.0	32.0	31.0	37.0	22.0	17.0	9.0

Category	Affordability											
Goal	Description	1A	1B	1C	2A	2B	3A	3B	3C	4A	4B	5
	Capital Only (\$M)	80	57	65	45	59	80	69	66	69	84	174
	50 Year NPV (Capital + O&M) (\$m)	122	118	131	105	141	123	116	109	149	176	316
Minimize Lifecycle Cost	Net present value of capital, operational and replacement cost, period is to the planning horizon	3.8	4.1	3.2	5.0	2.5	3.8	4.2	4.7	1.9	0.0	-9.8
Scoring Logic	Lowest 50yr NPV =5, Opt 4B 50yr NPV=0, pro-rate other options, allow Opt 5 to go negative as it is off the chart compared to other options											
Weight	14%	11	11	9	14	7	11	12	13	5	0	-27
Long term Value	Provides asset life and capacity beyond the design planning horizon	2.5	2.5	2.0	2.5	2.0	3.0	3.0	3.0	2.5	2.0	2.0
Scoring Logic	Use same values as for technical criteria of long term solution											
Weight	4%	2.0	2.0	1.6	2.0	1.6	2.4	2.4	2.4	2.0	1.6	1.6
Total Affordability	18%	12.6	13.4	10.5	16.0	8.6	12.9	14.2	15.5	7.4	1.6	(25.8)

Minutes of the meeting of the Liquid Waste Management Plan (LWMP) Joint Technical and Public Advisory Committees (TACPAC) Meeting #6 held on Friday, March 22, 2019 at the Comox Valley Regional District (CVRD) Boardroom, commencing at 9:00am.

PRESENT:

A. Habkirk, Chair and Facilitator	
P. Nash, LWMP Project Coordinator	
K. La Rose, Senior Manager of Water/Wastewater	CVRD
M. Imrie, Manager of Wastewater Services	CVRD
C. Wile, Manager of External Relations	CVRD
J. Boguski, Branch Assistant – Engineering Services	CVRD
A. Idris, Engineering Analyst	CVRD
W. Bayless	WSP
M. Swift, Town of Comox Councillor	PAC
W. Cole-Hamilton, City of Courtenay Councillor	PAC
A. Hamir, Lazo North – Electoral Area B Director	PAC
C. McColl, K'ómoks First Nation	PAC/TAC
T. Ennis, Comox Valley Conservation Partnership	PAC
S. Wood, Comox Business Improvement Association	PAC
S. Carey, Courtenay Resident Representative	PAC
T. Servizi, Courtenay Resident Representative	PAC
K. Niemi, Courtenay Resident Representative	PAC
K. vanVelzen, Comox Resident Representative	PAC
D. Jacquest, Comox Resident Representative	PAC
R. Craig, Comox Resident Representative	PAC
J. Steel, Area B Resident Representative	PAC
M. Lang, Area B Resident Representative	PAC
R. O'Grady, City of Courtenay Engineering	TAC
S. Ashfield, Town of Comox Engineering	TAC
G. Bonekamp, Department of National Defence Engineering	TAC
L. Aitken, Area B Representative Alternate (Observer)	
D. Hillian, City of Courtenay Councillor (Observer)	

ITEM	DESCRIPTION	OWNER
6.1	Call to Order <ul style="list-style-type: none"> The meeting was called to order at 9:05am 	Allison Habkirk
6.2	Review of Minutes of Meeting # 5 <ul style="list-style-type: none"> The motion by R. O'Grady, seconded by D. Jacquest that was defeated was not noted in meeting #5 minutes – M. Lang It was inaccurately stated in the minutes that A. Hamir put forward a motion that the minutes of meeting #4 be adopted. – K. vanVelzen MOTION: That the minutes of meeting #5 be adopted – A. Hamir SECONDED: W. Cole-Hamilton CARRIED	Allison Habkirk

ITEM	DESCRIPTION	OWNER
6.3	<p>Review of LWMP Process Changes</p> <ul style="list-style-type: none"> • We have decided to prioritize and identify a preferred solution for the conveyance component of this LWMP process due to its urgent nature and come back to shortlisting treatment and resource recovery options later. • This is not breaking the conveyance piece off of the LWMP process, it is just addressing the conveyance options first to allow for more in depth analysis of the options. • We plan to short list the treatment and resource recovery long list options in TACPAC meeting #8, after selecting a preferred solution for conveyance if time allows. • CVRD Senior Management met with K'ómoks First Nation (KFN) Chief and Council on February 20 to consult and present long list of options for conveyance, treatment and resource recovery components of the LWMP. • The KFN Chief and Council voiced their strong opposition to all of the estuary alignment option due to archaeological and environmental concerns. • The Chief and Council also voiced their support for treatment options that include UV disinfection. • We recognize the importance of engaging with the KFN and obtaining their support in order to move forward with any of these options because the entire plan area falls within the KFN's unseeded territory. • The CVRD is going to meet with the KFN Chief and Council on March 27. We will touch base again with Committee members if plans change or KFN does not support any of the options. 	Kris La Rose
6.4	<p>Long List Options – Conveyance</p> <ul style="list-style-type: none"> • From our experience, construction costs in the intertidal zone are twice as much as construction in terrestrial zone because inefficiencies due to tidal cycles, stringent regulations, nature of construction on wet sand and requirement for specialized equipment. • 40 per cent contingency is carried in the Class D cost estimates to account for unknowns at this stage. • An extra 20 per cent contingency is being carried for the tunneling options to account for inherent risk of cost overruns with tunnels. • Asset replacement cost is considered as part of the life cycle costs (60 years for 100 per cent pipe replacement, 25 years for replacement of 40 per cent for structures) • Annual inflation rates are considered: 3 per cent for labour, 3.02 per cent for construction (figures from the <i>Engineering News Record</i> (ENR)) and 5 per cent increase in power demand and energy costs. • What is the proximity of tunnel to water wells that could affect the ground water supply? – M. Lang <ul style="list-style-type: none"> ○ Don't know the exact answer to that but the interference with well water supply depends on the size and depth of the tunnel relative to the size of the aquifer. However, any 	Walt Bayless

ITEM	DESCRIPTION	OWNER
	<p>impacts are likely to be temporary during the construction period. – W. Bayless</p> <ul style="list-style-type: none"> • Truck traffic across the 17th Street Bridge could be significant, especially if it coincides with the upgrading project of the 5th Street Bridge. This would be worth consideration as a social aspect. – W. Cole-Hamilton • The 3.02 per cent construction inflation rate from ENR seems low, was this an average over a long time? – W. Cole-Hamilton <ul style="list-style-type: none"> ○ Yes, there is a significant uncertainty on the inflation/interest rates but changes in rates won't make a difference in terms of the relative cost of the 'buckets' of the options. – W. Bayless ○ Also, the ENR is a North American index and therefore local variabilities may come into play, especially on the island. – P. Nash 	
6.5	<p>Review of TAC Score of Technical Criteria</p> <ul style="list-style-type: none"> • Was there a consideration for ease of recovery after a disaster? – K. Niemi <ul style="list-style-type: none"> ○ The ease/complexity of recovery was factored in the operational considerations. – W. Bayless • Compared to previous processes I was involved in, it was a good surprise and reassuring to see that the sensitivity analysis resulted in a consistent shift of the option groups/buckets. – R. O'Grady 	Paul Nash
6.6	<p>TACPAC Evaluation of Long List Options – Conveyance</p> <ul style="list-style-type: none"> • Do any of these options affect the septicity of the sewer? Is there a measure to control odour for these options? – J. Steel <ul style="list-style-type: none"> ○ In general, the longer the route, the more septic the wastewater becomes. There are way to mitigate odour such as adding Ferrous Chloride (FeCl₂) in the collection laterals and conveyance mains. However, these are not silver bullets but odour issues can be addressed. – W. Bayless ○ We have hydrogen sulfide (H₂S) concentration at the headworks of about 5 parts per million (ppm) and occasionally that rises to 20 ppm for a short time. Adding FeCl₂ works but it does not eliminate septicity. – M. Imrie ○ It is appropriate to consider the septicity for options that take the longest path of conveyance to the treatment plant.- K. La Rose • To what extent does the geology affect the tunneling options? – T. Ennis <ul style="list-style-type: none"> ○ Our analysis was primarily based off of the available well data on Lazo hill, which mostly show sandy composition. However, a more detailed analysis would be exercised in the detailed study of the short listed options. – W. Bayless • I would prefer evaluating economic benefits based on percentage of cost that stays in the local economy rather than absolute values. – W. Cole-Hamilton (supported by the majority of TACPAC members) 	

ITEM	DESCRIPTION	OWNER
	<ul style="list-style-type: none"> • Access/time required to get to the damaged sections and the environmental damage that may occur in the meantime should be considered in the environmental category. • Where are the archaeological sensitivities considered? – W. Bayless <ul style="list-style-type: none"> ○ The TAC suggested that archaeological factors should be evaluated as part of both environmental and social benefits factors. – K. La Rose • It is important to keep in mind that in addition to the estuary and foreshore, inland areas such as the Comox Road. are known archaeological sites. – T. Ennis • Was the land acquisition cost for the treatment plant of Option 5 considered? <ul style="list-style-type: none"> ○ There was no particular consideration related to any of the options such as those that include a new pump station or a new treatment plant.- K. La Rose • What is the extent of the “general vicinity” noted for replacing the Jane Place Pump Station? <ul style="list-style-type: none"> ○ From a technical perspective, the objective of this new pump station is to use the existing gravity collection system to capture flows. However, locating the pump station and the boundary of the study area is beyond what I can speak to. – W. Bayless ○ We have a circle around the general area for potential pump station placement. At this point, the intent is not to have an inline pump station outside Comox. • Has there been a consideration for the fact that Area ‘B’ residents do not have the benefit of using the wastewater system but would experience the same disruption as the municipalities? And therefore the level of social impact would be different depending on whether those impacted benefit from the system? <ul style="list-style-type: none"> ○ All the septic systems in the valley discharge in the CVWPCC and therefore residents of Area ‘B’ and the other local areas are beneficiaries of the system. Also, the main trigger of this LWMP process is to mitigate the risk of a catastrophic failure of the section of the forcemain along the Willemar Bluffs, which would be in the interest of the entire community to solve. – D. Jacques ○ We are focussed on identifying a solution to the problems related to conveyance in this LWMP process. Topics related to the governance of the sewer system and participation to the service is out of the scope of this LWMP process. – P. Nash • Siting of tunnel shafts, pump stations should be explored in further detail for the short listed options. – S. Ashfield <p>MOTION: That conveyance short list include Option 2A, Option 3A, B and C, and Option 4A. – M. Lang SECONDED – T. Servizi</p>	

ITEM	DESCRIPTION	OWNER
	<ul style="list-style-type: none"> D. Jacques and R. Craig oppose the motion to include Option 4A in the short list because it scored significantly lower than the other options. <p>MOTION CARRIED – TACPAC consensus on forwarding Option 2A and Option 3A, B and C. Opposition from some members on Option 4A due to its weighting score being so close to other options.</p> <ul style="list-style-type: none"> Does the results from this LWMP process make the work currently underway at the treatment plant redundant? – A. Hamir Some work has been delayed until after the LWMP process is complete (such as adding additional clarifier). However, the equalization tanks and work related to odour control are going ahead independent of the LWMP process. – K. La Rose 	
6.7	<p>LWMP Schedule Update</p> <ul style="list-style-type: none"> May 30 is the start of the FCM Conference and therefore members who are elected officials cannot attend TACPAC 7 as it is currently scheduled. – M. Swift 	
6.8	Preview of TACPAC #7	
6.9	Meeting Adjourned	

Minutes of the meeting of the Liquid Waste Management Plan (LWMP) Joint Technical and Public Advisory Committees (TACPAC) Meeting #6 held on Friday, March 22, 2019 at the Comox Valley Regional District (CVRD) Boardroom, commencing at 9:00am.

PRESENT:

A. Habkirk, Chair and Facilitator	
P. Nash, LWMP Project Coordinator	
K. La Rose, Senior Manager of Water/Wastewater	CVRD
M. Imrie, Manager of Wastewater Services	CVRD
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J. Boguski, Branch Assistant – Engineering Services	CVRD
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ITEM	DESCRIPTION	OWNER
	<ul style="list-style-type: none"> D. Jacques and R. Craig oppose the motion to include Option 4A in the short list because it scored significantly lower than the other options. <p>MOTION CARRIED – TACPAC consensus on forwarding Option 2A and Option 3A, B and C. Opposition from some members on Option 4A due to its weighting score being so close to other options.</p> <ul style="list-style-type: none"> Does the results from this LWMP process make the work currently underway at the treatment plant redundant? – A. Hamir Some work has been delayed until after the LWMP process is complete (such as adding additional clarifier). However, the equalization tanks and work related to odour control are going ahead independent of the LWMP process. – K. La Rose 	
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6.8	Preview of TACPAC #7	
6.9	Meeting Adjourned	

Minutes of the meeting of the Liquid Waste Management Plan (LWMP) Joint Technical and Public Advisory Committees (TACPAC) Meeting #7 held on Monday, September 30, 2019 at the Comox Valley Regional District (CVRD) Boardroom, commencing at 1:00 pm.

PRESENT:	A. Habkirk, Chair and Facilitator	
	P. Nash, LWMP Project Coordinator	
	M. Rutten, General Manager Engineering Services	CVRD
	K. La Rose, Senior Manager of Water/Wastewater	CVRD
	M. Imrie, Manager of Wastewater Services	CVRD
	J. Wallis, Branch Assistant – Engineering Services	CVRD
	Z. Berkey, Engineering Analyst	CVRD
	C. Engisch	Baseline Archaeological
	A. Bennett	WSP
	C. Campbell	WSP
	D. Grimes	MJA
	M. Swift, Town of Comox Councillor	PAC
	W. Cole-Hamilton, City of Courtenay Councillor	PAC
	A. Hamir, Lazo North – Electoral Area B Director	PAC
	M. Horton, K'ómoks First Nation	PAC/TAC
	A. Gower, Comox Valley Chamber of Commerce	PAC
	E. Nowak, CV Conservation Partnership Alternate	PAC
	H. Dewhirst, Comox Business Improvement Association	PAC
	S. Carey, Courtenay Resident Representative	PAC
	K. Niemi, Courtenay Resident Representative	PAC
	K. vanVelzen, Comox Resident Representative	PAC
	D. Jacquest, Comox Resident Representative	PAC
	R. Craig, Comox Resident Representative	PAC
	D. Winterburn, BC Shellfish Growers Association	PAC
	J. Steel, Area B Resident Representative Alternate	PAC
	L. Aitken, Area B Representative Alternate (observer)	PAC
	M. Lang, Area B Resident Representative	PAC
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7.9	Meeting Adjourned	

Minutes of the meeting of the Liquid Waste Management Plan (LWMP) Joint Technical and Public Advisory Committees (TACPAC) Meeting #7 held on Monday, September 30, 2019 at the Comox Valley Regional District (CVRD) Boardroom, commencing at 1:00 pm.

PRESENT:	A. Habkirk, Chair and Facilitator	
	P. Nash, LWMP Project Coordinator	
	M. Rutten, General Manager Engineering Services	CVRD
	K. La Rose, Senior Manager of Water/Wastewater	CVRD
	M. Imrie, Manager of Wastewater Services	CVRD
	J. Wallis, Branch Assistant – Engineering Services	CVRD
	Z. Berkey, Engineering Analyst	CVRD
	C. Engisch	Baseline Archaeological
	A. Bennett	WSP
	C. Campbell	WSP
	D. Grimes	MJA
	M. Swift, Town of Comox Councillor	PAC
	W. Cole-Hamilton, City of Courtenay Councillor	PAC
	A. Hamir, Lazo North – Electoral Area B Director	PAC
	M. Horton, K'ómoks First Nation	PAC/TAC
	A. Gower, Comox Valley Chamber of Commerce	PAC
	E. Nowak, CV Conservation Partnership Alternate	PAC
	H. Dewhirst, Comox Business Improvement Association	PAC
	S. Carey, Courtenay Resident Representative	PAC
	K. Niemi, Courtenay Resident Representative	PAC
	K. vanVelzen, Comox Resident Representative	PAC
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7.9	Meeting Adjourned	

Minutes of the meeting of the Liquid Waste Management Plan (LWMP) Joint Technical and Public Advisory Committees (TACPAC) Meeting #8 held on Thursday, December 5, 2019 at the Comox Valley Regional District (CVRD) Boardroom, commencing at 9:00 am.

PRESENT:	A. Habkirk, Chair and Facilitator	
	P. Nash, LWMP Project Coordinator	
	M. Rutten, General Manager Engineering Services	CVRD
	K. La Rose, Senior Manager of Water/Wastewater	CVRD
	M. Imrie, Manager of Wastewater Services	CVRD
	J. Boguski, Branch Assistant – Engineering Services	CVRD
	Z. Berkey, Engineering Analyst	CVRD
	J. Morin	
	A. Bennett	WSP
	A. Gibb	WSP
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	W. Cole-Hamilton, City of Courtenay Councillor	PAC
	A. Hamir, Lazo North – Electoral Area B Director	PAC
	C. McColl, K'ómoks First Nation	PAC/TAC
	A. Gower, Comox Valley Chamber of Commerce	PAC
	T. Ennis, CV Conservation Partnership Alternate	PAC
	S. Carey, Courtenay Resident Representative	PAC
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	K. van Velzen, Comox Resident Representative	PAC
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	A. Munro, BC Shellfish Growers Association	PAC
	J. Steel, Area B Resident Representative	PAC
	L. Aitken, Area B Representative Alternate (observer)	PAC
	M. Lang, Area B Resident Representative	PAC
	C. Davidson, City of Courtenay Engineering (alternate)	TAC
	S. Ashfield, Town of Comox Engineering	TAC

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8.1	Call to Order Meeting called to order at 9:00am	Allison Habkirk
8.2	Review of Minutes of Meeting #7 MOTION: To adopt minutes of meeting #7 – R. Craig SECONDED – M. Swift CARRIED	
8.3	K'ómoks First Nation Archaeology Presentation Jesse Morin presented traditional territories of the Salish people, their history and the geographic regions of the different first nation languages.	Jesse Morin
8.4	Break 10:00 – 10:20	

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8.5	<p>LWMP Decision Making Process Presentation</p> <p>Overview and clarification of the TAC/PAC's role in the LWMP process as referred to in the Terms of Reference.</p> <p>Will this group make only one recommendation?</p> <ul style="list-style-type: none"> - The TAC/PAC will provide at least three recommendations, possibly more. One recommendation for each aspect, being conveyance, treatment and resource recovery. <p>If the TAC/PAC only have one recommendation, can the Sewage Commission (Steering Committee) and CVRD Board say no?</p> <ul style="list-style-type: none"> - The Sewage Commission makes the final decision, as referenced in the LWMP decision structure presentation and Terms of Reference. The Commission is provided with background information to help support recommendation decisions. 	Allison Habkirk
8.6	<p>Treatment Level Assessments Presentation- Technical</p> <p>WSP provided overview of levels of treatment assessment.</p> <p>The upgrades at the wastewater treatment plant will be triggered on flows not on year prescribed based on population projections and will likely be staged. The intent of the TACPAC is to determine the level of treatment at the plant, the actual scheduling of upgrades at the plant will be determined through the master planning process. The population estimates used for this analysis come from the 2016 ISL report. A review of population projections will be completed incorporating the following feedback from the TACPAC:</p> <ul style="list-style-type: none"> • Table 1 in the report shows zero per cent growth for CFB Comox. That will need to be adjusted, Shelly Ashfield can provide those projection numbers. • A review of higher density projections from the Town of Comox that have been completed as part of additional study work, will be reviewed and considered within these population projections. • Universal water metering will likely effect sewage flows, resulting in changes to the staging of future upgrades. <p>Is treatment of odour part of the LWMP?</p> <ul style="list-style-type: none"> - Sewage plant odour was ranked high in the early evaluation process. - Odour treatment studies are happening in parallel to this process and will be brought forward to the Sewage Commission in early 2020. Odour control upgrades are not a differentiator between the levels of treatment options presented to the TACPAC. <p>Union Bay growth projections and current applications for their effluent discharge into Hart Creek is very concerning to the community.</p> <ul style="list-style-type: none"> - In parallel to the LWMP, the CVRD are looking at governance implications to convey and treat Electoral Area A wastewater. <p>Why are the site plans presented by WSP quite different from the 2016 ISL report?</p> <ul style="list-style-type: none"> - Upgrades to the plant can be configured a number of different ways. The site layout will be developed as part of the comprehensive 	WSP

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8.6	<p>master plan for the CVWPCC. The presentation is just a comparative cost estimate to determine treatment level.</p> <p>What happens to the biological material captured by the disc filter? How is the final effluent improved?</p> <ul style="list-style-type: none"> - 95 per cent BOD/TSS is removed. That material goes to the solids removal process already in place and carries on to Skyrocket production. <p>For Option 3, when would we bypass the advanced treatment?</p> <ul style="list-style-type: none"> • Advanced treatment will only be bypassed during high flow events, likely one to two per cent of total flow through the plant would be bypassed annually. <p>What is the lifespan of the disc filters?</p> <ul style="list-style-type: none"> • A cloth media filter is replaced once in a while, it is a far lower cost option than membranes. <p>What is the implication to the aquifer from reclaimed water use?</p> <ul style="list-style-type: none"> • An environmental impact study would be required prior to implementation of reclaimed water use for irrigation. At this time, reclaimed water won't be used for irrigation, it would be used in the sewage treatment processing. <p>Why is treatment focused on BOD and TSS?</p> <ul style="list-style-type: none"> • BOD and TSS cause changes to the receiving environment and can cause oxygen deficiency in water and impact higher forms of life. <p>Why the range in the removal of micro plastics for the different options?</p> <ul style="list-style-type: none"> • Relatively new field, still understanding the impact of varying levels of treatment on micro plastics, it is largely based on the performance of the plant. <p>The CVWPCC currently is far below its discharge limit for BOD and TSS and is treating wastewater to the same limits as presented within Option 3 and 4.</p> <p>If Option 2 is selected, it does not preclude the option to add tertiary treatment in the future, if regulations/needs change in future years. Consideration in the site layout as part of the master plan process must be done accordingly to allow such flexibility in the future.</p>	WSP
8.9	Lunch 12:00 – 12:35	
8.10	<p>Treatment Level Assessments Discussion - Financial</p> <p>Significant discussion occurred on the current effluent quality of the plant and the economic and social benefits of addition of disc filter at the plant if the plant currently outputs quality that would be achieved by a filter.</p>	WSP/CVRD

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8.10	<p>For the cost per connection impact analysis, were senior government grants taken into consideration on the assumptions?</p> <ul style="list-style-type: none">- No the analysis does not take into account grant funding, and presents the worst case scenario for users. <p>Surprised that the cost per connection numbers are so low given the costs provided.</p> <ul style="list-style-type: none">- The Comox Valley Water Treatment Project went through a similar process, the LWMP process is consistent with that. <p>The meeting discussions did not allow time for the TAC/PAC to make a recommendation. It is suggested to either extend today's meeting by 20 minutes or forward this discussion and decision to a new meeting.</p> <p>MOTION: To adjourn Meeting #8 and have a new meeting in late January to complete decision on levels of treatment.</p> <p>CARRIED</p> <p>The next LWMP meeting will combine further discussion and a recommendation for treatment with resource recovery discussion/recommendation.</p>	WSP/CVRD
8.11	Meeting Adjourned 3:05pm	

Minutes of the meeting of the Liquid Waste Management Plan (LWMP) Joint Technical and Public Advisory Committees (TACPAC) Meeting #8 held on Thursday, December 5, 2019 at the Comox Valley Regional District (CVRD) Boardroom, commencing at 9:00 am.

PRESENT:	A. Habkirk, Chair and Facilitator	
	P. Nash, LWMP Project Coordinator	
	M. Rutten, General Manager Engineering Services	CVRD
	K. La Rose, Senior Manager of Water/Wastewater	CVRD
	M. Imrie, Manager of Wastewater Services	CVRD
	J. Boguski, Branch Assistant – Engineering Services	CVRD
	Z. Berkey, Engineering Analyst	CVRD
	J. Morin	
	A. Bennett	WSP
	A. Gibb	WSP
	M. Swift, Town of Comox Councillor	PAC
	W. Cole-Hamilton, City of Courtenay Councillor	PAC
	A. Hamir, Lazo North – Electoral Area B Director	PAC
	C. McColl, K'ómoks First Nation	PAC/TAC
	A. Gower, Comox Valley Chamber of Commerce	PAC
	T. Ennis, CV Conservation Partnership Alternate	PAC
	S. Carey, Courtenay Resident Representative	PAC
	K. Niemi, Courtenay Resident Representative	PAC
	K. van Velzen, Comox Resident Representative	PAC
	D. Jacquest, Comox Resident Representative	PAC
	R. Craig, Comox Resident Representative	PAC
	A. Munro, BC Shellfish Growers Association	PAC
	J. Steel, Area B Resident Representative	PAC
	L. Aitken, Area B Representative Alternate (observer)	PAC
	M. Lang, Area B Resident Representative	PAC
	C. Davidson, City of Courtenay Engineering (alternate)	TAC
	S. Ashfield, Town of Comox Engineering	TAC

ITEM	DESCRIPTION	OWNER
8.1	Call to Order Meeting called to order at 9:00am	Allison Habkirk
8.2	Review of Minutes of Meeting #7 MOTION: To adopt minutes of meeting #7 – R. Craig SECONDED – M. Swift CARRIED	
8.3	K'ómoks First Nation Archaeology Presentation Jesse Morin presented traditional territories of the Salish people, their history and the geographic regions of the different first nation languages.	Jesse Morin
8.4	Break 10:00 – 10:20	

ITEM	DESCRIPTION	OWNER
8.5	<p>LWMP Decision Making Process Presentation</p> <p>Overview and clarification of the TAC/PAC's role in the LWMP process as referred to in the Terms of Reference.</p> <p>Will this group make only one recommendation?</p> <ul style="list-style-type: none"> - The TAC/PAC will provide at least three recommendations, possibly more. One recommendation for each aspect, being conveyance, treatment and resource recovery. <p>If the TAC/PAC only have one recommendation, can the Sewage Commission (Steering Committee) and CVRD Board say no?</p> <ul style="list-style-type: none"> - The Sewage Commission makes the final decision, as referenced in the LWMP decision structure presentation and Terms of Reference. The Commission is provided with background information to help support recommendation decisions. 	Allison Habkirk
8.6	<p>Treatment Level Assessments Presentation- Technical</p> <p>WSP provided overview of levels of treatment assessment.</p> <p>The upgrades at the wastewater treatment plant will be triggered on flows not on year prescribed based on population projections and will likely be staged. The intent of the TACPAC is to determine the level of treatment at the plant, the actual scheduling of upgrades at the plant will be determined through the master planning process. The population estimates used for this analysis come from the 2016 ISL report. A review of population projections will be completed incorporating the following feedback from the TACPAC:</p> <ul style="list-style-type: none"> • Table 1 in the report shows zero per cent growth for CFB Comox. That will need to be adjusted, Shelly Ashfield can provide those projection numbers. • A review of higher density projections from the Town of Comox that have been completed as part of additional study work, will be reviewed and considered within these population projections. • Universal water metering will likely effect sewage flows, resulting in changes to the staging of future upgrades. <p>Is treatment of odour part of the LWMP?</p> <ul style="list-style-type: none"> - Sewage plant odour was ranked high in the early evaluation process. - Odour treatment studies are happening in parallel to this process and will be brought forward to the Sewage Commission in early 2020. Odour control upgrades are not a differentiator between the levels of treatment options presented to the TACPAC. <p>Union Bay growth projections and current applications for their effluent discharge into Hart Creek is very concerning to the community.</p> <ul style="list-style-type: none"> - In parallel to the LWMP, the CVRD are looking at governance implications to convey and treat Electoral Area A wastewater. <p>Why are the site plans presented by WSP quite different from the 2016 ISL report?</p> <ul style="list-style-type: none"> - Upgrades to the plant can be configured a number of different ways. The site layout will be developed as part of the comprehensive 	WSP

ITEM	DESCRIPTION	OWNER
8.6	<p>master plan for the CVWPCC. The presentation is just a comparative cost estimate to determine treatment level.</p> <p>What happens to the biological material captured by the disc filter? How is the final effluent improved?</p> <ul style="list-style-type: none"> - 95 per cent BOD/TSS is removed. That material goes to the solids removal process already in place and carries on to Skyrocket production. <p>For Option 3, when would we bypass the advanced treatment?</p> <ul style="list-style-type: none"> • Advanced treatment will only be bypassed during high flow events, likely one to two per cent of total flow through the plant would be bypassed annually. <p>What is the lifespan of the disc filters?</p> <ul style="list-style-type: none"> • A cloth media filter is replaced once in a while, it is a far lower cost option than membranes. <p>What is the implication to the aquifer from reclaimed water use?</p> <ul style="list-style-type: none"> • An environmental impact study would be required prior to implementation of reclaimed water use for irrigation. At this time, reclaimed water won't be used for irrigation, it would be used in the sewage treatment processing. <p>Why is treatment focused on BOD and TSS?</p> <ul style="list-style-type: none"> • BOD and TSS cause changes to the receiving environment and can cause oxygen deficiency in water and impact higher forms of life. <p>Why the range in the removal of micro plastics for the different options?</p> <ul style="list-style-type: none"> • Relatively new field, still understanding the impact of varying levels of treatment on micro plastics, it is largely based on the performance of the plant. <p>The CVWPCC currently is far below its discharge limit for BOD and TSS and is treating wastewater to the same limits as presented within Option 3 and 4.</p> <p>If Option 2 is selected, it does not preclude the option to add tertiary treatment in the future, if regulations/needs change in future years. Consideration in the site layout as part of the master plan process must be done accordingly to allow such flexibility in the future.</p>	WSP
8.9	Lunch 12:00 – 12:35	
8.10	<p>Treatment Level Assessments Discussion - Financial</p> <p>Significant discussion occurred on the current effluent quality of the plant and the economic and social benefits of addition of disc filter at the plant if the plant currently outputs quality that would be achieved by a filter.</p>	WSP/CVRD

ITEM	DESCRIPTION	OWNER
8.10	<p>For the cost per connection impact analysis, were senior government grants taken into consideration on the assumptions?</p> <ul style="list-style-type: none">- No the analysis does not take into account grant funding, and presents the worst case scenario for users. <p>Surprised that the cost per connection numbers are so low given the costs provided.</p> <ul style="list-style-type: none">- The Comox Valley Water Treatment Project went through a similar process, the LWMP process is consistent with that. <p>The meeting discussions did not allow time for the TAC/PAC to make a recommendation. It is suggested to either extend today's meeting by 20 minutes or forward this discussion and decision to a new meeting.</p> <p>MOTION: To adjourn Meeting #8 and have a new meeting in late January to complete decision on levels of treatment.</p> <p>CARRIED</p> <p>The next LWMP meeting will combine further discussion and a recommendation for treatment with resource recovery discussion/recommendation.</p>	WSP/CVRD
8.11	Meeting Adjourned 3:05pm	

Minutes of the meeting of the Liquid Waste Management Plan (LWMP) Joint Technical and Public Advisory Committees (TACPAC) Meeting #9 held on Wednesday, March 4, 2020 at the Comox Valley Curling Club, commencing at 9:00 am.

PRESENT:	A. Habkirk, Chair and Facilitator	
	P. Nash, LWMP Project Coordinator	
	K. La Rose, Senior Manager of Water/Wastewater	CVRD
	J. Boguski, Branch Assistant – Engineering Services	CVRD
	Z. Berkey, Engineering Analyst	CVRD
	C. Wile, Manager of External Relations	CVRD
	A. Gibb	WSP
	M. Swift, Town of Comox Councillor	PAC
	W. Cole-Hamilton, City of Courtenay Councillor	PAC
	D. Frisch, City of Courtenay Councillor Alternate (observer)	PAC
	A. Hamir, Lazo North – Electoral Area B Director	PAC
	A. Gower, Comox Valley Chamber of Commerce	PAC
	T. Ennis, CV Conservation Partnership Alternate	PAC
	S. Carey, Courtenay Resident Representative	PAC
	K. Niemi, Courtenay Resident Representative	PAC
	K. van Velzen, Comox Resident Representative	PAC
	D. Jacquest, Comox Resident Representative	PAC
	R. Craig, Comox Resident Representative	PAC
	L. Aitken, Area B Representative Alternate (observer)	PAC
	M. Lang, Area B Resident Representative	PAC
	S. Ashfield, Town of Comox Engineering	TAC
	A. Gaudet, Department of National Defence	TAC

ITEM	DESCRIPTION	OWNER
9.1	Call to Order Meeting called to order at 9:00am	Allison Habkirk
9.2	Review of Minutes of Meeting #8 Include within item 8.5 – if consensus is not reached on a decision point both the majority and minority view points will be brought forward to the Sewage Commission for consideration as described in the process outlined within the terms of reference for TACPAC. The addition of water filtration disk will change the operating and maintenance (O&M) cost greatly, that's not clarified in the minutes, and will this be discussed today? - Will be discussed as part of today's agenda. Will the cumulative impact of the LWMP be detailed/publicized? - That will be presented and is a required component of the LWMP process.	Allison Habkirk

ITEM	DESCRIPTION	OWNER
9.2	MOTION: To adopt minutes of meeting #8 – M. Lang SECONDED – M. Swift CARRIED	Allison Habkirk
9.3	<p>Update on Conveyance Option 4A to be removed following K'ómoks First Nation (KFN) consultation and due to its low score (high O&M costs).</p> <p>Will increased pressure in the conveyance lines affect the remaining lifespan?</p> <ul style="list-style-type: none"> - A detailed description on the forcemain condition assessment completed by Pure Technologies in 2017 was provided. The assessment completed included a structural analysis that included an analysis on the impacts to the pipe in regards to changes in pressure and will be considered going forward with analysis. <p>The shortlist conveyance option names are changing to better clarify the discussions going forward: Option 2A, overland forcemain, is now Option 1 Option 3 Series, tunneling, is now Option 2 Option 3 Series, tunneling with phased construction, is now Option 3</p> <p>Have the KFN agreed to Option 3?</p> <ul style="list-style-type: none"> - They have approved consideration of the shortlist. <p>Will an Alternate Approval Process be required for the phased construction approach?</p> <ul style="list-style-type: none"> - Yes. For any option borrowing will be required which will require a public approval process. <p>Would Phase 2 of Option 3 be included in the LWMP document?</p> <ul style="list-style-type: none"> - Hopefully yes, that is what we would like to happen. <p>As part of stage 3 of the LWMP process a timeline for implementing the project will be required.</p> <p>Are other options that were previously eliminated more viable now that we know the existing transmission main is in better condition than expected and that a phased approach can be implemented?</p> <ul style="list-style-type: none"> - No, it wouldn't change the ratings significantly. 	Kris La Rose
9.4	<p>Wastewater Treatment Level Assessments Why don't we test the effluent for nitrogen?</p> <ul style="list-style-type: none"> - It is not a required testing parameter. Testing other parameters, including ammonia, is standard and required (toxicity test). <p>At what point do the disk filters become a waste product?</p> <ul style="list-style-type: none"> - The media will require periodic replacement which will require disposal at the landfill. The amount of cloth media is relatively small. 	Al Gibb, WSP

ITEM	DESCRIPTION	OWNER
9.4	<p>Do the disk filters have the potential to remove future contaminants?</p> <ul style="list-style-type: none"> - Filters will improve the removal of solids from the effluent/liquid stream but solids that are removed from the liquid stream will be added to the solid stream. <p>What volume of reclaimed water would be available?</p> <ul style="list-style-type: none"> - Amount of reclaimed water generated is typically determined on the intended use. For the CVWPCC, the plant utilizes roughly 50,000m³ of potable water a year. The majority of this water could be changed from potable to reclaimed water to limit consumption. <p>Reclaimed water is a public amenity and maybe we should communicate it as such. The CVWPCC already processes reclaimed water. Another use for this water could be for ground compaction (construction sites).</p> <p>Are contingencies included in the cost estimates?</p> <ul style="list-style-type: none"> - Yes, 40%. <p>Option 3 (200% of average dry weather flows [ADWF]) is there a cost difference between, for example, 150% - 200%? How was 2xADWF selected?</p> <ul style="list-style-type: none"> - 2x ADWF, is arbitrary, you could design the filtration system to any size, 2x ADWF was used as it reflects the provincial guideline requirements for secondary treatment being require to 2xADWF. The cost difference is minimal when evaluating between 100% - 200%. <p>Grant Funding</p> <p>Is there a break point between Option 2 and 3 where more or less grant funding is available?</p> <ul style="list-style-type: none"> - Innovative technology is another section of funding that is available. Consideration of whether the project brings the service to federal standards also helps grant approval. 	Al Gibb, WSP
9.5	<p>Evaluation of Treatment Options</p> <p>Review of the evaluation system and methodology was completed. Each option is compared to the status quo to provide a consistent ranking system between different options for level of treatment.</p> <p>If we're already treating the sewage better than industry standards, how do we justify and communicate paying for these upgrades?</p> <ul style="list-style-type: none"> - Regulatory standard does not necessarily fully protect the receiving environment. Specially that we have a lot of aquaculture activity. By implementing further treatment, we are doing more to protect the receiving environment in the future. Regulatory standard is a bare minimum and aspiring to meet that standard isn't necessarily sufficient. <p>Will UV disinfection help to remove micro plastics?</p> <ul style="list-style-type: none"> - Not to a large degree, if at all. 	Paul Nash

ITEM	DESCRIPTION	OWNER
9.5	<p>Discussion on social benefits of the treatment options:</p> <ul style="list-style-type: none"> • The CVWPCC can definitively say it's not contributing to recreation beach closures due to contaminants if implement filtration at the plant. • Public perception on our quality standards are high. • It's suggested to split the Social Benefit category 15% to reflect 5% on a reputation social benefit and 10% on a physical social benefit. • Also consider the social benefit to the local economy for supply of materials/labour for each option into the rankings. • Are the weightings set? 15% seems high for the social benefit category considering we are struggling to produce evaluation factors for it. <ul style="list-style-type: none"> ○ Yes, the ratings are set as per the decision of the TACPAC from our first meetings. If we think this is distorting ranking of each option, we can leave this for now and re-evaluate the weighing percentages per category. <p>Will adding filters increase potential use of the EQ Basin?</p> <ul style="list-style-type: none"> - No, it is designed to not impact the frequency of when the EQ Basin will need to be used. 	Paul Nash
	Lunch	
9.6	<p>Evaluation of Treatment Options</p> <p>Each member discussed their opinions on a preferred option, summarized are the common themes below:</p> <ul style="list-style-type: none"> • Considering that Options 3 and 4 can be implemented later. Option 2 seems most viable, cost effective and provides greater flexibility for the future. • Given that no good measure for 'other contaminants' is currently present, Option 2 is preferred at this time. It gives more adaptability for future changes to regulation, we can phase the upgrades as needed. Upgrades that are required may change over the years from change in regulation. • Costs aside, Option 3 is preferred, but Option 2 is a better value. • Disinfection is the stronger barrier for the shellfish industry, however, filtration is important and hopefully will be written into the LWMP that it be considered in a later phase of upgrades. We are essentially relying on the marine environment to handle the extra pollutants that are present without disk filters. • There is value in building for the future, Option 3 will be more expensive to build in the future. It's more cost effective to do it now. Regulations and restrictions will become more stringent and we should build to accommodate those future standards now. 	Paul Nash

ITEM	DESCRIPTION	OWNER
9.6	<ul style="list-style-type: none"> It's not a lost opportunity to not include filtration now. It can be built later on. The LWMP will be reviewed and updated every 5 to 10 years and in this first version of the plan, language can be added to ensure filtration is added 'when necessary or desired' and that treatment levels be re-evaluated and necessary changes be implemented. <p>Did Option 3's financial rating consider using reclaimed water? Would that be a considerable savings?</p> <ul style="list-style-type: none"> Reclaimed water was considered separate to all in terms of financial score. <p>Do we have to choose just these options or can we combine options to create a new one to bring forward for recommendation?</p> <ul style="list-style-type: none"> We can put forward whatever the TACPAC chooses. <p>What are the implications of changing the design of disinfection to add filtration?</p> <ul style="list-style-type: none"> Almost no cost changes, just have to keep that considered in the design. <p>MOTION: To recommend to the Comox Valley Sewage Commission Option 2 as the preferred level of treatment at the CVWPCC, with consideration given to implement Option 3 or 4 if and when required or desired – R. Craig SECONDED: K. Neimi OPPOSED – A. Gower; M. Lang CARRIED</p> <p>In keeping with the TACPAC's decision making procedures, members Gower and Lang would provide a follow up (written) statement of the reasons for their dissenting opinion, and this will be provided to the Comox Valley Sewage Commission.</p>	Paul Nash
9.7	<p>Resource Recovery</p> <p>The results of the reclaimed water ideas session at TACPAC meeting #5 of February 2019 were presented and discussed. While there are many potential uses for reclaimed water, all of them except on-site use are located some distance away from the CVWPCC. The largest potential users, such as agriculture in the Portuguese Creek watershed, are located the farthest away.</p> <p>Discussion on reclaimed water:</p> <ul style="list-style-type: none"> Reclaimed water use is better to be written into the LWMP as on-site use only right now, because at the moment, there's no desire from potential users. Any additional infrastructure for reclaimed water usage would need to be driven by the interested parties. <p>Discussion occurred on costs and benefits of other resource recovery options including:</p> <ul style="list-style-type: none"> BC Ferries is a potential natural gas customer that is close proximity to the CVWPCC. 	Paul Nash / Al Gibb, WSP

ITEM	DESCRIPTION	OWNER
9.7	<ul style="list-style-type: none"> The Landfill in Cumberland is already working to put natural gas infrastructure to their facility to convey gas captured from the landfill flare and sell it to Fortis BC. <p>The viability of reclaimed heat would be better included as part of future upgrades, retrofitting the CVWPCC to use reclaimed heat is extensive and costly.</p> <p>How much does the CVWPCC spend on potable water per year?</p> <ul style="list-style-type: none"> Estimated at \$50,000 per year. The cost of the reclaimed water project is estimated at \$860,000, so it would take about 16 years for that expense to pay off. <p>Two primary options for consideration by the TACPAC for resource recovery were discussed:</p> <ol style="list-style-type: none"> Commit to installation of reclaimed water as part of the next upgrade at the CVWPCC. Build a business case as part of the master planning process for consideration. <p>It was discussed that at the moment, on-site reclaimed water is the most practical and viable resource recovery option. Ahead of making a recommendation to the Sewage Commission on resource recovery for the CVWPCC the following motion was passed.</p> <p>MOTION: To undertake an analysis/business case for reclaimed water use at the CVWPCC in the short term (before LWMP is finalized) to better inform deciding on a resource recovery option – W. Cole-Hamilton</p> <p>SECONDED: K. Neimi / M. Lang</p> <p>CARRIED</p> <p>Further discussion occurred on committing to review resource recovery, as part of the master planning process in order to give time for further assessments, more detailed study, and opportunity for future grants. CVWPCC Site Master Plan changes/updated do not need to wait for the LWMP to be written, and could look at the potential for reclaimed heat and anaerobic digesters as part of site master planning process.</p>	Paul Nash / Al Gibb, WSP
9.8	Meeting Adjourned	

Minutes of the meeting of the Liquid Waste Management Plan (LWMP) Joint Technical and Public Advisory Committees (TACPAC) Meeting #9 held on Wednesday, March 4, 2020 at the Comox Valley Curling Club, commencing at 9:00 am.

PRESENT:	A. Habkirk, Chair and Facilitator	
	P. Nash, LWMP Project Coordinator	
	K. La Rose, Senior Manager of Water/Wastewater	CVRD
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	C. Wile, Manager of External Relations	CVRD
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ITEM	DESCRIPTION	OWNER
9.2	MOTION: To adopt minutes of meeting #8 – M. Lang SECONDED – M. Swift CARRIED	Allison Habkirk
9.3	<p>Update on Conveyance Option 4A to be removed following K'ómoks First Nation (KFN) consultation and due to its low score (high O&M costs).</p> <p>Will increased pressure in the conveyance lines affect the remaining lifespan?</p> <ul style="list-style-type: none"> - A detailed description on the forcemain condition assessment completed by Pure Technologies in 2017 was provided. The assessment completed included a structural analysis that included an analysis on the impacts to the pipe in regards to changes in pressure and will be considered going forward with analysis. <p>The shortlist conveyance option names are changing to better clarify the discussions going forward: Option 2A, overland forcemain, is now Option 1 Option 3 Series, tunneling, is now Option 2 Option 3 Series, tunneling with phased construction, is now Option 3</p> <p>Have the KFN agreed to Option 3?</p> <ul style="list-style-type: none"> - They have approved consideration of the shortlist. <p>Will an Alternate Approval Process be required for the phased construction approach?</p> <ul style="list-style-type: none"> - Yes. For any option borrowing will be required which will require a public approval process. <p>Would Phase 2 of Option 3 be included in the LWMP document?</p> <ul style="list-style-type: none"> - Hopefully yes, that is what we would like to happen. <p>As part of stage 3 of the LWMP process a timeline for implementing the project will be required.</p> <p>Are other options that were previously eliminated more viable now that we know the existing transmission main is in better condition than expected and that a phased approach can be implemented?</p> <ul style="list-style-type: none"> - No, it wouldn't change the ratings significantly. 	Kris La Rose
9.4	<p>Wastewater Treatment Level Assessments Why don't we test the effluent for nitrogen?</p> <ul style="list-style-type: none"> - It is not a required testing parameter. Testing other parameters, including ammonia, is standard and required (toxicity test). <p>At what point do the disk filters become a waste product?</p> <ul style="list-style-type: none"> - The media will require periodic replacement which will require disposal at the landfill. The amount of cloth media is relatively small. 	Al Gibb, WSP

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9.5	<p>Evaluation of Treatment Options</p> <p>Review of the evaluation system and methodology was completed. Each option is compared to the status quo to provide a consistent ranking system between different options for level of treatment.</p> <p>If we're already treating the sewage better than industry standards, how do we justify and communicate paying for these upgrades?</p> <ul style="list-style-type: none"> - Regulatory standard does not necessarily fully protect the receiving environment. Specially that we have a lot of aquaculture activity. By implementing further treatment, we are doing more to protect the receiving environment in the future. Regulatory standard is a bare minimum and aspiring to meet that standard isn't necessarily sufficient. <p>Will UV disinfection help to remove micro plastics?</p> <ul style="list-style-type: none"> - Not to a large degree, if at all. 	Paul Nash

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9.5	<p>Discussion on social benefits of the treatment options:</p> <ul style="list-style-type: none"> • The CVWPCC can definitively say it's not contributing to recreation beach closures due to contaminants if implement filtration at the plant. • Public perception on our quality standards are high. • It's suggested to split the Social Benefit category 15% to reflect 5% on a reputation social benefit and 10% on a physical social benefit. • Also consider the social benefit to the local economy for supply of materials/labour for each option into the rankings. • Are the weightings set? 15% seems high for the social benefit category considering we are struggling to produce evaluation factors for it. <ul style="list-style-type: none"> ○ Yes, the ratings are set as per the decision of the TACPAC from our first meetings. If we think this is distorting ranking of each option, we can leave this for now and re-evaluate the weighing percentages per category. <p>Will adding filters increase potential use of the EQ Basin?</p> <ul style="list-style-type: none"> - No, it is designed to not impact the frequency of when the EQ Basin will need to be used. 	Paul Nash
	Lunch	
9.6	<p>Evaluation of Treatment Options</p> <p>Each member discussed their opinions on a preferred option, summarized are the common themes below:</p> <ul style="list-style-type: none"> • Considering that Options 3 and 4 can be implemented later. Option 2 seems most viable, cost effective and provides greater flexibility for the future. • Given that no good measure for 'other contaminants' is currently present, Option 2 is preferred at this time. It gives more adaptability for future changes to regulation, we can phase the upgrades as needed. Upgrades that are required may change over the years from change in regulation. • Costs aside, Option 3 is preferred, but Option 2 is a better value. • Disinfection is the stronger barrier for the shellfish industry, however, filtration is important and hopefully will be written into the LWMP that it be considered in a later phase of upgrades. We are essentially relying on the marine environment to handle the extra pollutants that are present without disk filters. • There is value in building for the future, Option 3 will be more expensive to build in the future. It's more cost effective to do it now. Regulations and restrictions will become more stringent and we should build to accommodate those future standards now. 	Paul Nash

ITEM	DESCRIPTION	OWNER
9.6	<ul style="list-style-type: none"> It's not a lost opportunity to not include filtration now. It can be built later on. The LWMP will be reviewed and updated every 5 to 10 years and in this first version of the plan, language can be added to ensure filtration is added 'when necessary or desired' and that treatment levels be re-evaluated and necessary changes be implemented. <p>Did Option 3's financial rating consider using reclaimed water? Would that be a considerable savings?</p> <ul style="list-style-type: none"> Reclaimed water was considered separate to all in terms of financial score. <p>Do we have to choose just these options or can we combine options to create a new one to bring forward for recommendation?</p> <ul style="list-style-type: none"> We can put forward whatever the TACPAC chooses. <p>What are the implications of changing the design of disinfection to add filtration?</p> <ul style="list-style-type: none"> Almost no cost changes, just have to keep that considered in the design. <p>MOTION: To recommend to the Comox Valley Sewage Commission Option 2 as the preferred level of treatment at the CVWPCC, with consideration given to implement Option 3 or 4 if and when required or desired – R. Craig SECONDED: K. Neimi OPPOSED – A. Gower; M. Lang CARRIED</p> <p>In keeping with the TACPAC's decision making procedures, members Gower and Lang would provide a follow up (written) statement of the reasons for their dissenting opinion, and this will be provided to the Comox Valley Sewage Commission.</p>	Paul Nash
9.7	<p>Resource Recovery</p> <p>The results of the reclaimed water ideas session at TACPAC meeting #5 of February 2019 were presented and discussed. While there are many potential uses for reclaimed water, all of them except on-site use are located some distance away from the CVWPCC. The largest potential users, such as agriculture in the Portuguese Creek watershed, are located the farthest away.</p> <p>Discussion on reclaimed water:</p> <ul style="list-style-type: none"> Reclaimed water use is better to be written into the LWMP as on-site use only right now, because at the moment, there's no desire from potential users. Any additional infrastructure for reclaimed water usage would need to be driven by the interested parties. <p>Discussion occurred on costs and benefits of other resource recovery options including:</p> <ul style="list-style-type: none"> BC Ferries is a potential natural gas customer that is close proximity to the CVWPCC. 	Paul Nash / Al Gibb, WSP

ITEM	DESCRIPTION	OWNER
9.7	<ul style="list-style-type: none"> The Landfill in Cumberland is already working to put natural gas infrastructure to their facility to convey gas captured from the landfill flare and sell it to Fortis BC. <p>The viability of reclaimed heat would be better included as part of future upgrades, retrofitting the CVWPCC to use reclaimed heat is extensive and costly.</p> <p>How much does the CVWPCC spend on potable water per year?</p> <ul style="list-style-type: none"> Estimated at \$50,000 per year. The cost of the reclaimed water project is estimated at \$860,000, so it would take about 16 years for that expense to pay off. <p>Two primary options for consideration by the TACPAC for resource recovery were discussed:</p> <ol style="list-style-type: none"> Commit to installation of reclaimed water as part of the next upgrade at the CVWPCC. Build a business case as part of the master planning process for consideration. <p>It was discussed that at the moment, on-site reclaimed water is the most practical and viable resource recovery option. Ahead of making a recommendation to the Sewage Commission on resource recovery for the CVWPCC the following motion was passed.</p> <p>MOTION: To undertake an analysis/business case for reclaimed water use at the CVWPCC in the short term (before LWMP is finalized) to better inform deciding on a resource recovery option – W. Cole-Hamilton</p> <p>SECONDED: K. Neimi / M. Lang</p> <p>CARRIED</p> <p>Further discussion occurred on committing to review resource recovery, as part of the master planning process in order to give time for further assessments, more detailed study, and opportunity for future grants. CVWPCC Site Master Plan changes/updated do not need to wait for the LWMP to be written, and could look at the potential for reclaimed heat and anaerobic digesters as part of site master planning process.</p>	Paul Nash / Al Gibb, WSP
9.8	Meeting Adjourned	

Minutes of the meeting of the Liquid Waste Management Plan (LWMP) Joint Technical and Public Advisory Committees (TACPAC) Meeting #10 held on Monday, September 28, 2020 at the Comox Valley Regional District Civic Room and via Zoom Online Conference, commencing at 9:00 am.

PRESENT:	A. Habkirk, Chair and Facilitator	
	P. Nash, LWMP Project Coordinator	
	K. La Rose, Senior Manager of Water/Wastewater	CVRD
	J. Boguski, Branch Assistant – Engineering Services	CVRD
	Z. Berkey, Engineering Analyst	CVRD
	M. Rutten, General Manager of Engineering Services	CVRD
	M. Imrie, Manager of Wastewater Services	CVRD
	J. Warren, Deputy Chief Administrative Officer	CVRD
	C. Campbell	WSP
	E. Wu	WSP
	M. Swift, Town of Comox Councillor	PAC
	W. Cole-Hamilton, City of Courtenay Councillor	PAC
	A. Hamir, Lazo North – Electoral Area B Director	PAC
	T. Ennis, CV Conservation Partnership Alternate	PAC
	S. Carey, Courtenay Resident Representative	PAC
	K. Niemi, Courtenay Resident Representative	PAC
	K. van Velzen, Comox Resident Representative	PAC
	D. Jacquest, Comox Resident Representative	PAC
	R. Craig, Comox Resident Representative	PAC
	L. Aitken, Area B Representative Alternate (observer)	PAC
	M. Lang, Area B Resident Representative	PAC
	J. Steele, Area B Resident Representative	PAC
	H. Dewhirst, Comox BIA	PAC
	E. Derby, Island Health	TAC
	S. Ashfield, Town of Comox Engineering	TAC

ITEM	DESCRIPTION	OWNER
10.1	Call to Order Meeting called to order at 9:00am	Allison Habkirk
10.2	Brief Orientation for Members Attending Virtually An introduction and orientation to the meeting process for in-person and virtual attendees.	Allison Habkirk
10.3	Review of Minutes of Meeting #9 Request for cumulative cost impacts for sewer capital projects to be presented at TACPAC #11. MOTION: To adopt minutes of meeting #9 – W. Cole-Hamilton SECONDED – M. Swift CARRIED	Allison Habkirk
10.4	Update on Process and Work to Date Overview of communications and process delay due to COVID-19. Kris La Rose summarized upcoming public consultation events, including virtual and in-person open houses and the focus on having the public complete the	Kris La Rose

ITEM	DESCRIPTION	OWNER
10.4	<p>online survey. An update on additional preliminary technical assessment work that has been completed due to delay, including further geotechnical investigations in and around Comox Road Hill and Lazo Hill was also provided.</p> <p>An update was provided on the Community Benefit Agreement with the K'ómoks First Nations and timeline for the Sewage Commission Decision on the preferred conveyance option anticipated to be in late November/ early December.</p>	Kris La Rose
10.5	<p>Review of Implementation Process</p> <p>Due to COVID-19, the business case for reclaimed water was deferred. Recommendation that reclaimed water will be considered as part of the master planning process, and the implementation decision would be a decision of the Sewage Commission.</p> <p>Brief discussion on implementation and splitting of the conveyance from the LWMP process following selection of preferred solution.</p> <p>Will dissenting opinions be provided to the TACPAC?</p> <ul style="list-style-type: none"> - Yes, dissenting opinions for level of treatment and conveyance will be provided to the TACPAC, for the record. CVRD staff will follow up with the dissenting TACPAC members 	Paul Nash
10.6	<p>Short List Options- Conveyance - Technical</p> <p>Presentation on alignments and technical considerations for each of the three short-listed conveyance options. Including description of technical considerations for horizontal directional drilling (HDD).</p> <p>Concern that sea level rise values used within the report are too conservative.</p> <ul style="list-style-type: none"> - At the time of publication of the Stage 2 report sea level rise projections were developed utilizing the best available information, being the City of Courtenay's Integrated Flood Management Study and official government of BC recommendations for projections. In early October, the CVRD's planning department received the preliminary results from a comprehensive Floodplain mapping study for the region, the results of this updated study work will be reviewed and compared to the assumptions made within the Stage 2 report and will be incorporated into the current flood proofing work underway by WSP. <p>Questions around groundwater and risk assessments on wells.</p> <ul style="list-style-type: none"> - Once preferred conveyance option is selected, a monitoring program will be developed to establish a baseline for quality and quantity of water in the area. A backgrounder for groundwater is available on the LWMP project page on the CVRD's website. <p>Clarification on Figures 3 and 4 of the GW Solutions Hydrogeological report, provided as Appendix C, incorrectly show the Comox No.2 pump station. No Comox No.2 pump station is being considered in any of the short listed options.</p>	Carol Campbell and Eric Wu, WSP

ITEM	DESCRIPTION	OWNER
10.6	<p>Discussion on HDD alignments, construction considerations including staging and laydown areas for the pipe and potential for improvements along alignment. General comments and discussion are provided below:</p> <ul style="list-style-type: none"> - For both Options 2 and 3, Goose Spit access via Torrence Road will not be closed during the drilling. - Any concerns with difficulties around encountering cobble along HDD alignments? Can be managed by considerations for size of machine and reamer selected for job. There are cost implications with including within the specifications a larger/better quality reamer. - Potential for large costs being encountered with unexpected ground conditions? For current cost estimates carrying a higher contingency for the HDD sections (60%). Not recommending to do more boreholes in Lazo area as results to date have been uniform. Can manage risk with contract language and development of baseline geotechnical report. - Bentonite is used in the drilling process to keep tunnel from collapsing while drilling, it is a heavy dense fluid that becomes inert clay with low permeability. - Frac out of drilling fluids can be a concern at the entry and exit pits if ground is not strong enough at these two locations. Can be avoided by installing a steel tube to fortify ground during drilling. - For option 3 it is not likely that a reduction in drilling costs may be realized for the phase 2 works in the future due to technology advancements. The majority of costs associated with HDD is for the mobilization of the machinery to site. - What is the process for statutory right-of-way's (SRW) for HDD? Similar process to cut and cover, still require an SRW, typically difference is in terms of the SRW agreement, less restrictive for HDD as the pipe is much deeper. i.e. no restriction on planting trees over top forcemain alignment. Owners could refuse the SRW, options if owner refuses includes expropriation or investigating alternative alignment options. <p>What are the odour control facilities included within the costing for each option?</p> <ul style="list-style-type: none"> - Odour control to be upgraded or included at each of the pump stations as part of the conveyance project. <p>What is the plan for decommissioning the existing forcemain that will no longer be used?</p> <ul style="list-style-type: none"> - There are a number of options for decommissioning, including complete removal or abandoning in place. The most cost effective and least environmentally impactful option is abandoning in place, future discussion on the options for the existing forcemain is planned. 	Carol Campbell and Eric Wu, WSP
10.7	<p>Short List Options – Conveyance - Financial</p> <p>Summary of the capital cost, 30 year and 50 year life cycle costs for each of the short listed conveyance options. Explanation on the assumptions used for the development of the life cycle costs, including asset replacement timelines, power and labour costs.</p>	Carol Campbell, WSP

ITEM	DESCRIPTION	OWNER
Lunch		
10.8	<p>Evaluating Short List Options - Conveyance Preliminary review and discussion on the financial, local economic benefit, environmental impacts, greenhouse gas emissions and social categories were completed. The technical evaluation will be completed in a subsequent TAC meeting and presented to the TACPAC at the October 27th meeting.</p> <p>Discussion of pre-determined evaluation criteria for the financial components and evaluating the financial criteria based on net present value (NPV). Due to the development of Option 3, the NPV criteria no longer seems like the appropriate metric because of the need for evaluating the phased option which maximizes use of existing infrastructure and is in line with regional CVRD policies. Staff to present proposed alternate affordability calculation for consideration at TACPAC #11.</p> <p>MOTION: Recommend restructuring of the financial evaluation criteria to fully reflect the cost impacts for the phased option – D. Jacquest SECONDED: W. Cole-Hamilton CARRIED</p> <p>A summary of the general discussion for the local economic benefit, environmental impact and social categories is below:</p> <ul style="list-style-type: none"> - Consideration on economic impacts for construction through downtown Comox should be captured in the evaluation. - For social construction category, need to capture impact of laydown area impacts for Option 2 and 3 over and above of construction impacts for Option 1, including longer duration of construction impacts. This was a notable change as it was originally expected that the trenchless options would reduce impacts compared with cut and cover, but the laydown areas and duration of their use is a significant local disruption. - Should consideration be made for future impacts for the second phase of Option 3, more people in future therefore could be causing greater future impacts? - Social amenities, Town of Comox will be looking for additional amenities as part of construction through Comox. - Discussion on social amenity potential – the similar nature of all the options make bike lanes the only probable social amenity for this project. - Groundwater considerations will be evaluated within the technical criteria for resilience to external factors. 	Paul Nash
10.9	<p>Preview of TACPAC #11 Summary of what the TACPAC member can expect at the next meeting and a refresher on the open house dates for public consultation.</p>	Paul Nash and Kris La Rose
10.10	<p>Adjournment The meeting was adjourned at 2:43pm.</p>	

Minutes of the meeting of the Liquid Waste Management Plan (LWMP) Joint Technical and Public Advisory Committees (TACPAC) Meeting #10 held on Monday, September 28, 2020 at the Comox Valley Regional District Civic Room and via Zoom Online Conference, commencing at 9:00 am.

PRESENT:	A. Habkirk, Chair and Facilitator	
	P. Nash, LWMP Project Coordinator	
	K. La Rose, Senior Manager of Water/Wastewater	CVRD
	J. Boguski, Branch Assistant – Engineering Services	CVRD
	Z. Berkey, Engineering Analyst	CVRD
	M. Rutten, General Manager of Engineering Services	CVRD
	M. Imrie, Manager of Wastewater Services	CVRD
	J. Warren, Deputy Chief Administrative Officer	CVRD
	C. Campbell	WSP
	E. Wu	WSP
	M. Swift, Town of Comox Councillor	PAC
	W. Cole-Hamilton, City of Courtenay Councillor	PAC
	A. Hamir, Lazo North – Electoral Area B Director	PAC
	T. Ennis, CV Conservation Partnership Alternate	PAC
	S. Carey, Courtenay Resident Representative	PAC
	K. Niemi, Courtenay Resident Representative	PAC
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	M. Lang, Area B Resident Representative	PAC
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10.9	<p>Preview of TACPAC #11 Summary of what the TACPAC member can expect at the next meeting and a refresher on the open house dates for public consultation.</p>	Paul Nash and Kris La Rose
10.10	<p>Adjournment The meeting was adjourned at 2:43pm.</p>	

Minutes of the meeting of the Liquid Waste Management Plan (LWMP) Technical Advisory Committees (TAC) Meeting #10A held on Tuesday, October 20, 2020 at the Comox Valley Regional District Civic Room and via Zoom Online Conference, commencing at 11:00 am.

PRESENT: P. Nash, LWMP Project Coordinator
 K. La Rose, Senior Manager of Water/Wastewater CVRD
 J. Boguski, Branch Assistant – Engineering Services CVRD
 Z. Berkey, Engineering Analyst CVRD
 M. Rutten, General Manager of Engineering Services CVRD
 M. Imrie, Manager of Wastewater Services CVRD
 C. Campbell WSP
 A. Dewar WSP
 C. Perry, Town of Comox Engineering TAC
 S. Ashfield, Town of Comox Engineering TAC

ITEM	DESCRIPTION	OWNER
10.A.1	Call to Order Meeting called to order at 11:05am	Paul Nash /Kris La Rose
10.A.2	Update on LWMP Process and Communications Update provided on general themes of communication with public heard to date.	Kris La Rose
10.A.3	Overview of Stage 2 Conveyance Report All TAC members present were up to date and in the essence of time no overview of options provided.	WSP
10.A.4	Summary of TACPAC Evaluation from September 28, 2020 Overview of the preliminary evaluation from TACPAC Meeting #10. Significant discussion on the potential risk for groundwater contamination in the Lazo Hill area from all options, and the appropriate place to address this within the evaluation criteria. Potential risk arises from construction phase for trenchless options, and possibility of a future leak in operation of all the options. Discussion at TAC was for consideration of scoring within environmental impacts section of evaluation but was flagged for discussion at TACPAC#11.	Paul Nash
10.A.5	Preliminary Evaluation of Technical Criteria A live spreadsheet of the evaluation system was used and the TAC members progressively scored each goal for all the options and then moved on to the next goal. Scoring was done by first comparing the differences of the various options, operating pressures, horizontal directional drilling considerations, phased approach pros and cons etc. and some of the operational attributes that go with them. For each evaluation goal, there was a discussion on the major pros and cons of the options as they relate to the goal in question. For scoring, the options started out with a score of three (out of five) and then putting plus or minus values to the attributes, to create a scoring logic to get the scores from zero to five. It was noted that this was still a subjective process and the logic is still a guide. The final scores agreed upon did not always fit formulaically with the scoring logic.	Paul Nash

ITEM	DESCRIPTION	OWNER																														
10.A.5	<p>The scoring tables and the scoring logic are attached as Schedule A, and the final scoring is summarized below.</p> <p>(Color scale - green boxes = best; yellow = intermediate; pink = worst)</p> <table><tr><th>Goal</th><th>Resilience to External Factors</th><th>Resilience to Internal Factors</th><th>Long Term Solution</th><th>Flexibility to accommodate future changes</th><th>Total</th></tr><tr><td>Weight %</td><td>15%</td><td>15%</td><td>10%</td><td>5%</td><td>45%</td></tr><tr><td>Opt. 1</td><td>9.0</td><td>3.0</td><td>6.0</td><td>3.0</td><td>21.0</td></tr><tr><td>2</td><td>9.0</td><td>9.0</td><td>6.0</td><td>3.0</td><td>27.0</td></tr><tr><td>3</td><td>7.5</td><td>6.0</td><td>6.5</td><td>4.0</td><td>24.0</td></tr></table> <p>The major considerations when scoring the technical criteria were:</p> <ul style="list-style-type: none">For External Factors (earthquakes, flood, etc) there is no practical difference between Options 1 and 2, and the defining difference for Option 3 is the portion of existing concrete pipe that would be remaining in the estuary and along the Dyke Road for the next 20 years. This pipe is at greater risk from the external factors than would be the new pipe in new alignments for Options 1 and 2.For Internal Factors, the operating risks for Option 1 and 3 are higher than that of Option 2. For Option 1, it is operating a high pressure system, which is at the limits of wastewater pumping capabilities. And additional issue is that the forcemain in Option 1 is intentionally oversized to reduce pressure loss, but this leads to poor flushing of the pipe, and so an additional maintenance program is required to address this. For Option 3, there are technical risks associated with construction of the Marina Park tie-in, and also a minor risk for operating the existing concrete pipe at a higher pressure for the next 20 years.For a long term solution, the only difference between any of the options is that for Option 3, the Courtenay to Comox section of pipe is installed 20 years later than for Options 1 and 2, and so reaches the end of its life 20 years later than for Options 1 and 2.For future flexibility, there is a slight benefit to Option 3 as it allows for some design considerations (eg. pipe size/material, specific alignment, trenchless installation technology) to be changed and improved in the future as part of the second phase. <p>Overall, the TAC reviewed the scoring and felt that the scoring accurately represented that Option 2 is the best technical option, and that there are some minor technical trade-offs that come with phasing it to create Option 3. These trade-offs are the unavoidable cost of creating the financial benefit of Option 3. In considering the closeness of the scoring, it was noted in discussion that the evaluation system was created to compare some very different conveyance options, and the three options on the short list are all very similar to each other, which leads to close scoring.</p>	Goal	Resilience to External Factors	Resilience to Internal Factors	Long Term Solution	Flexibility to accommodate future changes	Total	Weight %	15%	15%	10%	5%	45%	Opt. 1	9.0	3.0	6.0	3.0	21.0	2	9.0	9.0	6.0	3.0	27.0	3	7.5	6.0	6.5	4.0	24.0	Paul Nash
Goal	Resilience to External Factors	Resilience to Internal Factors	Long Term Solution	Flexibility to accommodate future changes	Total																											
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Opt. 1	9.0	3.0	6.0	3.0	21.0																											
2	9.0	9.0	6.0	3.0	27.0																											
3	7.5	6.0	6.5	4.0	24.0																											
10.A.6	<p>Round Table</p> <p>Final discussion on construction risk considerations for the options and the appropriate areas to evaluate was completed including discussion on cost contingencies and social impacts.</p>	Paul Nash																														

ITEM	DESCRIPTION	OWNER
10.A.7	Adjournment The meeting was adjourned at 1:02pm.	

Attachments:

Schedule A –Detailed Evaluation Results for Technical Categories.

EVALUATION SYSTEM DESCRIPTION

Category	Goal	Description, Comment	Scored by	Weight %
Technical	Resilience to External Factors	Includes climate change, natural disasters, seasonal impact	TAC	15%
	Resilience to Internal Factors	Operational simplicity and reliability, minimise risk of failure	TAC	15%
	Long Term Solution	Provides asset life, and possibly capacity, beyond the minimum planning horizon.	TAC	10%
	Flexibility to accommodate future changes	Technical Consultants to elaborate	TAC	5%
Technical Total				45%

EVALUATION RESULTS FOR CONVEYANCE TECHNICAL CATEGORY

Color scale - green boxes = best; yellow = intermediate; pink = worst

Goal	Resilience to External Factors	Resilience to Internal Factors	Long Term Solution	Flexibility to accommodate future changes	Total
Weight %	15%	15%	10%	5%	45%
Opt. 1	9.0	3.0	6.0	3.0	21.0
2	9.0	9.0	6.0	3.0	27.0
3	7.5	6.0	6.5	4.0	24.0

Technical Attributes				
Item	Analysis	1	2	3
Major Components (construction & operation)	km of estuary pipe	0.0	0.0	0.0 (1)
	km of overland forcemain	8.8	6.7	2.3
	km of HDD trenchless section	0	2.2	1.5
	km of HDD laydown area	0	2.2	1.5
	Total large pump stations	2	2	2
	Total WWTP's	1	1	1
Construction Impacts	Avoid estuary	Y	Y	N (1)
	Avoid new pump station site	Y	Y	Y
	Avoid road disturbance in central Comox	N	N	N
	Avoid road disturbance in Lazo Hill	N	Y	Y
	Avoid additional WWTP site	Y	Y	Y
	Avoid new KFN pump station	Y	Y	Y
Operational Impacts	Avoid 3 rd large pump station	Y	Y	Y
	Avoid critical failure point (overflow risk)	Y	Y	Y
	Avoid additional WWTP	Y	Y	Y

Note 1. Option 3 does not require installation of any new estuary pipe, but does continue to operate the existing pipe in the estuary for 20 years, so it does not “avoid” the estuary until then.

Evaluation by TAC				
Goal	Description	Option 1	Option 2	Option 3
Resilience to External Factors	Includes climate change, natural disasters, seasonal impact	3.0	3.0	2.5
Scoring Logic	Option 3 has increased external risk due to earthquake, storm surge, etc. from the entire remaining Phase 2 portion, for the next 20 years of the 80 year project design life			
Weight	15%	9	9	7.5

Resilience to Internal Factors	Operational simplicity and reliability, minimize risk of failure	1.0	3.0	2.0
Scoring Logic	Option 1 has the highest operating pressures, closer to limits of materials and highest maintenance requirements. Option 3, Phase 1 is continuing to use the old pipe, which has a slightly greater of risk failure compared to new pipe in addition to a tie-in at marina park between new and old infrastructure.			
Weight	15%	3	9	6

Long Term Solution	Provides asset life, and possibly capacity, beyond the minimum planning horizon.	3.0	3.0	3.25
Scoring Logic	No difference in asset life between Options 1 and 2, slight advantage to Option 3.			
Weight	10%	6.0	6.0	6.5

Flexibility to accommodate future changes	Technical consultants to elaborate	3.0	3.0	4.0
Scoring Logic	Option 3 allows for numerous changes (pipe size, material, pumping conditions, alignment, trenchless method) when Phase 2 is constructed			
Weight	5%	3	3	4
Total Technical Category	45%	21.0	27.0	24.0

Minutes of the meeting of the Liquid Waste Management Plan (LWMP) Technical Advisory Committees (TAC) Meeting #10A held on Tuesday, October 20, 2020 at the Comox Valley Regional District Civic Room and via Zoom Online Conference, commencing at 11:00 am.

PRESENT: P. Nash, LWMP Project Coordinator
 K. La Rose, Senior Manager of Water/Wastewater CVRD
 J. Boguski, Branch Assistant – Engineering Services CVRD
 Z. Berkey, Engineering Analyst CVRD
 M. Rutten, General Manager of Engineering Services CVRD
 M. Imrie, Manager of Wastewater Services CVRD
 C. Campbell WSP
 A. Dewar WSP
 C. Perry, Town of Comox Engineering TAC
 S. Ashfield, Town of Comox Engineering TAC

ITEM	DESCRIPTION	OWNER
10.A.1	Call to Order Meeting called to order at 11:05am	Paul Nash /Kris La Rose
10.A.2	Update on LWMP Process and Communications Update provided on general themes of communication with public heard to date.	Kris La Rose
10.A.3	Overview of Stage 2 Conveyance Report All TAC members present were up to date and in the essence of time no overview of options provided.	WSP
10.A.4	Summary of TACPAC Evaluation from September 28, 2020 Overview of the preliminary evaluation from TACPAC Meeting #10. Significant discussion on the potential risk for groundwater contamination in the Lazo Hill area from all options, and the appropriate place to address this within the evaluation criteria. Potential risk arises from construction phase for trenchless options, and possibility of a future leak in operation of all the options. Discussion at TAC was for consideration of scoring within environmental impacts section of evaluation but was flagged for discussion at TACPAC#11.	Paul Nash
10.A.5	Preliminary Evaluation of Technical Criteria A live spreadsheet of the evaluation system was used and the TAC members progressively scored each goal for all the options and then moved on to the next goal. Scoring was done by first comparing the differences of the various options, operating pressures, horizontal directional drilling considerations, phased approach pros and cons etc. and some of the operational attributes that go with them. For each evaluation goal, there was a discussion on the major pros and cons of the options as they relate to the goal in question. For scoring, the options started out with a score of three (out of five) and then putting plus or minus values to the attributes, to create a scoring logic to get the scores from zero to five. It was noted that this was still a subjective process and the logic is still a guide. The final scores agreed upon did not always fit formulaically with the scoring logic.	Paul Nash

ITEM	DESCRIPTION	OWNER																														
10.A.5	<p>The scoring tables and the scoring logic are attached as Schedule A, and the final scoring is summarized below.</p> <p>(Color scale - green boxes = best; yellow = intermediate; pink = worst)</p> <table><tr><th>Goal</th><th>Resilience to External Factors</th><th>Resilience to Internal Factors</th><th>Long Term Solution</th><th>Flexibility to accommodate future changes</th><th>Total</th></tr><tr><td>Weight %</td><td>15%</td><td>15%</td><td>10%</td><td>5%</td><td>45%</td></tr><tr><td>Opt. 1</td><td>9.0</td><td>3.0</td><td>6.0</td><td>3.0</td><td>21.0</td></tr><tr><td>2</td><td>9.0</td><td>9.0</td><td>6.0</td><td>3.0</td><td>27.0</td></tr><tr><td>3</td><td>7.5</td><td>6.0</td><td>6.5</td><td>4.0</td><td>24.0</td></tr></table> <p>The major considerations when scoring the technical criteria were:</p> <ul style="list-style-type: none">For External Factors (earthquakes, flood, etc) there is no practical difference between Options 1 and 2, and the defining difference for Option 3 is the portion of existing concrete pipe that would be remaining in the estuary and along the Dyke Road for the next 20 years. This pipe is at greater risk from the external factors than would be the new pipe in new alignments for Options 1 and 2.For Internal Factors, the operating risks for Option 1 and 3 are higher than that of Option 2. For Option 1, it is operating a high pressure system, which is at the limits of wastewater pumping capabilities. And additional issue is that the forcemain in Option 1 is intentionally oversized to reduce pressure loss, but this leads to poor flushing of the pipe, and so an additional maintenance program is required to address this. For Option 3, there are technical risks associated with construction of the Marina Park tie-in, and also a minor risk for operating the existing concrete pipe at a higher pressure for the next 20 years.For a long term solution, the only difference between any of the options is that for Option 3, the Courtenay to Comox section of pipe is installed 20 years later than for Options 1 and 2, and so reaches the end of its life 20 years later than for Options 1 and 2.For future flexibility, there is a slight benefit to Option 3 as it allows for some design considerations (eg. pipe size/material, specific alignment, trenchless installation technology) to be changed and improved in the future as part of the second phase. <p>Overall, the TAC reviewed the scoring and felt that the scoring accurately represented that Option 2 is the best technical option, and that there are some minor technical trade-offs that come with phasing it to create Option 3. These trade-offs are the unavoidable cost of creating the financial benefit of Option 3. In considering the closeness of the scoring, it was noted in discussion that the evaluation system was created to compare some very different conveyance options, and the three options on the short list are all very similar to each other, which leads to close scoring.</p>	Goal	Resilience to External Factors	Resilience to Internal Factors	Long Term Solution	Flexibility to accommodate future changes	Total	Weight %	15%	15%	10%	5%	45%	Opt. 1	9.0	3.0	6.0	3.0	21.0	2	9.0	9.0	6.0	3.0	27.0	3	7.5	6.0	6.5	4.0	24.0	Paul Nash
Goal	Resilience to External Factors	Resilience to Internal Factors	Long Term Solution	Flexibility to accommodate future changes	Total																											
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10.A.6	<p>Round Table</p> <p>Final discussion on construction risk considerations for the options and the appropriate areas to evaluate was completed including discussion on cost contingencies and social impacts.</p>	Paul Nash																														

ITEM	DESCRIPTION	OWNER
10.A.7	Adjournment The meeting was adjourned at 1:02pm.	

Attachments:

Schedule A –Detailed Evaluation Results for Technical Categories.

EVALUATION SYSTEM DESCRIPTION

Category	Goal	Description, Comment	Scored by	Weight %
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	Resilience to Internal Factors	Operational simplicity and reliability, minimise risk of failure	TAC	15%
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	Flexibility to accommodate future changes	Technical Consultants to elaborate	TAC	5%
Technical Total				45%

EVALUATION RESULTS FOR CONVEYANCE TECHNICAL CATEGORY

Color scale - green boxes = best; yellow = intermediate; pink = worst

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Item	Analysis	1	2	3
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	km of HDD laydown area	0	2.2	1.5
	Total large pump stations	2	2	2
	Total WWTP's	1	1	1
Construction Impacts	Avoid estuary	Y	Y	N (1)
	Avoid new pump station site	Y	Y	Y
	Avoid road disturbance in central Comox	N	N	N
	Avoid road disturbance in Lazo Hill	N	Y	Y
	Avoid additional WWTP site	Y	Y	Y
	Avoid new KFN pump station	Y	Y	Y
Operational Impacts	Avoid 3 rd large pump station	Y	Y	Y
	Avoid critical failure point (overflow risk)	Y	Y	Y
	Avoid additional WWTP	Y	Y	Y

Note 1. Option 3 does not require installation of any new estuary pipe, but does continue to operate the existing pipe in the estuary for 20 years, so it does not “avoid” the estuary until then.

Evaluation by TAC				
Goal	Description	Option 1	Option 2	Option 3
Resilience to External Factors	Includes climate change, natural disasters, seasonal impact	3.0	3.0	2.5
Scoring Logic	Option 3 has increased external risk due to earthquake, storm surge, etc. from the entire remaining Phase 2 portion, for the next 20 years of the 80 year project design life			
Weight	15%	9	9	7.5

Resilience to Internal Factors	Operational simplicity and reliability, minimize risk of failure	1.0	3.0	2.0
Scoring Logic	Option 1 has the highest operating pressures, closer to limits of materials and highest maintenance requirements. Option 3, Phase 1 is continuing to use the old pipe, which has a slightly greater of risk failure compared to new pipe in addition to a tie-in at marina park between new and old infrastructure.			
Weight	15%	3	9	6

Long Term Solution	Provides asset life, and possibly capacity, beyond the minimum planning horizon.	3.0	3.0	3.25
Scoring Logic	No difference in asset life between Options 1 and 2, slight advantage to Option 3.			
Weight	10%	6.0	6.0	6.5

Flexibility to accommodate future changes	Technical consultants to elaborate	3.0	3.0	4.0
Scoring Logic	Option 3 allows for numerous changes (pipe size, material, pumping conditions, alignment, trenchless method) when Phase 2 is constructed			
Weight	5%	3	3	4
Total Technical Category	45%	21.0	27.0	24.0

Minutes of the meeting of the Liquid Waste Management Plan (LWMP) Joint Technical and Public Advisory Committees (TACPAC) Meeting #11 held on Tuesday, October 27, 2020 at the Comox Valley Regional District Civic Room and via Zoom Online Conference, commencing at 10:00 am.

PRESENT:	A. Habkirk, Chair and Facilitator	
	P. Nash, LWMP Project Coordinator	
	K. La Rose, Senior Manager of Water/Wastewater	CVRD
	J. Boguski, Branch Assistant – Engineering Services	CVRD
	Z. Berkey, Engineering Analyst	CVRD (Zoom)
	M. Rutten, General Manager of Engineering Services	CVRD
	M. Imrie, Manager of Wastewater Services	CVRD
	C. Campbell	WSP
	M. Swift, Town of Comox Councillor	PAC
	W. Cole-Hamilton, City of Courtenay Councillor	PAC
	A. Hamir, Lazo North – Electoral Area B Director	PAC (Zoom)
	A. Gower, CV Chamber of Commerce	PAC (Zoom)
	T. Ennis, CV Conservation Partnership Alternate	PAC
	S. Carey, Courtenay Resident Representative	PAC (Zoom)
	K. Niemi, Courtenay Resident Representative	PAC (Zoom)
	K. van Velzen, Comox Resident Representative	PAC (Zoom)
	D. Jacquest, Comox Resident Representative	PAC
	R. Craig, Comox Resident Representative	PAC (Zoom)
	L. Aitken, Area B Representative Alternate (observer)	PAC (Zoom)
	M. Lang, Area B Resident Representative	PAC (Zoom)
	J. Steele, Area B Resident Representative	PAC (Zoom)
	H. Dewhirst, Comox BIA	PAC
	E. Derby, Island Health	TAC (Zoom)
	S. Ashfield, Town of Comox Engineering	TAC

ITEM	DESCRIPTION	OWNER
11.1	Call to Order Meeting called to order at 10:03am	Allison Habkirk
11.2	Review of Minutes of Meeting #10 and #10A Item 10.6 of meeting minutes for TACPAC meeting #10, should include a note on property negotiation consultant being engaged to work through statutory right-of-way requirements for horizontal directional drilling options. Also in item 10.6, there's a mistake in understanding of clarification raised on figures 3 and 4 in GW solutions report. Clarification wasn't that the figures incorrectly showed Comox No.2 pump station, but rather that it showed forcemain routing through Docliddle, which is incorrect. MOTION: To adopt minutes of meeting #10 and #10A – W. Cole-Hamilton SECONDED – M. Swift CARRIED	Allison Habkirk

ITEM	DESCRIPTION	OWNER
11.3	<p>Presentation of Public Engagement Results</p> <p>Overview provided of public engagement and consultation to date and upcoming additional consultation with Electoral Area B residents on concerns surrounding groundwater. A summary of feedback from online surveys and in person open houses was provided.</p> <p>Christianne Wile, Manager of External Relations, indicated that public engagement was successful as there are a number of competing demands on people's attention with COVID-19 but there was sufficient response from the public to develop a clear understanding of community concerns and priorities.</p> <p>There are no further opportunities for the public to provide input on the conveyance short list of options, next public engagement is planned for pre-construction of the preferred conveyance solution.</p> <p>Note that Morland Road has been incorrectly spelled in public communications.</p>	Christianne Wile
11.5	<p>* Vary the Agenda*</p> <p>Review of Technical Advisory Committee Evaluation Criteria</p> <p>Paul Nash provided a review and discussion on the TAC evaluation and scoring rationale for each of the technical criteria as summarized in the minutes of TAC Meeting #10A.</p> <p>Was tie-in at marina park considered in evaluation of technical criteria?</p> <ul style="list-style-type: none"> - Yes was considered a construction risk when evaluating the resilience to internal factors criteria, and so Option 3 scored lower in this category <p>Discussion on the operational desirability for Option 1, Mike Imrie indicated operating a high pressure system such as Option 1 is less operationally desirable. WSP noted that while it's less desirable, Option 1 is still feasible.</p> <p>Follow-up question regarding risk of failure to pipe and ease of repair for different options. Option 1 is easier to fix if a problem occurs, but the entire pipeline is at a shallow depth which arguably results in the pipe being at greater risk of being accidentally damaged by adjacent construction, roadwork etc. Option 2 and 3 each contain two trenchless sections that are at greater depths which greatly reduces chance of being accidentally struck, but does result in repairs being far more challenging if required.</p>	Paul Nash
11.4	<p>Review of Cumulative Cost Impacts</p> <p>Presentation on cumulative cost impacts to residents for the various conveyance options and selected level of treatment option and discussion on the impacts to operating costs. It was noted that considering the cost impacts to residents, greater attendance at open houses was expected. Cost impacts for the various level of treatment options for the wastewater treatment plant upgrades will be provided to the sewage commission as part of the staff report presenting the preferred level of treatment decision.</p>	Kris La Rose

ITEM	DESCRIPTION	OWNER
11.4	<p>Is there an opportunity for grant funding?</p> <ul style="list-style-type: none"> - CVRD will apply for any available grant funding, however typically conveyance projects don't attract grant funding, more feasible that treatment plant upgrades will attract funding due to opportunities for resource recovery and innovation. At this time the cost per connection estimates have assumed no grant funding. - Grant funding under the disaster mitigation fund is also not likely due to project eligibility requirements of funding, however CVRD staff will review to confirm. <p>Kris La Rose provided an additional update on public consultation at this time and the primary issue/ concern being raised by residents being groundwater in the area. Discussion on the contingencies for installing a line in this area including construction technology, leak monitoring/protection was provided and viable solutions will be put in place to ensure concerns are mitigated.</p> <p>Is there any relative difference in seismic vulnerability to cut and cover or tunneling?</p> <ul style="list-style-type: none"> - HDD installation requires thick wall steel pipe to be able to withstand pulling force of construction methodology. Whether it's at the surface or at a greater depth, the pipe will be engineered to handle earthquakes. - With leak detection, staff are in discussion with leak detection companies to determine a successful leak monitoring methodology that will be able to quickly identify and record leaks for repair. <p>Will HDD have an impact of the spring that feeds the Croteau neighborhood?</p> <ul style="list-style-type: none"> - Tunneling experts at WSP have determined that HDD will not affect the flow of ground water due to installation methodology and relative small diameter of the pipe in relation to the ground area. <p>Kris La Rose also provided an update on the Community Benefit Agreement (CBA) with the K'ómoks First Nation (KFN) and the impact on timing for consideration of the preferred conveyance solution by the Sewage Commission. The Sewage Commission decision for conveyance is anticipated in December 2020 or early 2021, following completion of the CBA with the KFN. KFN will not be attending TACPAC meetings moving forward and will remain apprised of the project through regular Chief and Council meetings.</p>	Kris La Rose
11.6	<p>Evaluating Short List Options – Conveyance</p> <p>Summary and review of the evaluation system and previous preliminary scoring of each criteria from TACPAC Meeting No.10.</p> <p><i>Local Economic Benefit Criteria</i></p> <p>Discussion on how to evaluate the future Phase 2 benefit of Option 3, consensus that future benefit should be considered but a delayed impact factor of 25% should be applied to Option 3. 25% delayed impact factor</p>	Paul Nash

ITEM	DESCRIPTION	OWNER
11.6	determined based on service life of pipe, For Option 3 extending life of pipe by 25% for time period (estimated service life of new pipe is 80 years, for Option 3 will only be using for 60 years).	Paul Nash
Lunch		
11.6	<p>Evaluating Short List Options - Conveyance</p> <p><i>Environmental Impacts</i> Consensus that Option 3 for this category be evaluated without discounting environmental risks as risks will happen now or in the future. All options include a stream crossing at Brooklyn Creek. Option 1 would have greater impacts if a leak were to occur because the higher pressure inside the pipe would spill waste at a higher velocity.</p> <p><i>Greenhouse Gasses</i> The calculation formula for greenhouse gas generated through the lifetime of all Options was changed from 60 years to 80 years.</p> <p><i>Social Benefit</i> Per the discussion at TACPAC 10, the scoring for the social categories was revised to be based on the actual lengths of cut/cover and trenchless sections, and the relative impacts of each.</p> <p>For construction impacts, the discount for any future (delayed) impacts associated with Option 3 was reduced from 50% to 25%. Impacts to traffic, local businesses and residents fronting onto the work areas was quantified. The trenchless laydown areas have the greatest local impact, and for the affected properties, for a longer period of construction time than the progression of cut and cover. Option 3 delays part of this disruption to the future, but also occurs additional initial disruption for the Marina Park tie-in. With all options, the construction schedule will be made to mitigate impacts as much as possible.</p> <p>For operational impacts, there were no differences between the options. For amenity value, the only identifiable benefit is the potential for cycle lanes after installation of cut and cover forcemain, so Option 1 scored the highest, and Option 3 the lowest, as some of this benefit is delayed from the phased implementation.</p> <p>The final scoring for the social benefit category confirmed the counter-intuitive result that the trenchless methods actually have a greater disruption and less amenity value than conventional cut and cover.</p> <p><i>Financial Summary</i> The group discussed the scoring philosophy for the financial category, which has been net present value. For simplicity, the analysis is based on 25 year amortization for each option. There was general consensus to discount Option 3 by 25% due to the 20 year extension of taxation, keeping in mind that the second phase that is 20 more years of additional tax payers contributing to the repayment.</p>	Paul Nash

ITEM	DESCRIPTION	OWNER																																			
11.6	<p>The final scoring for the three options was:</p> <table><tr><th>Category</th><th>Category Value</th><th>Option 1 Cut and Cover</th><th>Option 2 Trenchless</th><th>Option 3 Phased Trenchless</th></tr><tr><td>Technical</td><td>45</td><td>21</td><td>27</td><td>24</td></tr><tr><td>Affordability</td><td>18</td><td>9.4</td><td>11.9</td><td>15.5</td></tr><tr><td>Local Economic Benefit</td><td>2</td><td>1.4</td><td>1.0</td><td>0.9</td></tr><tr><td>Environmental Benefit</td><td>18</td><td>10.1</td><td>10.2</td><td>9.1</td></tr><tr><td>Social Benefit</td><td>17</td><td>8.7</td><td>7.7</td><td>8.1</td></tr><tr><td>Total</td><td>100</td><td>50.6</td><td>57.8</td><td>57.6</td></tr></table> <p>Discussion on the applicability of the scoring system to a phased option. A phased implementation was not anticipated when the scoring criteria and weighting were developed; it was inherently assumed that any option would be implemented in its entirety. For example, the environmental risk related to an estuary pipeline option had originally only been considered in terms of building and operating an entirely new estuary pipeline, or removing it entirely, rather than a period of continued operation for part of the existing one. Best efforts have been made to apply appropriate discounting to delayed benefits or impacts.</p> <p>Discussion on reality of current economic situation with COVID-19 and if consideration should be included and affordability criteria weighting be amended based on the current situation, which was not anticipated when scoring criteria and weighting were developed. Consensus around the table that weighting of the criteria should not be changed, to keep the result consistent with the original goals as developed and approved by the Sewage Commission. A decision to change the category weighting to place a greater importance on affordability in light of COVID-19 (and lesser importance on other categories) is ultimately a political decision, and the appropriate place for that is at the Sewage Commission.</p> <p>Upon review of the final scoring of the options the following motions were made.</p> <p>MOTION – Recommend Option 1 be removed from consideration and Options 2 and 3 be further assessed by the Sewage Commission and that the Sewage Commission seek the input of the TACPAC on the merits of the Options – A. Gower MOTION WITHDRAWN</p> <p>MOTION – Remove Option 1 from consideration. – A Gower SECONDED – W. Cole Hamilton CARRIED OPPOSED – J. Steel</p>	Category	Category Value	Option 1 Cut and Cover	Option 2 Trenchless	Option 3 Phased Trenchless	Technical	45	21	27	24	Affordability	18	9.4	11.9	15.5	Local Economic Benefit	2	1.4	1.0	0.9	Environmental Benefit	18	10.1	10.2	9.1	Social Benefit	17	8.7	7.7	8.1	Total	100	50.6	57.8	57.6	Paul Nash
Category	Category Value	Option 1 Cut and Cover	Option 2 Trenchless	Option 3 Phased Trenchless																																	
Technical	45	21	27	24																																	
Affordability	18	9.4	11.9	15.5																																	
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Social Benefit	17	8.7	7.7	8.1																																	
Total	100	50.6	57.8	57.6																																	

ITEM	DESCRIPTION	OWNER
11.6	<p>MOTION – Endorse Option 2 because it has the highest valuation. – A. Gower SECONDED – M. Lang OPPOSED - 7 IN FAVOUR - 2 DEFEATED</p> <p>Consensus from the group that no additional motion is necessary and that commentary be provided weighting the merits of both Options 2 and 3 for consideration by the Sewage Commission for final decision of the preferred solution. Summary of commentary provided below:</p> <ul style="list-style-type: none"> - Option 3 utilizes the full lifecycle of existing assets and reflects policies within the Regional Growth Strategy. - Phased approach allows for more flexibility in future, eg. Updating growth projections and potential for new technology consideration. - Priority for decommissioning Willemar Bluffs and importance of doing so quickly. - There are unknown costs associated with delaying part of construction and escalation of project costs should be considered. - Concern with challenges associated with pipe running under private property as part of HDD installation for Options 2 and 3. - No input from K'ómoks First Nation at this time on Options 2 and 3, input from K'ómoks First Nation is an important consideration in decision of preferred solution. - Weightings created prior to COVID-19 and consideration of cost impacts should be made by Sewage Commission in light of the unexpected current COVID-19 situation. - 	Paul Nash
11.8	<p>Adjournment The meeting was adjourned at 3:45pm.</p>	

Option Name	All Options Summary		Cut & Cover	Trenchless	Phased Trenchless
Category	Goal	Weight %	1	2	3
Technical	Resilience to External Factors	15%	9.0	9.0	7.5
	Resilience to Internal Factors	15%	3.0	9.0	6.0
	Long Term Solution	10%	6.0	6.0	6.5
	Flexibility to accommodate future changes	5%	3.0	3.0	4.0
<u>Technical Total</u>	-	<u>45%</u>	<u>21.0</u>	<u>27.0</u>	<u>24.0</u>
Affordability	Minimize Lifecycle Cost	14%	7.0	9.5	12.9
	Long term Value	4%	2.4	2.4	2.7
<u>Affordability Total</u>	-	<u>18%</u>	<u>9.4</u>	<u>11.9</u>	<u>15.5</u>
Economic Benefits	Benefits to local economy	2%	1.4	1.0	0.9
<u>Local Economic Benefit Total</u>	-	<u>2%</u>	<u>1.4</u>	<u>1.0</u>	<u>0.9</u>
Environment Benefits	Minimize risk of impacts to sensitive environment	12%	6.5	6.7	5.5
	Mitigate climate change impacts (Energy and GHG's)	6%	3.6	3.5	3.6
<u>Environmental Benefit Total</u>	-	<u>18%</u>	<u>10.1</u>	<u>10.2</u>	<u>9.1</u>
Social Benefit	Minimize noise, odour and visual impacts in operation	10%	6.7	6.7	6.7
	Minimize community disruption during construction	3%	1.3	0.4	0.9
	Maximize community and recreational amenity value	4%	0.7	0.5	0.4
<u>Social Benefit Total</u>	-	<u>17%</u>	<u>8.7</u>	<u>7.7</u>	<u>8.1</u>
<u>Grand Total</u>	-	<u>100%</u>	<u>50.6</u>	<u>57.8</u>	<u>57.6</u>

Minutes of the meeting of the Liquid Waste Management Plan (LWMP) Joint Technical and Public Advisory Committees (TACPAC) Meeting #11 held on Tuesday, October 27, 2020 at the Comox Valley Regional District Civic Room and via Zoom Online Conference, commencing at 10:00 am.

PRESENT:	A. Habkirk, Chair and Facilitator	
	P. Nash, LWMP Project Coordinator	
	K. La Rose, Senior Manager of Water/Wastewater	CVRD
	J. Boguski, Branch Assistant – Engineering Services	CVRD
	Z. Berkey, Engineering Analyst	CVRD (Zoom)
	M. Rutten, General Manager of Engineering Services	CVRD
	M. Imrie, Manager of Wastewater Services	CVRD
	C. Campbell	WSP
	M. Swift, Town of Comox Councillor	PAC
	W. Cole-Hamilton, City of Courtenay Councillor	PAC
	A. Hamir, Lazo North – Electoral Area B Director	PAC (Zoom)
	A. Gower, CV Chamber of Commerce	PAC (Zoom)
	T. Ennis, CV Conservation Partnership Alternate	PAC
	S. Carey, Courtenay Resident Representative	PAC (Zoom)
	K. Niemi, Courtenay Resident Representative	PAC (Zoom)
	K. van Velzen, Comox Resident Representative	PAC (Zoom)
	D. Jacquest, Comox Resident Representative	PAC
	R. Craig, Comox Resident Representative	PAC (Zoom)
	L. Aitken, Area B Representative Alternate (observer)	PAC (Zoom)
	M. Lang, Area B Resident Representative	PAC (Zoom)
	J. Steele, Area B Resident Representative	PAC (Zoom)
	H. Dewhirst, Comox BIA	PAC
	E. Derby, Island Health	TAC (Zoom)
	S. Ashfield, Town of Comox Engineering	TAC

ITEM	DESCRIPTION	OWNER
11.1	Call to Order Meeting called to order at 10:03am	Allison Habkirk
11.2	Review of Minutes of Meeting #10 and #10A Item 10.6 of meeting minutes for TACPAC meeting #10, should include a note on property negotiation consultant being engaged to work through statutory right-of-way requirements for horizontal directional drilling options. Also in item 10.6, there's a mistake in understanding of clarification raised on figures 3 and 4 in GW solutions report. Clarification wasn't that the figures incorrectly showed Comox No.2 pump station, but rather that it showed forcemain routing through Docliddle, which is incorrect. MOTION: To adopt minutes of meeting #10 and #10A – W. Cole-Hamilton SECONDED – M. Swift CARRIED	Allison Habkirk

ITEM	DESCRIPTION	OWNER
11.3	<p>Presentation of Public Engagement Results</p> <p>Overview provided of public engagement and consultation to date and upcoming additional consultation with Electoral Area B residents on concerns surrounding groundwater. A summary of feedback from online surveys and in person open houses was provided.</p> <p>Christianne Wile, Manager of External Relations, indicated that public engagement was successful as there are a number of competing demands on people's attention with COVID-19 but there was sufficient response from the public to develop a clear understanding of community concerns and priorities.</p> <p>There are no further opportunities for the public to provide input on the conveyance short list of options, next public engagement is planned for pre-construction of the preferred conveyance solution.</p> <p>Note that Morland Road has been incorrectly spelled in public communications.</p>	Christianne Wile
11.5	<p>* Vary the Agenda*</p> <p>Review of Technical Advisory Committee Evaluation Criteria</p> <p>Paul Nash provided a review and discussion on the TAC evaluation and scoring rationale for each of the technical criteria as summarized in the minutes of TAC Meeting #10A.</p> <p>Was tie-in at marina park considered in evaluation of technical criteria?</p> <ul style="list-style-type: none"> - Yes was considered a construction risk when evaluating the resilience to internal factors criteria, and so Option 3 scored lower in this category <p>Discussion on the operational desirability for Option 1, Mike Imrie indicated operating a high pressure system such as Option 1 is less operationally desirable. WSP noted that while it's less desirable, Option 1 is still feasible.</p> <p>Follow-up question regarding risk of failure to pipe and ease of repair for different options. Option 1 is easier to fix if a problem occurs, but the entire pipeline is at a shallow depth which arguably results in the pipe being at greater risk of being accidentally damaged by adjacent construction, roadwork etc. Option 2 and 3 each contain two trenchless sections that are at greater depths which greatly reduces chance of being accidentally struck, but does result in repairs being far more challenging if required.</p>	Paul Nash
11.4	<p>Review of Cumulative Cost Impacts</p> <p>Presentation on cumulative cost impacts to residents for the various conveyance options and selected level of treatment option and discussion on the impacts to operating costs. It was noted that considering the cost impacts to residents, greater attendance at open houses was expected. Cost impacts for the various level of treatment options for the wastewater treatment plant upgrades will be provided to the sewage commission as part of the staff report presenting the preferred level of treatment decision.</p>	Kris La Rose

ITEM	DESCRIPTION	OWNER
11.4	<p>Is there an opportunity for grant funding?</p> <ul style="list-style-type: none"> - CVRD will apply for any available grant funding, however typically conveyance projects don't attract grant funding, more feasible that treatment plant upgrades will attract funding due to opportunities for resource recovery and innovation. At this time the cost per connection estimates have assumed no grant funding. - Grant funding under the disaster mitigation fund is also not likely due to project eligibility requirements of funding, however CVRD staff will review to confirm. <p>Kris La Rose provided an additional update on public consultation at this time and the primary issue/ concern being raised by residents being groundwater in the area. Discussion on the contingencies for installing a line in this area including construction technology, leak monitoring/protection was provided and viable solutions will be put in place to ensure concerns are mitigated.</p> <p>Is there any relative difference in seismic vulnerability to cut and cover or tunneling?</p> <ul style="list-style-type: none"> - HDD installation requires thick wall steel pipe to be able to withstand pulling force of construction methodology. Whether it's at the surface or at a greater depth, the pipe will be engineered to handle earthquakes. - With leak detection, staff are in discussion with leak detection companies to determine a successful leak monitoring methodology that will be able to quickly identify and record leaks for repair. <p>Will HDD have an impact of the spring that feeds the Croteau neighborhood?</p> <ul style="list-style-type: none"> - Tunneling experts at WSP have determined that HDD will not affect the flow of ground water due to installation methodology and relative small diameter of the pipe in relation to the ground area. <p>Kris La Rose also provided an update on the Community Benefit Agreement (CBA) with the K'ómoks First Nation (KFN) and the impact on timing for consideration of the preferred conveyance solution by the Sewage Commission. The Sewage Commission decision for conveyance is anticipated in December 2020 or early 2021, following completion of the CBA with the KFN. KFN will not be attending TACPAC meetings moving forward and will remain apprised of the project through regular Chief and Council meetings.</p>	Kris La Rose
11.6	<p>Evaluating Short List Options – Conveyance</p> <p>Summary and review of the evaluation system and previous preliminary scoring of each criteria from TACPAC Meeting No.10.</p> <p><i>Local Economic Benefit Criteria</i></p> <p>Discussion on how to evaluate the future Phase 2 benefit of Option 3, consensus that future benefit should be considered but a delayed impact factor of 25% should be applied to Option 3. 25% delayed impact factor</p>	Paul Nash

ITEM	DESCRIPTION	OWNER
11.6	determined based on service life of pipe, For Option 3 extending life of pipe by 25% for time period (estimated service life of new pipe is 80 years, for Option 3 will only be using for 60 years).	Paul Nash
Lunch		
11.6	<p>Evaluating Short List Options - Conveyance</p> <p><i>Environmental Impacts</i> Consensus that Option 3 for this category be evaluated without discounting environmental risks as risks will happen now or in the future. All options include a stream crossing at Brooklyn Creek. Option 1 would have greater impacts if a leak were to occur because the higher pressure inside the pipe would spill waste at a higher velocity.</p> <p><i>Greenhouse Gasses</i> The calculation formula for greenhouse gas generated through the lifetime of all Options was changed from 60 years to 80 years.</p> <p><i>Social Benefit</i> Per the discussion at TACPAC 10, the scoring for the social categories was revised to be based on the actual lengths of cut/cover and trenchless sections, and the relative impacts of each.</p> <p>For construction impacts, the discount for any future (delayed) impacts associated with Option 3 was reduced from 50% to 25%. Impacts to traffic, local businesses and residents fronting onto the work areas was quantified. The trenchless laydown areas have the greatest local impact, and for the affected properties, for a longer period of construction time than the progression of cut and cover. Option 3 delays part of this disruption to the future, but also occurs additional initial disruption for the Marina Park tie-in. With all options, the construction schedule will be made to mitigate impacts as much as possible.</p> <p>For operational impacts, there were no differences between the options. For amenity value, the only identifiable benefit is the potential for cycle lanes after installation of cut and cover forcemain, so Option 1 scored the highest, and Option 3 the lowest, as some of this benefit is delayed from the phased implementation.</p> <p>The final scoring for the social benefit category confirmed the counter-intuitive result that the trenchless methods actually have a greater disruption and less amenity value than conventional cut and cover.</p> <p><i>Financial Summary</i> The group discussed the scoring philosophy for the financial category, which has been net present value. For simplicity, the analysis is based on 25 year amortization for each option. There was general consensus to discount Option 3 by 25% due to the 20 year extension of taxation, keeping in mind that the second phase that is 20 more years of additional tax payers contributing to the repayment.</p>	Paul Nash

ITEM	DESCRIPTION	OWNER																																			
11.6	<p>The final scoring for the three options was:</p> <table><tr><th>Category</th><th>Category Value</th><th>Option 1 Cut and Cover</th><th>Option 2 Trenchless</th><th>Option 3 Phased Trenchless</th></tr><tr><td>Technical</td><td>45</td><td>21</td><td>27</td><td>24</td></tr><tr><td>Affordability</td><td>18</td><td>9.4</td><td>11.9</td><td>15.5</td></tr><tr><td>Local Economic Benefit</td><td>2</td><td>1.4</td><td>1.0</td><td>0.9</td></tr><tr><td>Environmental Benefit</td><td>18</td><td>10.1</td><td>10.2</td><td>9.1</td></tr><tr><td>Social Benefit</td><td>17</td><td>8.7</td><td>7.7</td><td>8.1</td></tr><tr><td>Total</td><td>100</td><td>50.6</td><td>57.8</td><td>57.6</td></tr></table> <p>Discussion on the applicability of the scoring system to a phased option. A phased implementation was not anticipated when the scoring criteria and weighting were developed; it was inherently assumed that any option would be implemented in its entirety. For example, the environmental risk related to an estuary pipeline option had originally only been considered in terms of building and operating an entirely new estuary pipeline, or removing it entirely, rather than a period of continued operation for part of the existing one. Best efforts have been made to apply appropriate discounting to delayed benefits or impacts.</p> <p>Discussion on reality of current economic situation with COVID-19 and if consideration should be included and affordability criteria weighting be amended based on the current situation, which was not anticipated when scoring criteria and weighting were developed. Consensus around the table that weighting of the criteria should not be changed, to keep the result consistent with the original goals as developed and approved by the Sewage Commission. A decision to change the category weighting to place a greater importance on affordability in light of COVID-19 (and lesser importance on other categories) is ultimately a political decision, and the appropriate place for that is at the Sewage Commission.</p> <p>Upon review of the final scoring of the options the following motions were made.</p> <p>MOTION – Recommend Option 1 be removed from consideration and Options 2 and 3 be further assessed by the Sewage Commission and that the Sewage Commission seek the input of the TACPAC on the merits of the Options – A. Gower MOTION WITHDRAWN</p> <p>MOTION – Remove Option 1 from consideration. – A Gower SECONDED – W. Cole Hamilton CARRIED OPPOSED – J. Steel</p>	Category	Category Value	Option 1 Cut and Cover	Option 2 Trenchless	Option 3 Phased Trenchless	Technical	45	21	27	24	Affordability	18	9.4	11.9	15.5	Local Economic Benefit	2	1.4	1.0	0.9	Environmental Benefit	18	10.1	10.2	9.1	Social Benefit	17	8.7	7.7	8.1	Total	100	50.6	57.8	57.6	Paul Nash
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ITEM	DESCRIPTION	OWNER
11.6	<p>MOTION – Endorse Option 2 because it has the highest valuation. – A. Gower SECONDED – M. Lang OPPOSED - 7 IN FAVOUR - 2 DEFEATED</p> <p>Consensus from the group that no additional motion is necessary and that commentary be provided weighting the merits of both Options 2 and 3 for consideration by the Sewage Commission for final decision of the preferred solution. Summary of commentary provided below:</p> <ul style="list-style-type: none"> - Option 3 utilizes the full lifecycle of existing assets and reflects policies within the Regional Growth Strategy. - Phased approach allows for more flexibility in future, eg. Updating growth projections and potential for new technology consideration. - Priority for decommissioning Willemar Bluffs and importance of doing so quickly. - There are unknown costs associated with delaying part of construction and escalation of project costs should be considered. - Concern with challenges associated with pipe running under private property as part of HDD installation for Options 2 and 3. - No input from K'ómoks First Nation at this time on Options 2 and 3, input from K'ómoks First Nation is an important consideration in decision of preferred solution. - Weightings created prior to COVID-19 and consideration of cost impacts should be made by Sewage Commission in light of the unexpected current COVID-19 situation. - 	Paul Nash
11.8	<p>Adjournment The meeting was adjourned at 3:45pm.</p>	

Option Name	All Options Summary		Cut & Cover	Trenchless	Phased Trenchless
Category	Goal	Weight %	1	2	3
Technical	Resilience to External Factors	15%	9.0	9.0	7.5
	Resilience to Internal Factors	15%	3.0	9.0	6.0
	Long Term Solution	10%	6.0	6.0	6.5
	Flexibility to accommodate future changes	5%	3.0	3.0	4.0
<u>Technical Total</u>	-	<u>45%</u>	<u>21.0</u>	<u>27.0</u>	<u>24.0</u>
Affordability	Minimize Lifecycle Cost	14%	7.0	9.5	12.9
	Long term Value	4%	2.4	2.4	2.7
<u>Affordability Total</u>	-	<u>18%</u>	<u>9.4</u>	<u>11.9</u>	<u>15.5</u>
Economic Benefits	Benefits to local economy	2%	1.4	1.0	0.9
<u>Local Economic Benefit Total</u>	-	<u>2%</u>	<u>1.4</u>	<u>1.0</u>	<u>0.9</u>
Environment Benefits	Minimize risk of impacts to sensitive environment	12%	6.5	6.7	5.5
	Mitigate climate change impacts (Energy and GHG's)	6%	3.6	3.5	3.6
<u>Environmental Benefit Total</u>	-	<u>18%</u>	<u>10.1</u>	<u>10.2</u>	<u>9.1</u>
Social Benefit	Minimize noise, odour and visual impacts in operation	10%	6.7	6.7	6.7
	Minimize community disruption during construction	3%	1.3	0.4	0.9
	Maximize community and recreational amenity value	4%	0.7	0.5	0.4
<u>Social Benefit Total</u>	-	<u>17%</u>	<u>8.7</u>	<u>7.7</u>	<u>8.1</u>
<u>Grand Total</u>	-	<u>100%</u>	<u>50.6</u>	<u>57.8</u>	<u>57.6</u>



Comox Valley Sewerage System Liquid Waste Management Plan

Public Consultation Plan

FINAL: May 22, 2018

CONTENTS

1.0	Introduction	1
	Background.....	1
	Consultation Area and Target Audience.....	2
	Local Interests	2
	Regional Interests.....	2
	Study Process	2
2.0	Public Consultation Framework	3
	Principles	3
	Objectives	3
	Team Roles	3
	Consultation Milestones and Estimated Timeline.....	4
3.0	Consultation Methods and Tools	6
3.1	Ongoing.....	6
3.1.1	Project Website	6
3.1.2	Online Consultation/Discussion Forum.....	6
3.1.3	Social media.....	6
3.1.4	Public Advisory Committee (PAC)	7
3.1.5	Phone/Email Logs and Comment Sheets	7
3.1.6	Traditional media	7
3.2	Milestone-specific.....	7
3.2.1	Open Houses and Public Events	7
3.2.2	Promotional Materials.....	8
3.2.3	Informational Materials.....	8
3.2.4	Newsletters.....	8
4.0	Outcomes and Products	8
	Public Consultation Report	8
	Comment Log/Input Received	8

1.0 Introduction

This document outlines the approach and tactics for public consultation during the development of a liquid waste management plan (LWMP) for all Comox Valley Sewerage System (CVSS) works, including conveyance system components and upgrades to the Comox Valley Water Pollution Control Centre (CVWPCC).

The two primary objectives for a LWMP are:

- 1) to protect public health and the environment, and
- 2) to properly consult the public.

The strength and rigor of the required public and stakeholder consultation, along with final approval of the plan by independent provincial review, will allow for the selection and implementation of the best long-term solutions for the CVSS, using a process that generates community and stakeholder confidence.

BACKGROUND

Wastewater from the City of Courtenay and Town of Comox is transported to the CVWPCC through a large diameter forcemain that follows the shoreline from the Courtenay River estuary to Goose Spit, along Willemar Bluff and then on to the CVWPCC. The section along Willemar Bluff has deteriorated and poses significant environmental and operational risks.

Studies to address those risks led to the development of the Comox No. 2 Pump Station project – a planned re-routing of the at-risk pipe away from the beach which was further supported during the sewer master planning process.

In 2017, the CVRD carried out an indicative design process for delivery of the Comox No. 2 Pump Station project, finding that:

- Capital and lifecycle costs associated with the project would be significantly higher than previously understood.
- Addition of an inline booster style pump station would increase the risk of overflow at the Courtenay and Jane Place pump stations.
- Given the revised cost estimates, there may be a cost-effective solution to rerouting this portion of pipe.
- The condition of the foreshore forcemain, including the Willemar Bluff section, is better than expected, offering additional time to ensure the region implements the optimum solution.

In October 2017, after reviewing the above findings, the Comox Valley Sewage Commission directed staff to review alternative options to the Comox No. 2 project to identify a lower risk and more cost-effective solution to the issue of conveyance, one that inspires confidence and buy-in from stakeholders.

The CVRD is committed to ensuring that the plan moving forward considers the best approach for the full CVSS, not solely the high-priority Willemar Bluff (Balmoral Beach) portion of pipe.

As a result, an LWMP has been selected as the best planning tool moving forward – offering both a comprehensive planning opportunity as well as one that prioritizes public involvement in determining solutions.

CONSULTATION AREA AND TARGET AUDIENCE

The LWMP will be developed for the Comox Valley Sewerage System (CVSS), inclusive of the conveyance system and CVWPCC. As the scope will address the current system only, which primarily serves City of Courtenay, Town of Comox, CFB Comox, and K’ómoks First Nation, the consultation area will include those municipalities/regions.

Target audiences for LWMP public consultation activities include:

- K’ómoks First Nation
- Property and business owners in City of Courtenay, Town of Comox, Lazo, and other areas served by the CVSS
- Department of National Defence/CFB Comox
- Environmental stewardship organizations
- Industry associations

LOCAL INTERESTS

The LWMP includes a broad region. Residents throughout the area will consider this a topic of local interest because it is a service they participate in and rely on. In addition to the service area, residents in the CVRD’s electoral area “B” will also be included in the consultation process as the CVWPCC is located in that area, as is much of the conveyance system infrastructure.

REGIONAL INTERESTS

Regionally, interest in the LWMP process will be centered on protecting both:

- The long-term viability of the CVSS, and the importance of reliable infrastructure to continued growth in the area.
- The health of Baynes Sound, which is critically important to the Comox Valley, and which could be put at risk by over-capacity or aging/failing infrastructure.

Also, between 2014 and 2016, the first two phases of an LWMP were developed for the CVRD’s electoral area “A” (excluding Denman and Hornby Islands). The proposal to proceed with the implementation of a South Region wastewater system was defeated in a referendum in 2016. However, growth in the south region (currently not serviced by CVSS) has led to interest in delivering wastewater from Area A to the Comox Valley Pollution Control Centre.

STUDY PROCESS

The LWMP process is a prescribed approach used by many local governments in BC to develop a wastewater management strategy for their communities. Traditionally a three-stage process, the CVRD has chosen to combine stages one and two of the LWMP in order to make use of relevant prior investigations and advance the LWMP process efficiently.

While much work has already been completed, the LWMP involves key steps that create critical opportunity for public engagement. These include the creation of public and technical advisory committees, review of existing information, development of service options, identification of a preferred option, completion of environmental condition and risk studies, and assessment of financial and implementation plans.

2.0 Public Consultation Framework

A successful LWMP requires extensive public consultation. This framework outlines proposed engagement for the process.

PRINCIPLES

The following principles will guide public consultation throughout the LWMP process:

- Follow IAP2 Spectrum of Public Participation – This acknowledged best practice of public engagement (inform, consult, involve, collaborate, empower) will guide consultation.
- Meet provincial LWMP Requirements– The specific requirements of the LWMP process ensure meaningful input is sought from the public – these will guide consultation plans.
- Support the Work of the LWMP Technical Consultant/Engineer - Public consultation will support and align with the efforts of the technical consultant.
- Demonstrate transparency and competency in planning – By openly sharing information and working through planning and decision-making processes with interested and affected parties (IAPs).
- Offer options for community involvement– By using a range of tools, the public will be able to engage in a method that suits them.

OBJECTIVES

1. Provide information about the process of engagement and tools to be used.
2. Offer opportunities for active public involvement.
3. Clearly explain how feedback will be received and considered.
4. Create a record of engagement at the end of the process
5. Demonstrate how engagement was considered and how input influenced final decisions.

TEAM ROLES

The development of the technical portion of the LWMP will be managed by the CVRD's Engineering Department with the support of consulting engineers and an independent facilitator to assist with moderating meetings.

The CVRD's Operational Communications, with support of communications consultants and a public engagement facilitator will plan, deliver and manage the public engagement and community outreach portion of the LWMP development work.

Management of the Public Advisory Committee (PAC) will primarily be led by the engineering department.

CONSULTATION MILESTONES AND ESTIMATED TIMELINE

DATES	PROJECT MILESTONES
	Educate the Public about wastewater in the CVRD
May-Aug 2018	<ul style="list-style-type: none"> • INFORM – provide information via advertising and website • INVOLVE – host a facilitated workshop for public to start discussion with public about the sewage system and value decisions around planning, support with online consultation.
	Kick-off LWMP
May-Sept 2018	<ul style="list-style-type: none"> • INFORM – public open house to introduce the LWMP process and public consultation options • COLLABORATE – introduce public and technical advisory committee (PAC/TAC).
	Establish LWMP Goals and Objectives
Oct – Dec 2018	<ul style="list-style-type: none"> • COLLABORATE – PAC/TAC meetings, goals and objectives established • CONSULT – host a facilitated workshop for public to review goals and objectives, support with online consultation.
	Present Long List of Options
Jan-Feb 2019	<ul style="list-style-type: none"> • COLLABORATE – PAC/TAC meetings, long list established • CONSULT – host a facilitated workshop for public to review and rank long list options, support with online consultation.
	Present Short List of Options
Feb-Mar 2019	<ul style="list-style-type: none"> • COLLABORATE PAC/TAC meetings, short list established • CONSULT – host a facilitated workshop for public to review and rank short list, support with online consultation • INFORM – Sewage Commission signs off on shortlist of options.
	Present Preferred Solution*
Apr -Jul 2019	<ul style="list-style-type: none"> • COLLABORATE – PAC/TAC meetings, consensus on preferred solution • INFORM – Sewage Commission signs off on preferred solution • INFORM – host public open house to present preferred solution to community and report on feedback obtained from public

**Conveyance components may be split from remaining LWMP processes once preferred conveyance solution is selected. Communications support for a separate assent process will be coordinated as details are confirmed.*

	Working Towards Final Draft Report
Aug-Dec 2019	<ul style="list-style-type: none"> • COLLABORATE – PAC/TAC meetings to refine draft • COLLABORATE - submit LWMP stages 1 and 2 final report and Environmental Impact Studies to Ministry of Environment (MOE) for review • INVOLVE – PAC/TAC meetings, working towards final draft report.
Jan - Mar 2020	Present LWMP Final Draft Report <ul style="list-style-type: none"> • CONSULT – facilitated session to present final draft report to community for input, supported with online consultation • COLLABORATE – PAC/TAC considers community input and refines draft.
Spring 2020	Present and Submit Final Report <ul style="list-style-type: none"> • COLLABORATE – submit Stage 3 final report to Ministry of Environment • INFORM – provide final report to the community, host public open house • INFORM – report back to public consultation participants/community on consultation value, results and affect.

3.0 Consultation Methods and Tools

Multiple complementary consultation approaches will be used to ensure the public has many opportunities to be informed and engage/provide input in a meaningful way in a format that is convenient for them.

3.1 ONGOING

3.1.1 PROJECT WEBSITE

The project website will be the central location for project information and details of how the public can engage with the LWMP process. It will be the hub for accurate, timely information about the process and the link to the online consultation/discussion tool and will include:

- Up-to-date project information
- Link to online consultation/discussion forum (*Bang the Table*)
- Calendar of public events, PAC/TAC meetings
- Resource materials (e.g. Glossary, FAQs, staff reports, studies)

3.1.2 ONLINE CONSULTATION/DISCUSSION FORUM

An online consultation/engagement tool such as *Bang the Table* offers the public the opportunity to engage when it is convenient for them, broadening the consultation reach through ease of access. *Bang the Table* is very intuitive, easy to use, allows for public debate, discussion and comment and is moderated 24/7 ensuring questions are answered promptly and discussions are managed in a constructive and respectful tone. *Bang the Table* also measures participant engagement, distinguishing between aware, informed and engaged users.

To encourage public participation via *Bang the Table*, an engagement strategy will be executed, inclusive of the following actions:

- Sending targeted invitations to interested constituents
- Issuing a news release about the *Bang the Table* launch
- Targeted advertising and social media push to support launch and consultation re: project milestones

3.1.3 SOCIAL MEDIA

Using the CVRD's Facebook and Twitter accounts, brief, shareable updates will be regularly provided. Any social media updates will link to the online consultation/discussion forum, where commentary and questions will be monitored. The goal will be to provide as new information is available and project milestones are achieved.

3.1.4 PUBLIC ADVISORY COMMITTEE (PAC)

As part of the LWMP process, a PAC will be established that connects interested and affected parties (IAPs), environmental and business organizations to the project. They will be tasked with gathering and relaying public feedback, as well as reviewing information and providing comment directly to the project team.

To encourage participation via the PAC and ensure the right people are at the table, active recruitment will be undertaken from:

- General public, with the goal of fair representation from IAPs, across geographic areas, and from those with relevant experience
- Business organizations, such as Business Improvement Associations (BIAs) and the Chamber of Commerce
- Environmental organizations, such as Comox Valley Land Trust, Comox Valley Conservation Partnership, Project Watershed

3.1.5 PHONE/EMAIL LOGS AND COMMENT SHEETS

Project team members will be provided with phone/email logs, where they will record comments or questions received from members of the public. Comment sheets will also be made available at all open houses/public events/presentations, to encourage ease of feedback from event participants.

3.1.6 TRADITIONAL MEDIA

Traditional media channels (radio, print, television) will be used as appropriate to keep the public informed as project milestones are achieved. The focus of any advertisements, news releases, and media outreach will be to direct the public to opportunities (open houses/public events and Bang the Table) where they can learn more about the LWMP process and provide comment/input.

3.2 MILESTONE-SPECIFIC

3.2.1 OPEN HOUSES AND FACILITATED SESSIONS

Both facilitated sessions to collect targeted feedback and more open/general public open houses with a drop-in style will be held during the LWMP process. These will mark important milestones in the development of the plan, including preliminary education, launch, shortlisting proposed options, presentation of preferred solutions, and presentation of financing requirements and implementation schedule. Events may also be held if other opportunities arise.

These events are effective for sharing large amounts of information, collect input and offer the opportunity for the public to meet with the project team to have their questions answered or seek specific information. In organizing each event, the following will be considered:

- Up-to-date and new information and presence of project experts
- Opportunities to collect input and feedback
- Convenient hours and location
- Easy to understand informational material

3.2.2 PROMOTIONAL MATERIALS

Using tools like advertising or handouts, promotional materials will be used specifically as the LWMP process is launched, in order to draw attention to the opportunity for involvement and explain the process which will roll out as the planning begins.

3.2.3 INFORMATIONAL MATERIALS

Easy to read materials will be provided both in hard copy and online to assist in explaining the background and ongoing work related to the LWMP. This information will be designed for ease of reading and written with the general public as the target audience. Examples include project display boards, FAQs, project backgrounders/pamphlets, glossary.

3.2.4 NEWSLETTERS

Newsletters will be produced to update residents when project milestones are achieved. These newsletters will be distributed via post or email to IAPs and stakeholders and will also be made available online and at the public open houses. The newsletters will include project contact information should recipients have questions and directions on how to participate in the Bang the Table online consultation/discussion forum.

4.0 Outcomes and Products

PUBLIC CONSULTATION REPORT

The proceedings of consultation activities will be documented and available to regulators and members of the public at the conclusion of the LWMP process. It will include:

- Overview of consultation activities
- Listing and samples of informational materials created and provided to the public, IAPs and stakeholders
- Record of consultation reach and participation
- Synopsis of feedback themes, trends and findings
- Summary of incorporation of public feedback in the final plan

COMMENT LOG/INPUT RECEIVED

All input/comments received, including comment logs, will be provided to the CVRD in their raw form at project end, to form part of the official record of the public consultation process.



Comox Valley Sewerage System Liquid Waste Management Plan

Public Consultation Plan

FINAL: May 22, 2018

CONTENTS

1.0	Introduction	1
	Background.....	1
	Consultation Area and Target Audience.....	2
	Local Interests	2
	Regional Interests.....	2
	Study Process	2
2.0	Public Consultation Framework	3
	Principles	3
	Objectives	3
	Team Roles	3
	Consultation Milestones and Estimated Timeline.....	4
3.0	Consultation Methods and Tools	6
3.1	Ongoing.....	6
3.1.1	Project Website	6
3.1.2	Online Consultation/Discussion Forum.....	6
3.1.3	Social media.....	6
3.1.4	Public Advisory Committee (PAC)	7
3.1.5	Phone/Email Logs and Comment Sheets	7
3.1.6	Traditional media	7
3.2	Milestone-specific.....	7
3.2.1	Open Houses and Public Events	7
3.2.2	Promotional Materials.....	8
3.2.3	Informational Materials.....	8
3.2.4	Newsletters.....	8
4.0	Outcomes and Products	8
	Public Consultation Report	8
	Comment Log/Input Received	8

1.0 Introduction

This document outlines the approach and tactics for public consultation during the development of a liquid waste management plan (LWMP) for all Comox Valley Sewerage System (CVSS) works, including conveyance system components and upgrades to the Comox Valley Water Pollution Control Centre (CVWPCC).

The two primary objectives for a LWMP are:

- 1) to protect public health and the environment, and
- 2) to properly consult the public.

The strength and rigor of the required public and stakeholder consultation, along with final approval of the plan by independent provincial review, will allow for the selection and implementation of the best long-term solutions for the CVSS, using a process that generates community and stakeholder confidence.

BACKGROUND

Wastewater from the City of Courtenay and Town of Comox is transported to the CVWPCC through a large diameter forcemain that follows the shoreline from the Courtenay River estuary to Goose Spit, along Willemar Bluff and then on to the CVWPCC. The section along Willemar Bluff has deteriorated and poses significant environmental and operational risks.

Studies to address those risks led to the development of the Comox No. 2 Pump Station project – a planned re-routing of the at-risk pipe away from the beach which was further supported during the sewer master planning process.

In 2017, the CVRD carried out an indicative design process for delivery of the Comox No. 2 Pump Station project, finding that:

- Capital and lifecycle costs associated with the project would be significantly higher than previously understood.
- Addition of an inline booster style pump station would increase the risk of overflow at the Courtenay and Jane Place pump stations.
- Given the revised cost estimates, there may be a cost-effective solution to rerouting this portion of pipe.
- The condition of the foreshore forcemain, including the Willemar Bluff section, is better than expected, offering additional time to ensure the region implements the optimum solution.

In October 2017, after reviewing the above findings, the Comox Valley Sewage Commission directed staff to review alternative options to the Comox No. 2 project to identify a lower risk and more cost-effective solution to the issue of conveyance, one that inspires confidence and buy-in from stakeholders.

The CVRD is committed to ensuring that the plan moving forward considers the best approach for the full CVSS, not solely the high-priority Willemar Bluff (Balmoral Beach) portion of pipe.

As a result, an LWMP has been selected as the best planning tool moving forward – offering both a comprehensive planning opportunity as well as one that prioritizes public involvement in determining solutions.

CONSULTATION AREA AND TARGET AUDIENCE

The LWMP will be developed for the Comox Valley Sewerage System (CVSS), inclusive of the conveyance system and CVWPCC. As the scope will address the current system only, which primarily serves City of Courtenay, Town of Comox, CFB Comox, and K’ómoks First Nation, the consultation area will include those municipalities/regions.

Target audiences for LWMP public consultation activities include:

- K’ómoks First Nation
- Property and business owners in City of Courtenay, Town of Comox, Lazo, and other areas served by the CVSS
- Department of National Defence/CFB Comox
- Environmental stewardship organizations
- Industry associations

LOCAL INTERESTS

The LWMP includes a broad region. Residents throughout the area will consider this a topic of local interest because it is a service they participate in and rely on. In addition to the service area, residents in the CVRD’s electoral area “B” will also be included in the consultation process as the CVWPCC is located in that area, as is much of the conveyance system infrastructure.

REGIONAL INTERESTS

Regionally, interest in the LWMP process will be centered on protecting both:

- The long-term viability of the CVSS, and the importance of reliable infrastructure to continued growth in the area.
- The health of Baynes Sound, which is critically important to the Comox Valley, and which could be put at risk by over-capacity or aging/failing infrastructure.

Also, between 2014 and 2016, the first two phases of an LWMP were developed for the CVRD’s electoral area “A” (excluding Denman and Hornby Islands). The proposal to proceed with the implementation of a South Region wastewater system was defeated in a referendum in 2016. However, growth in the south region (currently not serviced by CVSS) has led to interest in delivering wastewater from Area A to the Comox Valley Pollution Control Centre.

STUDY PROCESS

The LWMP process is a prescribed approach used by many local governments in BC to develop a wastewater management strategy for their communities. Traditionally a three-stage process, the CVRD has chosen to combine stages one and two of the LWMP in order to make use of relevant prior investigations and advance the LWMP process efficiently.

While much work has already been completed, the LWMP involves key steps that create critical opportunity for public engagement. These include the creation of public and technical advisory committees, review of existing information, development of service options, identification of a preferred option, completion of environmental condition and risk studies, and assessment of financial and implementation plans.

2.0 Public Consultation Framework

A successful LWMP requires extensive public consultation. This framework outlines proposed engagement for the process.

PRINCIPLES

The following principles will guide public consultation throughout the LWMP process:

- Follow IAP2 Spectrum of Public Participation – This acknowledged best practice of public engagement (inform, consult, involve, collaborate, empower) will guide consultation.
- Meet provincial LWMP Requirements– The specific requirements of the LWMP process ensure meaningful input is sought from the public – these will guide consultation plans.
- Support the Work of the LWMP Technical Consultant/Engineer - Public consultation will support and align with the efforts of the technical consultant.
- Demonstrate transparency and competency in planning – By openly sharing information and working through planning and decision-making processes with interested and affected parties (IAPs).
- Offer options for community involvement– By using a range of tools, the public will be able to engage in a method that suits them.

OBJECTIVES

1. Provide information about the process of engagement and tools to be used.
2. Offer opportunities for active public involvement.
3. Clearly explain how feedback will be received and considered.
4. Create a record of engagement at the end of the process
5. Demonstrate how engagement was considered and how input influenced final decisions.

TEAM ROLES

The development of the technical portion of the LWMP will be managed by the CVRD's Engineering Department with the support of consulting engineers and an independent facilitator to assist with moderating meetings.

The CVRD's Operational Communications, with support of communications consultants and a public engagement facilitator will plan, deliver and manage the public engagement and community outreach portion of the LWMP development work.

Management of the Public Advisory Committee (PAC) will primarily be led by the engineering department.

CONSULTATION MILESTONES AND ESTIMATED TIMELINE

DATES	PROJECT MILESTONES
	Educate the Public about wastewater in the CVRD
May-Aug 2018	<ul style="list-style-type: none"> • INFORM – provide information via advertising and website • INVOLVE – host a facilitated workshop for public to start discussion with public about the sewage system and value decisions around planning, support with online consultation.
	Kick-off LWMP
May-Sept 2018	<ul style="list-style-type: none"> • INFORM – public open house to introduce the LWMP process and public consultation options • COLLABORATE – introduce public and technical advisory committee (PAC/TAC).
	Establish LWMP Goals and Objectives
Oct – Dec 2018	<ul style="list-style-type: none"> • COLLABORATE – PAC/TAC meetings, goals and objectives established • CONSULT – host a facilitated workshop for public to review goals and objectives, support with online consultation.
	Present Long List of Options
Jan-Feb 2019	<ul style="list-style-type: none"> • COLLABORATE – PAC/TAC meetings, long list established • CONSULT – host a facilitated workshop for public to review and rank long list options, support with online consultation.
	Present Short List of Options
Feb-Mar 2019	<ul style="list-style-type: none"> • COLLABORATE PAC/TAC meetings, short list established • CONSULT – host a facilitated workshop for public to review and rank short list, support with online consultation • INFORM – Sewage Commission signs off on shortlist of options.
	Present Preferred Solution*
Apr -Jul 2019	<ul style="list-style-type: none"> • COLLABORATE – PAC/TAC meetings, consensus on preferred solution • INFORM – Sewage Commission signs off on preferred solution • INFORM – host public open house to present preferred solution to community and report on feedback obtained from public

**Conveyance components may be split from remaining LWMP processes once preferred conveyance solution is selected. Communications support for a separate assent process will be coordinated as details are confirmed.*

Aug-Dec 2019	Working Towards Final Draft Report
	<ul style="list-style-type: none"> • COLLABORATE – PAC/TAC meetings to refine draft • COLLABORATE - submit LWMP stages 1 and 2 final report and Environmental Impact Studies to Ministry of Environment (MOE) for review • INVOLVE – PAC/TAC meetings, working towards final draft report.
	Present LWMP Final Draft Report
Jan - Mar 2020	<ul style="list-style-type: none"> • CONSULT – facilitated session to present final draft report to community for input, supported with online consultation • COLLABORATE – PAC/TAC considers community input and refines draft.
	Present and Submit Final Report
Spring 2020	<ul style="list-style-type: none"> • COLLABORATE – submit Stage 3 final report to Ministry of Environment
	<ul style="list-style-type: none"> • INFORM – provide final report to the community, host public open house
	<ul style="list-style-type: none"> • INFORM – report back to public consultation participants/community on consultation value, results and affect.

3.0 Consultation Methods and Tools

Multiple complementary consultation approaches will be used to ensure the public has many opportunities to be informed and engage/provide input in a meaningful way in a format that is convenient for them.

3.1 ONGOING

3.1.1 PROJECT WEBSITE

The project website will be the central location for project information and details of how the public can engage with the LWMP process. It will be the hub for accurate, timely information about the process and the link to the online consultation/discussion tool and will include:

- Up-to-date project information
- Link to online consultation/discussion forum (Bang the Table)
- Calendar of public events, PAC/TAC meetings
- Resource materials (e.g. Glossary, FAQs, staff reports, studies)

3.1.2 ONLINE CONSULTATION/DISCUSSION FORUM

An online consultation/engagement tool such as *Bang the Table* offers the public the opportunity to engage when it is convenient for them, broadening the consultation reach through ease of access. *Bang the Table* is very intuitive, easy to use, allows for public debate, discussion and comment and is moderated 24/7 ensuring questions are answered promptly and discussions are managed in a constructive and respectful tone. *Bang the Table* also measures participant engagement, distinguishing between aware, informed and engaged users.

To encourage public participation via *Bang the Table*, an engagement strategy will be executed, inclusive of the following actions:

- Sending targeted invitations to interested constituents
- Issuing a news release about the *Bang the Table* launch
- Targeted advertising and social media push to support launch and consultation re: project milestones

3.1.3 SOCIAL MEDIA

Using the CVRD's Facebook and Twitter accounts, brief, shareable updates will be regularly provided. Any social media updates will link to the online consultation/discussion forum, where commentary and questions will be monitored. The goal will be to provide as new information is available and project milestones are achieved.

3.1.4 PUBLIC ADVISORY COMMITTEE (PAC)

As part of the LWMP process, a PAC will be established that connects interested and affected parties (IAPs), environmental and business organizations to the project. They will be tasked with gathering and relaying public feedback, as well as reviewing information and providing comment directly to the project team.

To encourage participation via the PAC and ensure the right people are at the table, active recruitment will be undertaken from:

- General public, with the goal of fair representation from IAPs, across geographic areas, and from those with relevant experience
- Business organizations, such as Business Improvement Associations (BIAs) and the Chamber of Commerce
- Environmental organizations, such as Comox Valley Land Trust, Comox Valley Conservation Partnership, Project Watershed

3.1.5 PHONE/EMAIL LOGS AND COMMENT SHEETS

Project team members will be provided with phone/email logs, where they will record comments or questions received from members of the public. Comment sheets will also be made available at all open houses/public events/presentations, to encourage ease of feedback from event participants.

3.1.6 TRADITIONAL MEDIA

Traditional media channels (radio, print, television) will be used as appropriate to keep the public informed as project milestones are achieved. The focus of any advertisements, news releases, and media outreach will be to direct the public to opportunities (open houses/public events and Bang the Table) where they can learn more about the LWMP process and provide comment/input.

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Both facilitated sessions to collect targeted feedback and more open/general public open houses with a drop-in style will be held during the LWMP process. These will mark important milestones in the development of the plan, including preliminary education, launch, shortlisting proposed options, presentation of preferred solutions, and presentation of financing requirements and implementation schedule. Events may also be held if other opportunities arise.

These events are effective for sharing large amounts of information, collect input and offer the opportunity for the public to meet with the project team to have their questions answered or seek specific information. In organizing each event, the following will be considered:

- Up-to-date and new information and presence of project experts
- Opportunities to collect input and feedback
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Using tools like advertising or handouts, promotional materials will be used specifically as the LWMP process is launched, in order to draw attention to the opportunity for involvement and explain the process which will roll out as the planning begins.

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Newsletters will be produced to update residents when project milestones are achieved. These newsletters will be distributed via post or email to IAPs and stakeholders and will also be made available online and at the public open houses. The newsletters will include project contact information should recipients have questions and directions on how to participate in the Bang the Table online consultation/discussion forum.

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PUBLIC CONSULTATION REPORT

The proceedings of consultation activities will be documented and available to regulators and members of the public at the conclusion of the LWMP process. It will include:

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Comox Valley Sewer Service Liquid Waste Management Plan

Phase 1 Public Consultation Summary Report

November 1, 2018

Contents

1.0	Executive Summary	2
2.0	Introduction	2
2.1	Project Brief.....	2
2.2	Consultation Overview	3
2.3	Phase 1 Consultation: Overview	4
3.0	Consultation Results	4
3.1	By the Numbers	5
3.2	Facilitated Sessions: Themes of Feedback.....	5
3.3	ConnectCVRD: Themes of Feedback	5
4.0	Conclusion.....	6
	Appendices.....	7

1.0 Executive Summary

In June 2018, the Comox Valley Regional District (CVRD) launched the Comox Valley Sewer Service Liquid Waste Management Plan. The plan will identify the path forward for the service, including the approach for new/upgraded infrastructure.

Public engagement is key to the management planning process and a public consultation plan was received by the Sewage Commission in spring 2018. The first phase of the plan was implemented from June to August 2018 and focused on educating the public about the sewer system and the planning process. It collected foundational feedback about community values for sewer system planning and included the following tactics:

- *Advertising:* Promotional “Let’s Talk Poop” ads were developed and published to draw attention to the process and the online hub for updates and engagement.
- *Facilitated Sessions:* In mid-June, participants were invited to work together on an interactive activity that saw them prioritize values in sewer service decision making, as part of a two-part workshop led by professional facilitator Allison Habkirk.
- *Online Consultation:* The ConnectCVRD project page was launched with both general information and a structured survey that mimicked the exercise followed in the facilitated sessions.

Despite a challenging time of year for outreach (summer), the results of these were generally good. They included over 1,600 visits to the ConnectCVRD page, and roughly 150 active participants in the values exercise through both the online and in-person components.

Themes of feedback include the importance of the environment in decision making and a keen interest in seeing long-term plans created and followed. There is strong interest by those who have participated to remain involved through future stages of outreach.

Next steps for the project team are to hold an open house in November that will inform the public about the sewer planning process and opportunities for public consultation. It will also provide an opportunity to educate about how the sewer system operates. Following the first meetings of the Public Advisory Committee, a second set of facilitated sessions will be held to obtain the community’s feedback on goals and objectives for the sewer planning process.

2.0 Introduction


2.1 Project Brief

In spring 2018, the Comox Valley Regional District launched a liquid waste management planning process for the Comox Valley Sewer System, which will provide a comprehensive planning opportunity that prioritizes public involvement in determining solutions. To outline how the public would be consulted in this process, a public consultation plan was drafted which offered five stages of outreach beginning in summer 2018.

2.2 Consultation Overview

The sewer system planning process requires active public engagement in order to determine the preferred path forward and demonstrate to the province the community's input to the overall plan. The public engagement plan developed in spring 2018 identified a suite of tools focused around facilitated sessions, open houses and the online consultation site, ConnectCVRD.

An outline of the plan is below. Phase 1 was completed this summer.



PHASE	OBJECTIVES	TOOLS
PHASE 1: Educate/Kick-Off (Summer 2018)	<ul style="list-style-type: none"> • INFORM: provide info about the sewer system and LWMP start • INVOLVE: connect with public to collect feedback on values in sewer planning 	<ul style="list-style-type: none"> • Project Webpage: create dedicated pages on regional district & ConnectCVRD websites • Advertisements: Print, radio & online • Facilitated Session #1 - Values • Online Consultation Survey
PHASE 2: Kick off & Goals/Objectives (Fall/Winter 2018)	<ul style="list-style-type: none"> • INFORM: introduce LWMP process • COLLABORATE: work with the public advisory committee • CONSULT: collect feedback on goals and objectives 	<ul style="list-style-type: none"> • Open House #1: including promotional & info materials • Facilitated Session #2 - Goals • Online Consultation Survey
PHASE 3: Longlisted Options (Winter 2019)	<ul style="list-style-type: none"> • COLLABORATE: PAC/TAC meetings, long list established • CONSULT: host a facilitated workshop for public to review and rank long list options, support with online consultation 	<ul style="list-style-type: none"> • Facilitated Session #3 – Long List • Online Consultation Survey
PHASE 4: Shortlisted Options (Spring 2019)	<ul style="list-style-type: none"> • COLLABORATE: PAC/TAC meetings, short list established • CONSULT: host a facilitated workshop for public to review and rank short list options, support with online consultation • INFORM: Sewage Commission signs off on shortlist of options 	<ul style="list-style-type: none"> • Facilitated Session #4 – Short List • Online Consultation Survey

PHASE 5:

Preferred Option
(Fall 2019)

- COLLABORATE: PAC/TAC meetings, consensus on preferred solution
- INFORM: Sewage Commission signs off on preferred solution
- INFORM: Present preferred solution to community and report on feedback obtained from public
- Open House #2 - Preferred Solution
- Inform via news release, website and ConnectCVRD

Engaging with the public about wastewater – particularly in planning for services – can be difficult because of a lack of interest and understanding from the public. However, it's very important as the results of these planning processes can have tangible impacts on some residents and businesses, and on all service users.

With that in mind, the following goals were identified to guide engagement:

1. Provide information about the process of engagement and tools to be used.
2. Offer opportunities for active public involvement.
3. Clearly explain how feedback will be received and considered.
4. Create a record of engagement at the end of the process.
5. Demonstrate how engagement was considered and how input influenced final decisions.

2.3 Phase 1 Consultation: Overview

The first phase of consultation was centered on collecting feedback that would help to establish the values of the community as they pertain to decision making in the sewer planning process. Along with promoting the new online consultation tool and advertising for Public Advisory Committee nominees, the engagement in this first phase focused on two hubs:

- *Facilitated Sessions:* Two facilitated sessions were held – June 18 & 19, 2018 – hosted by facilitator Allison Habkirk. These sessions used a group discussion method that had people discuss and rank cost, environment, neighbourhood impact and other criteria as factors in sewer service decision making. The exercise used a series of scenarios.
- *Online Consultation Survey:* A survey mimicking the exercise hosted at the two open houses was posted to the ConnectCVRD page on June 20, 2018 and ran until August 7, allowing others who did not attend the facilitated sessions to contribute their comments, for consideration by the public advisory committee.

3.0 Consultation Results

The primary objective of this stage of consultation was to understand the public's values as they relate to the decision-making process in sewage service. Also key was to establish the CVRD's goal to actively engage with the public and introduce the online tool that will be used throughout the

process. The below overview shows a summary of these consultation results. The full reports from both the facilitated sessions and online consultations tools are attached as appendices.

3.1 By the Numbers

1,600	Visits to the ConnectCVRD Sewer LWMP page
104	Participants in the online consultation survey
15	Number of questions posted by participants to the online consultation tool
171	‘Engaged’ visitors who contributed actively via online consultation tool
20	Participants in two facilitated sessions
89	Percent of facilitated session participants who were ‘very satisfied’ or ‘satisfied’ with the process
88	Percentage of scenarios over the two sessions where environment was identified as the top priority
35	Average majority percentage of participants who identified long term planning or expanding the sewer service as a priority.

3.2 Facilitated Sessions: Themes of Feedback

- *Concern about the environment:* Participants in the two facilitated sessions were largely focused on the importance of protecting the environment – and in almost all of the scenario exercises ranked it the highest value to consider when making sewer system decisions.
- *Interest in long-term planning:* As the most consistent response for the “other” category, participants should support and share interest in long-term infrastructure planning in coordination with community development and land use planning.

3.3 ConnectCVRD: Themes of Feedback

- *Interest in long-term planning:* When asked to prioritize values, the majority of participants selected ‘other’. When asked to explain ‘other’, a theme around the importance of long-term future planning emerges, along with interest in opportunities and plans for service outside of the existing areas.
- *Importance of moving forward:* A number of responses emphasize the need for the CVRD to make decisions and move forward with improvements, given the risks posed by aging/overstretched infrastructure and septic fields. Some of these comments

suggested ‘engagement’ should be reduced in order to allow progress on construction to happen sooner.

- *Concerns about the environment:* While this did not land at the top of the ranking exercise, the responses to a written question about top concerns were largely focused on the importance of protecting the environment and concerns that environment could be impacted by eagerness to reduce costs.

4.0 Conclusion

Summer is a challenging time to encourage participation from the public in formal planning or engagement processes, particularly around wastewater, which often faces limited public interest. However, a push of active promotion using online and radio advertising to highlight the combined opportunities for engagement (both in-person and online) resulted in roughly 150 people providing feedback on this early stage. This is notable and sets a good foundation for engagement going forward.

The resulting comments about the importance of the environment, interest in long-term planning and eagerness to see the process move forward, will help to inform the Technical Advisory and Public Advisory Committees as they work to set the goals and objectives for the process moving forward.

Next Steps

The public engagement was successfully launched during this period, and the CVRD has the opportunity now to move that momentum forward over the subsequent stages of the sewer service planning process. Next steps for public engagement and outreach include:

- *Open Houses:* Scheduled for November 6 and 8 at the Comox Valley Pollution Control Centre. These events will offer tours of the sewage treatment plant and provide more information about the management planning process and how to get involved in the public consultation.
- *Facilitated Sessions:* Scheduled November 27 and 28 in Courtenay and Comox. These sessions will obtain feedback from the community on the goals and objectives for the management planning process. Results will be fed back to the Technical Advisory and Public Advisory Committees and will help to inform the final recommendation to Sewage Commission.
- *Online Consultation:* Residents may submit feedback on the goals and objectives via an online survey on ConnectCVRD from November 24 to December 5, 2018.

Appendices

Appendix 1 – Facilitator’s Report: June 18 & 19, 2018

Appendix 2 – ConnectCVRD Analytics

Appendix 3 – Sample Advertisements



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Contents

1.0	Executive Summary	2
2.0	Introduction	2
2.1	Project Brief.....	2
2.2	Consultation Overview	3
2.3	Phase 1 Consultation: Overview	4
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In spring 2018, the Comox Valley Regional District launched a liquid waste management planning process for the Comox Valley Sewer System, which will provide a comprehensive planning opportunity that prioritizes public involvement in determining solutions. To outline how the public would be consulted in this process, a public consultation plan was drafted which offered five stages of outreach beginning in summer 2018.

2.2 Consultation Overview

The sewer system planning process requires active public engagement in order to determine the preferred path forward and demonstrate to the province the community's input to the overall plan. The public engagement plan developed in spring 2018 identified a suite of tools focused around facilitated sessions, open houses and the online consultation site, ConnectCVRD.

An outline of the plan is below. Phase 1 was completed this summer.



PHASE	OBJECTIVES	TOOLS
PHASE 1: Educate/Kick-Off (Summer 2018)	<ul style="list-style-type: none"> • INFORM: provide info about the sewer system and LWMP start • INVOLVE: connect with public to collect feedback on values in sewer planning 	<ul style="list-style-type: none"> • Project Webpage: create dedicated pages on regional district & ConnectCVRD websites • Advertisements: Print, radio & online • Facilitated Session #1 - Values • Online Consultation Survey
PHASE 2: Kick off & Goals/Objectives (Fall/Winter 2018)	<ul style="list-style-type: none"> • INFORM: introduce LWMP process • COLLABORATE: work with the public advisory committee • CONSULT: collect feedback on goals and objectives 	<ul style="list-style-type: none"> • Open House #1: including promotional & info materials • Facilitated Session #2 - Goals • Online Consultation Survey
PHASE 3: Longlisted Options (Winter 2019)	<ul style="list-style-type: none"> • COLLABORATE: PAC/TAC meetings, long list established • CONSULT: host a facilitated workshop for public to review and rank long list options, support with online consultation 	<ul style="list-style-type: none"> • Facilitated Session #3 – Long List • Online Consultation Survey
PHASE 4: Shortlisted Options (Spring 2019)	<ul style="list-style-type: none"> • COLLABORATE: PAC/TAC meetings, short list established • CONSULT: host a facilitated workshop for public to review and rank short list options, support with online consultation • INFORM: Sewage Commission signs off on shortlist of options 	<ul style="list-style-type: none"> • Facilitated Session #4 – Short List • Online Consultation Survey

PHASE 5:

Preferred Option
(Fall 2019)

- COLLABORATE: PAC/TAC meetings, consensus on preferred solution
- INFORM: Sewage Commission signs off on preferred solution
- INFORM: Present preferred solution to community and report on feedback obtained from public
- Open House #2 - Preferred Solution
- Inform via news release, website and ConnectCVRD

Engaging with the public about wastewater – particularly in planning for services – can be difficult because of a lack of interest and understanding from the public. However, it's very important as the results of these planning processes can have tangible impacts on some residents and businesses, and on all service users.

With that in mind, the following goals were identified to guide engagement:

1. Provide information about the process of engagement and tools to be used.
2. Offer opportunities for active public involvement.
3. Clearly explain how feedback will be received and considered.
4. Create a record of engagement at the end of the process.
5. Demonstrate how engagement was considered and how input influenced final decisions.

2.3 Phase 1 Consultation: Overview

The first phase of consultation was centered on collecting feedback that would help to establish the values of the community as they pertain to decision making in the sewer planning process. Along with promoting the new online consultation tool and advertising for Public Advisory Committee nominees, the engagement in this first phase focused on two hubs:

- *Facilitated Sessions:* Two facilitated sessions were held – June 18 & 19, 2018 – hosted by facilitator Allison Habkirk. These sessions used a group discussion method that had people discuss and rank cost, environment, neighbourhood impact and other criteria as factors in sewer service decision making. The exercise used a series of scenarios.
- *Online Consultation Survey:* A survey mimicking the exercise hosted at the two open houses was posted to the ConnectCVRD page on June 20, 2018 and ran until August 7, allowing others who did not attend the facilitated sessions to contribute their comments, for consideration by the public advisory committee.

3.0 Consultation Results

The primary objective of this stage of consultation was to understand the public's values as they relate to the decision-making process in sewage service. Also key was to establish the CVRD's goal to actively engage with the public and introduce the online tool that will be used throughout the

process. The below overview shows a summary of these consultation results. The full reports from both the facilitated sessions and online consultations tools are attached as appendices.

3.1 By the Numbers

1,600	Visits to the ConnectCVRD Sewer LWMP page
104	Participants in the online consultation survey
15	Number of questions posted by participants to the online consultation tool
171	‘Engaged’ visitors who contributed actively via online consultation tool
20	Participants in two facilitated sessions
89	Percent of facilitated session participants who were ‘very satisfied’ or ‘satisfied’ with the process
88	Percentage of scenarios over the two sessions where environment was identified as the top priority
35	Average majority percentage of participants who identified long term planning or expanding the sewer service as a priority.

3.2 Facilitated Sessions: Themes of Feedback

- *Concern about the environment:* Participants in the two facilitated sessions were largely focused on the importance of protecting the environment – and in almost all of the scenario exercises ranked it the highest value to consider when making sewer system decisions.
- *Interest in long-term planning:* As the most consistent response for the “other” category, participants should support and share interest in long-term infrastructure planning in coordination with community development and land use planning.

3.3 ConnectCVRD: Themes of Feedback

- *Interest in long-term planning:* When asked to prioritize values, the majority of participants selected ‘other’. When asked to explain ‘other’, a theme around the importance of long-term future planning emerges, along with interest in opportunities and plans for service outside of the existing areas.
- *Importance of moving forward:* A number of responses emphasize the need for the CVRD to make decisions and move forward with improvements, given the risks posed by aging/overstretched infrastructure and septic fields. Some of these comments

suggested ‘engagement’ should be reduced in order to allow progress on construction to happen sooner.

- *Concerns about the environment:* While this did not land at the top of the ranking exercise, the responses to a written question about top concerns were largely focused on the importance of protecting the environment and concerns that environment could be impacted by eagerness to reduce costs.

4.0 Conclusion

Summer is a challenging time to encourage participation from the public in formal planning or engagement processes, particularly around wastewater, which often faces limited public interest. However, a push of active promotion using online and radio advertising to highlight the combined opportunities for engagement (both in-person and online) resulted in roughly 150 people providing feedback on this early stage. This is notable and sets a good foundation for engagement going forward.

The resulting comments about the importance of the environment, interest in long-term planning and eagerness to see the process move forward, will help to inform the Technical Advisory and Public Advisory Committees as they work to set the goals and objectives for the process moving forward.

Next Steps

The public engagement was successfully launched during this period, and the CVRD has the opportunity now to move that momentum forward over the subsequent stages of the sewer service planning process. Next steps for public engagement and outreach include:

- *Open Houses:* Scheduled for November 6 and 8 at the Comox Valley Pollution Control Centre. These events will offer tours of the sewage treatment plant and provide more information about the management planning process and how to get involved in the public consultation.
- *Facilitated Sessions:* Scheduled November 27 and 28 in Courtenay and Comox. These sessions will obtain feedback from the community on the goals and objectives for the management planning process. Results will be fed back to the Technical Advisory and Public Advisory Committees and will help to inform the final recommendation to Sewage Commission.
- *Online Consultation:* Residents may submit feedback on the goals and objectives via an online survey on ConnectCVRD from November 24 to December 5, 2018.

Appendices

Appendix 1 – Facilitator’s Report: June 18 & 19, 2018

Appendix 2 – ConnectCVRD Analytics

Appendix 3 – Sample Advertisements

APPENDIX 1 – FACILITATOR’S REPORT: JUNE 18 & 19, 2018

CVRD LWMP Public Consultation Report



July 28, 2018

Prepared by A.M Habkirk BA MA MPA MCIP

BACKGROUND

This report documents the outcomes of the two public consultation workshops held June 18 & 19, 2018 conducted to solicit early input into a proposed public consultation plan for the development of the Comox Valley Sewer System's Liquid Waste Management Plan (LWMP).

The Comox Valley Sewer System provides liquid waste management for the City of Courtney and the Town of Comox at the sewage treatment plant. As the communities grow, capacity to deliver liquid waste to the treatment plant must be expanded by installing new pipes in the ground. Potential upgrades at the plant may also be necessary to provide a higher standard treatment.

The consultation for the LWMP is proposed to include four sessions over the life of the Liquid Waste Management Plan development process. The first phase includes an online consultation and two workshops sessions, which are detailed in this report. The first phase of consultation is fundamental as it lays the groundwork for the consultation process and provides input for the Public Advisory and Technical Advisory Committees (PAC/TAC) to consider as they develop a shortlist of options to review.

Future consultation phases are proposed to include:

September 2018: Open House #1 – Introduce LWMP process and opportunities for public to provide input

Oct-Dec 2018: Facilitated Session #2 – Review LWMP Goals and Objectives – supported with online consultation

Jan-Feb 2019: Facilitated Session #3 – Review and rank longlist of options – supported with online consultation

Feb-Mar 2019: Facilitated Session #4 – Review and rank shortlist of options – supported with online consultation

Apr-July 2019: Open House #2 – Present preferred options to community

Jan-Mar 2020: Facilitated Session #5 - Gather input on implementation of solution and financing

Spring 2020: Open House #3 - Report back to community on consultation value, results and affect. Supported with online information.

The results of the two consultation workshops held June 18 & 19, 2018 should be considered along with the results of the online consultation process.

THE PURPOSE OF THE PHASE 1 CONSULTATION WORKSHOPS

The purpose of the workshops was to gain an understanding of what residents in the CVRD value most and would like used as the basis for development and evaluation of options for potential pipe routes and upgrading of the CVWPCC. The information gathered in these workshops and through the online consultation tool, will be provided to the Technical and Public Advisory Committees for consideration as the goals and objectives for the LWMP process are established.

THE WORKSHOP CONSULTATION PROCESS

At each of the two workshops attendees were organized in small groups – at the June 18 workshop in Courtenay a single group was formed due to the low attendance. At the June 19 workshop three groups were formed and at each step in the process the composition of the groups was changed by asking 1 or 2 individuals to move clockwise to the next group.

Over the course of the evening the groups were asked to consider four scenarios with each one representing a situation that is likely to be in front of elected officials and staff in considering potential alternatives for liquid waste management in the Comox Valley. The scenarios were:

- Construction of pipes in an environmentally sensitive area
- Construction of pipes in a commercial/business area
- Construction of pipes in a residential area
- Comox Valley Water Pollution Control Centre (treatment plant) upgrade

The groups were asked to rank the importance of three values/criteria that could be used to evaluate each scenario:

- minimizing cost,
- maximizing protection of the environment,
- minimizing impact on nearby properties, and
- other which they were asked to specify if they considered.

The ranking was performed by allocating 10 candies on a game board that showed the 4 possible values/criteria. The groups had 20 minutes to discuss each scenario and to allocate the candies.



The attendees willingly participated in the process and except for needing to replace some of the candies allocated for each table because they had been eaten the process played out surprisingly smoothly.

WHAT DID THE PUBLIC TELL US?

Complete Workshop results are detailed in Appendices 1 & 2 and are summarized in the table below.

June 18, 2018 Workshop Results - Courtenay

	Minimize cost	Maximize protection of the environment	Minimize impact on nearby properties	Other criteria
Scenario #1 Construction of pipes in an environmentally sensitive area	2	6	2	
Scenario #2 Construction of pipes in a commercial/business area	2	5	3	
Scenario #3 Construction of pipes in a residential area	3	6	1	
Scenario #4 Comox Valley Water Pollution Control Centre Upgrade	2	5	3	

Observations:

The June 18 group consisted of only six people from the following communities: Courtenay (3), Fanny bay (1) and Comox (1). Nonetheless the group wrestled with the scenarios and turned their minds to the exercise.

In all scenarios the group ranked “Maximize protection of the environment” as the highest value criteria. They also acknowledged/ranked all three values/criteria in each of the four scenarios suggesting that all the values/criteria held importance. Interestingly the “candies” were distributed more evenly across the values/criteria than they were at the second workshop in Comox.

June 19, 2018 Workshop Results - Comox

Scenario #1 Construction of pipes in an environmentally sensitive area				
	Minimize cost	Maximize protection of the environment	Minimize impact on nearby properties	Other criteria
Group 1	0	9	1	
Group 2	0	8	0	2 Maximize funding equity parcel tax, assessment, flow?
Group 3	2	4	3	1 Maximize alternatives to single plant (in ground?)
Scenario #2 Construction of pipes in a commercial/business area				
Group 1	1	6	1	2 Maximize alignment with future planning
Group 2	1	4	3	2 Maximize conformance with long term planning e.g. RGS OCP service plans
Group 3	2	6 Protect aquifers	2	
Scenario #3 Construction of pipes in a residential area				
Group 1	1	4	4	1 Maximize benefit to adjacent property owners
Group 2	1	4	3	2 Maximize alignment with long term planning
Group 3	1	7	1	1 Maximize alignment with long term planning
Scenario #4 Comox Valley Water Pollution Control Centre Upgrade				
Group 1	0	4	5	1 Maximize support of existing plant
Group 2	1	4	3	2 Maximize alternatives to existing process/location Maximize expansion of the collection area
Group 3	0	8	0	2 Maximize new technologies/innovation

Observations:

The June 19 group consisted of 15* people from across the region.

June 19 Workshop Attendees by residence location	
Comox*	3
Courtenay	1
Electoral Area B	9
Union Bay	2
Fanny bay	0

**Actual attendance numbers were 17, which included two directors from the Sewage Commission who attended as observers. These directors have been removed from the final count.*

The dominance of participants from outside of the two municipalities that receive and pay for the service likely impacted the results. The low results for “minimize the cost” may be a consequence of most attendees not being responsible for paying for the services.

Regardless of the residence of the attendees the dominance of results for “maximize protection of the environment” echoes the results from the June 18 workshop and was clearly heard in the discussions at the group tables.

The “other” results from this Workshop were also interesting particularly the repeated theme of “maximize long term planning.” These results and the discussions suggest significant support for long term infrastructure planning in coordination with community development and land use planning.

Another theme that was heard in the discussions was a desire to explore new liquid waste technologies.

NEXT STEPS

The results of the two consultation workshops should be considered in conjunction with the online consultation results; the combined results should then be provided as input for the Public Advisory and Technical Advisory Committees (PAC/TAC) to consider as they develop a shortlist of options to review.

Appendix 1: June 18, 2018 Workshop Results - Courtenay



World Café Scenario #1 Construction of pipes in an environmentally sensitive area

10 POINTS TOTAL				
Environmentally sensitive area	Minimize cost	Maximize protection of the environment	Minimize impact on nearby properties	Other criteria
Group 1	2	6	2	
Observations: <ul style="list-style-type: none">The group ranked “Maximize protection of the environment” as most important but acknowledged the importance of minimizing the cost to taxpayers and minimizing the impact on adjacent property owners.The comment was made that “pipes shouldn’t be built through an environmentally sensitive area at all.”				



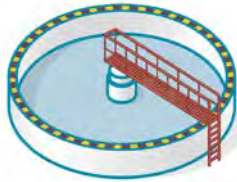
World Café Scenario #2 Construction of pipes in a commercial/business area

10 POINTS TOTAL				
Commercial/business area	Minimize cost	Maximize protection of the environment	Minimize impact on nearby properties	Other criteria
Group 1	2	5	3	
Observations: <ul style="list-style-type: none">The group ranked “Maximize protection of the environment” but also recognized that impact on nearby business properties was important as was minimizing the cost to taxpayers				



World Café Scenario #3 Construction of pipes in a residential area

10 POINTS TOTAL				
Residential area	Minimize cost	Maximize protection of the environment	Minimize impact on nearby properties	Other criteria
Group 1	3	6	1	
Observations: <ul style="list-style-type: none"> The group ranked “Maximize protection of the environment” as the highest value criteria but also more than the first two scenarios recognized the importance of minimizing cost to the taxpayer. “Minimizing impact on nearby properties was also acknowledged although not as strongly as in the first two scenarios. 				



World Café Scenario #4 Comox Valley Water Pollution Control Centre upgrade

10 POINTS TOTAL				
Upgrading of the CVWPCC capacity	Minimize cost	Maximize protection of the environment	Minimize impact on nearby properties	Other criteria
Group 1	2	5	3	
Observations: <ul style="list-style-type: none"> The group ranked “Maximize protection of the environment” as the highest value criteria The also ranked “Minimize impact on nearby properties” and “Minimize cost “as being important. The scores in this case mirrored the scores in scenario 2. 				

Appendix 2: June 19, 2018 Workshop Results - Comox



World Café Scenario #1 Construction of pipes in an environmentally sensitive area

10 POINTS TOTAL				
Environmentally sensitive area	Minimize cost	Maximize protection of the environment	Minimize impact on nearby properties	Other criteria
Group 1	0	9	1	
Group 2	0	8	0	2 Maximize funding equity parcel tax, assessment, flow?
Group 3	2	4	3	1 Maximize alternatives to single plant (in ground?)
Observations: <ul style="list-style-type: none"> All the groups ranked "Maximize protection of the environment" as most important Only 1 group ranked "Minimize" cost as being of importance 2 groups noted other criteria including "funding equity" which refers to wanting there to be fairness in how the service was paid for e.g. user pay and the second group wanted alternatives to a single treatment plant to be considered. 				



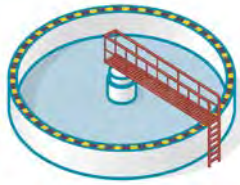
World Café Scenario #2 Construction of pipes in a commercial/business area

10 POINTS TOTAL				
Commercial/business area	Minimize cost	Maximize protection of the environment	Minimize impact on nearby properties	Other criteria
Group 1	1	6	1	2 Maximize alignment with future planning
Group 2	1	4	3	2 Maximize conformance with long term planning e.g. RGS OCP service plans
Group 3	2	6 Protect aquifers	2	
Observations: <ul style="list-style-type: none"> All groups ranked “Maximize protection of the environment” as the highest value criteria although the rankings were not as high as in the first scenario using the environmentally sensitive area. All three groups acknowledged “minimize cost” as having some ranking. All three groups ranked “Minimize impact on nearby properties” as being of some importance presumably recognizing the risk to business of construction and interruption of business. Two of the groups independently acknowledged that an “other” criteria should recognize the importance of aligning alternatives with long term planning. 				



World Café Scenario #3 Construction of pipes in a residential area

10 POINTS TOTAL				
Residential area	Minimize cost	Maximize protection of the environment	Minimize impact on nearby properties	Other criteria
Group 1	1	4	4	1 Maximize benefit to adjacent property owners
Group 2	1	4	3	2 Maximize alignment with long term planning
Group 3	1	7	1	1 Maximize alignment with long term planning
Observations: <ul style="list-style-type: none"> All groups ranked “Maximize protection of the environment” as the highest value criteria All three groups acknowledged “minimize cost” as having some ranking. All three groups ranked “Minimize impact on nearby properties” as being of some importance Two of the groups acknowledged that an “other” criteria should recognize the importance of aligning alternatives with long term planning. One group recognized “Maximize benefit to adjacent property owners” presumably in an option to connect to the sewer line or to densification that could lead to public transit. 				



World Café Scenario #4 Comox Valley Water Pollution Control Centre upgrade

10 POINTS TOTAL				
Upgrading of the CVWPCC capacity	Minimize cost	Maximize protection of the environment	Minimize impact on nearby properties	Other criteria
Group 1	0	4	5	1 Maximize support of existing plant
Group 2	1	4	3	2 Maximize alternatives to existing process/location Maximize expansion of the collection area
Group 3	0	8	0	2 Maximize new technologies/innovation
Observations: <ul style="list-style-type: none"> All groups ranked “Maximize protection of the environment” as the highest value criteria Only 1 group acknowledged “minimize cost” as having ranking. Two groups ranked “Minimize impact on nearby properties” as being of some importance “Other” Criteria/values included: Maximize support of existing plant, maximize alternatives to existing process/location, maximize expansion of the collection area, maximize new technologies/innovation 				

Appendix 3: Workshop Agenda and Instructions

CVRD Liquid Waste Management Public Engagement Workshop Agenda June 18 & 19, 2018 Courtenay and Comox at the Native Sons Hall (downstairs) Comox Valley Golf Course	
5:00 pm – 5:10 pm	Welcome & introductions What do we hope to accomplish at this workshop?
5:10 pm – 5:25 pm	Setting the context (presentation by staff) <ul style="list-style-type: none"> • What is the big picture? • What is the overall consultation process proposed? • How will the information flowing out of this workshop be used? • What do we plan to do tonight?
5:25 pm – 5:30 pm	World Café Instructions
5:30 pm – 5:50 pm	World Café 1 Environmentally sensitive area
5:50 pm – 5:55 pm	Shuffle Groups
5:55 pm – 6:15 pm	World Café 2 Commercial/business area
6:15 pm – 6:20 pm	Shuffle Groups
6:20 pm – 6:40 pm	World café 3: Residential area
6:40 pm – 7:00 pm	Scenario 4: Comox Valley Water Pollution Control Centre Upgrade
	Summary & Next Steps

CVRD LWMP Public Engagement

Workshop Instructions

Background: The CVRD provides liquid waste management for the City of Courtney and the Town of Comox at the Comox Valley Water Pollution Control Centre (CVWPCC). As the communities grow capacity to deliver liquid waste to the CVWPCC must be expanded by installing new pipes in the ground and potentially upgrading of the CVWPCC to provide a higher level of wastewater treatment.

At present no decisions have been made about either location for pipes or upgrading of the CVWPCC.

The purpose of the workshop is to gain an understanding of what residents in the CVRD value most and would like used as the basis for development and evaluation of options for potential pipe routes and upgrading of the CVWPCC to provide a higher level of wastewater treatment.

It is expected several values will be used as criteria to evaluate alternatives including:

- minimizing cost,
- maximizing protection of the environment, and
- minimizing impact on nearby properties.

We have created four scenarios for you to discuss this evening; each scenario represents a situation that is likely to be in front of your elected officials and staff in considering potential alternatives.

You will be asked to rank the criteria (minimizing cost, maximizing protection of the environment, minimizing impact on nearby properties, other) that will be used to evaluate each scenario.

The scenarios are:

- Construction of pipes in an environmentally sensitive area
- Construction of pipes in a commercial/business area
- Construction of pipes in a residential area
- Comox Valley Water Pollution Control Centre upgrade

You will be randomly sorted into groups of 5 or 6 and the groups will be shuffled for each scenario.

You will have 20 minutes to discuss each scenario



World Café Scenario #1 Construction of pipes in an environmentally sensitive area

In order for liquid waste to be transported to the Comox Valley Water Pollution Control Centre pipes may need to be constructed in an **environmentally sensitive area**.

- You and your fellow group members are faced with the challenge of deciding which criteria are most important in this scenario.
- You have a total of 10 points to assign to all the criteria.
- Discuss the scenario and agree on how the points will be distributed and thus which criteria are of greater or lesser importance.

For example, in this scenario construction could take place in an environmentally sensitive area so you may feel that protection of the environment is more important than in other locations. If that is the case, you might allocate more of your points to maximizing protection of the environment and fewer to minimizing cost and impact on nearby properties. Alternately, you may feel that minimizing cost to the taxpayer is the most important criteria in which case you would allocate more of your points to that criteria.

If the group is not able to come to a consensus on how to allocate the points, then each member assigns their points individually and the total number of points for each criterion are added together and then divided by the number of people in the group.

You can use the matrix below to help you to think about how to assign your points.

ALLOCATE 10 POINTS TOTAL				
	Minimize cost	Maximize protection of the environment	Minimize impact on nearby properties	Other criteria
Environmentally sensitive area				

Each group will be asked to report out its results.



World Café Scenario #2 Construction of pipes in a commercial/business area

In order for liquid waste to be transported to the Comox Valley Water Pollution Control Centre pipes may need to be constructed in a **commercial/business area**.

- You and your fellow group members are faced with the challenge of deciding which criteria are most important in this scenario.
- You have a total of 10 points to assign to all the criteria.
- Discuss the scenario and agree on how the points will be distributed and thus which criteria are of greater or lesser importance.

For example, in this scenario construction could take place in a commercial business area so you may feel that minimizing impact on adjacent properties is more important than in other locations. If that is the case, you might allocate more of your points to minimizing impact on nearby properties and fewer to maximizing protection of the environment and minimizing cost. Alternately, you may feel that minimizing cost to the taxpayer is the most important criteria in which case you would allocate more of your points to that criteria.

If the group is not able to come to a consensus on how to allocate the points, then each member assigns their points individually and the total number of points for each criterion are added together and then divided by the number of people in the group.

You can use the matrix below to help you to think about how to assign your points.

ALLOCATE 10 POINTS TOTAL				
	Minimize cost	Maximize protection of the environment	Minimize impact on nearby properties	Other criteria
Commercial/business area				

Each group will be asked to report out its results.



World Café Scenario #3 Construction of pipes in a residential area

In order for liquid waste to be transported to the Comox Valley Water Pollution Control Centre pipes may need to be constructed in a **residential area**.

- You and your fellow group members are faced with the challenge of deciding which criteria are most important in this scenario.
- You have a total of 10 points to assign to all the criteria.
- Discuss the scenario and agree on how the points will be distributed and thus which criteria are of greater or lesser importance.

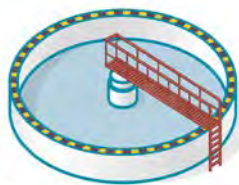
For example, in this scenario construction would take place in a residential area so you may feel that minimizing impact on adjacent properties is more important than in other locations. If that is the case, you might allocate more of your points to impact on nearby properties and fewer to minimizing cost and maximizing protection of the environment. Alternately, you may feel that minimizing cost to the taxpayer is the most important criteria in which case you would allocate more of your points to that criteria.

If the group is not able to come to a consensus on how to allocate the points, then each member assigns their points individually and the total number of points for each criterion are added together and then divided by the number of people in the group.

You can use the matrix below to help you to think about how to assign your points.

ALLOCATE 10 POINTS TOTAL				
	Minimize cost	Maximize protection of the environment	Minimize impact on nearby properties	Other criteria
Residential area				

Each group will be asked to report out its results.



World Café Scenario #4 Comox Valley Water Pollution Control Centre upgrade

In addition to installing new pipes, upgrading of the Comox Valley Water Pollution Control Centre (CVWPCC) is a possibility. Upgrading would result in improvement of the quality of treated wastewater which would benefit the marine environment and enable reclamation of water.

- You and your fellow group members are faced with the challenge of deciding which criteria are most important in considering expansion of the capacity of the existing plant.
- You have a total of 10 points to assign to all the criteria.
- Discuss the scenario and agree on how the points will be distributed and thus which criteria are of greater or lesser importance.

For example, you may feel that minimizing costs to the taxpayers is more important than maximizing protection of the environment. If that is the case, you might allocate more of your points to minimizing cost and fewer to maximizing protection of the environment and minimizing impact on nearby properties. Alternately, you may feel that maximizing protection of the environment is the most important criteria in which case you would allocate more of your points to that criteria.

If the group is not able to come to a consensus on how to allocate the points, then each member assigns their points individually and the total number of points for each criterion are added together and then divided by the number of people in the group.

You can use the matrix below to help you to think about how to assign your points.

ALLOCATE 10 POINTS TOTAL				
	Minimize cost	Maximize protection of the environment	Minimize impact on nearby properties	Other criteria
Upgrading of the CVWPCC capacity				

Each group will be asked to report out its results.

Appendix 4: Evaluation Results

June 18, 2018 consolidated feedback - Total completed 5

How familiar were you with liquid waste management in the Comox Valley before the workshop?

Very familiar	Familiar	Somewhat familiar	Not at all familiar
1	0	4	0

How satisfied are you about this workshop?

Very satisfied	Satisfied	Somewhat satisfied	Not satisfied
0	5	0	0

What was the best thing in the workshop?

- Small groups
- Face to face interactions
- Group discussions
- Hearing the opinions and having experts available to answer questions
- Conversation

What was the worst thing in the workshop?

- Not enough people there
- Lack of attendance
- Not enough details
- Not enough people attended
- Small attendance

How could the workshop be improved?

- Better attendance
- Give more facts

The most important thing I learned?

- Different impacts/interests to designing a system
- We need to save water-important issue with long term plans to be taken seriously with an organized official plan
- Complexity of the sewer system

Will I come to another meeting?

Yes	No	Maybe
12	0	1

Please offer any other comments you have.

- Need to reduce water usage with meters
- Look into ozone treatment, cross contamination opportunities with drinking water
- We need water meters to contain the amount of sewage

June 19, 2018 consolidated feedback - Total completed 13

How familiar were you with liquid waste management in the Comox Valley before the workshop?

Very familiar	Familiar	Somewhat familiar	Not at all familiar
5	6	2	0

How satisfied are you about this workshop?

Very satisfied	Satisfied	Somewhat satisfied	Not satisfied
1	10	1	1

What was the best thing in the workshop?

- World café format
- Hearing other opinions from various members of the community.
- A human/community experience.
- Facilitator.
- Very good workshop coordinator
- Having representatives from the CVRD who were able to answer questions
- Allowed to have a voice
- The ability to engage in conversation and exchange of ideas
- Concerns by all on the environment, concerns by all on integrated planning.
- Everyone got a say
- Process
- Hear people's ideas and opinions

What was the worst thing in the workshop?

- Majority seems willing to pay more to protect environment and do it right for the long term.
- Attendance was 16. Wish more people would come out!
- It was fine I would like to see more innovative treatment plants shared.
- Focus on the status quo treatment
- Nothing really
- Would like to have a quick comprehensive explaining the current system
- Environment seemed to be important and high priority
- Hosts seem to assume the plant should be at same location
- There was not a balance of urban/rural Area B over represented
- Notification that the meeting was going to happen was abysmal
- Your cookies – weight problem

How could the workshop be improved?

- I had to dig deep into website to find info on this meeting. Way too hard to find and I am comfortable on computers.
- Building trust in the CVRD management – are their decisions in the best interest of the people. Idea share how they are working for the bettering of the Comox valley.
- No politicians at the tables – better notice to the community.
- More advertising prior to the workshop
- Maps provided
- Allowed to eat candies at the start
- Well-paced – balance of reps
- More advertising

- See above – re notice of meeting

The most important thing I learned?

- The complexity behind waste management
- The manner in which decisions are made (processes)
- Not to eat candies at the start
- No accountability for costs. Environment very important but Area B doesn't feel they should share the costs of clean environment.
- Public consultation by the CVRD is still in its infancy
- We need to consider innovation
- At least in discussion people were very focused on the environment – could be skewed by the type of people that show up?

Will I come to another meeting?

Yes	No	Maybe
12	0	1

Please offer any other comments you have.

- With an overwhelming representation from Area B I believe the findings were slanted. There were many misconceptions and nimbyism. Everyone wants a clean environment. I believe cost is an issue and looking at the Valley as a whole and sharing costs is important.
- Not sure how you can justify so many CVRD employees at a meeting like this.
- Positive – thank you!

APPENDIX 2 – CONNECTCVRD ANALYTICS

Survey Responses

28 May 2018 - 12 August 2018

Your Values: Sewer Service Planning

Connect CVRD

Project: Help shape the future of our Sewer Service



VISITORS

166

CONTRIBUTORS

101

RESPONSES

104

5

Registered

0

Unverified

96

Anonymous

5

Registered

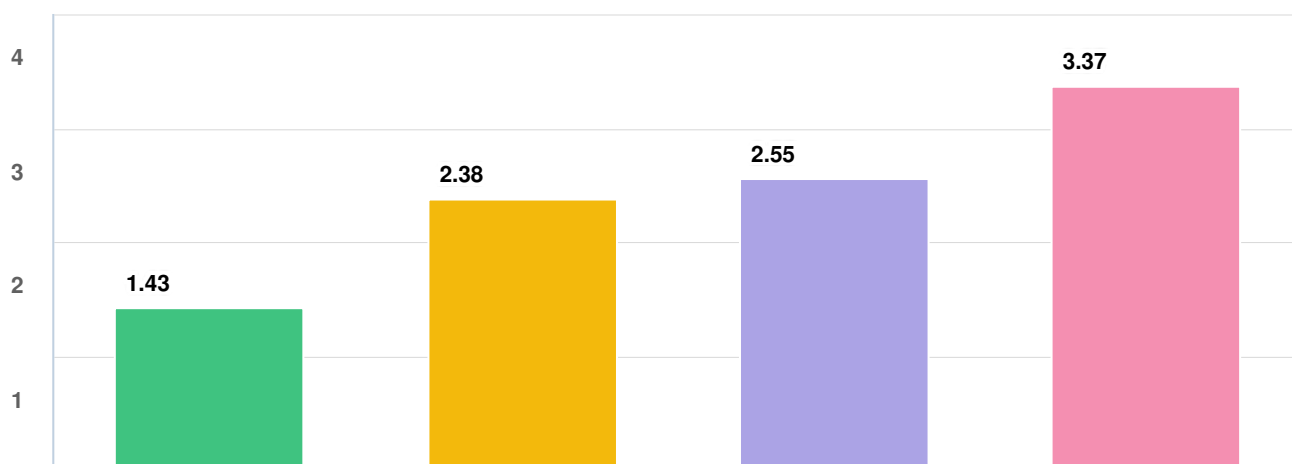
0

Unverified

99

Anonymous

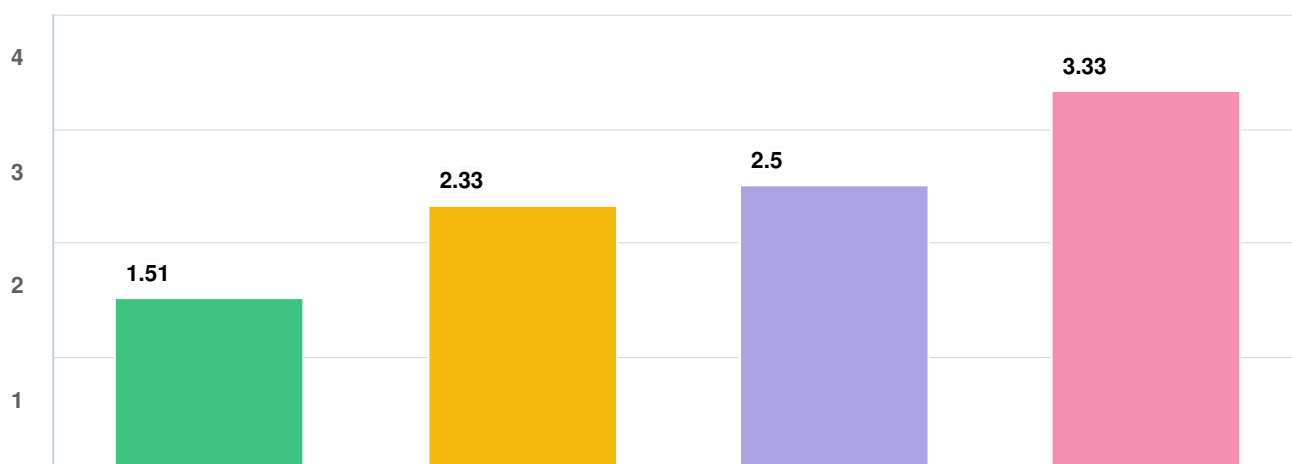
Q1 | **IMAGINE THAT: to move wastewater to the sewage treatment plant, a collection line (pipes) is proposed for an environmental...**



Question options

● Maximize Protection of Environment ● Minimize Impact on Nearby Properties ● Minimize Cost ● Other Criteria

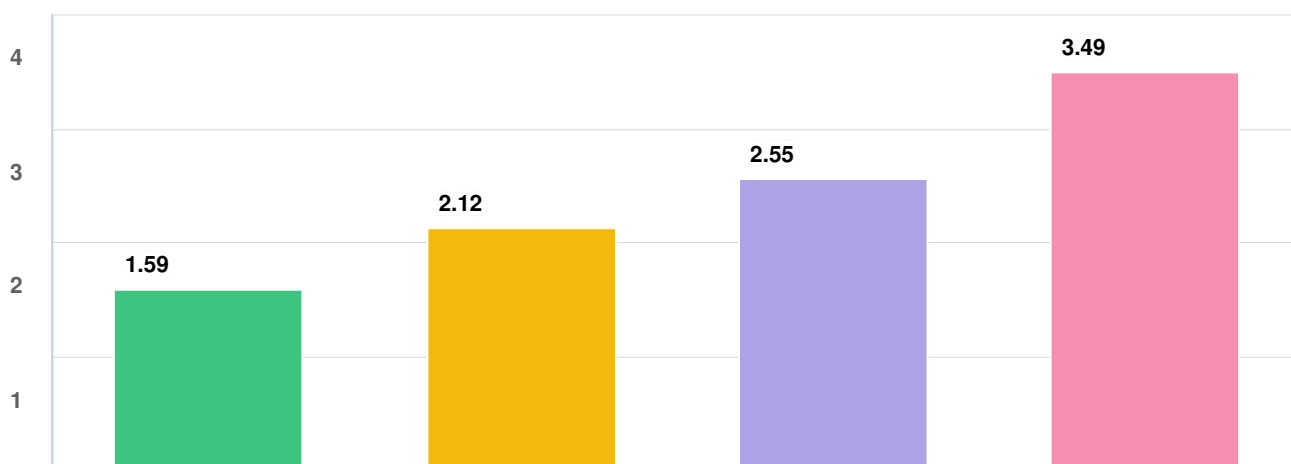
Q2 | **IMAGINE THAT: to move wastewater to the sewage treatment plant, a collection line (pipes) is proposed for a commercial/busi...**



Question options

● Maximize Protection of Environment ● Minimize Impact on Nearby Properties ● Minimize Cost ● Other Criteria

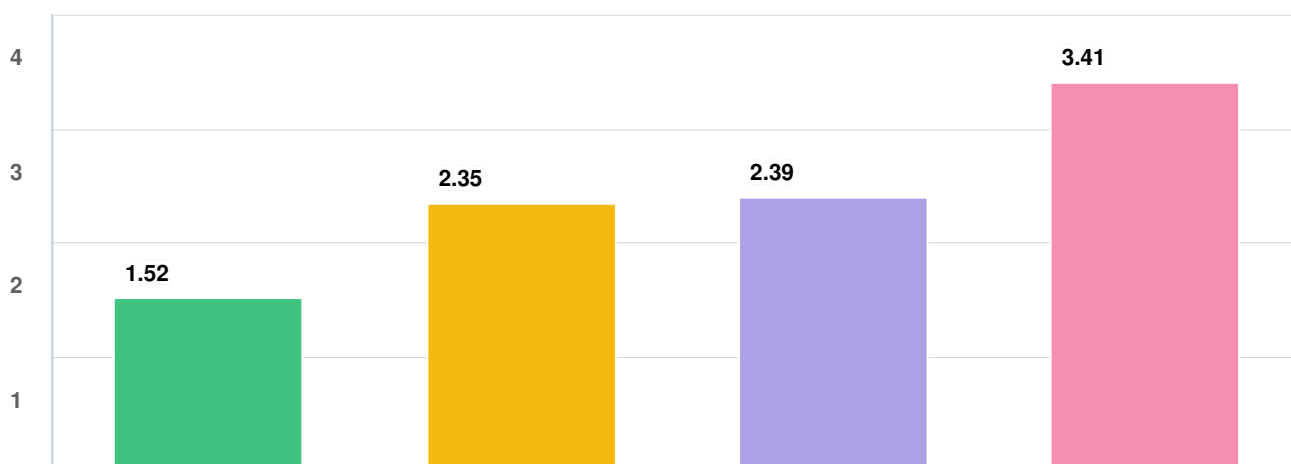
Q3 | **IMAGINE THAT: to move wastewater to the sewage treatment plant, a collection line (pipes) is proposed for a residential are...**



Question options

● Maximize Protection of Environment ● Minimize Impact on Nearby Properties ● Minimize Cost ● Other Criteria

Q4 | **IMAGINE THAT: to properly collect and treat wastewater from the Comox Valley service, an expansion of the sewage treatment ...**



Question options

● Maximize Protection of Environment ● Minimize Impact on Nearby Properties ● Minimize Cost ● Other Criteria

Q5 | Did you chose "Other Criteria" in any of those four ranking questions? Please let us know what that other criteria was.

Anonymous 6/24/2018 09:08 AM	Why isn't human health an option? Minimize impacts to human health. WWT should use the latest technology to reduce antimicrobial resistant and other contaminants.
Anonymous 7/17/2018 04:23 AM	Plan for the future! That the 17th Street bridge and the new hospital reached capacity so quickly is a disgrace. The new highway is awful in parts. Don't make the same mistake with sewers.
Anonymous 7/17/2018 06:22 AM	Education of public
Anonymous 7/17/2018 11:40 PM	Please select a treatment process that has a smaller land footprint but will exceed regulatory requirements for the upgrades lifespan (30-40 years?)
Anonymous 7/18/2018 03:27 PM	Latest technologies
Anonymous 7/18/2018 03:32 PM	Safety and exposure to toxic substances in case of leaks, explosion or general failure of systems
Anonymous 7/19/2018 06:54 AM	for other criteria. expansion should take into account future planning and growth, be large enough that wwe will not have to upsize or upgrade because of poor planning
Anonymous 7/19/2018 10:34 PM	Efficiency and common sense
Anonymous 7/20/2018 08:31 AM	Choice as to when you hook up the sewer
Anonymous 7/20/2018 09:44 AM	the expected life of that system. will it last 20 years or 50 years.
Anonymous 7/20/2018 11:11 AM	Let,s get it done, Septictanks are failing and the longer we wait the cost goes up
Anonymous 7/20/2018 11:11 AM	Consideration of future commercial and residential developments along with the environmental risk of existing septic systems and the possibilities of thier ground water contamination.
Anonymous 7/20/2018 01:49 PM	I chose "Other Criteria" over "Minimize Cost" because there may be more important issues that come up that I have no knowledge of. The idea of minimizing costs to the detriment of citizens and their quality of life is unfair.
Anonymous 7/22/2018 07:19 PM	Keep the sewer system a public property. Please don't sell all or part to a private business.
Anonymous 7/23/2018 07:51 AM	Technology considerations, is it the latest and best; room for future expansion beyond what is proposed now.
Anonymous	I chose other criteria as I believe it is important to also consider impact when

7/24/2018 03:29 PM

Anonymous

7/25/2018 08:32 AM

Anonymous

7/26/2018 08:51 PM

Anonymous

7/28/2018 12:51 PM

Anonymous

7/29/2018 04:33 PM

Anonymous

7/29/2018 06:43 PM

Anonymous

7/29/2018 08:43 PM

Anonymous

7/29/2018 10:11 PM

Anonymous

7/30/2018 06:02 AM

Anonymous

8/01/2018 02:08 PM

Anonymous

8/01/2018 03:29 PM

hefalumpion

8/01/2018 06:08 PM

Anonymous

8/03/2018 05:44 PM

Anonymous

8/04/2018 07:00 PM

construction of these sewer improvements are implemented. The construction can impact properties that are nowhere near the site itself. The concern about cost, but environmental impact is ALWAYS a top concern. Being considerate of already existing properties is a top concern, looking at the future growth of our communities are also a top concern - do it right & prepare for growth.

Sewage although stinky if leaking is not an environmental disaster. Pipes transporting sewage last decades and are easily repaired with minimal environmental footprint. This is not an oil or gas pipeline. Let's get it done!

Having had Courtenay's sewer in my basement 3 times 1997, 2007, 2017 due to Courtenay's inadequate 1st Street pump station. I think it's very important to get on with it instead of running surveys

Availability of materials?

That is sound technology

Products such as skyrocket compost

No

Safety

Any plans to treat sewage in north Courtenay near Seal Bay Park?

Impact to traffic

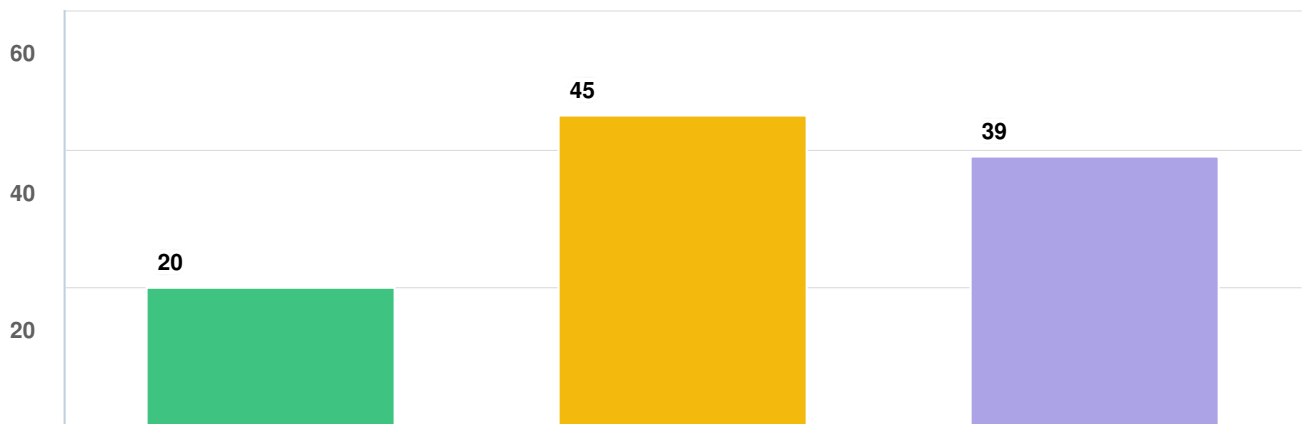
Future growth and expansion

Anything else that needs to be considered.

Cut the bullshit and get on with doing the work completed as soon as possible, cut red tape and push it though fast. Eliminate all the questions the faster it done the less cost involve. Set a realistic schedule.

Optional question (29 responses, 75 skipped)

Q6 How much do you know about the sewer service in Courtenay and Comox, and what happens to wastewater when it leaves our homes?



Question options

- ☐ A Lot - I have a good idea of the process ☐ Some - I get the concept but don't know the details
☐ A little - Actually, I don't really know much

(104 responses, 0 skipped)

Q7 | What is your biggest concern when it comes to wastewater planning in the Comox Valley?

Anonymous

6/21/2018 08:21 PM

running pipes along the foreshore - better to put them underground and away from the estuary

Anonymous

6/24/2018 09:08 AM

Ineffective WWT that leads to regular boil water notices and risks to human health. It's very concerning to me that human health risks were not listed as one of the voting criteria. This isn't just about the environment and costs. This is about public health and people need to know that when they're weighing criteria. It's a serious flaw of this survey. Additionally, forcing people to rank assumes they don't see these priorities as equal which may not be the case. The affect on the environment, affect on ALR land, affect on underground streams, affect on Baynes Sound and wildlife on land and water.

Anonymous

6/24/2018 02:17 PM

gu3

6/25/2018 02:31 PM

Minimize impact on environment. Allow for future growth.

Anonymous

7/10/2018 04:31 PM

Environmental impact and longterm planning...

Anonymous

7/10/2018 10:41 PM

Don't put pipes and a pump in Beech Street neighbourhood. There are too many wells that can be impacted. Plus, the sewage treat ment pump and pipes shouldn't go through a neighbourhood that doesn't get to use the new system. If CVRD properties have to be affected then they could be offered a hook up and reduced cost.

Anonymous

7/15/2018 10:06 PM

Environmental impact and responsible long term planning.

Anonymous

7/17/2018 04:23 AM

That we will cheap out, not do the job properly, and end up throwing money at repairs and upgrades down the road. We need to have the difficult covers at ions so we can do fewer things better. AND, more community consultation on all projects. No more making decisions behind closed doors! If you are concerned that the public is too ignorant to have meaningful input, set up a community group of people willing to commit the time for you to educate them on all aspects of the process, and let them prepare a report for the district ... then if their report is rejected, let it go to a referendum at voting time. They would receive only a minimal stipend. That should weed out triflers. Also ... NO TOUCHING AQUIFERS! Clean groundwater is far too valuable to even be considered for sale, or endangered in anyway. Canada is one of the few nations, and we are one if the few parts of that nation that has wonderful drinking water right out of the ground. Anything that monetizes or threatens that is a deal breaker to me.

Anonymous

7/17/2018 06:22 AM

The general public has never been to your sewer plant and do not "GET" where and how their own toilets work. It is ridiculous and primitive that our MODERN toilets accept dental floss, tampons, plastic floaties and all of the grease , sand and whatever else and that the bugs and worms have to clean

Anonymous 7/17/2018 02:11 PM	us up and the we buy our cleansed poop back I have lived in land locked countries, toured a few sewage plants, made jungles from sludge. WHY are we so stubbornly stupid? ""PUT A SCREEN IN YOUR TOILET!! P.s. I have been your biggest protester ; and now I would be your biggest educator It is the small children we must educate, who in turn will educate their elders Adults all are used to dumping every thing in i would like to see the waste water get filtered Alot and go in the ground not in the water. my concern is the protection of our water shed.
Anonymous 7/17/2018 11:40 PM	Sewage treatment technology is so diverse and efficient these days that I trust the CVRD to select the most cost effective and suitable system for the valley. I expect that upgrades will match expected population growth for the expected life span of the upgrade. Of concern is the age demographic and average taxpayer income to support the project.
Anonymous 7/18/2018 07:12 AM	Keep it out of waterways
Anonymous 7/18/2018 08:04 AM	Service expansion in my area ,when and if it is going to happen.
Anonymous 7/18/2018 11:07 AM	Creation of infrastructure in rural areas that do not benefit from the service. Lack of sufficient odour control at the treatment plant. Separate sewage treatment plant for area south of Puntledge River.
Anonymous 7/18/2018 03:27 PM	Town growing faster than infrastructure
Anonymous 7/18/2018 03:32 PM	Proper treatment. We live in the 21st century and it costs money to treat sewage effectively. So, lets spend the money up front, so in the long run, it pays off with cleaner water and less pollution. we can only gripe about taxes for so long, eventually we need to invest where we live.
Anonymous 7/18/2018 06:17 PM	environmental protection!
Anonymous 7/18/2018 09:50 PM	Biggest concern is the ever increasing taxation, especially on low income, fixed income and seniors
Anonymous 7/19/2018 06:54 AM	are we in a place now to handle the fast growth the valley is experiencing. will this process ensure we are going to plan for 20-30 years into the future.
Anonymous 7/19/2018 08:58 PM	To stop it going untreated into the ocean.
Anonymous 7/19/2018 09:06 PM	That I dont ever have to pay for the collective anything. We already subsidize other user pay planned situations if only by taxes that pay salaries of staff at the RD full time, that end up using such time to manage said situations.
Anonymous 7/19/2018 10:34 PM	Wasting a ton of money for very little gain.
Anonymous 7/20/2018 07:26 AM	Environmental impact

Anonymous

7/20/2018 07:30 AM

Dont buy a rolls royce system when a honda will do

Anonymous

7/20/2018 08:24 AM

Smells from the treatement plant

Anonymous

7/20/2018 08:31 AM

Being forced to pay for it when our septic is still in good condition

Anonymous

7/20/2018 09:44 AM

I feel encouraging grey water collection for residents is a big deal because it lessens the load the wastewater will have to deal with. Also starting up large scale and small scale rainwater collection systems can cut down on water usage and thus decrease wastewater. And lastly alternative systems: such as composting toilets. Even small initiatives like not using the toilet as a garbage can(flushing bits of garbage), and not flushing urine(might sound gross but that's a lot of water I haven't flushed).

Anonymous

7/20/2018 11:11 AM

That all residents do not have sewer systems

Anonymous

7/20/2018 11:11 AM

The possibility of 3L development of Browns/ Puntledge River properties. If this development is granted approval the proximity to the river systems and sensitive ecosystems/wetlands must be protected by a connected treatment system. If an expansion of collection lines is considered, then perhaps an option would include the Piercy Road, greaves Crescent, Cessford Road and Condensory Road residential properties. These properties have high water tables and I believe it was a concern of ground water contamination in the past resulting in the Greaves Crescent water system.

Anonymous

7/20/2018 11:52 AM

Cost to the Homeowners for hooking up.

Anonymous

7/20/2018 01:49 PM

Putting waste water treatment plants in existing communities/neighbourhoods. It is simply wrong. Figure something else out. It may cost more but it is the sensible and morally right thing to do. Ask yourself, would you want a waste water treatment plant in your neighbourhood?

Anonymous

7/20/2018 02:41 PM

Environmental protection

Anonymous

7/20/2018 04:40 PM

Poor short range planning is a significant concern. The over-all cost can be considerably lower with proper planning and design.

Anonymous

7/21/2018 05:43 PM

That RAW waste water doesn't end up in the ocean And the enormous prizing what comes along building a new facility Suggest a few smaller facilities instead of one new facility Cv is a very large area And all the piping will cost to much for a relatively small amount off people

Anonymous

7/22/2018 04:49 PM

No raw sewage dumping in the lake or ocean

Anonymous

7/22/2018 07:19 PM

I think we need one sewer system for the whole Comox Valley. It should be a mandatory hook-up, not subject to referendum.Repairs are needed for the

existing systems in Comox and Courtenay. If the project included almost the whole valley, including Cumberland and south Courtenay, Royston, then it would get better grants and spread the costs amongst everyone. But it should be mandatory. It is a health issue. I don't like Cumberland sewage coming down the Trent River. I don't like failing septic fields or household sewage treatment plants installed on tiny lots with large houses and carriage houses.

Anonymous

7/23/2018 07:51 AM

That we do it right, and not end up like the CRD (Victoria) and pump raw sewage into the straight.

Anonymous

7/23/2018 07:53 AM

Waste entering our oceans, lakes, or soil and waste contaminating our drinking water.

Anonymous

7/23/2018 09:01 PM

Over development and impact on residential areas Our capacity to handle sewage services with an expanding population Impact on the environment

Anonymous

7/24/2018 06:06 AM

The environmental impact

Anonymous

7/24/2018 07:55 AM

Environmental protection

Anonymous

7/24/2018 03:29 PM

I was very concerned when the residents of croteau Road had to go to great lengths to prevent a pumping station that cold affect drinling water wells. We must be careful as to where the sewage treatment pipelines and plants are placed to ensure safe drinking water supplies. My second concern is that the environment be carefully preserved in all improvements.

Anonymous

7/24/2018 06:03 PM

Efficiency/best practises, expediency (generally a novel concept, in the Comox Valley). Let's get it done sooner rather than later-rapid population growth demands it.

Anonymous

7/24/2018 08:25 PM

That the water is filtrated and reused!

Anonymous

7/25/2018 08:03 AM

That all properties have the option of hooking up to municipal sewer systems

Anonymous

7/25/2018 08:32 AM

That we don't bandaid the existing one & that we do this right with the plan for expansion in the future, being the most environmentally conscious every step of the way.

Anonymous

7/25/2018 07:10 PM

That the houses that have septic systems are aloud to connect seems we have a water meter for usage and no one with sewer lines does. This is not fair.

Anonymous

7/26/2018 08:51 PM

Getting area C rural residential (that would gravity feed most product) septic fields tied in quickly around sensitive areas such as Arden and Morrison creek tributaries. These are salmon spawning tribs with red listed species such as lamprey. Sewer would clean ground water and run-off

Anonymous

7/27/2018 01:13 AM

To not impact our lakes , rivers and ocean. To provide needed clean water resources.

Anonymous

Polluting the environment

7/27/2018 06:27 PM

Anonymous

7/28/2018 12:51 PM

That's it all talk and no action. Once you let the environmentalists in on the game nothing will be done - the pump house on 1st street is 60 years old. And yet the city kept approving subdivisions. I found out that before the 1970's the overflow went into the Puntledge river! Come on folks lets use some common sense. Get it done whatever the cost . Through years of shortsightedness on the part of mayors and councilors this mess was created, now do the right thing and fix it. Be brave, make the necessary decisions - you won't be popular with the environmentalists and yes maybe you won't get voted in the next election but you'd certainly have my vote. That the beautiful Comox Valley environment be protected from harm and destruction and pollution.

Anonymous

7/29/2018 04:33 PM

Anonymous

7/29/2018 06:43 PM

Dumpi g it in the Salish Sea.

Anonymous

7/29/2018 08:43 PM

Although people will be concerned about cost, I don't think they will have considered the consequences of saving money against quality.

Anonymous

7/29/2018 10:11 PM

Too much development stresses the system. New development must pay for additional infrastructure required.

Anonymous

7/29/2018 10:44 PM

The environment, and the impact on homes , and awareness of cost.

Anonymous

7/30/2018 06:02 AM

Sickness and disease, safety protocols, Waste water being dispursed into the wilderness and oceans untreated.

Anonymous

7/30/2018 09:05 AM

Environmental- look to the future. Build something forward thinking!

K Woodley

7/31/2018 01:39 PM

The protection of the environment must be a priority. There needs to be a Valley-wide, multi-year plan, rather than dealing with upgrades piece by piece.

heidrick

7/31/2018 01:40 PM

That plans allow for protection, now and in the future, of our sensitive environmental areas while considering capacity for future growth in the Valley.

Anonymous

8/01/2018 02:08 PM

That you are prepared for the rainy season.

hefalumpion

8/01/2018 06:08 PM

How will it affect people? Will it affect the ocean?

Anonymous

8/02/2018 12:07 AM

It is environmentally favourable and absolutely considerate of the neighbours... no detracting elements that negatively impact any citizens!

Anonymous

8/02/2018 08:59 AM

Minimizing the risks and affects on our beautiful environment.

Anonymous

Remove wastewater from entering baynes sound and Trent river

8/02/2018 01:30 PM

Anonymous

It doesn't continue to go into the Ocean

8/02/2018 09:58 PM

Anonymous

What the secondary and tertiary treatment processes will use and the use of new technologies . Also monitoring and removing pharmaceuticals from being released into the environment.

8/02/2018 09:59 PM

Anonymous

INSTALLING A FACILITY THAT CAN HANDLE GROWTH AND THAT MORE THAN ONE BID IS CONSIDERED FOR THE STRUCTURE. THAT THE TAXPAYERS ARE INFORMED OF COST AND ARE PART OF THE DECISION.

8/03/2018 06:53 AM

Anonymous

our water sources from puntledge our swimming holes and the environment all around

8/03/2018 02:49 PM

Anonymous

That it NOT go into the ocean! What is wrong with the world when septic is allowed to be spewed into the ocean?! Treated or not, it needs to STOP! Is there no one left that remembers how nice it used to smell here? There are actually people who think that the stink tinged with septic that prevelant out there on our beaches, is what the beach is supposed to smell like! What are you people doing?! Do you not care?!
environmental impact!

8/03/2018 05:44 PM

Anonymous

Environmental impact

8/03/2018 08:39 PM

Anonymous

The ability to add on to existing, go big or go home.

8/04/2018 07:29 AM

Anonymous

That we are able to cope with rapidly increasing population

8/04/2018 07:00 PM

Anonymous

Environment and cost

8/06/2018 07:44 AM

Anonymous

My biggest concern when it comes to wastewater planning in the Comox Valley is to minimize the impact it has on the environment.

8/06/2018 10:15 AM

Anonymous

8/06/2018 11:00 AM

Optional question (76 responses, 28 skipped)

Q8 What area of the Comox Valley do you live in?

Anonymous

6/21/2018 08:21 PM

west Comox

Anonymous

6/24/2018 09:08 AM

North Courtenay

cbuckle

6/24/2018 10:17 AM

Courtenay

Anonymous

6/24/2018 02:17 PM

Comox

gu3

6/25/2018 02:31 PM

Courtenay

Anonymous

6/25/2018 11:02 PM

Courtenay East

Anonymous

7/10/2018 04:31 PM

Area B

Anonymous

7/10/2018 10:41 PM

Comox

Anonymous

7/15/2018 10:06 PM

Area B

Anonymous

7/16/2018 05:54 PM

Bill Moore Park area.

Anonymous

7/17/2018 04:23 AM

Near the corner of Graham Road and the old highway

Anonymous

7/17/2018 06:22 AM

Downtown Comox . And my dead bench is your propose

Anonymous

7/17/2018 02:11 PM

denman island area

Anonymous

7/17/2018 11:40 PM

Merville

Anonymous

7/18/2018 07:12 AM

Courtenay, near powerhouse

Anonymous

7/18/2018 08:04 AM

Regional district bordering Comox Hector rd

Anonymous

Area B

7/18/2018 11:07 AM

Anonymous

Comox

7/18/2018 03:27 PM

Anonymous

Puntledge

7/18/2018 03:32 PM

Anonymous

Courtenay

7/18/2018 06:17 PM

Anonymous

East Courtenay

7/18/2018 09:50 PM

Anonymous

west courtenay

7/19/2018 06:54 AM

Anonymous

Comox

7/19/2018 08:25 AM

Anonymous

Laketrail

7/19/2018 09:34 AM

Anonymous

Crown Isle

7/19/2018 01:34 PM

Anonymous

Royston

7/19/2018 08:58 PM

Anonymous

Headquarters

7/19/2018 09:06 PM

Anonymous

Comox

7/19/2018 10:34 PM

Anonymous

Comox

7/20/2018 07:26 AM

Anonymous

Comox

7/20/2018 07:30 AM

Anonymous

Comox near the plant

7/20/2018 08:24 AM

Anonymous

Comox regional district

7/20/2018 08:31 AM

Anonymous

I live on Comox Rd

7/20/2018 09:44 AM

Anonymous

South Courtenay

7/20/2018 11:11 AM

Anonymous 7/20/2018 11:11 AM	Greaves Crescent
Anonymous 7/20/2018 11:52 AM	South
Anonymous 7/20/2018 01:49 PM	Regional District
Anonymous 7/20/2018 02:41 PM	Courtenay
Anonymous 7/20/2018 04:40 PM	Comox
Anonymous 7/21/2018 09:58 AM	west courtenay
Anonymous 7/21/2018 05:43 PM	Courtenay
Anonymous 7/22/2018 11:34 AM	Comox
Anonymous 7/22/2018 04:49 PM	comox
Anonymous 7/22/2018 07:19 PM	Royston
Anonymous 7/23/2018 07:51 AM	Regional district, area b.
Anonymous 7/23/2018 07:53 AM	Courtenay
Anonymous 7/23/2018 09:01 PM	Comox
Anonymous 7/24/2018 06:06 AM	Lazo
Anonymous 7/24/2018 07:55 AM	Courtenay
Anonymous 7/24/2018 03:29 PM	Area B - Huband Road
Anonymous 7/24/2018 06:03 PM	East Courtenay-Valley View
Anonymous 7/24/2018 07:43 PM	in courtenay near the lawn bowling center

Anonymous 7/24/2018 08:25 PM	V9N 1L1
Anonymous 7/24/2018 08:31 PM	Courtenay
Anonymous 7/24/2018 09:37 PM	Puntledge Park
Anonymous 7/25/2018 08:03 AM	Town of Comox
Anonymous 7/25/2018 08:32 AM	East Courtenay, Family in Comox
Anonymous 7/25/2018 09:41 AM	Comox
Anonymous 7/25/2018 07:10 PM	Area B
Anonymous 7/26/2018 12:45 PM	North Courtenay. No sewer systems here
Anonymous 7/26/2018 03:13 PM	Courtenay
Anonymous 7/26/2018 08:51 PM	Area C Conrad Road
Anonymous 7/26/2018 10:38 PM	Marsden Rd
Anonymous 7/27/2018 01:13 AM	Comox
Anonymous 7/27/2018 10:43 AM	Cumberland
Anonymous 7/27/2018 06:27 PM	Crown Isle
Anonymous 7/27/2018 11:45 PM	East Courtenay
Anonymous 7/28/2018 12:51 PM	975 1st Street, Courtenay
Anonymous 7/28/2018 04:20 PM	North Courtenay
Anonymous 7/29/2018 09:16 AM	East Courtenay

Anonymous 7/29/2018 11:44 AM	areaB
Anonymous 7/29/2018 04:33 PM	Courtenay, near Puntledge River
Anonymous 7/29/2018 06:43 PM	Fanny Bay
Anonymous 7/29/2018 08:43 PM	Puntledge
Anonymous 7/29/2018 10:11 PM	Comox
Anonymous 7/29/2018 10:44 PM	Comox
Anonymous 7/30/2018 06:02 AM	Courtenay, Puntledge Park
Anonymous 7/30/2018 06:52 AM	Area B
Anonymous 7/30/2018 09:05 AM	Courtenay
K Woodley 7/31/2018 01:39 PM	west Courtenay, by the river
heidrick 7/31/2018 01:40 PM	West Courtenay, Riverside/estuary
Anonymous 8/01/2018 02:08 PM	V9J 1X8
Anonymous 8/01/2018 03:29 PM	Courtenay
hefalumpion 8/01/2018 06:08 PM	Area C Arden Rd
Anonymous 8/01/2018 07:13 PM	East courtenay
Anonymous 8/02/2018 12:07 AM	Comox
Anonymous 8/02/2018 07:05 AM	Courtenay
Anonymous	Puntledge area

8/02/2018 08:59 AM

Anonymous

Royston

8/02/2018 01:30 PM

Anonymous

Downtown

8/02/2018 09:58 PM

Anonymous

Courtenay

8/02/2018 09:59 PM

Anonymous

cOURTENAY

8/03/2018 06:53 AM

Anonymous

Regional Distict north of Comox

8/03/2018 01:33 PM

Anonymous

laketrail

8/03/2018 02:49 PM

Anonymous

All of it. I was born in Comox.

8/03/2018 05:44 PM

Anonymous

mission hill

8/03/2018 08:39 PM

Anonymous

Lazo

8/04/2018 07:29 AM

Anonymous

Black creek

8/04/2018 07:00 PM

Anonymous

Comox

8/04/2018 08:06 PM

Anonymous

Downtown courtenay

8/05/2018 11:58 AM

Anonymous

Comox

8/06/2018 07:44 AM

Anonymous

Comox

8/06/2018 07:46 AM

Anonymous

Union bay

8/06/2018 10:15 AM

Anonymous

Town of Comox

8/06/2018 11:00 AM

(104 responses, 0 skipped)

APPENDIX 3 – SAMPLE ADVERTISEMENTS



Sewer Service Affects Us All

It isn't something that most of us like to think about, but sewer service plays a vital role in our community. We are planning for the future of our service in Courtenay and Comox and we are looking for input from everyone who is affected.

Participate in our Online Consultation


1. Visit connectcvrd.ca/lwmp
2. Register or sign in
3. Click the "Consultation" tab

For more information:
call: 250-334-6000
visit: connectcvrd.ca




comoxvalleyrd.ca   

Social Media Ads: Instagram & Facebook


 **Comox Valley Regional District** Sponsored · 🌐 ...

We want to hear from you as we plan our future sewer service in Courtenay and Comox.




connectcvrd.ca
Register for our Public Consultation [LEARN MORE](#)

👍 🤔 37 49 Comments

 **Comox Valley Regional District** Sponsored · 🌐 ...

Fill out the survey to help us plan the future of our sewer service.



connectcvrd.ca
Join the Conversation this Summer. [LEARN MORE](#)

👍 ❤️ 🤔 32 10 Comments

 **Comox Valley Regional District** Sponsored · 🌐 [Like Page](#)

We are looking for your input on future sewer services in Comox and Courtenay. Attend a facilitated session next week and have your voice heard. Visit www.comoxvalleyrd.ca/lwmp for event details.



Join us June 18 & 19



17 Reactions · 8 Comments · 9 Shares

[Like](#) [Comment](#) [Share](#)

Radio Ad Script

PROJECT: CV Sewer Service LWMP
MEDIA: 30 second ads
CAMPAIGN: Facilitated Session Invite
RUN DATES: June 4-15, 2018

SCRIPT

SOUND OF TOILET FLUSHING

Sewage.

What happens to it is a pretty icky topic. But we all need a system that works well – for a long time.

To make sure that happens, the Comox Valley Regional District wants to hear from you. Come to a workshop to kick off planning for a service that we need but never want to talk about.

Either Monday June 18 at lower level Native Son's Hall OR Tuesday June 19 at the Comox golf course. Both 5 to 7 p.m. Can't be there in person? Share your feedback online at connectcvrd.ca.

APPENDIX 4 – INFORMATIONAL MATERIALS



Comox Valley Sewer Service

Liquid Waste Management Plan Project Backgrounder #1

Wastewater planning for Comox Valley

The Comox Valley Regional District is planning how the sewer service will be managed in the years and decades to come, and your feedback is critical to finding a solution that's appropriate and sustainable.

Liquid Waste Management Plans

The liquid waste management plan process is used by local governments in BC to develop strategies for managing wastewater. It includes:

- the collection/review of existing information
- development of options for future services
- identification of a preferred option
- completion of required studies/assessments on preferred option
- development of financial and implementation plans

The plan can take up to two years to move through the full process – and is ultimately submitted to the provincial government for review and consideration for approval.

What's being planned:

The planning process will look at the Comox Valley Sewer Service, which services Courtenay and Comox, and how best to address the future needs of those communities and inevitable infrastructure upgrades that will be required. It includes collection, conveyance (pipes and pump stations) and the treatment plant. It will consider options for providing reliable sewer service for the years to come, including consideration of anticipated future growth in our communities.

Hearing from you

Members of the public are encouraged to weigh-in, either through the public advisory committee or via less-formal workshops and open houses, or online consultations. To get involved:

Visit our website at www.comoxvalleyrd.ca/lwmp

Or join the online discussion at www.connectcvrd.ca/lwmp

Timeline

Step-by-step wastewater planning

- **Setting the Stage and Kick Off**
- **Goal Setting:** Determining what we want to achieve with this plan.
- **Establishing a Long List:** Options for the future of the sewer service will be presented in early 2019.
- **Narrowing Down a Short List:** Feedback to the long list will help committees narrow down to some preferred options.
- **Choosing the Preferred Option:** From the short list, the preferred option will be presented to the Sewage Commission and public.
- **Drafting the Report:** Include a summary of all the work done to date - including a report on the public's feedback and comments during the process.
- **Report Submitted:** Stages 1 and 2 final report of the management plan will be completed and submitted for review to the provincial government.

APPENDIX 1 – FACILITATOR’S REPORT: JUNE 18 & 19, 2018

CVRD LWMP Public Consultation Report



July 28, 2018

Prepared by A.M Habkirk BA MA MPA MCIP

BACKGROUND

This report documents the outcomes of the two public consultation workshops held June 18 & 19, 2018 conducted to solicit early input into a proposed public consultation plan for the development of the Comox Valley Sewer System's Liquid Waste Management Plan (LWMP).

The Comox Valley Sewer System provides liquid waste management for the City of Courtney and the Town of Comox at the sewage treatment plant. As the communities grow, capacity to deliver liquid waste to the treatment plant must be expanded by installing new pipes in the ground. Potential upgrades at the plant may also be necessary to provide a higher standard treatment.

The consultation for the LWMP is proposed to include four sessions over the life of the Liquid Waste Management Plan development process. The first phase includes an online consultation and two workshops sessions, which are detailed in this report. The first phase of consultation is fundamental as it lays the groundwork for the consultation process and provides input for the Public Advisory and Technical Advisory Committees (PAC/TAC) to consider as they develop a shortlist of options to review.

Future consultation phases are proposed to include:

September 2018: Open House #1 – Introduce LWMP process and opportunities for public to provide input

Oct-Dec 2018: Facilitated Session #2 – Review LWMP Goals and Objectives – supported with online consultation

Jan-Feb 2019: Facilitated Session #3 – Review and rank longlist of options – supported with online consultation

Feb-Mar 2019: Facilitated Session #4 – Review and rank shortlist of options – supported with online consultation

Apr-July 2019: Open House #2 – Present preferred options to community

Jan-Mar 2020: Facilitated Session #5 - Gather input on implementation of solution and financing

Spring 2020: Open House #3 - Report back to community on consultation value, results and affect. Supported with online information.

The results of the two consultation workshops held June 18 & 19, 2018 should be considered along with the results of the online consultation process.

THE PURPOSE OF THE PHASE 1 CONSULTATION WORKSHOPS

The purpose of the workshops was to gain an understanding of what residents in the CVRD value most and would like used as the basis for development and evaluation of options for potential pipe routes and upgrading of the CVWPCC. The information gathered in these workshops and through the online consultation tool, will be provided to the Technical and Public Advisory Committees for consideration as the goals and objectives for the LWMP process are established.

THE WORKSHOP CONSULTATION PROCESS

At each of the two workshops attendees were organized in small groups – at the June 18 workshop in Courtenay a single group was formed due to the low attendance. At the June 19 workshop three groups were formed and at each step in the process the composition of the groups was changed by asking 1 or 2 individuals to move clockwise to the next group.

Over the course of the evening the groups were asked to consider four scenarios with each one representing a situation that is likely to be in front of elected officials and staff in considering potential alternatives for liquid waste management in the Comox Valley. The scenarios were:

- Construction of pipes in an environmentally sensitive area
- Construction of pipes in a commercial/business area
- Construction of pipes in a residential area
- Comox Valley Water Pollution Control Centre (treatment plant) upgrade

The groups were asked to rank the importance of three values/criteria that could be used to evaluate each scenario:

- minimizing cost,
- maximizing protection of the environment,
- minimizing impact on nearby properties, and
- other which they were asked to specify if they considered.

The ranking was performed by allocating 10 candies on a game board that showed the 4 possible values/criteria. The groups had 20 minutes to discuss each scenario and to allocate the candies.



The attendees willingly participated in the process and except for needing to replace some of the candies allocated for each table because they had been eaten the process played out surprisingly smoothly.

WHAT DID THE PUBLIC TELL US?

Complete Workshop results are detailed in Appendices 1 & 2 and are summarized in the table below.

June 18, 2018 Workshop Results - Courtenay

	Minimize cost	Maximize protection of the environment	Minimize impact on nearby properties	Other criteria
Scenario #1 Construction of pipes in an environmentally sensitive area	2	6	2	
Scenario #2 Construction of pipes in a commercial/business area	2	5	3	
Scenario #3 Construction of pipes in a residential area	3	6	1	
Scenario #4 Comox Valley Water Pollution Control Centre Upgrade	2	5	3	

Observations:

The June 18 group consisted of only six people from the following communities: Courtenay (3), Fanny bay (1) and Comox (1). Nonetheless the group wrestled with the scenarios and turned their minds to the exercise.

In all scenarios the group ranked “Maximize protection of the environment” as the highest value criteria. They also acknowledged/ranked all three values/criteria in each of the four scenarios suggesting that all the values/criteria held importance. Interestingly the “candies” were distributed more evenly across the values/criteria than they were at the second workshop in Comox.

June 19, 2018 Workshop Results - Comox

Scenario #1 Construction of pipes in an environmentally sensitive area				
	Minimize cost	Maximize protection of the environment	Minimize impact on nearby properties	Other criteria
Group 1	0	9	1	
Group 2	0	8	0	2 Maximize funding equity parcel tax, assessment, flow?
Group 3	2	4	3	1 Maximize alternatives to single plant (in ground?)
Scenario #2 Construction of pipes in a commercial/business area				
Group 1	1	6	1	2 Maximize alignment with future planning
Group 2	1	4	3	2 Maximize conformance with long term planning e.g. RGS OCP service plans
Group 3	2	6 Protect aquifers	2	
Scenario #3 Construction of pipes in a residential area				
Group 1	1	4	4	1 Maximize benefit to adjacent property owners
Group 2	1	4	3	2 Maximize alignment with long term planning
Group 3	1	7	1	1 Maximize alignment with long term planning
Scenario #4 Comox Valley Water Pollution Control Centre Upgrade				
Group 1	0	4	5	1 Maximize support of existing plant
Group 2	1	4	3	2 Maximize alternatives to existing process/location Maximize expansion of the collection area
Group 3	0	8	0	2 Maximize new technologies/innovation

Observations:

The June 19 group consisted of 15* people from across the region.

June 19 Workshop Attendees by residence location	
Comox*	3
Courtenay	1
Electoral Area B	9
Union Bay	2
Fanny bay	0

**Actual attendance numbers were 17, which included two directors from the Sewage Commission who attended as observers. These directors have been removed from the final count.*

The dominance of participants from outside of the two municipalities that receive and pay for the service likely impacted the results. The low results for “minimize the cost” may be a consequence of most attendees not being responsible for paying for the services.

Regardless of the residence of the attendees the dominance of results for “maximize protection of the environment” echoes the results from the June 18 workshop and was clearly heard in the discussions at the group tables.

The “other” results from this Workshop were also interesting particularly the repeated theme of “maximize long term planning.” These results and the discussions suggest significant support for long term infrastructure planning in coordination with community development and land use planning.

Another theme that was heard in the discussions was a desire to explore new liquid waste technologies.

NEXT STEPS

The results of the two consultation workshops should be considered in conjunction with the online consultation results; the combined results should then be provided as input for the Public Advisory and Technical Advisory Committees (PAC/TAC) to consider as they develop a shortlist of options to review.

Appendix 1: June 18, 2018 Workshop Results - Courtenay



World Café Scenario #1 Construction of pipes in an environmentally sensitive area

10 POINTS TOTAL				
Environmentally sensitive area	Minimize cost	Maximize protection of the environment	Minimize impact on nearby properties	Other criteria
Group 1	2	6	2	
Observations: <ul style="list-style-type: none">The group ranked “Maximize protection of the environment” as most important but acknowledged the importance of minimizing the cost to taxpayers and minimizing the impact on adjacent property owners.The comment was made that “pipes shouldn’t be built through an environmentally sensitive area at all.”				



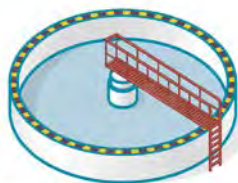
World Café Scenario #2 Construction of pipes in a commercial/business area

10 POINTS TOTAL				
Commercial/business area	Minimize cost	Maximize protection of the environment	Minimize impact on nearby properties	Other criteria
Group 1	2	5	3	
Observations: <ul style="list-style-type: none">The group ranked “Maximize protection of the environment” but also recognized that impact on nearby business properties was important as was minimizing the cost to taxpayers				



World Café Scenario #3 Construction of pipes in a residential area

10 POINTS TOTAL				
Residential area	Minimize cost	Maximize protection of the environment	Minimize impact on nearby properties	Other criteria
Group 1	3	6	1	
Observations: <ul style="list-style-type: none"> The group ranked “Maximize protection of the environment” as the highest value criteria but also more than the first two scenarios recognized the importance of minimizing cost to the taxpayer. “Minimizing impact on nearby properties was also acknowledged although not as strongly as in the first two scenarios. 				



World Café Scenario #4 Comox Valley Water Pollution Control Centre upgrade

10 POINTS TOTAL				
Upgrading of the CVWPCC capacity	Minimize cost	Maximize protection of the environment	Minimize impact on nearby properties	Other criteria
Group 1	2	5	3	
Observations: <ul style="list-style-type: none"> The group ranked “Maximize protection of the environment” as the highest value criteria The also ranked “Minimize impact on nearby properties” and “Minimize cost “as being important. The scores in this case mirrored the scores in scenario 2. 				

Appendix 2: June 19, 2018 Workshop Results - Comox



World Café Scenario #1 Construction of pipes in an environmentally sensitive area

10 POINTS TOTAL				
Environmentally sensitive area	Minimize cost	Maximize protection of the environment	Minimize impact on nearby properties	Other criteria
Group 1	0	9	1	
Group 2	0	8	0	2 Maximize funding equity parcel tax, assessment, flow?
Group 3	2	4	3	1 Maximize alternatives to single plant (in ground?)
Observations: <ul style="list-style-type: none">All the groups ranked “Maximize protection of the environment” as most importantOnly 1 group ranked “Minimize” cost as being of importance2 groups noted other criteria including “funding equity” which refers to wanting there to be fairness in how the service was paid for e.g. user pay and the second group wanted alternatives to a single treatment plant to be considered.				



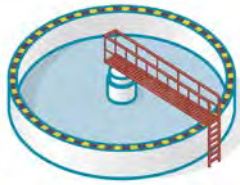
World Café Scenario #2 Construction of pipes in a commercial/business area

10 POINTS TOTAL				
Commercial/business area	Minimize cost	Maximize protection of the environment	Minimize impact on nearby properties	Other criteria
Group 1	1	6	1	2 Maximize alignment with future planning
Group 2	1	4	3	2 Maximize conformance with long term planning e.g. RGS OCP service plans
Group 3	2	6 Protect aquifers	2	
Observations: <ul style="list-style-type: none"> All groups ranked “Maximize protection of the environment” as the highest value criteria although the rankings were not as high as in the first scenario using the environmentally sensitive area. All three groups acknowledged “minimize cost” as having some ranking. All three groups ranked “Minimize impact on nearby properties” as being of some importance presumably recognizing the risk to business of construction and interruption of business. Two of the groups independently acknowledged that an “other” criteria should recognize the importance of aligning alternatives with long term planning. 				



World Café Scenario #3 Construction of pipes in a residential area

10 POINTS TOTAL				
Residential area	Minimize cost	Maximize protection of the environment	Minimize impact on nearby properties	Other criteria
Group 1	1	4	4	1 Maximize benefit to adjacent property owners
Group 2	1	4	3	2 Maximize alignment with long term planning
Group 3	1	7	1	1 Maximize alignment with long term planning
Observations: <ul style="list-style-type: none"> All groups ranked “Maximize protection of the environment” as the highest value criteria All three groups acknowledged “minimize cost” as having some ranking. All three groups ranked “Minimize impact on nearby properties” as being of some importance Two of the groups acknowledged that an “other” criteria should recognize the importance of aligning alternatives with long term planning. One group recognized “Maximize benefit to adjacent property owners” presumably in an option to connect to the sewer line or to densification that could lead to public transit. 				



World Café Scenario #4 Comox Valley Water Pollution Control Centre upgrade

10 POINTS TOTAL				
Upgrading of the CVWPCC capacity	Minimize cost	Maximize protection of the environment	Minimize impact on nearby properties	Other criteria
Group 1	0	4	5	1 Maximize support of existing plant
Group 2	1	4	3	2 Maximize alternatives to existing process/location Maximize expansion of the collection area
Group 3	0	8	0	2 Maximize new technologies/innovation
Observations: <ul style="list-style-type: none"> All groups ranked “Maximize protection of the environment” as the highest value criteria Only 1 group acknowledged “minimize cost” as having ranking. Two groups ranked “Minimize impact on nearby properties” as being of some importance “Other” Criteria/values included: Maximize support of existing plant, maximize alternatives to existing process/location, maximize expansion of the collection area, maximize new technologies/innovation 				

Appendix 3: Workshop Agenda and Instructions

CVRD Liquid Waste Management Public Engagement Workshop Agenda June 18 & 19, 2018 Courtenay and Comox at the Native Sons Hall (downstairs) Comox Valley Golf Course	
5:00 pm – 5:10 pm	Welcome & introductions What do we hope to accomplish at this workshop?
5:10 pm – 5:25 pm	Setting the context (presentation by staff) <ul style="list-style-type: none"> • What is the big picture? • What is the overall consultation process proposed? • How will the information flowing out of this workshop be used? • What do we plan to do tonight?
5:25 pm – 5:30 pm	World Café Instructions
5:30 pm – 5:50 pm	World Café 1 Environmentally sensitive area
5:50 pm – 5:55 pm	Shuffle Groups
5:55 pm – 6:15 pm	World Café 2 Commercial/business area
6:15 pm – 6:20 pm	Shuffle Groups
6:20 pm – 6:40 pm	World café 3: Residential area
6:40 pm – 7:00 pm	Scenario 4: Comox Valley Water Pollution Control Centre Upgrade
	Summary & Next Steps

CVRD LWMP Public Engagement

Workshop Instructions

Background: The CVRD provides liquid waste management for the City of Courtney and the Town of Comox at the Comox Valley Water Pollution Control Centre (CVWPCC). As the communities grow capacity to deliver liquid waste to the CVWPCC must be expanded by installing new pipes in the ground and potentially upgrading of the CVWPCC to provide a higher level of wastewater treatment.

At present no decisions have been made about either location for pipes or upgrading of the CVWPCC.

The purpose of the workshop is to gain an understanding of what residents in the CVRD value most and would like used as the basis for development and evaluation of options for potential pipe routes and upgrading of the CVWPCC to provide a higher level of wastewater treatment.

It is expected several values will be used as criteria to evaluate alternatives including:

- minimizing cost,
- maximizing protection of the environment, and
- minimizing impact on nearby properties.

We have created four scenarios for you to discuss this evening; each scenario represents a situation that is likely to be in front of your elected officials and staff in considering potential alternatives.

You will be asked to rank the criteria (minimizing cost, maximizing protection of the environment, minimizing impact on nearby properties, other) that will be used to evaluate each scenario.

The scenarios are:

- Construction of pipes in an environmentally sensitive area
- Construction of pipes in a commercial/business area
- Construction of pipes in a residential area
- Comox Valley Water Pollution Control Centre upgrade

You will be randomly sorted into groups of 5 or 6 and the groups will be shuffled for each scenario.

You will have 20 minutes to discuss each scenario



World Café Scenario #1 Construction of pipes in an environmentally sensitive area

In order for liquid waste to be transported to the Comox Valley Water Pollution Control Centre pipes may need to be constructed in an **environmentally sensitive area**.

- You and your fellow group members are faced with the challenge of deciding which criteria are most important in this scenario.
- You have a total of 10 points to assign to all the criteria.
- Discuss the scenario and agree on how the points will be distributed and thus which criteria are of greater or lesser importance.

For example, in this scenario construction could take place in an environmentally sensitive area so you may feel that protection of the environment is more important than in other locations. If that is the case, you might allocate more of your points to maximizing protection of the environment and fewer to minimizing cost and impact on nearby properties. Alternately, you may feel that minimizing cost to the taxpayer is the most important criteria in which case you would allocate more of your points to that criteria.

If the group is not able to come to a consensus on how to allocate the points, then each member assigns their points individually and the total number of points for each criterion are added together and then divided by the number of people in the group.

You can use the matrix below to help you to think about how to assign your points.

ALLOCATE 10 POINTS TOTAL				
	Minimize cost	Maximize protection of the environment	Minimize impact on nearby properties	Other criteria
Environmentally sensitive area				

Each group will be asked to report out its results.



World Café Scenario #2 Construction of pipes in a commercial/business area

In order for liquid waste to be transported to the Comox Valley Water Pollution Control Centre pipes may need to be constructed in a **commercial/business area**.

- You and your fellow group members are faced with the challenge of deciding which criteria are most important in this scenario.
- You have a total of 10 points to assign to all the criteria.
- Discuss the scenario and agree on how the points will be distributed and thus which criteria are of greater or lesser importance.

For example, in this scenario construction could take place in a commercial business area so you may feel that minimizing impact on adjacent properties is more important than in other locations. If that is the case, you might allocate more of your points to minimizing impact on nearby properties and fewer to maximizing protection of the environment and minimizing cost. Alternately, you may feel that minimizing cost to the taxpayer is the most important criteria in which case you would allocate more of your points to that criteria.

If the group is not able to come to a consensus on how to allocate the points, then each member assigns their points individually and the total number of points for each criterion are added together and then divided by the number of people in the group.

You can use the matrix below to help you to think about how to assign your points.

ALLOCATE 10 POINTS TOTAL				
	Minimize cost	Maximize protection of the environment	Minimize impact on nearby properties	Other criteria
Commercial/business area				

Each group will be asked to report out its results.



World Café Scenario #3 Construction of pipes in a residential area

In order for liquid waste to be transported to the Comox Valley Water Pollution Control Centre pipes may need to be constructed in a **residential area**.

- You and your fellow group members are faced with the challenge of deciding which criteria are most important in this scenario.
- You have a total of 10 points to assign to all the criteria.
- Discuss the scenario and agree on how the points will be distributed and thus which criteria are of greater or lesser importance.

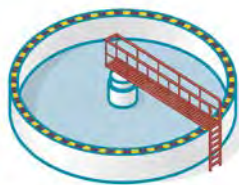
For example, in this scenario construction would take place in a residential area so you may feel that minimizing impact on adjacent properties is more important than in other locations. If that is the case, you might allocate more of your points to impact on nearby properties and fewer to minimizing cost and maximizing protection of the environment. Alternately, you may feel that minimizing cost to the taxpayer is the most important criteria in which case you would allocate more of your points to that criteria.

If the group is not able to come to a consensus on how to allocate the points, then each member assigns their points individually and the total number of points for each criterion are added together and then divided by the number of people in the group.

You can use the matrix below to help you to think about how to assign your points.

ALLOCATE 10 POINTS TOTAL				
	Minimize cost	Maximize protection of the environment	Minimize impact on nearby properties	Other criteria
Residential area				

Each group will be asked to report out its results.



World Café Scenario #4 Comox Valley Water Pollution Control Centre upgrade

In addition to installing new pipes, upgrading of the Comox Valley Water Pollution Control Centre (CVWPCC) is a possibility. Upgrading would result in improvement of the quality of treated wastewater which would benefit the marine environment and enable reclamation of water.

- You and your fellow group members are faced with the challenge of deciding which criteria are most important in considering expansion of the capacity of the existing plant.
- You have a total of 10 points to assign to all the criteria.
- Discuss the scenario and agree on how the points will be distributed and thus which criteria are of greater or lesser importance.

For example, you may feel that minimizing costs to the taxpayers is more important than maximizing protection of the environment. If that is the case, you might allocate more of your points to minimizing cost and fewer to maximizing protection of the environment and minimizing impact on nearby properties. Alternately, you may feel that maximizing protection of the environment is the most important criteria in which case you would allocate more of your points to that criteria.

If the group is not able to come to a consensus on how to allocate the points, then each member assigns their points individually and the total number of points for each criterion are added together and then divided by the number of people in the group.

You can use the matrix below to help you to think about how to assign your points.

ALLOCATE 10 POINTS TOTAL				
	Minimize cost	Maximize protection of the environment	Minimize impact on nearby properties	Other criteria
Upgrading of the CVWPCC capacity				

Each group will be asked to report out its results.

Appendix 4: Evaluation Results

June 18, 2018 consolidated feedback - Total completed 5

How familiar were you with liquid waste management in the Comox Valley before the workshop?

Very familiar	Familiar	Somewhat familiar	Not at all familiar
1	0	4	0

How satisfied are you about this workshop?

Very satisfied	Satisfied	Somewhat satisfied	Not satisfied
0	5	0	0

What was the best thing in the workshop?

- Small groups
- Face to face interactions
- Group discussions
- Hearing the opinions and having experts available to answer questions
- Conversation

What was the worst thing in the workshop?

- Not enough people there
- Lack of attendance
- Not enough details
- Not enough people attended
- Small attendance

How could the workshop be improved?

- Better attendance
- Give more facts

The most important thing I learned?

- Different impacts/interests to designing a system
- We need to save water-important issue with long term plans to be taken seriously with an organized official plan
- Complexity of the sewer system

Will I come to another meeting?

Yes	No	Maybe
12	0	1

Please offer any other comments you have.

- Need to reduce water usage with meters
- Look into ozone treatment, cross contamination opportunities with drinking water
- We need water meters to contain the amount of sewage

June 19, 2018 consolidated feedback - Total completed 13

How familiar were you with liquid waste management in the Comox Valley before the workshop?

Very familiar	Familiar	Somewhat familiar	Not at all familiar
5	6	2	0

How satisfied are you about this workshop?

Very satisfied	Satisfied	Somewhat satisfied	Not satisfied
1	10	1	1

What was the best thing in the workshop?

- World café format
- Hearing other opinions from various members of the community.
- A human/community experience.
- Facilitator.
- Very good workshop coordinator
- Having representatives from the CVRD who were able to answer questions
- Allowed to have a voice
- The ability to engage in conversation and exchange of ideas
- Concerns by all on the environment, concerns by all on integrated planning.
- Everyone got a say
- Process
- Hear people's ideas and opinions

What was the worst thing in the workshop?

- Majority seems willing to pay more to protect environment and do it right for the long term.
- Attendance was 16. Wish more people would come out!
- It was fine I would like to see more innovative treatment plants shared.
- Focus on the status quo treatment
- Nothing really
- Would like to have a quick comprehensive explaining the current system
- Environment seemed to be important and high priority
- Hosts seem to assume the plant should be at same location
- There was not a balance of urban/rural Area B over represented
- Notification that the meeting was going to happen was abysmal
- Your cookies – weight problem

How could the workshop be improved?

- I had to dig deep into website to find info on this meeting. Way too hard to find and I am comfortable on computers.
- Building trust in the CVRD management – are their decisions in the best interest of the people. Idea share how they are working for the bettering of the Comox valley.
- No politicians at the tables – better notice to the community.
- More advertising prior to the workshop
- Maps provided
- Allowed to eat candies at the start
- Well-paced – balance of reps
- More advertising

- See above – re notice of meeting

The most important thing I learned?

- The complexity behind waste management
- The manner in which decisions are made (processes)
- Not to eat candies at the start
- No accountability for costs. Environment very important but Area B doesn't feel they should share the costs of clean environment.
- Public consultation by the CVRD is still in its infancy
- We need to consider innovation
- At least in discussion people were very focused on the environment – could be skewed by the type of people that show up?

Will I come to another meeting?

Yes	No	Maybe
12	0	1

Please offer any other comments you have.

- With an overwhelming representation from Area B I believe the findings were slanted. There were many misconceptions and nimbyism. Everyone wants a clean environment. I believe cost is an issue and looking at the Valley as a whole and sharing costs is important.
- Not sure how you can justify so many CVRD employees at a meeting like this.
- Positive – thank you!

APPENDIX 2 – CONNECTCVRD ANALYTICS

Survey Responses

28 May 2018 - 12 August 2018

Your Values: Sewer Service Planning

Connect CVRD

Project: Help shape the future of our Sewer Service



VISITORS

166

CONTRIBUTORS

101

RESPONSES

104

5

Registered

0

Unverified

96

Anonymous

5

Registered

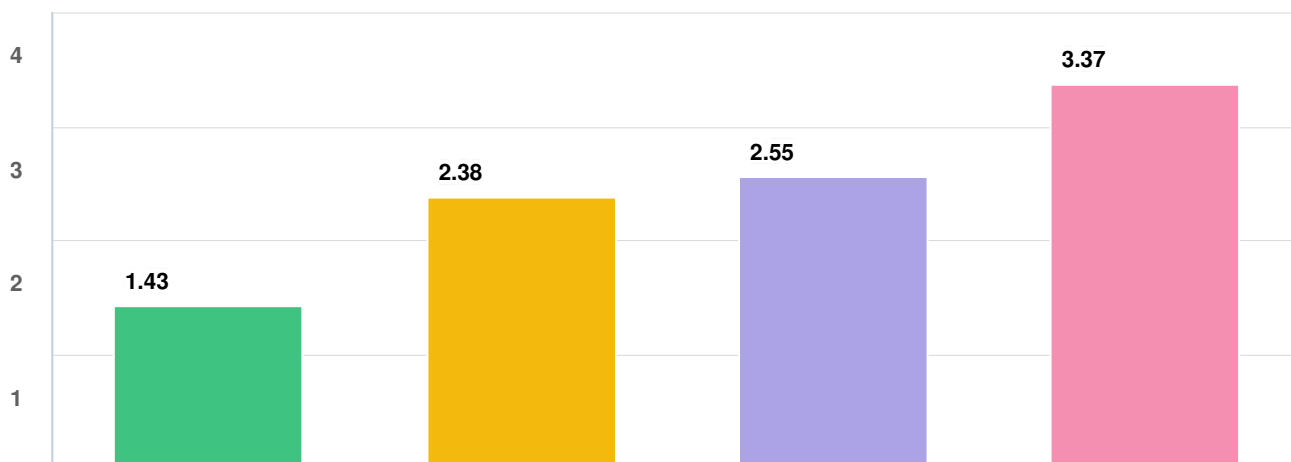
0

Unverified

99

Anonymous

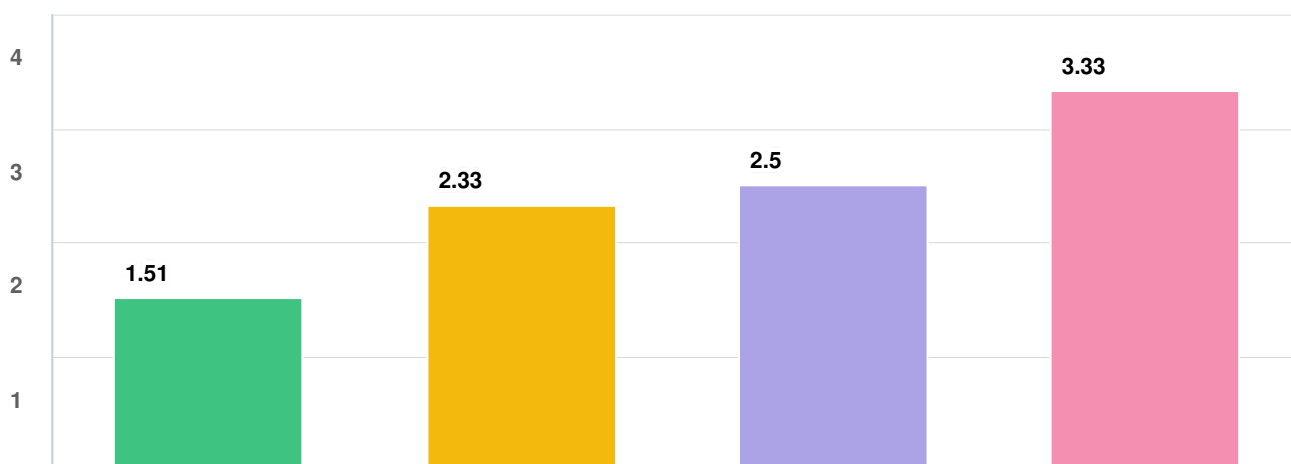
Q1 | **IMAGINE THAT: to move wastewater to the sewage treatment plant, a collection line (pipes) is proposed for an environmental...**



Question options

● Maximize Protection of Environment ● Minimize Impact on Nearby Properties ● Minimize Cost ● Other Criteria

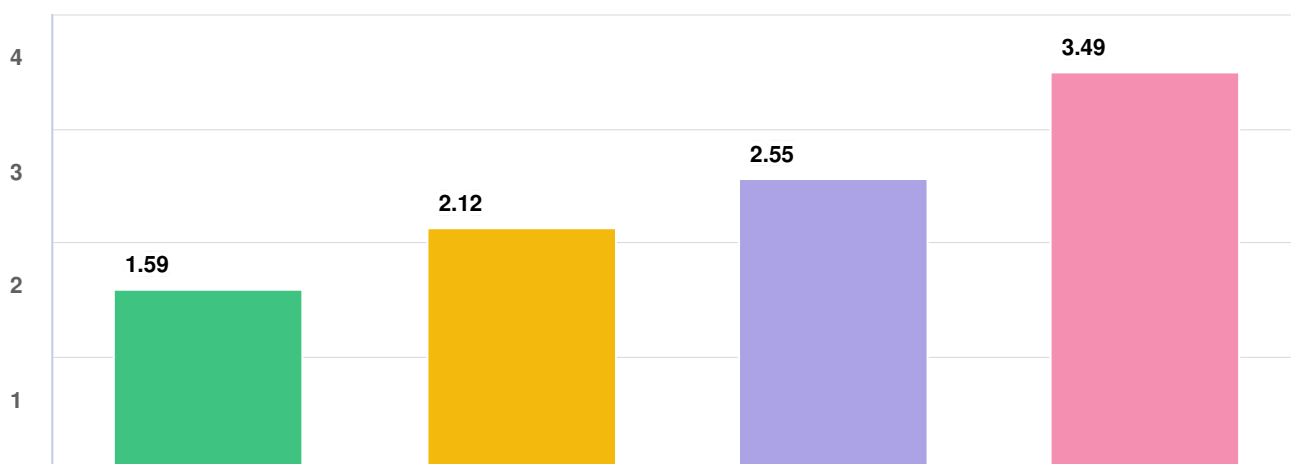
Q2 | **IMAGINE THAT: to move wastewater to the sewage treatment plant, a collection line (pipes) is proposed for a commercial/busi...**



Question options

● Maximize Protection of Environment ● Minimize Impact on Nearby Properties ● Minimize Cost ● Other Criteria

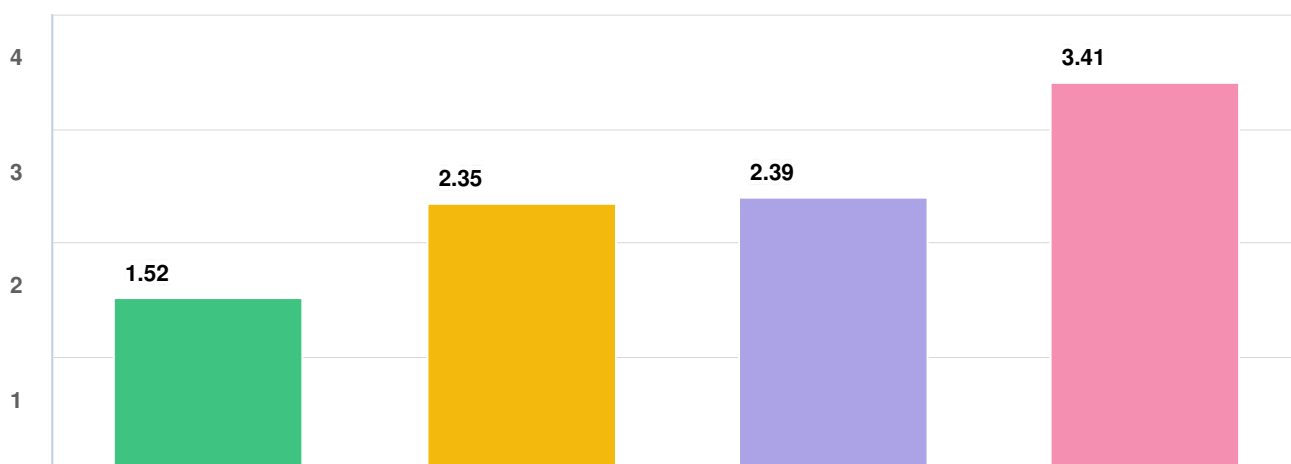
Q3 | **IMAGINE THAT: to move wastewater to the sewage treatment plant, a collection line (pipes) is proposed for a residential are...**



Question options

● Maximize Protection of Environment ● Minimize Impact on Nearby Properties ● Minimize Cost ● Other Criteria

Q4 | **IMAGINE THAT: to properly collect and treat wastewater from the Comox Valley service, an expansion of the sewage treatment ...**



Question options

● Maximize Protection of Environment ● Minimize Impact on Nearby Properties ● Minimize Cost ● Other Criteria

Q5 | Did you chose "Other Criteria" in any of those four ranking questions? Please let us know what that other criteria was.

Anonymous 6/24/2018 09:08 AM	Why isn't human health an option? Minimize impacts to human health. WWT should use the latest technology to reduce antimicrobial resistant and other contaminants.
Anonymous 7/17/2018 04:23 AM	Plan for the future! That the 17th Street bridge and the new hospital reached capacity so quickly is a disgrace. The new highway is awful in parts. Don't make the same mistake with sewers.
Anonymous 7/17/2018 06:22 AM	Education of public
Anonymous 7/17/2018 11:40 PM	Please select a treatment process that has a smaller land footprint but will exceed regulatory requirements for the upgrades lifespan (30-40 years?)
Anonymous 7/18/2018 03:27 PM	Latest technologies
Anonymous 7/18/2018 03:32 PM	Safety and exposure to toxic substances in case of leaks, explosion or general failure of systems
Anonymous 7/19/2018 06:54 AM	for other criteria. expansion should take into account future planning and growth, be large enough that wwe will not have to upsize or upgrade because of poor planning
Anonymous 7/19/2018 10:34 PM	Efficiency and common sense
Anonymous 7/20/2018 08:31 AM	Choice as to when you hook up the sewer
Anonymous 7/20/2018 09:44 AM	the expected life of that system. will it last 20 years or 50 years.
Anonymous 7/20/2018 11:11 AM	Let,s get it done, Septictanks are failing and the longer we wait the cost goes up
Anonymous 7/20/2018 11:11 AM	Consideration of future commercial and residential developments along with the environmental risk of existing septic systems and the possibilities of thier ground water contamination.
Anonymous 7/20/2018 01:49 PM	I chose "Other Criteria" over "Minimize Cost" because there may be more important issues that come up that I have no knowledge of. The idea of minimizing costs to the detriment of citizens and their quality of life is unfair.
Anonymous 7/22/2018 07:19 PM	Keep the sewer system a public property. Please don't sell all or part to a private business.
Anonymous 7/23/2018 07:51 AM	Technology considerations, is it the latest and best; room for future expansion beyond what is proposed now.
Anonymous	I chose other criteria as I believe it is important to also consider impact when

7/24/2018 03:29 PM

Anonymous

7/25/2018 08:32 AM

Anonymous

7/26/2018 08:51 PM

Anonymous

7/28/2018 12:51 PM

Anonymous

7/29/2018 04:33 PM

Anonymous

7/29/2018 06:43 PM

Anonymous

7/29/2018 08:43 PM

Anonymous

7/29/2018 10:11 PM

Anonymous

7/30/2018 06:02 AM

Anonymous

8/01/2018 02:08 PM

Anonymous

8/01/2018 03:29 PM

hefalumpion

8/01/2018 06:08 PM

Anonymous

8/03/2018 05:44 PM

Anonymous

8/04/2018 07:00 PM

construction of these sewer improvements are implemented. The construction can impact properties that are nowhere near the site itself. The concern about cost, but environmental impact is ALWAYS a top concern. Being considerate of already existing properties is a top concern, looking at the future growth of our communities are also a top concern - do it right & prepare for growth.

Sewage although stinky if leaking is not an environmental disaster. Pipes transporting sewage last decades and are easily repaired with minimal environmental footprint. This is not an oil or gas pipeline. Let's get it done!

Having had Courtenay's sewer in my basement 3 times 1997, 2007, 2017 due to Courtenay's inadequate 1st Street pump station. I think it's very important to get on with it instead of running surveys

Availability of materials?

That is sound technology

Products such as skyrocket compost

No

Safety

Any plans to treat sewage in north Courtenay near Seal Bay Park?

Impact to traffic

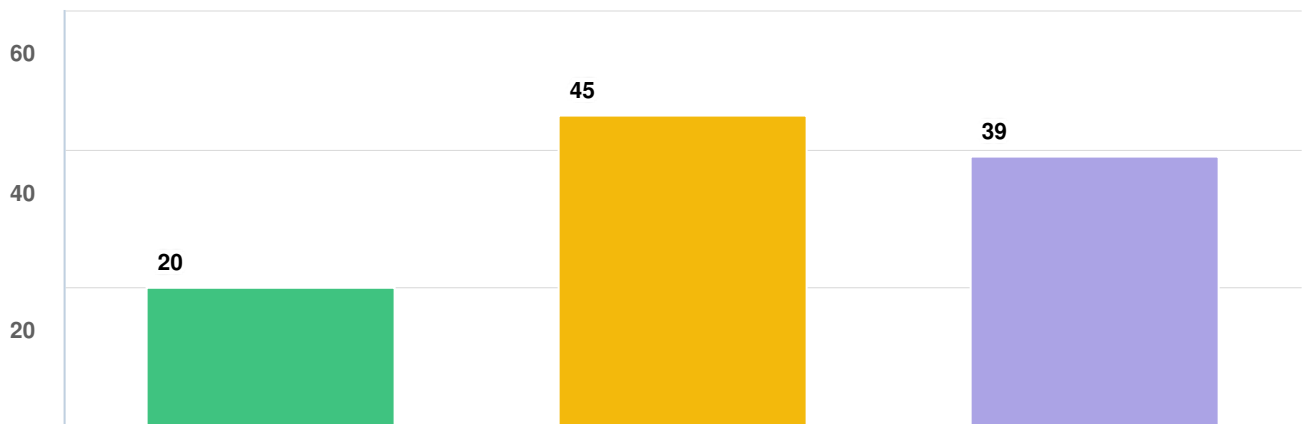
Future growth and expansion

Anything else that needs to be considered.

Cut the bullshit and get on with doing the work completed as soon as possible, cut red tape and push it though fast. Eliminate all the questions the faster it done the less cost involve. Set a realistic schedule.

Optional question (29 responses, 75 skipped)

Q6 How much do you know about the sewer service in Courtenay and Comox, and what happens to wastewater when it leaves our homes?



Question options

- ☐ A Lot - I have a good idea of the process ☐ Some - I get the concept but don't know the details
☐ A little - Actually, I don't really know much

(104 responses, 0 skipped)

Q7 | What is your biggest concern when it comes to wastewater planning in the Comox Valley?

Anonymous

6/21/2018 08:21 PM

running pipes along the foreshore - better to put them underground and away from the estuary

Anonymous

6/24/2018 09:08 AM

Ineffective WWT that leads to regular boil water notices and risks to human health. It's very concerning to me that human health risks were not listed as one of the voting criteria. This isn't just about the environment and costs. This is about public health and people need to know that when they're weighing criteria. It's a serious flaw of this survey. Additionally, forcing people to rank assumes they don't see these priorities as equal which may not be the case. The affect on the environment, affect on ALR land, affect on underground streams, affect on Baynes Sound and wildlife on land and water.

Anonymous

6/24/2018 02:17 PM

gu3

6/25/2018 02:31 PM

Minimize impact on environment. Allow for future growth.

Anonymous

7/10/2018 04:31 PM

Environmental impact and longterm planning...

Anonymous

7/10/2018 10:41 PM

Don't put pipes and a pump in Beech Street neighbourhood. There are too many wells that can be impacted. Plus, the sewage treatment pump and pipes shouldn't go through a neighbourhood that doesn't get to use the new system. If CVRD properties have to be affected then they could be offered a hook up and reduced cost.

Anonymous

7/15/2018 10:06 PM

Environmental impact and responsible long term planning.

Anonymous

7/17/2018 04:23 AM

That we will cheap out, not do the job properly, and end up throwing money at repairs and upgrades down the road. We need to have the difficult conversations so we can do fewer things better. AND, more community consultation on all projects. No more making decisions behind closed doors! If you are concerned that the public is too ignorant to have meaningful input, set up a community group of people willing to commit the time for you to educate them on all aspects of the process, and let them prepare a report for the district ... then if their report is rejected, let it go to a referendum at voting time. They would receive only a minimal stipend. That should weed out triflers. Also ... NO TOUCHING AQUIFERS! Clean groundwater is far too valuable to even be considered for sale, or endangered in anyway. Canada is one of the few nations, and we are one of the few parts of that nation that has wonderful drinking water right out of the ground. Anything that monetizes or threatens that is a deal breaker to me.

Anonymous

7/17/2018 06:22 AM

The general public has never been to your sewer plant and do not "GET" where and how their own toilets work. It is ridiculous and primitive that our MODERN toilets accept dental floss, tampons, plastic floaties and all of the grease, sand and whatever else and that the bugs and worms have to clean

Anonymous 7/17/2018 02:11 PM	us up and the we buy our cleansed poop back I have lived in land locked countries, toured a few sewage plants, made jungles from sludge. WHY are we so stubbornly stupid? ""PUT A SCREEN IN YOUR TOILET!! P.s. I have been your biggest protester ; and now I would be your biggest educator It is the small children we must educate, who in turn will educate their elders Adults all are used to dumping every thing in i would like to see the waste water get filtered Alot and go in the ground not in the water. my concern is the protection of our water shed.
Anonymous 7/17/2018 11:40 PM	Sewage treatment technology is so diverse and efficient these days that I trust the CVRD to select the most cost effective and suitable system for the valley. I expect that upgrades will match expected population growth for the expected life span of the upgrade. Of concern is the age demographic and average taxpayer income to support the project.
Anonymous 7/18/2018 07:12 AM	Keep it out of waterways
Anonymous 7/18/2018 08:04 AM	Service expansion in my area ,when and if it is going to happen.
Anonymous 7/18/2018 11:07 AM	Creation of infrastructure in rural areas that do not benefit from the service. Lack of sufficient odour control at the treatment plant. Separate sewage treatment plant for area south of Puntledge River.
Anonymous 7/18/2018 03:27 PM	Town growing faster than infrastructure
Anonymous 7/18/2018 03:32 PM	Proper treatment. We live in the 21st century and it costs money to treat sewage effectively. So, lets spend the money up front, so in the long run, it pays off with cleaner water and less pollution. we can only gripe about taxes for so long, eventually we need to invest where we live.
Anonymous 7/18/2018 06:17 PM	environmental protection!
Anonymous 7/18/2018 09:50 PM	Biggest concern is the ever increasing taxation, especially on low income, fixed income and seniors
Anonymous 7/19/2018 06:54 AM	are we in a place now to handle the fast growth the valley is experiencing. will this process ensure we are going to plan for 20-30 years into the future.
Anonymous 7/19/2018 08:58 PM	To stop it going untreated into the ocean.
Anonymous 7/19/2018 09:06 PM	That I dont ever have to pay for the collective anything. We already subsidize other user pay planned situations if only by taxes that pay salaries of staff at the RD full time, that end up using such time to manage said situations.
Anonymous 7/19/2018 10:34 PM	Wasting a ton of money for very little gain.
Anonymous 7/20/2018 07:26 AM	Environmental impact

Anonymous

7/20/2018 07:30 AM

Dont buy a rolls royce system when a honda will do

Anonymous

7/20/2018 08:24 AM

Smells from the treatement plant

Anonymous

7/20/2018 08:31 AM

Being forced to pay for it when our septic is still in good condition

Anonymous

7/20/2018 09:44 AM

I feel encouraging grey water collection for residents is a big deal because it lessens the load the wastewater will have to deal with. Also starting up large scale and small scale rainwater collection systems can cut down on water usage and thus decrease wastewater. And lastly alternative systems: such as composting toilets. Even small initiatives like not using the toilet as a garbage can(flushing bits of garbage), and not flushing urine(might sound gross but that's a lot of water I haven't flushed).

Anonymous

7/20/2018 11:11 AM

That all residents do not have sewer systems

Anonymous

7/20/2018 11:11 AM

The possibility of 3L development of Browns/ Puntledge River properties. If this development is granted approval the proximity to the river systems and sensitive ecosystems/wetlands must be protected by a connected treatment system. If an expansion of collection lines is considered, then perhaps an option would include the Piercy Road, greaves Crescent, Cessford Road and Condensory Road residential properties. These properties have high water tables and I believe it was a concern of ground water contamination in the past resulting in the Greaves Crescent water system.

Anonymous

7/20/2018 11:52 AM

Cost to the Homeowners for hooking up.

Anonymous

7/20/2018 01:49 PM

Putting waste water treatment plants in existing communities/neighbourhoods. It is simply wrong. Figure something else out. It may cost more but it is the sensible and morally right thing to do. Ask yourself, would you want a waste water treatment plant in your neighbourhood?

Anonymous

7/20/2018 02:41 PM

Environmental protection

Anonymous

7/20/2018 04:40 PM

Poor short range planning is a significant concern. The over-all cost can be considerably lower with proper planning and design.

Anonymous

7/21/2018 05:43 PM

That RAW waste water doesn't end up in the ocean And the enormous prizing what comes along building a new facility Suggest a few smaller facilities instead of one new facility Cv is a very large area And all the piping will cost to much for a relatively small amount off people

Anonymous

7/22/2018 04:49 PM

No raw sewage dumping in the lake or ocean

Anonymous

7/22/2018 07:19 PM

I think we need one sewer system for the whole Comox Valley. It should be a mandatory hook-up, not subject to referendum.Repairs are needed for the

	existing systems in Comox and Courtenay. If the project included almost the whole valley, including Cumberland and south Courtenay, Royston, then it would get better grants and spread the costs amongst everyone. But it should be mandatory. It is a health issue. I don't like Cumberland sewage coming down the Trent River. I don't like failing septic fields or household sewage treatment plants installed on tiny lots with large houses and carriage houses.
Anonymous 7/23/2018 07:51 AM	That we do it right, and not end up like the CRD (Victoria) and pump raw sewage into the straight.
Anonymous 7/23/2018 07:53 AM	Waste entering our oceans, lakes, or soil and waste contaminating our drinking water.
Anonymous 7/23/2018 09:01 PM	Over development and impact on residential areas Our capacity to handle sewage services with an expanding population Impact on the environment
Anonymous 7/24/2018 06:06 AM	The environmental impact
Anonymous 7/24/2018 07:55 AM	Environmental protection
Anonymous 7/24/2018 03:29 PM	I was very concerned when the residents of croteau Road had to go to great lengths to prevent a pumping station that cold affect drinling water wells. We must be careful as to where the sewage treatment pipelines and plants are placed to ensure safe drinking water supplies. My second concern is that the environment be carefully preserved in all improvements.
Anonymous 7/24/2018 06:03 PM	Efficiency/best practises, expediency (generally a novel concept, in the Comox Valley). Let's get it done sooner rather than later-rapid population growth demands it.
Anonymous 7/24/2018 08:25 PM	That the water is filtrated and reused!
Anonymous 7/25/2018 08:03 AM	That all properties have the option of hooking up to municipal sewer systems
Anonymous 7/25/2018 08:32 AM	That we don't bandaid the existing one & that we do this right with the plan for expansion in the future, being the most environmentally conscious every step of the way.
Anonymous 7/25/2018 07:10 PM	That the houses that have septic systems are aloud to connect seems we have a water meter for usage and no one with sewer lines does. This is not fair.
Anonymous 7/26/2018 08:51 PM	Getting area C rural residential (that would gravity feed most product) septic fields tied in quickly around sensitive areas such as Arden and Morrison creek tributaries. These are salmon spawning tribs with red listed species such as lamprey. Sewer would clean ground water and run-off
Anonymous 7/27/2018 01:13 AM	To not impact our lakes , rivers and ocean. To provide needed clean water resources.
Anonymous	Polluting the environment

7/27/2018 06:27 PM

Anonymous

7/28/2018 12:51 PM

That's it all talk and no action. Once you let the environmentalists in on the game nothing will be done - the pump house on 1st street is 60 years old. And yet the city kept approving subdivisions. I found out that before the 1970's the overflow went into the Puntledge river! Come on folks lets use some common sense. Get it done whatever the cost . Through years of shortsightedness on the part of mayors and councilors this mess was created, now do the right thing and fix it. Be brave, make the necessary decisions - you won't be popular with the environmentalists and yes maybe you won't get voted in the next election but you'd certainly have my vote. That the beautiful Comox Valley environment be protected from harm and destruction and pollution.

Anonymous

7/29/2018 04:33 PM

Anonymous

7/29/2018 06:43 PM

Dumpi g it in the Salish Sea.

Anonymous

7/29/2018 08:43 PM

Although people will be concerned about cost, I don't think they will have considered the consequences of saving money against quality.

Anonymous

7/29/2018 10:11 PM

Too much development stresses the system. New development must pay for additional infrastructure required.

Anonymous

7/29/2018 10:44 PM

The environment, and the impact on homes , and awareness of cost.

Anonymous

7/30/2018 06:02 AM

Sickness and disease, safety protocols, Waste water being dispursed into the wilderness and oceans untreated.

Anonymous

7/30/2018 09:05 AM

Environmental- look to the future. Build something forward thinking!

K Woodley

7/31/2018 01:39 PM

The protection of the environment must be a priority. There needs to be a Valley-wide, multi-year plan, rather than dealing with upgrades piece by piece.

heidrick

7/31/2018 01:40 PM

That plans allow for protection, now and in the future, of our sensitive environmental areas while considering capacity for future growth in the Valley.

Anonymous

8/01/2018 02:08 PM

That you are prepared for the rainy season.

hefalumpion

8/01/2018 06:08 PM

How will it affect people? Will it affect the ocean?

Anonymous

8/02/2018 12:07 AM

It is environmentally favourable and absolutely considerate of the neighbours... no detracting elements that negatively impact any citizens!

Anonymous

8/02/2018 08:59 AM

Minimizing the risks and affects on our beautiful environment.

Anonymous

Remove wastewater from entering baynes sound and Trent river

8/02/2018 01:30 PM

Anonymous

It doesn't continue to go into the Ocean

8/02/2018 09:58 PM

Anonymous

What the secondary and tertiary treatment processes will use and the use of new technologies . Also monitoring and removing pharmaceuticals from being released into the environment.

8/02/2018 09:59 PM

Anonymous

INSTALLING A FACILITY THAT CAN HANDLE GROWTH AND THAT MORE THAN ONE BID IS CONSIDERED FOR THE STRUCTURE. THAT THE TAXPAYERS ARE INFORMED OF COST AND ARE PART OF THE DECISION.

8/03/2018 06:53 AM

Anonymous

our water sources from puntledge our swimming holes and the environment all around

8/03/2018 02:49 PM

Anonymous

That it NOT go into the ocean! What is wrong with the world when septic is allowed to be spewed into the ocean?! Treated or not, it needs to STOP! Is there no one left that remembers how nice it used to smell here? There are actually people who think that the stink tinged with septic that prevelant out there on our beaches, is what the beach is supposed to smell like! What are you people doing?! Do you not care?!
environmental impact!

8/03/2018 05:44 PM

Anonymous

Environmental impact

8/03/2018 08:39 PM

Anonymous

The ability to add on to existing, go big or go home.

8/04/2018 07:29 AM

Anonymous

That we are able to cope with rapidly increasing population

8/04/2018 07:00 PM

Anonymous

Environment and cost

8/06/2018 07:44 AM

Anonymous

My biggest concern when it comes to wastewater planning in the Comox Valley is to minimize the impact it has on the environment.

8/06/2018 10:15 AM

Anonymous

8/06/2018 11:00 AM

Optional question (76 responses, 28 skipped)

Q8 What area of the Comox Valley do you live in?

Anonymous west Comox

6/21/2018 08:21 PM

Anonymous North Courtenay

6/24/2018 09:08 AM

cbuckle Courtenay

6/24/2018 10:17 AM

Anonymous Comox

6/24/2018 02:17 PM

gu3 Courtenay

6/25/2018 02:31 PM

Anonymous Courtenay East

6/25/2018 11:02 PM

Anonymous Area B

7/10/2018 04:31 PM

Anonymous Comox

7/10/2018 10:41 PM

Anonymous Area B

7/15/2018 10:06 PM

Anonymous Bill Moore Park area.

7/16/2018 05:54 PM

Anonymous Near the corner of Graham Road and the old highway

7/17/2018 04:23 AM

Anonymous Downtown Comox . And my dead bench is your propose

7/17/2018 06:22 AM

Anonymous denman island area

7/17/2018 02:11 PM

Anonymous Merville

7/17/2018 11:40 PM

Anonymous Courtenay, near powerhouse

7/18/2018 07:12 AM

Anonymous Regional district bordering Comox Hector rd

7/18/2018 08:04 AM

Anonymous Area B

7/18/2018 11:07 AM

Anonymous

Comox

7/18/2018 03:27 PM

Anonymous

Puntledge

7/18/2018 03:32 PM

Anonymous

Courtenay

7/18/2018 06:17 PM

Anonymous

East Courtenay

7/18/2018 09:50 PM

Anonymous

west courtenay

7/19/2018 06:54 AM

Anonymous

Comox

7/19/2018 08:25 AM

Anonymous

Laketrail

7/19/2018 09:34 AM

Anonymous

Crown Isle

7/19/2018 01:34 PM

Anonymous

Royston

7/19/2018 08:58 PM

Anonymous

Headquarters

7/19/2018 09:06 PM

Anonymous

Comox

7/19/2018 10:34 PM

Anonymous

Comox

7/20/2018 07:26 AM

Anonymous

Comox

7/20/2018 07:30 AM

Anonymous

Comox near the plant

7/20/2018 08:24 AM

Anonymous

Comox regional district

7/20/2018 08:31 AM

Anonymous

I live on Comox Rd

7/20/2018 09:44 AM

Anonymous

South Courtenay

7/20/2018 11:11 AM

Anonymous 7/20/2018 11:11 AM	Greaves Crescent
Anonymous 7/20/2018 11:52 AM	South
Anonymous 7/20/2018 01:49 PM	Regional District
Anonymous 7/20/2018 02:41 PM	Courtenay
Anonymous 7/20/2018 04:40 PM	Comox
Anonymous 7/21/2018 09:58 AM	west courtenay
Anonymous 7/21/2018 05:43 PM	Courtenay
Anonymous 7/22/2018 11:34 AM	Comox
Anonymous 7/22/2018 04:49 PM	comox
Anonymous 7/22/2018 07:19 PM	Royston
Anonymous 7/23/2018 07:51 AM	Regional district, area b.
Anonymous 7/23/2018 07:53 AM	Courtenay
Anonymous 7/23/2018 09:01 PM	Comox
Anonymous 7/24/2018 06:06 AM	Lazo
Anonymous 7/24/2018 07:55 AM	Courtenay
Anonymous 7/24/2018 03:29 PM	Area B - Huband Road
Anonymous 7/24/2018 06:03 PM	East Courtenay-Valley View
Anonymous 7/24/2018 07:43 PM	in courtenay near the lawn bowling center

Anonymous 7/24/2018 08:25 PM	V9N 1L1
Anonymous 7/24/2018 08:31 PM	Courtenay
Anonymous 7/24/2018 09:37 PM	Puntledge Park
Anonymous 7/25/2018 08:03 AM	Town of Comox
Anonymous 7/25/2018 08:32 AM	East Courtenay, Family in Comox
Anonymous 7/25/2018 09:41 AM	Comox
Anonymous 7/25/2018 07:10 PM	Area B
Anonymous 7/26/2018 12:45 PM	North Courtenay. No sewer systems here
Anonymous 7/26/2018 03:13 PM	Courtenay
Anonymous 7/26/2018 08:51 PM	Area C Conrad Road
Anonymous 7/26/2018 10:38 PM	Marsden Rd
Anonymous 7/27/2018 01:13 AM	Comox
Anonymous 7/27/2018 10:43 AM	Cumberland
Anonymous 7/27/2018 06:27 PM	Crown Isle
Anonymous 7/27/2018 11:45 PM	East Courtenay
Anonymous 7/28/2018 12:51 PM	975 1st Street, Courtenay
Anonymous 7/28/2018 04:20 PM	North Courtenay
Anonymous 7/29/2018 09:16 AM	East Courtenay

Anonymous 7/29/2018 11:44 AM	areaB
Anonymous 7/29/2018 04:33 PM	Courtenay, near Puntledge River
Anonymous 7/29/2018 06:43 PM	Fanny Bay
Anonymous 7/29/2018 08:43 PM	Puntledge
Anonymous 7/29/2018 10:11 PM	Comox
Anonymous 7/29/2018 10:44 PM	Comox
Anonymous 7/30/2018 06:02 AM	Courtenay, Puntledge Park
Anonymous 7/30/2018 06:52 AM	Area B
Anonymous 7/30/2018 09:05 AM	Courtenay
K Woodley 7/31/2018 01:39 PM	west Courtenay, by the river
heidrick 7/31/2018 01:40 PM	West Courtenay, Riverside/estuary
Anonymous 8/01/2018 02:08 PM	V9J 1X8
Anonymous 8/01/2018 03:29 PM	Courtenay
hefalumpion 8/01/2018 06:08 PM	Area C Arden Rd
Anonymous 8/01/2018 07:13 PM	East courtenay
Anonymous 8/02/2018 12:07 AM	Comox
Anonymous 8/02/2018 07:05 AM	Courtenay
Anonymous	Puntledge area

8/02/2018 08:59 AM

Anonymous

Royston

8/02/2018 01:30 PM

Anonymous

Downtown

8/02/2018 09:58 PM

Anonymous

Courtenay

8/02/2018 09:59 PM

Anonymous

cOURTENAY

8/03/2018 06:53 AM

Anonymous

Regional Distict north of Comox

8/03/2018 01:33 PM

Anonymous

laketrail

8/03/2018 02:49 PM

Anonymous

All of it. I was born in Comox.

8/03/2018 05:44 PM

Anonymous

mission hill

8/03/2018 08:39 PM

Anonymous

Lazo

8/04/2018 07:29 AM

Anonymous

Black creek

8/04/2018 07:00 PM

Anonymous

Comox

8/04/2018 08:06 PM

Anonymous

Downtown courtenay

8/05/2018 11:58 AM

Anonymous

Comox

8/06/2018 07:44 AM

Anonymous

Comox

8/06/2018 07:46 AM

Anonymous

Union bay

8/06/2018 10:15 AM

Anonymous

Town of Comox

8/06/2018 11:00 AM

(104 responses, 0 skipped)

APPENDIX 3 – SAMPLE ADVERTISEMENTS



Sewer Service Affects Us All

It isn't something that most of us like to think about, but sewer service plays a vital role in our community. We are planning for the future of our service in Courtenay and Comox and we are looking for input from everyone who is affected.

Participate in our Online Consultation


1. Visit connectcvrd.ca/lwmp
2. Register or sign in
3. Click the "Consultation" tab

For more information:
call: 250-334-6000
visit: connectcvrd.ca




comoxvalleyrd.ca   

Social Media Ads: Instagram & Facebook


 **Comox Valley Regional District** Sponsored · 🌐 ...

We want to hear from you as we plan our future sewer service in Courtenay and Comox.




connectcvrd.ca
Register for our Public Consultation [LEARN MORE](#)

👍 🤔 37 49 Comments

 **Comox Valley Regional District** Sponsored · 🌐 ...

Fill out the survey to help us plan the future of our sewer service.



connectcvrd.ca
Join the Conversation this Summer. [LEARN MORE](#)

👍 ❤️ 🤔 32 10 Comments

 **Comox Valley Regional District** Sponsored · 🌐 [Like Page](#)

We are looking for your input on future sewer services in Comox and Courtenay. Attend a facilitated session next week and have your voice heard. Visit www.comoxvalleyrd.ca/lwmp for event details.



Join us June 18 & 19



17 Reactions · 8 Comments · 9 Shares

[Like](#) [Comment](#) [Share](#)

Radio Ad Script

PROJECT: CV Sewer Service LWMP
MEDIA: 30 second ads
CAMPAIGN: Facilitated Session Invite
RUN DATES: June 4-15, 2018

SCRIPT

SOUND OF TOILET FLUSHING

Sewage.

What happens to it is a pretty icky topic. But we all need a system that works well – for a long time.

To make sure that happens, the Comox Valley Regional District wants to hear from you. Come to a workshop to kick off planning for a service that we need but never want to talk about.

Either Monday June 18 at lower level Native Son's Hall OR Tuesday June 19 at the Comox golf course. Both 5 to 7 p.m. Can't be there in person? Share your feedback online at connectcvrd.ca.

APPENDIX 4 – INFORMATIONAL MATERIALS



Comox Valley Sewer Service

Liquid Waste Management Plan Project Backgrounder #1

Wastewater planning for Comox Valley

The Comox Valley Regional District is planning how the sewer service will be managed in the years and decades to come, and your feedback is critical to finding a solution that's appropriate and sustainable.

Liquid Waste Management Plans

The liquid waste management plan process is used by local governments in BC to develop strategies for managing wastewater. It includes:

- the collection/review of existing information
- development of options for future services
- identification of a preferred option
- completion of required studies/assessments on preferred option
- development of financial and implementation plans

The plan can take up to two years to move through the full process – and is ultimately submitted to the provincial government for review and consideration for approval.

What's being planned:

The planning process will look at the Comox Valley Sewer Service, which services Courtenay and Comox, and how best to address the future needs of those communities and inevitable infrastructure upgrades that will be required. It includes collection, conveyance (pipes and pump stations) and the treatment plant. It will consider options for providing reliable sewer service for the years to come, including consideration of anticipated future growth in our communities.

Hearing from you

Members of the public are encouraged to weigh-in, either through the public advisory committee or via less-formal workshops and open houses, or online consultations. To get involved:

Visit our website at www.comoxvalleyrd.ca/lwmp

Or join the online discussion at www.connectcvrd.ca/lwmp

Timeline

Step-by-step wastewater planning

- **Setting the Stage and Kick Off**
- **Goal Setting:** Determining what we want to achieve with this plan.
- **Establishing a Long List:** Options for the future of the sewer service will be presented in early 2019.
- **Narrowing Down a Short List:** Feedback to the long list will help committees narrow down to some preferred options.
- **Choosing the Preferred Option:** From the short list, the preferred option will be presented to the Sewage Commission and public.
- **Drafting the Report:** Include a summary of all the work done to date - including a report on the public's feedback and comments during the process.
- **Report Submitted:** Stages 1 and 2 final report of the management plan will be completed and submitted for review to the provincial government.



Comox Valley Sewer Service LWMP

Phase 2 Outreach – Summary Report September to December 2018

January 7, 2019

CONTENTS

1.0	Executive Summary	1
2.0	Introduction	1
2.1	Project Brief & Consultation Overview	1
2.2	Overview of Previous Phases	3
3.0	Phase 2 Consultation Results.....	3
3.1	By the Numbers.....	3
3.2	Themes of Feedback.....	3
4.0	Conclusion.....	4
5.0	Next Steps	4
	APPENDICES	4

APPENDICES

APPENDIX 1 – EVENT REPORT: NOV. 6 & 8, 2018, OPEN HOUSES

APPENDIX 2 – FACILITATOR’S REPORT: NOV. 27 & 28, 2018, FACILITATED SESSIONS

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APPENDIX 4 – SAMPLE ADVERTISEMENTS

APPENDIX 5 – INFORMATIONAL MATERIALS

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After a busy summer laying the foundation for the Comox Valley Sewer Service Liquid Waste Management Plan (officially launched in June), the fall brought the opportunity for a second round of public engagement. The LWMP will identify the path forward for the service, including the approach for new/upgraded infrastructure.

The public participation focus in this phase was two-fold:

- **INFORM:** Introduce the LWMP process and teach about the sewer service.
- **ENGAGE:** Collect feedback on draft goals and objectives, developed by the newly-created public and technical advisory committees.

To achieve these goals, multiple tools were used, each designed to maximize the opportunity to engage the community.

It included:

- *Open Houses:* Two open house events were held at the Comox Valley Water Pollution Control Centre (treatment plant) with roughly 120 attending to learn more about the existing sewer system and about the planning process getting underway.
- *Facilitated Sessions:* In late November, following initial meetings by advisory committees, two facilitated sessions were held (one in Comox, one in Courtenay) to collect feedback/input on draft goals and objectives. That input was put back to the committees for review before final goals and objectives were set.
- *Online Consultation:* To supplement the facilitated sessions, a survey was created on ConnectCVRD to mimic the feedback process at the in-person events. An online ad campaign was implemented to draw audiences to the online engagement tool.

From October through December 2018, approximately 662 residents visited ConnectCVRD to learn more about the process and 160 residents provided direct feedback on the goals and objectives through the open house, workshops or online survey.

Themes of feedback included general support for the goals and objectives outlined by the TAC/PAC, and eagerness to know about long-term plans for the sewer system.

Next steps for the project team are to maintain what is becoming a consistent outreach approach, with promotion of both in-person and online consultation opportunities, during Phase 3, long-listed options.

2.0 Introduction

2.1 PROJECT BRIEF & CONSULTATION OVERVIEW

In Spring 2018, the Comox Valley Regional District launched a liquid waste management planning process for the Comox Valley Sewer System, which provides a comprehensive planning opportunity that prioritizes public involvement in determining solutions. To outline how the public would be consulted in this process, a public engagement plan was drafted using five stages of outreach beginning in June 2018. The plan uses a suite of tools, focusing around a series of in-person events (facilitated

sessions, workshops, info sessions and open houses), and online consultation. This report summarizes the results from Phase 2. An outline of those phases is below.

PHASE	OBJECTIVES	TOOLS
PHASE 1: Educate/Kick-Off (May-Aug. 2018) COMPLETE	<ul style="list-style-type: none"> • INFORM: provide info about the sewer system and LWMP start • INVOLVE: connect with public to collect feedback on goals/values in sewer planning 	<ul style="list-style-type: none"> • Digital Content: create dedicated pages on regional district + ConnectCVRD websites • Advertisements: Promote online tool and sessions • Facilitated Session #1 • Online Consultation Survey
PHASE 2: Kick off & Goals/Objectives (Sept.-Dec. 2018) COMPLETE	<ul style="list-style-type: none"> • INFORM: introduce LWMP process • COLLABORATE: work with the public advisory committee • CONSULT: collect feedback on goals and objectives 	<ul style="list-style-type: none"> • Open House #1: including promotional and info materials • Facilitated Session #2 • Digital Content • Online Consultation Survey
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The goals set to guide this engagement are:

1. Provide information about the LWMP process.
2. Offer opportunities for active public involvement.
3. Clearly explain how feedback will be received and considered.
4. Create a record of engagement at the end of the process.
5. Demonstrate how engagement was considered and how input influenced final decisions.

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Phase 1 of consultation centered on collecting feedback to establish the values of the community as they pertain to decision making in the sewer planning process, along with promoting the new online consultation tool and advertising for public advisory committee nominees. This included hosting two facilitated sessions and an online consultation survey to collect feedback on priorities and values for sewer planning. It generated 1,900 visits to the digital platform with engagement by +120 via the in-person and online opportunities.

3.0 Phase 2 Consultation Results

The primary objective of this phase of consultation was to announce the official start of the LWMP process, and collect the public's input on draft goals and objectives outlined by the PAC/TAC. Participants were asked to provide their comments on the importance of individual goals as well as identify any that should be added or removed.

3.1 BY THE NUMBERS

110	People who attended the open house/tour of the CVWPCC
662	Visitors to digital platform to learn more about the project
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3.2 THEMES OF FEEDBACK

- *General support for the goals identified:* Most goals were ranked on the 'important' side of the spectrum with very few having any indication of lesser interest, especially for conveyance and treatment. There was particular strength around the goals of ensuring infrastructure works for the long-term, being able to adapt to changing conditions and community growth.
- *Rankings from Courtenay and Comox residents similar:* The responses for all goals from Courtenay and Comox residents were relatively similar, while Area B residents generally ranked all of the goals higher for treatment and resource recovery.
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With Phase 2 of the public consultation process complete, the community is becoming familiar with the “Let’s Talk Poop” branding and expressing appreciation for the clear process and opportunities for engagement.

With the comments to date, it appears that interested residents are supportive of the process so far – in particular the most immediate step of goals and objective-setting – and look forward to continuing to be involved.

5.0 Next Steps

The public engagement process found its rhythm with the completion of the Phase 2 process. Continuing to present valuable opportunities for input and maintaining regular outreach will be important as we move into subsequent phases. Among the next steps are:

- *Maintain the ConnectCVRD digital content:* Ensuring that there is regularly-updated materials will assist in encouraging ongoing interaction, including project updates in between active engagement opportunities.
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CONTENTS

1.0	Executive Summary	1
2.0	Introduction	1
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3.2	Themes of Feedback.....	3
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5.0	Next Steps	4
	APPENDICES	4

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APPENDIX 1 – EVENT REPORT NOV. 6 & 8, 2018, OPEN HOUSES

EVENT SUMMARY & FEEDBACK OVERVIEW

OPEN HOUSES, Comox Valley Sewer Service LWMP + Treatment Plant



Date/Location: Nov. 6 & 8, Comox Valley Water Pollution Control Centre, 5-7 pm

Prepared By: ZINC Strategies

Prepared For: Christianne Wile (Manager, External Relations)

OVERVIEW

As the Comox Valley Regional District launches the Comox Valley Sewer Service Liquid Waste Management Plan process, an opportunity to teach the public about the existing service and the basics of the planning process was identified. To inform the public, two open houses were held at the sewage treatment plant, incorporating open house-style displays and tours of the facility.

1. EVENT DETAILS

- Approximately 110 people attended the open houses: est. 52 at the first (Nov. 6) and est. 60 at the second (Nov. 8).
- Eight information display boards were on display in the facility's atrium, outlining the sewer service, upgrades to the treatment plant and introducing the LWMP process.
- The wastewater treatment plant staff worked hard leading to the event to make sure all was tidy, ensuring small repairs were complete, additional lighting was available and the facility was highly presentable.
- Reflective open house signs were created and posted at intersection to help direct visitors to the event despite the dark area and night-time event.
- Tours beginning and ending at the atrium ran intermittently as groups collected throughout the evening. Roughly four/five tours ran each night, with stops at each stage of treatment, the air scrubber system and the lab.
- Kris La Rose, senior manager, water & wastewater, served as event host, with support from other CVRD staff (Marc Rutten, Mike Imrie + treatment plant crews). They were supported by ZINC Strategies consultants.
- Comment forms were available to all, however 0 were received.
- Seven members of the LWMP public advisory committee attended to hear feedback from the public, as did seven elected officials from Courtenay, Comox + CVRD.

2. PROMOTION/OUTREACH

As free, public events, the Open Houses were promoted via regular media and social media channels, specifically:

- A news release was issued Oct 22 and was published in local media outlets.
- Newspaper print ads ran Oct 25, 30 & Nov. 1, radio ads ran Oct 29 – Nov 5 inclusive.
- Posters and save-the-date cards were shared at community hubs (rec centre, coffee shops, etc).
- Social media event was posted on Facebook and promoted, reaching 2,617 people and generating 35 event responses.
- Sewage commission members were advised/invited by email

3. THEMES OF FEEDBACK

The open houses provided a learning opportunity for many in the service area with a wide range of understanding about the system and LWMP processes. Attendees were enthusiastic about learning about the process and asked many questions of the tour guide and the public.

Attendees were engaged, prepared with questions and comments, and were very respectful and appreciative of answers provided by the project team.

WASTEWATER TREATMENT PLANT OPERATIONS
<ul style="list-style-type: none">• Degree of treatment: How compare to other areas? How are pharmaceuticals treated? Paint/heavy metals/perfumes?• Interest in odour management, and potential impact of increased flows. Opinions ranged on level of odour. Regardless, smell generally – and mitigation - was focus for many participants.• Concerns raised over potential impact of natural disasters• Interest in learning about how homeowners can make the system work better: ie: help educate about dental floss/wipes issues, reduce water use with number of flushes.
ENGAGEMENT IN WASTE MANAGEMENT PLANNING
<ul style="list-style-type: none">• A fair amount of education required about the basics of the service area (ie: including both Courtenay and Comox, and that local septic waste is processed at the plant).• Questions about what components of the system are included in the planning process• General positive response to the plan getting underway and the attendance by advisory committee members. Interest in ongoing/future engagement opportunities.
PLANNING FOR THE FUTURE
<ul style="list-style-type: none">• High interest in whether the plant can serve growing area, and if not, how it will be accommodated.• Concern about what will be needed in the future throughout the sewer system given the ongoing population increases in the Comox Valley• Comments about the challenges of wastewater infrastructure planning + construction in established areas where existing residences are.

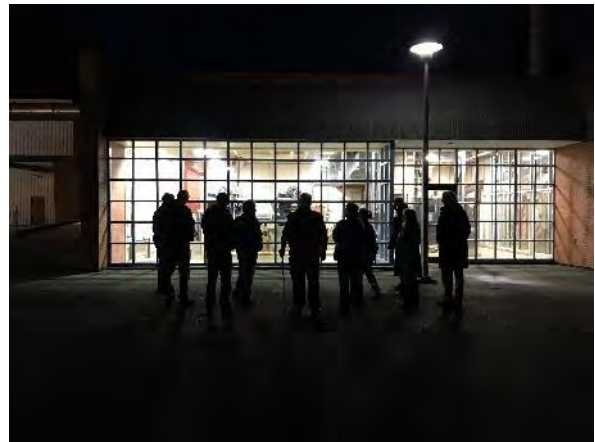
4. SUMMARY AND FOLLOW-UP

The event was a good introduction to the community -teaching them about the treatment plant and the start of the sewer planning process. People who attended were enthusiastic about the opportunity to learn more about this key infrastructure – with families coming with children, along with engaged, informed adults on their own.

As follow up to the Open Houses, the below actions will be taken

- **CONTACT LIST UPDATED:** New addresses provided at the event will be added to the email list.
- **EVENT MATERIAL SHARED:** Images of posters and informational handouts will be shared on the LWMP website + the ConnectCVRD page.

IMAGES



APPENDIX 2 – FACILITATOR’S REPORT: NOV. 27 & 28, 2018, FACILITATED SESSIONS

CVRD LWMP Public Consultation Report



December 10, 2018

**Revised January 7, 2019 to include
feedback comments**

BACKGROUND

This report documents the outcomes of the two public consultation workshops held November 27 & 28, 2018 conducted to solicit feedback on goals developed for the CVRD LWMP by the Technical Advisory Committee and Public Advisory Committee (TACPAC) meeting held November 30, 2018.

The Comox Valley Regional District (CVRD) provides liquid waste management for the City of Courtney and the Town of Comox at the Comox Valley Water Pollution Control Centre (CVWPCC). As the communities grow capacity to deliver liquid waste to the CVWPCC must be expanded by increasing conveyance capacity (installing new pipes in the ground) and potentially upgrading of the CVWPCC to provide a higher level of wastewater treatment.

Consultation for the LWMP is proposed to include four sessions over the life of the Liquid Waste Management Plan development process. The first phase included an online consultation and two workshops sessions held in June of 2018. This report documents the workshop components of the second phase of the public consultation process which will also include a parallel online consultation process.

The input from the workshops and online process will provide input to the PACTAC as they develop a shortlist of options to review.

Future consultation phases are proposed to include:

Mar 2020 Open House #2 (CVRD) - Report back to community on consultation value, results and affect. Supported with online information.

THE PURPOSE OF THE PHASE 2 CONSULTATION WORKSHOPS

The purpose of the workshops was to gain feedback on the goals for the Liquid Waste Management Plan (LWMP) components developed by the PACTAC.

THE WORKSHOP CONSULTATION PROCESS

At each of the two workshops attendees were organized in small groups to discuss and then rank the importance of goals developed for each of the LWMP components: conveyance, treatment and resource recovery. The goals generated by the PACTAC were distributed to each participant in a workbook; copies of the workshop workbook and ranking sheets are attached to this report as Appendix 1.

In total 37 complete ranking sheets were submitted. Attendees were asked to record where they live, and data was sorted by place of residence. The following table shows the distribution by place of residence of attendees. It is interesting to note that there were virtually equal numbers of residents from Courtenay and Comox and a significantly high number of attendees from Area B which is not a participant in the service but is impacted by the service.

Workshop Attendees by residence location	
Comox	10
Courtenay	11
Electoral Area A	1
Electoral Area B	15

WHAT DID THE PUBLIC TELL US?



Workshop results are summarized in the tables below and is presented by component and participant place of residence

CONVEYANCE: November 27 & 28 Workshop Results Courtenay and Comox

	CONVEYANCE Courtenay					CONVEYANCE Comox					CONVEYANCE Area A					CONVEYANCE Area B				
	VI	SI	NIU	SU	NI	VI	SI	NIU	SU	NI	VI	SI	NIU	SU	NI	VI	SI	NIU	SU	NI
Technical Goals																				
Ensure infrastructure is resilient to climate change, natural disasters and seasonal impacts.	9	1				9					1					14		1		
Ensure operations are able to adapt to changing conditions.	9	1				8	1				1					14		1		
Maximize the use of existing infrastructure and road right-of-ways.	4	4	3			2	5	1				1				2	4	4	2	3
Ensure long term viability of infrastructure.	9	1				7	1	1			1					10	3	2		
Utilize innovative design.	3	5	2			6	3	1			1					9	3	3		
Affordability Goals																				
Consider long term financial impact, including minimizing lifecycle costs through asset management.	4	1	3	2		6	3				1					4	7	4		
Maximize opportunity for grant funding.	9		1			5	3				1					6	4	3	1	
Economic Goals																				
Maximize opportunities to enhance the local economy.	3	5	2			4	3	2					1			3	6	4		2
Environment Goals																				
Minimize risks and potential impacts to sensitive environments.	9	1				9					1					13	1	1		
Maximize energy efficiency and mitigate climate change impacts.	5	5				9					1					9	4	2		
Social Goals																				
Minimize noise and odour impacts to community.	7	1	1			6	2	1			1					14	1	4		
Minimize disruptions to communities along conveyance routes.	3		3	2		1	6	2					1			10		8		1
Maximize opportunities for community and recreational amenities.	3	5	1	1		2		4							1	3	1			1

CONVEYANCE COMMENTS FROM FEEDBACK FORMS:

Courtenay:

Are there any goals you think should be deleted?

- Innovative design

Are there any goals missing that you think should be included?

- Maximize fairness in impact and cost to residents?
- Fairness
- 1 Assessment from other communities that e.g. in last 5 years have funding similar issues e.g. Gibsons 0 over investment 2) historical dimension of dealing with crises complaints controversy 2a) lawsuits

Other

- Let's not pay for someone to develop a new system/process
- Noise and odor impacts – not likely to work well

Comox

Are there any goals you think should be deleted?

- Some need to be elaborated upon

Are there any goals missing that you think should be included?

- Reduce rainwater infiltration

None

Other

- Minimize the number of septic systems and make them hook up to system
- I would have found it helpful for these goals to be explained by the PAC with examples
- Get the sewage lines away from the foreshore. The sooner we begin to do this the sooner this probably long-term project can be completed.
- Minimize septic systems consider more real regionalization
- No loss of salmon habitat
- Minimize gas emissions

Area A

Are there any goals you think should be deleted?

None

Are there any goals missing that you think should be included?

- Reduce rainwater infiltration

Area B

Are there any goals you think should be deleted?

Utilize innovative design. Maximize opportunity for grant funding.

Are there any goals missing that you think should be included?

- Fairness to users
- Risk management because of previous law suites and public demonstrations – nuisance law

Other:

- Get an Area B rep on the sewerage commission, building a newer better treatment plant
- Planning to create development where there are existing services
- These are mandatory not important
- 30-year-old plant there is a limit on what you can change
- Infrastructure should remain in jurisdiction it serves. Impact on adjacent properties such as smell, noise, pollution.
- Inclusion of all end users
- Revise principle objective – get all the pipes out of the estuary and convey all overland route
- Decommission all pipes in estuary – do all overland as only option – representative for areas affected
- Removal of existing pipes in the estuary that potentially affect environment in the long run.
- The use of existing infrastructure could very well mean we are pigeon holing ourselves. Have all options been explored?

Observations on the Conveyance data overall:

- The rankings for all goals from Courtenay and Comox residents are very similar.
- Overall all goals were ranked relatively high – the majority were ranked very important and important.
- There were a minority of rankings in the somewhat and not important categories.



Observations on the technical goals (Courtenay & Comox):

- rankings were highest for:
 - *Ensure infrastructure is resilient to climate change, natural disasters and seasonal impacts.*
 - *Ensure operations are able to adapt to changing conditions.*
 - *Ensure long term viability of infrastructure.*
- rankings were significantly lower for:
 - *Maximize the use of existing infrastructure and road right-of-ways.*
 - *Utilize innovative design.*
- Rankings for the technical goals from residents of Area B are similar to those from Courtenay and Comox residents except for a higher rating for innovative design from Area B residents

Observations on the affordability goals (Courtenay & Comox):

- rankings were highest for:
 - *Maximize opportunity for grant funding.*
- rankings were lower for:
 - *Consider long term financial impact, including minimizing lifecycle costs through asset management.*
- rankings for the affordability goals from residents of Area B were more distributed across the rankings.

Observations on the economic goal (Courtenay & Comox):

- rankings for the economic goal *Maximize opportunities to enhance the local economy* were relatively evenly distributed across the rankings by all participants.

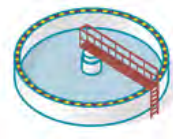
Observations on the environment goals (Courtenay & Comox):

- rankings were highest for:
 - *Minimize risks and potential impacts to sensitive environments from Courtenay residents and Area B residents.* Comox residents ranked this goal equally with *Maximize energy efficiency and mitigate climate change impacts.*
- rankings were lower for:
 - *Maximize energy efficiency and mitigate climate change impacts* from Courtenay residents and Area B residents

Observations on the social goals (Courtenay & Comox):

- rankings were highest for:
 - *Minimize noise and odour impacts to community including Area B residents*
- rankings were lower for:
 - *Minimize disruptions to communities along conveyance routes except Area B residents ranked this goal higher*
 - *Maximize opportunities for community and recreational amenities.*

TREATMENT: November 27 & 28 Workshop Results Courtenay and Comox



	TREATMENT Courtenay					TREATMENT Comox					TREATMENT Area A					TREATMENT Area B				
	VI	SI	NIU	SU	NI	VI	SI	NIU	SU	NI	VI	SI	NIU	SU	NI	VI	SI	NIU	SU	NI
Technical Goals																				
Ensure infrastructure and operations are resilient to climate change, natural disasters and seasonal impacts.	8	1				10					1					13				
Ensure operations are able to adapt to changing conditions.	8		1			7	3				1					11	4			
Maximize the use of existing infrastructure and road right of ways.	2	4	1			3	4	3				1				3	5	1	5	
Ensure assets are relevant for the long term.	7	1	1			7	2	1			1					9	6	1		
Ensure the system has enough capacity to meet future growth.	7	2				8	1	1								8	2	1		
Affordability Goals																				
Consider long term financial impact, including minimizing lifecycle costs through asset management.	4	2	2	1		5	4	1				1				4	7	5		
Maximize opportunity for grant funding.	3		1			6	3	1			1					12	3	3		
Environment Goals																				
Ensure treatment of wastewater exceeds current standards	9					5	3				1					11	4			
Remove artificial contaminants such as pharmaceuticals and micro plastics from wastewater.	6	2	1			8	2				1					13	1			
Ensure energy efficiency and mitigate climate change impacts.	6	1	2			8	2				1					10	4	1		
Social Goals																				
Minimize noise and odour from treatment plant	5	3	1			5	4	1				1				13				
Maximize opportunities for partnerships that achieve a community benefit	4	3	2			5	2	3					1			6	5	3		
Maximize opportunities for community and recreational amenities at/around the treatment plant.	2	2	2	1	1	1	4	3	1				1			4	4	4	2	

TREATMENT COMMENTS FROM FEEDBACK FORMS:

Courtenay:

Are there any goals you think should be deleted?

None

Are there any goals missing that you think should be included?

None

Other

- Anticipate flexible design for add-on capacity; Must be tertiary at minimum; Generating employment and local big opportunities; Maintain standard that was a hard-fought victory in the late 70's and early 80's protect fisheries and beach
- 1) develop the economic opportunities for Comox Valley and Vancouver Island 2) ? bounce the plans or e.g. project watershed polling, market & commodity research – synergies ecological and technical opportunities 3) what are possible components for community fundraising hub? Life after Cumberland's
- To me these questions seem to be very directed to have us come to an already decided outcome
- Exploring opportunities to decentralize operations e.g. Kingfisher Hotel, utilizing parks or liquid distribution
- Stop storm water effluent as best you can and start the process as soon as you can before this study goes to politics

Comox

Are there any goals you think should be deleted?

None

Are there any goals missing that you think should be included?

None

Other

- We need to take into consideration all sources of wastewater including septic systems stormwater and commercial sanitary waste
- 100 year storms
- Any work with other ?? should be considered. Consider more regional solutions.
- Cost of conveyance to a central treatment plant compared to two or more local plants. The existing plant is very nearly if not already at capacity. Further treatment options should be localized and decentralized plants rather than enlarging the existing plant.
- Once again, an example would have been helpful to go from

Area A

Are there any goals you think should be deleted?

None

Are there any goals missing that you think should be included?

- Nitrates endocrines? Use of modular units Meet expected 50 year standards

Area B

Are there any goals you think should be deleted?

None

Are there any goals missing that you think should be included?

Zero nuisance at perimeter of plant, mandatory criteria to not meet these constitutes public nuisance!

Risk management because of previous lawsuits – nuisance law

Other

- An Area B rep on the sewer commission, a new treatment plant
- Decommission all pipes in the estuary, all should be overland, representative from all areas affected
- Apparently, the state of the art system in Sechelt is already over capacity
- Allow development or at least prioritize development along existing lines to minimize adverse effects of septic
- Disaster recovery plan made available to neighbours of plant
- Include a rep from Area B we get all the noise smell and no say protection of well water
- Whole valley solution not just population growth
- Remove all pipes from the estuary – keep pipes overland representatives for areas affected
- I stress that the Brent Road plant is built on a sandpile and we should consider other options rather than put all eggs into one sandy basket

Observations on the Treatment data overall:

- The rankings for all goals from Courtenay and Comox residents are relatively similar.
- Overall all goals were ranked relatively high – the majority falling into the very important and important categories.
- A small proportion of the rankings fall into the neither important or unimportant categories.
- Area B residents tended to rank all of the goals higher than did Courtenay and Comox residents.



Observations on the technical goals (Courtenay & Comox):

- rankings were highest for:
 - *Ensure infrastructure and operations are resilient to climate change, natural disasters and seasonal impacts.*
 - *Ensure operations are able to adapt to changing conditions.*
 - *Ensure assets are relevant for the long term.*
 - *Ensure the system has enough capacity to meet future growth.*
- rankings were significantly lower for:
 - *Maximize the use of existing infrastructure and road right of ways*
- Rankings for the technical goals from residents of Area B are similar to those from Courtenay and Comox.

Observations on the affordability goals (Courtenay & Comox):

- rankings for the affordability goals tended to be distributed except for a high very important ranking for *Maximize opportunity for grant funding*

Observations on the environment goals (Courtenay & Comox):

- rankings were highest for:
 - *Ensure treatment of wastewater exceeds current standards*
- rankings were lower for:
 - *Remove artificial contaminants such as pharmaceuticals and micro plastics from wastewater.*
 - *Ensure energy efficiency and mitigate climate change impacts.*
- Rankings from Area B residents were very high for all environment goals with the majority of them in the very important category.

Observations on the social goals (Courtenay & Comox):

- rankings were highest for:
 - *Minimize noise and odour from treatment plant including Area B residents*
- rankings were lower for:
 - *Maximize opportunities for partnerships that achieve a community benefit*
 - *Maximize opportunities for community and recreational amenities at/around the treatment plant.*

RESOURCE RECOVERY November 27 & 28 Workshop Results Courtenay and Comox



	Resource Recovery Courtenay					Resource Recovery Comox					Resource Recovery Area A					Resource Recovery Area B				
	VI	SI	NIU	SU	NI	VI	SI	NIU	SU	NI	VI	SI	NIU	SU	NI	VI	SI	NIU	SU	NI
Technical Goals																				
Use commercially available technology.	5	2	3			4	2	2				1				11	2	2		
Anticipate future demand for resources.	7		3			7	1	1			1					10	3	2		
Improve performance of treatment plant.	6	2	1			6	2	1			1					13		2		
Affordability Goals																				
Explore opportunities to recover heat and energy and offset costs at CVWPCC	8	1	1			5	4				1					11	2	2		
Explore economically productive use of reclaimed water.	9					4	4	1				1				10	4			1
Select resource recovery options that will maximize grant funding opportunities.	8	1	1			4	4	1			1					11	2	1	1	
Explore the potential for external partners to help reduce capital costs.	4	1	3			3	2	4								5	2	6		1
Economic Goals																				
Explore options that can have a positive impact on or grow the local economy	6	1	3			5	1	3					1			6	5	2	1	
Environment Goals																				
Maximize climate change mitigation	6	3	1			8	1					1				9	4	2		
Restore or enhance environmental habitat	7	3				7	1	1			1					10	4	1		
Social Goals																				
Protect public health	9					8	1				1					15				
Ensure ability to maintain irrigation of public parks and gardens during water restrictions.	4	6	1	2		3	4	1		1		1				8	2	3	2	

RESOURCE RECOVERY COMMENTS FROM FEEDBACK FORMS:

Courtenay:

Are there any goals you think should be deleted?

- No external partners

Are there any goals missing that you think should be included?

- Community garden is important to keep irrigation during restrictions

Comox

Are there any goals you think should be deleted?

Are there any goals missing that you think should be included?

Other

- Too vague, too aspirational. Would be preferable to have 3 different examples of a plan to work from.
- Quite vague goals without knowledge of more presentation of technical solutions
- Series of notes on form: new plants, design competition by local construction groups, DFO and salmon, global warming, remove phosphorous, fertilizer and RNG by Fortis BC, hands free public address

Area A

Are there any goals you think should be deleted?

Are there any goals missing that you think should be included?

- Explore opportunities for carbon sequestration. Explore UV decontamination as opposed to Ch

Other

- PPP?

Area B

Are there any goals you think should be deleted?

- Irrigating people's gardens is a nice product but shouldn't be a goal
- Protecting public health is not a goal but a mandatory criterion
- Overflow ponds what capacity to adversely affect other development?
- Be careful of public – private partnerships

Are there any goals missing that you think should be included?

- Protection of residential areas having wells and septic systems
- Protection of ground water – wells aquifer

Other

- Electoral Area B should have input in the decision making. The goal is to have full public representation.
- It is a vast improvement over what we had with the last sewage commission. We hope town councillors are more open to listening respectfully and hearing feedback

- Would like to have more input on principal objectives
- There is no one representing our Area on the sewage commission Area B
- Hard to comment when we haven't seen what is planned
- Better representation for Area B on sewage commission!
- Plans to include Area B on sewerage commission, discussion of a new state of the art treatment plant

Observations on the Resource Recovery data overall:

- The rankings for all goals from Courtenay and Comox residents are relatively similar.
- Overall all goals were ranked relatively high – the majority falling into the very important and important categories.
- A small proportion of the rankings fall into the neither important or unimportant categories.
- More rankings in the neither important or unimportant category in the Resource Recovery rankings.
- Area B residents tended to rank the resource recovery goals more highly than did Courtenay and Comox residents.



Observations on the technical goals (Courtenay & Comox):

- rankings were fairly distributed across the very, somewhat and neither important or unimportant categories.
- Area B residents ranked these goals very high compared with Courtenay and Comox residents

Observations on the affordability goals (Courtenay & Comox):

- rankings were highest for:
 - *Explore opportunities to recover heat and energy and offset costs at CVWPCC*
 - *Explore economically productive use of reclaimed water.*
 - *Select resource recovery options that will maximize grant funding opportunities.*
- Rankings were lower for: *Explore the potential for external partners to help reduce capital costs.*
- Courtenay, Comox & Area B ranking were quite similar

Observations on the economic goal (Courtenay & Comox):

- Courtenay, Comox & Area B ranking were quite similar (VI & SI) for: *Explore options that can have a positive impact on or grow the local economy*

Observations on the environment goals (Courtenay & Comox):

- Courtenay, Comox & Area B ranking were quite similar (VI & SI) for: *Maximize climate change mitigation & Restore or enhance environmental habitat*

Observations on the social goals (Courtenay & Comox):

- Courtenay, Comox & Area B ranking were quite similar (VI) for: Protect public health
- rankings were lower for:
 - *Ensure ability to maintain irrigation of public parks and gardens during water restrictions.*

NEXT STEPS

The results of the two consultation workshops will be discussed at the Dec 11, 2018 Technical Advisory and Public Advisory Committees (PAC/TAC) along with the online consultation results and will be considered as they develop a shortlist of options to review.

Appendix 1: Workshop Instructions and ranking pages



CVRD LWMP Public Engagement Workshop Instructions

Background: The CVRD is developing a liquid waste management plan (LWMP) for the City of Courtenay and the Town of Comox. The LWMP process is being guided and supported by Technical and Public Advisory Committees (PACTAC) made up of professionals, elected officials from Courtenay and Comox, and members of the public.

One of the early steps in the LWMP process is to develop goals for the management of liquid waste. These goals will ultimately be used to evaluate different options for conveyance, treatment and resource recovery of liquid waste.

Draft goals were developed by the Technical and Public Advisory Committees at a meeting held on November 23, 2018.

The purpose of this workshop is to gain feedback from the public on the draft goals developed by the Technical and Public Advisory Committees to ensure they reflect the goals of the community.

The process for this evening includes:

- A short presentation on the LWMP process
- A short presentation on the existing CVRD liquid management system
- Presentation of the PACTAC draft goals
- Small group discussion of the draft goals
- Individual feedback on the draft goals

Following the presentations there will be an opportunity to discuss the various goals with a small number of workshop participants. Take time to consider some of the following questions in your discussions:

- Do you agree with the goals outlined by the PACTAC?
- Are there goals that you think should be removed?
- Are there any goals missing that you think should be included?

Following the group discussion please record your individual thoughts on the relative importance of the draft goals on the attached form. Also note any goals you think should not be included and any goals you think should be added.

When you are finished please drop the form at the door before you leave.

How important are these goals to you?

I live in ☐ Courtenay ☐ Comox ☐ Other please specify where _____

CONVEYANCE

Principal Objectives:

Decommission Willemar Bluffs section of pipeline

Increase capacity for future growth

	Very important	Somewhat important	Neither important or unimportant	Somewhat unimportant	Not important
Technical Goals					
Ensure infrastructure is resilient to climate change, natural disasters and seasonal impacts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ensure operations are able to adapt to changing conditions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maximize the use of existing infrastructure and road right-of-ways.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ensure long term viability of infrastructure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Utilize innovative design.					
Affordability Goals					
Consider long term financial impact, including minimizing lifecycle costs through asset management.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maximize opportunity for grant funding.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Economic Goals					
Maximize opportunities to enhance the local economy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environment Goals					
Minimize risks and potential impacts to sensitive environments.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ensure energy efficiency and mitigate climate change impacts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Social Goals					
Minimize noise and odour impacts to community.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Minimize disruptions to communities along conveyance routes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maximize opportunities for community and recreational amenities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Are there any goals you think should be deleted?

Are there any goals missing that you think should be included?

How important are these goals to you?

TREATMENT

Principal Objectives:

Upgrades to meet regulatory requirements

Increase capacity for future growth

	Very important	Somewhat important	Neither important or unimportant	Somewhat unimportant	Not important
Technical Goals					
Ensure infrastructure and operations are resilient to climate change, natural disasters and seasonal impacts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ensure operations are able to adapt to changing conditions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maximize the use of existing infrastructure and road right of ways.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ensure assets are relevant for the long term.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ensure the system has enough capacity to meet future growth.					
Affordability Goals					
Consider long term financial impact, including minimizing lifecycle costs through asset management.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maximize opportunity for grant funding.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environment Goals					
Ensure disinfection of wastewater exceeds current standards.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ensure treatment of wastewater exceeds current standards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Remove artificial contaminants such as pharmaceuticals and micro plastics from wastewater.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ensure energy efficiency and mitigate climate change impacts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Social Goals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Minimize noise and odour from treatment plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maximize opportunities for partnerships that achieve a community benefit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maximize opportunities for community and recreational amenities at/around the treatment plant.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Are there any goals you think should be deleted?

Are there any goals missing that you think should be included?

How important are these goals to you?

RESOURCE RECOVERY

Principal Objectives:

Explore opportunities to recover and reuse resources from wastewater

- Water
- Heat/energy
- Nutrients

	Very important	Somewhat important	Neither important or unimportant	Somewhat unimportant	Not important
Technical Goals					
Use commercially available technology.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Anticipate future demand for resources.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improve performance of treatment plant.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Affordability Goals					
Explore opportunities to recover heat and energy and offset costs at CVWPCC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Explore economically productive use of reclaimed water.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Select resource recovery options that will maximize grant funding opportunities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Explore the potential for external partners to help reduce capital costs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Economic Goals					
Explore options that can have a positive impact on or grow the local economy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environment Goals					
Maximize climate change mitigation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restore or enhance environmental habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Social Goals					
Protect public health	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ensure ability to maintain irrigation of public parks and gardens during water restrictions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Are there any goals you think should be deleted?

Are there any goals missing that you think should be included?

How satisfied are you with this workshop as an opportunity to have your voice heard?

Very satisfied

☐

Satisfied

☐

Somewhat satisfied

☐

Not satisfied

☐

APPENDIX 3 – CONNECTCVRD ANALYTICS: NOV. 28-DEC. 7, 2018, GOALS AND OBJECTIVES

Survey Report

27 November 2018 - 09 December 2018

Goals and Objectives - Comox Valley Sewer Service Planning

PROJECT: Help shape the future of our Sewer System in
Courtenay and Comox

Connect CVRD

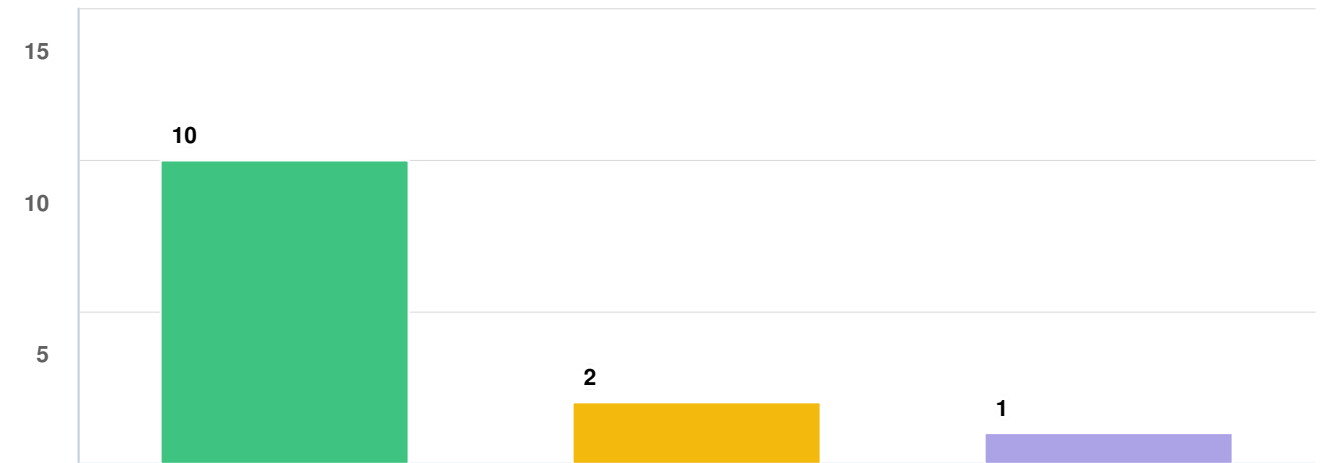


CONVEYANCE

The first series of questions focuses on CONVEYANCE: How important are these goals to you regarding conveyance (the pipes and pump stations that move wastewater from homes/businesses to the treatment plant).

Q1

Ensure infrastructure is resilient to climate change, natural disasters and seasonal impacts.



Question options

Very Important

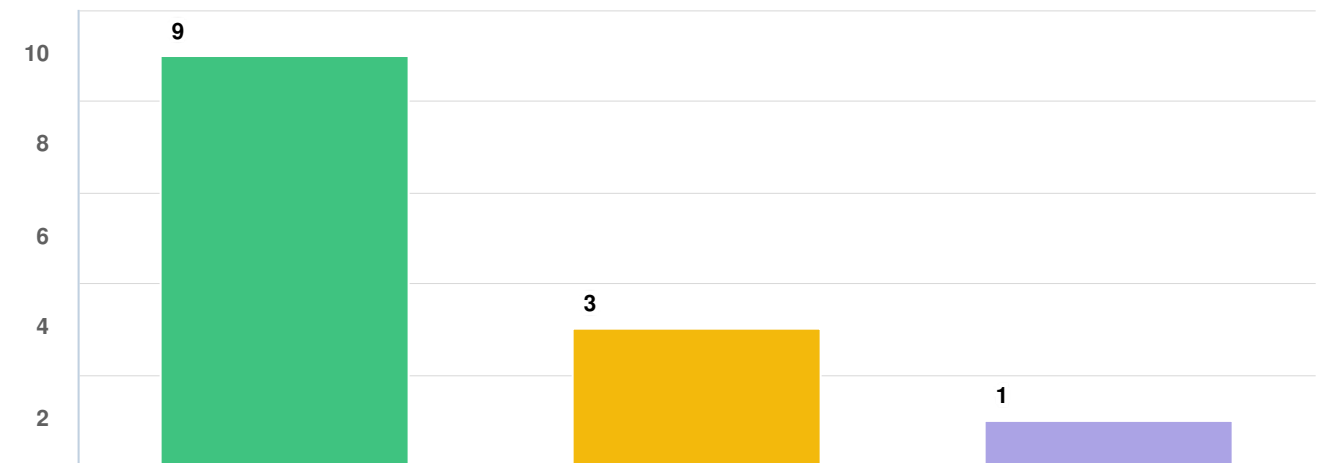
Somewhat important

Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q2

Ensure operations are able to adapt to changing conditions.



Question options

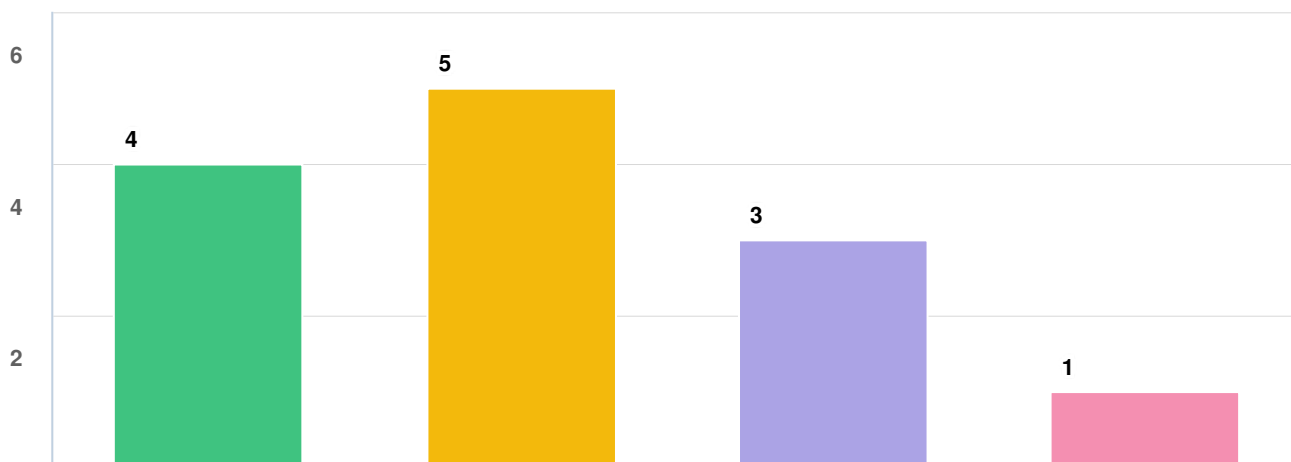
Very important

Somewhat important

Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q3 Maximize the use of existing infrastructure and road right of ways.

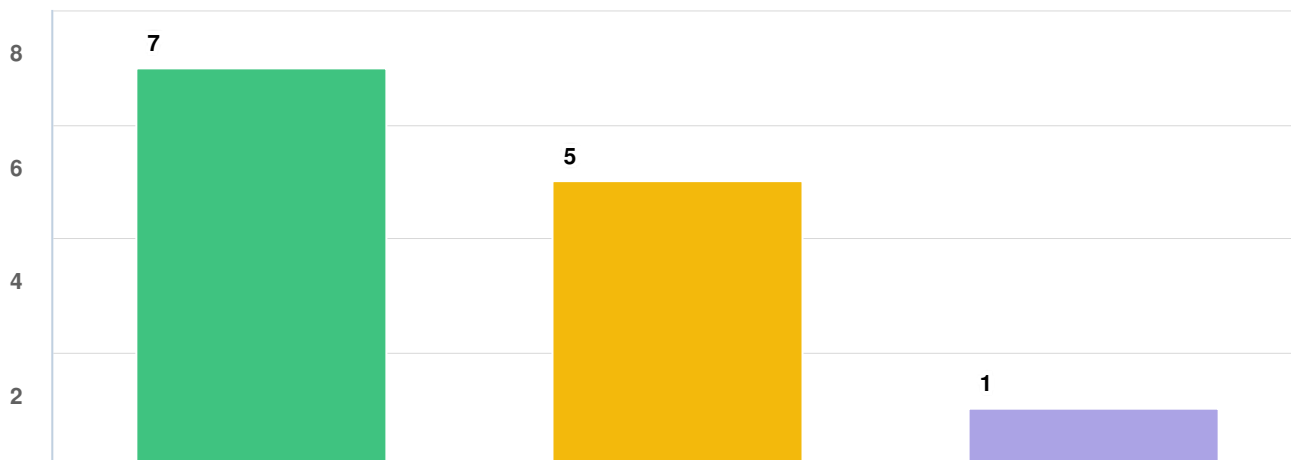


Question options

Very Important Somewhat important Neither important or unimportant Somewhat unimportant

Optional question (14 responses, 0 skipped)

Q4 Ensure long-term viability of infrastructure.

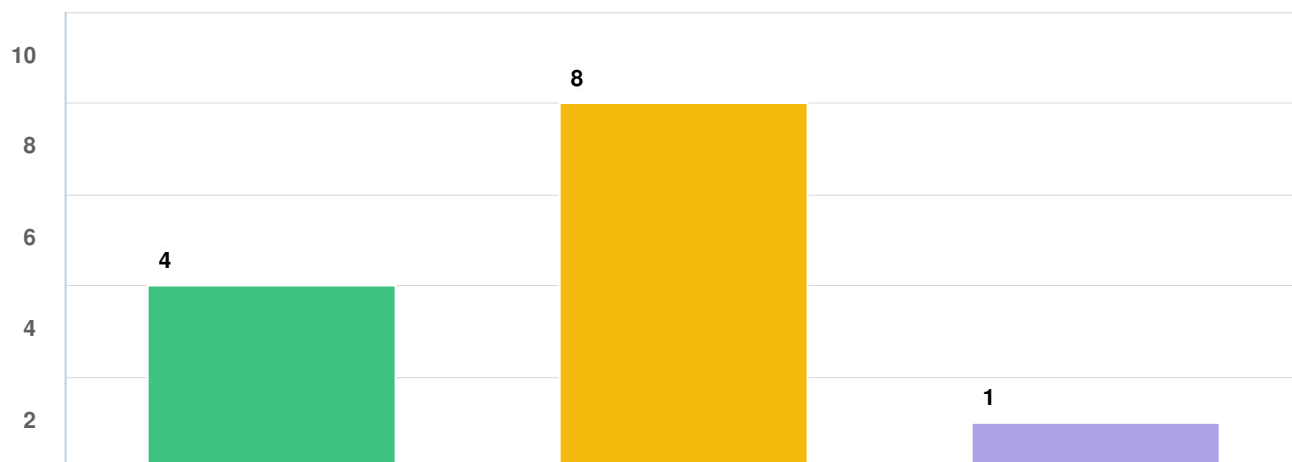


Question options

Very Important Somewhat important Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q5 Utilize innovative design.

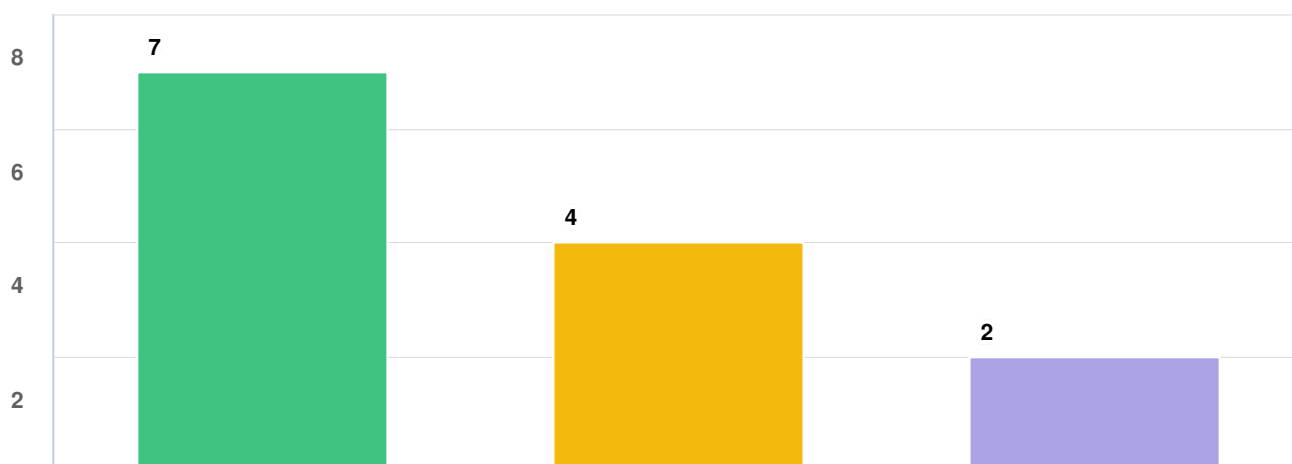


Question options

Very important Somewhat important Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q6 Consider long-term financial impact and minimize lifecycle costs

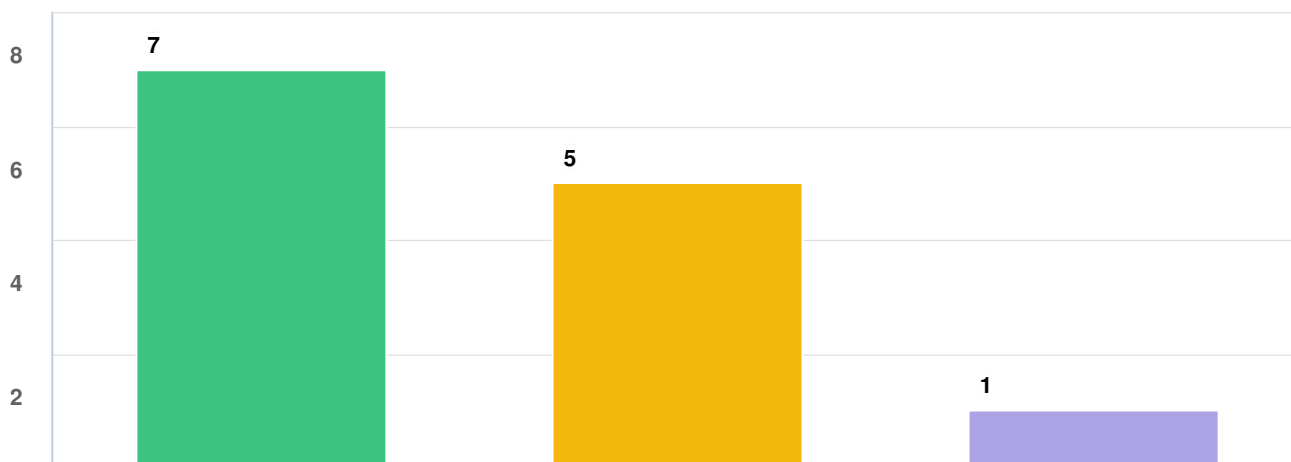


Question options

Very important Somewhat important Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q7 Maximize opportunity for grant funding.

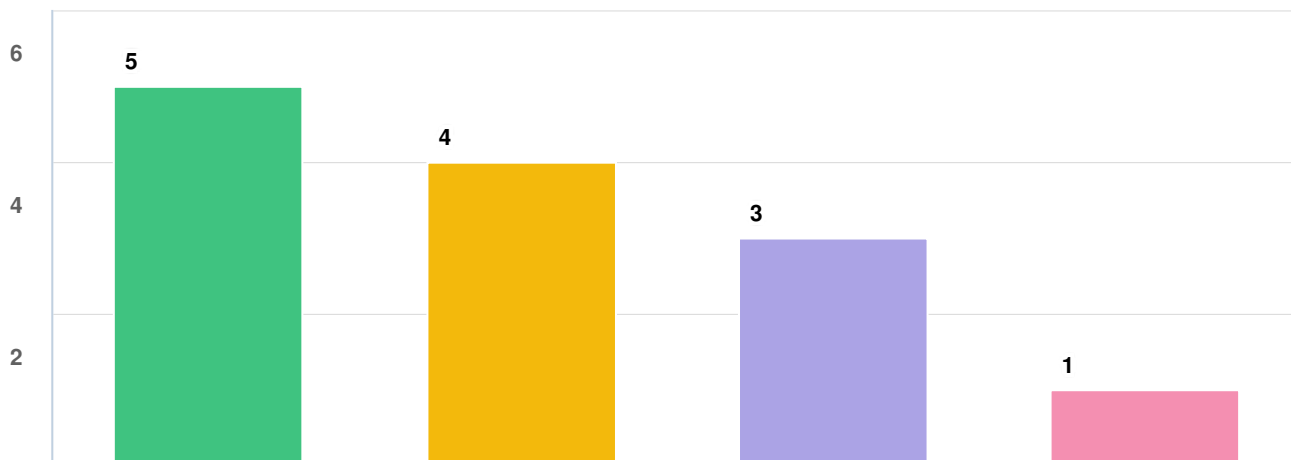


Question options

Very important Somewhat important Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q8 Maximize opportunities to enhance the local economy.

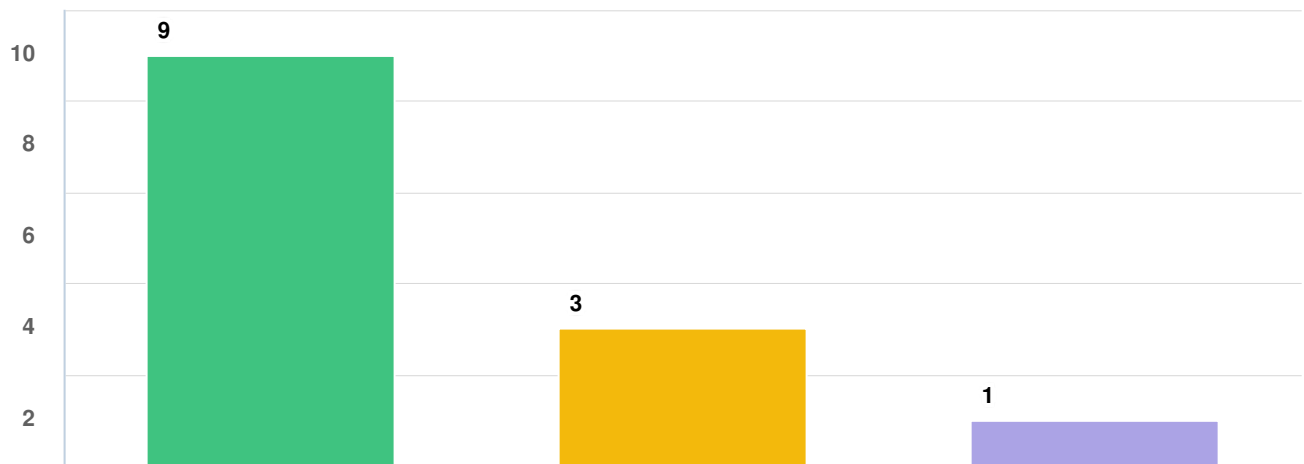


Question options

Very important Somewhat important Neither important or unimportant Not important

Optional question (14 responses, 0 skipped)

Q9 Minimize risks and potential impacts to sensitive environments.

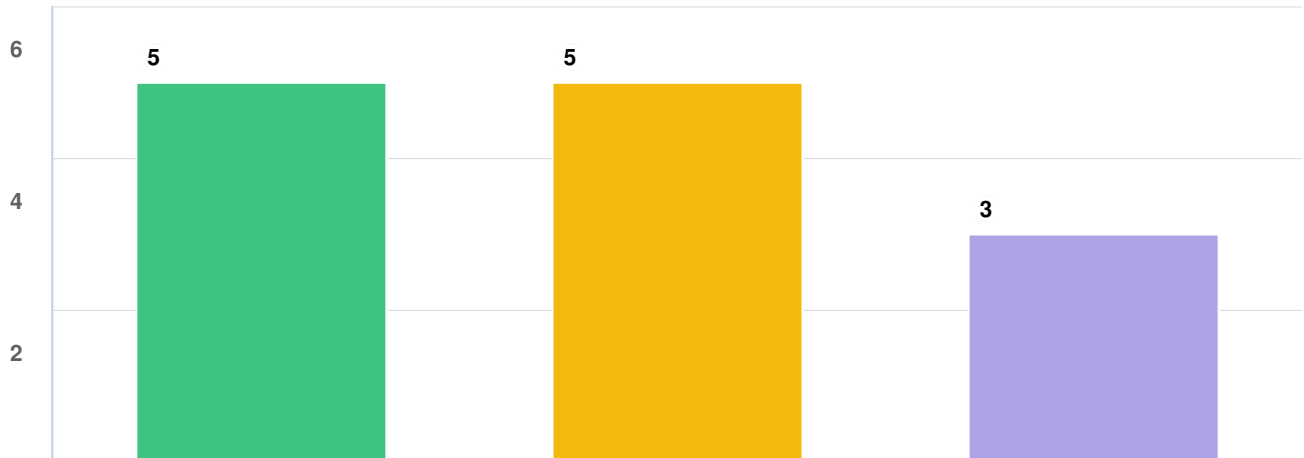


Question options

● Very important ● Somewhat important ● Somewhat unimportant

Optional question (14 responses, 0 skipped)

Q10 Maximize energy efficiency and mitigate climate change impacts.

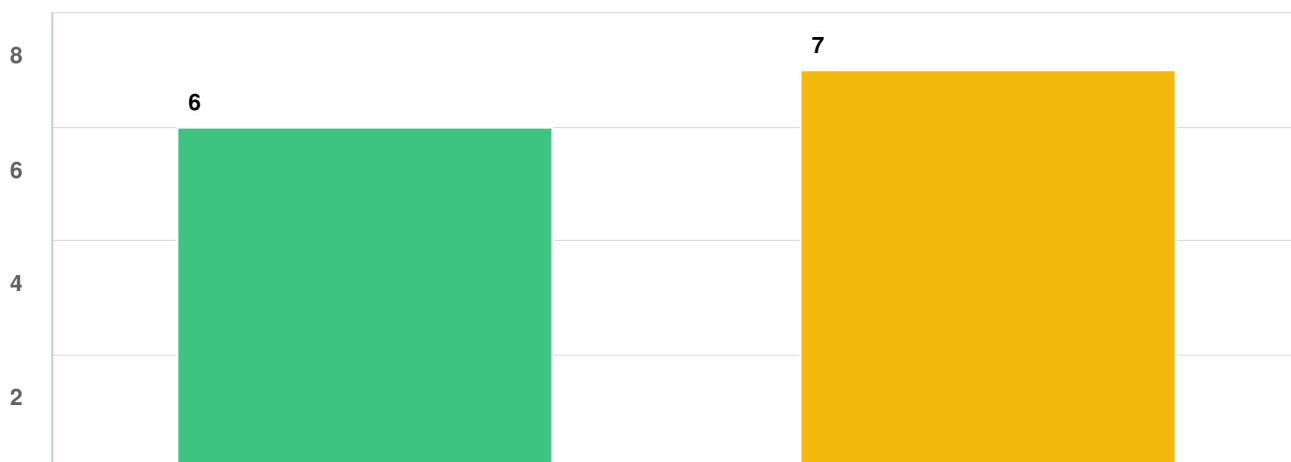


Question options

● Very important ● Somewhat important ● Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q11 Minimize noise and odour impacts to the community.

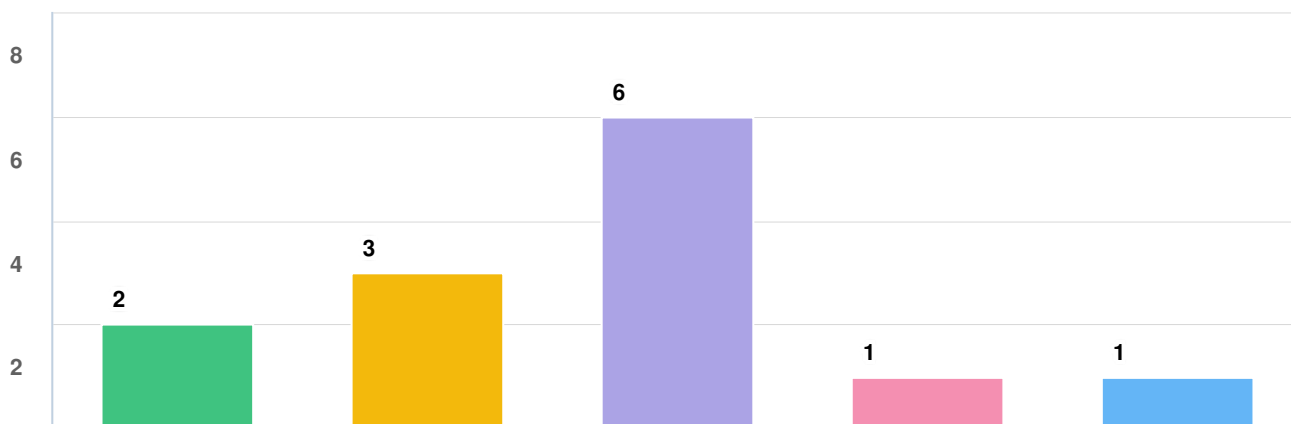


Question options

Very important Somewhat important

Optional question (14 responses, 0 skipped)

Q12 Minimize disruptions to communities along conveyance routes.

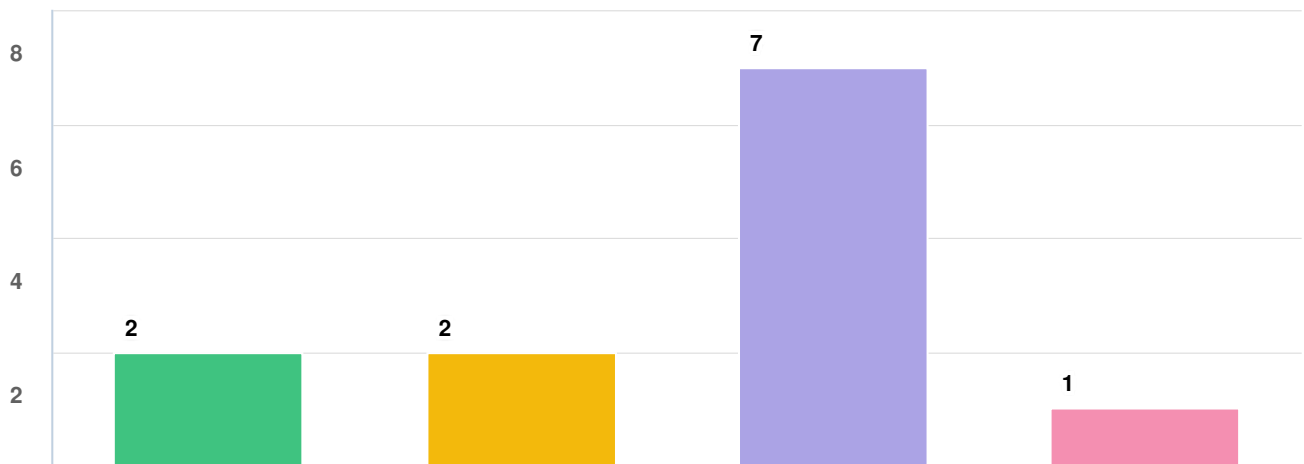


Question options

Very important Somewhat important Neither important or unimportant Somewhat unimportant
Not important

Optional question (14 responses, 0 skipped)

Q13 Maximize opportunities for community and recreational amenities.



Question options

Very important Somewhat important Neither important or unimportant Not important

Optional question (14 responses, 0 skipped)

Q14 | **Are there any goals you think should be deleted regarding CONVEYANCE?**

peatrlorian

11/30/2018 11:57 AM

Less car focus

Linvann

12/03/2018 09:13 AM

On budget

salty

12/04/2018 10:36 AM

Maximize opportunities to enhance the local economy...

Jennysteel

12/06/2018 09:29 PM

Optional question (3 responses, 11 skipped)

Q15 | Are there any goals missing that you think should be included regarding CONVEYANCE?

Albert Englehart

11/30/2018 10:54 AM

At the very least, all areas in the city of Comox should be connected to the sewer system vice septic. We should not be dumping untreated waste back into the environment if we can help it.

peatrlorian

11/30/2018 11:57 AM

Bike lanes

mary.payne

12/01/2018 09:13 AM

A timeline was not part of the survey

Linvann

12/03/2018 09:13 AM

Progress reports with learnings and recommendations.

Amanda Smith

12/06/2018 08:53 AM

Are you going to use ozone and this system to treat our waste?
<https://www.rdkb.com/Services/EnvironmentalServices2014/LiquidWaste.aspx>

Susan Ruth

12/06/2018 07:24 PM

upgrading the storm water system so that it does not impact the sewage lines.

Jennysteel

12/06/2018 09:29 PM

Should try to reduce the amount and nature of the household effluent coming into the system through public education

Eugene

12/07/2018 04:19 PM

Energy generation potential of the project

ggeiger

12/08/2018 10:02 AM

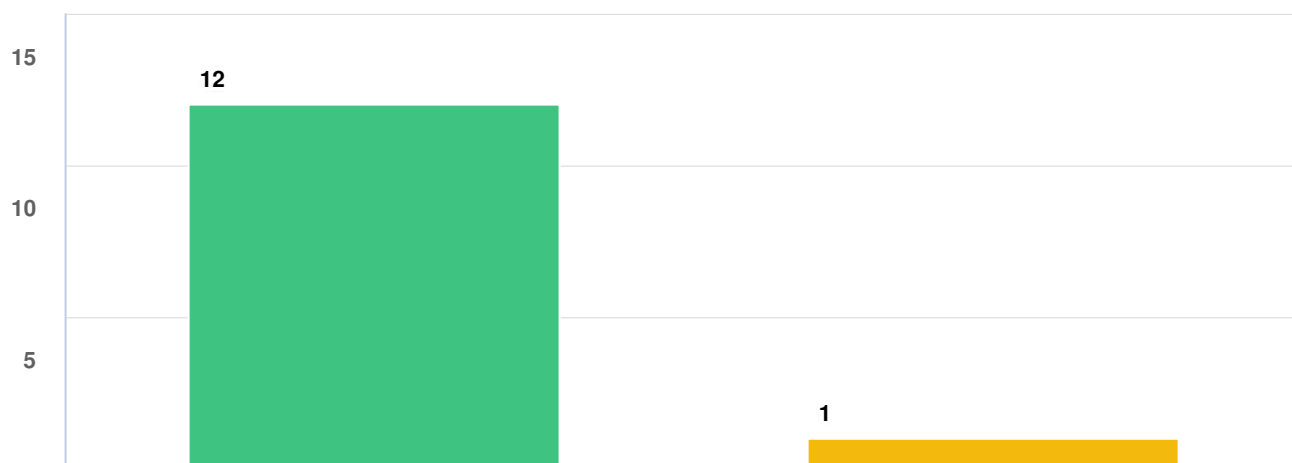
If there is a rural impact or ideas involving rural land , large land owners should be consulted eg. Comox Valley Farmers Institute .As they have a large impact on economy.

Optional question (9 responses, 5 skipped)

TREATMENT

This second series of questions focuses on TREATMENT: How important are these goals to you when it comes to treatment of wastewater (the collection and treatment of all wastewater collected - ensuring it's at a safe standard before discharging into the marine environment)?

Q16 | Ensure infrastructure and operations are resilient to climate change, natural disasters and seasonal impacts.

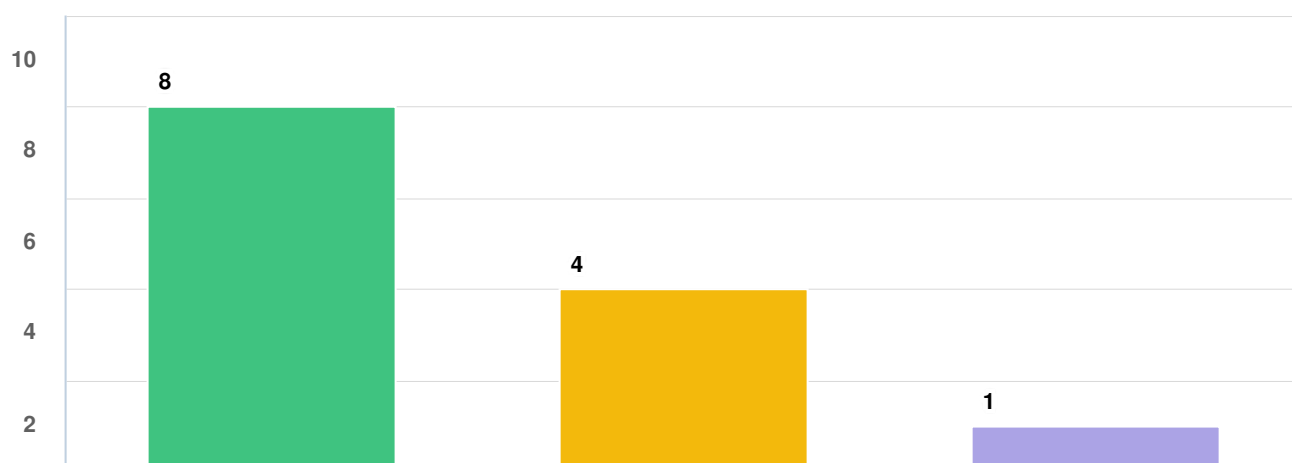


Question options

Very important Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q17 | Ensure operations are able to adapt to changing conditions.

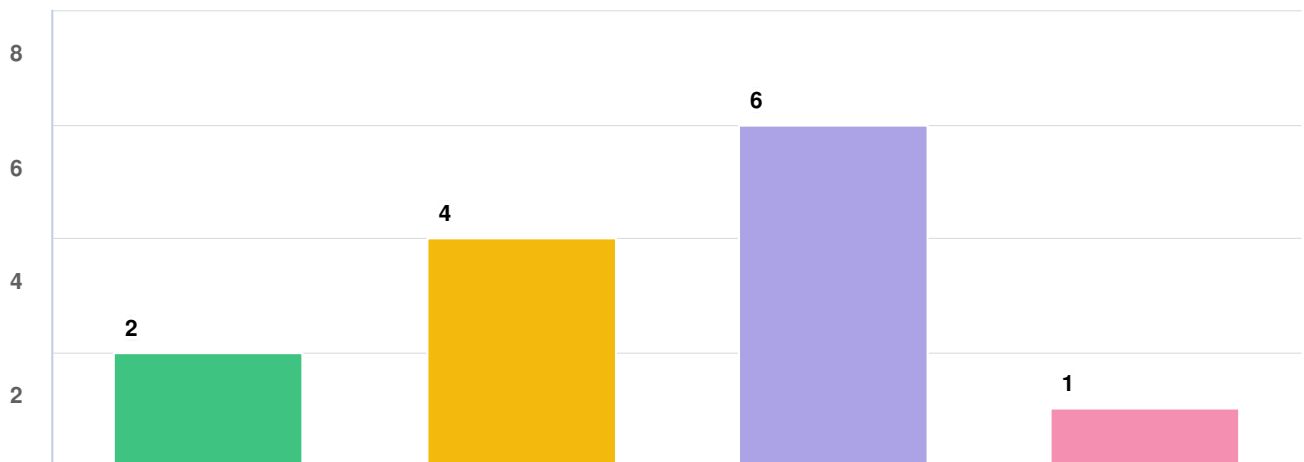


Question options

Very important Somewhat important Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q18 Maximize the use of existing infrastructure and road right-of-ways.

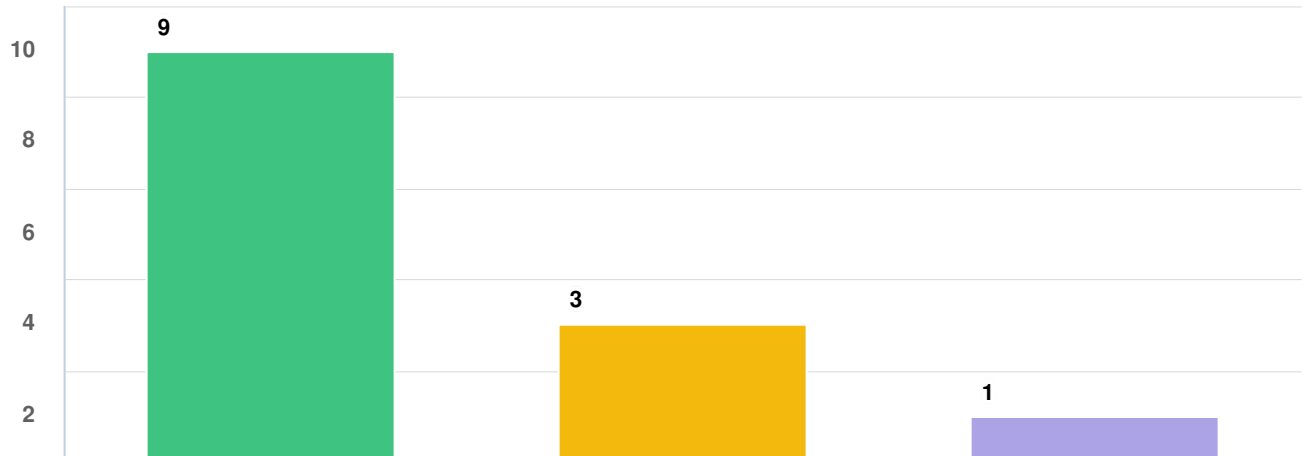


Question options

Very important Somewhat important Neither important or unimportant Somewhat unimportant

Optional question (14 responses, 0 skipped)

Q19 Ensure assets are relevant for the long term.

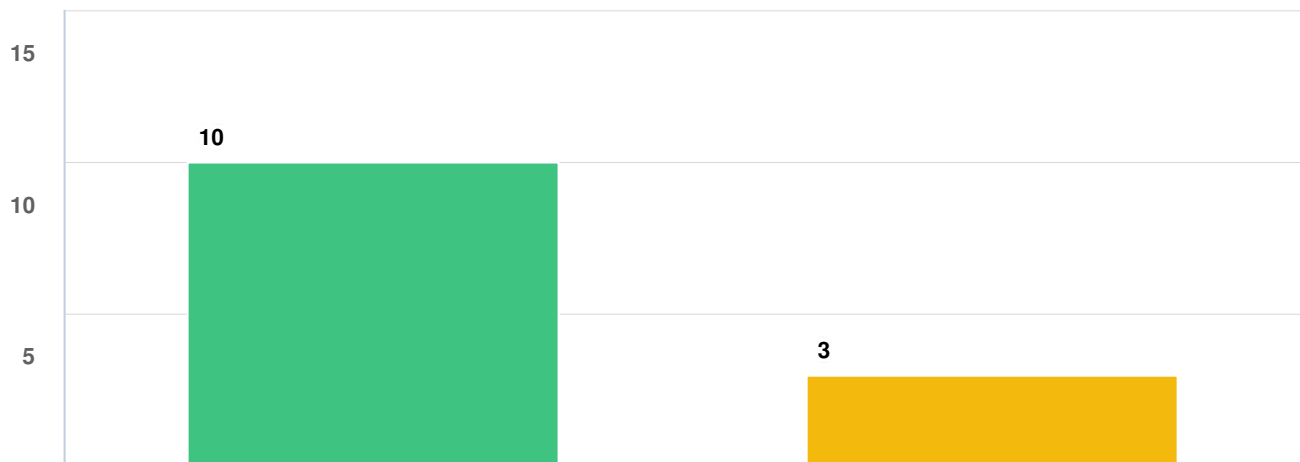


Question options

Very important Somewhat important Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q20 Ensure the system has enough capacity to meet future growth.

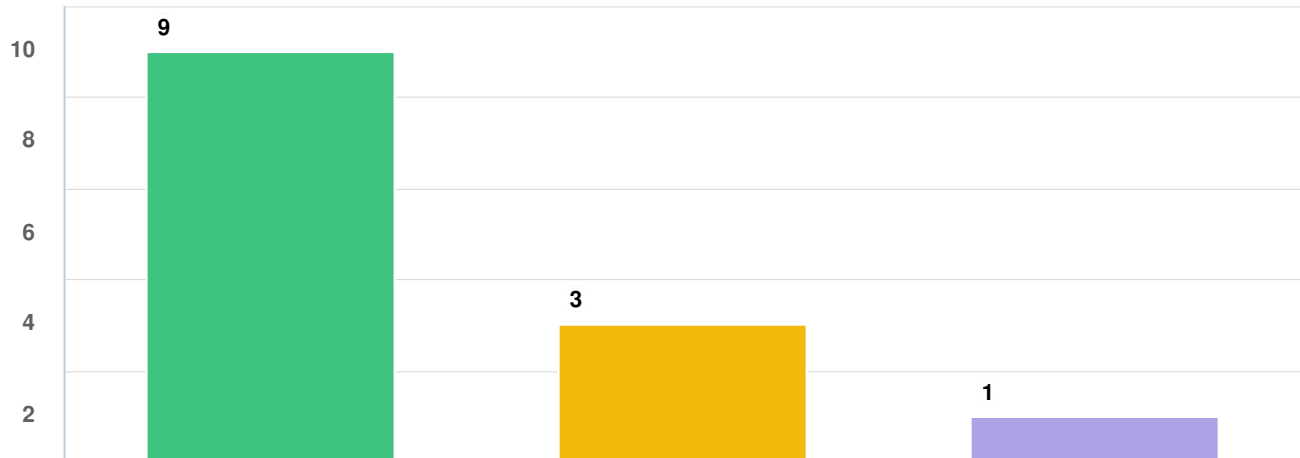


Question options

● Very important ● Somewhat important

Optional question (14 responses, 0 skipped)

Q21 Consider long-term financial impact and minimize life cycle costs.

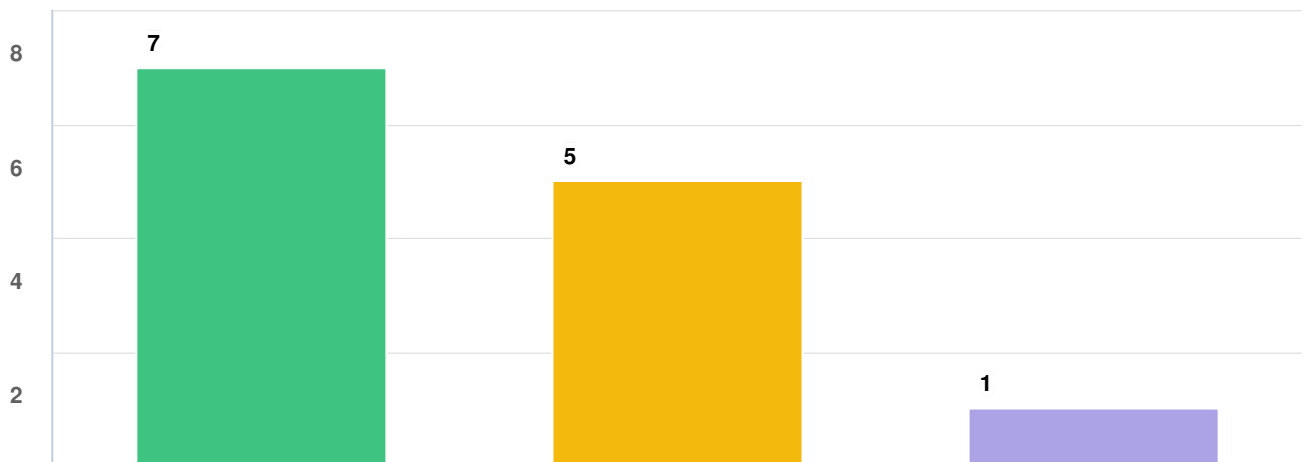


Question options

● Very important ● Somewhat important ● Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q22 Maximize opportunity for grant funding.

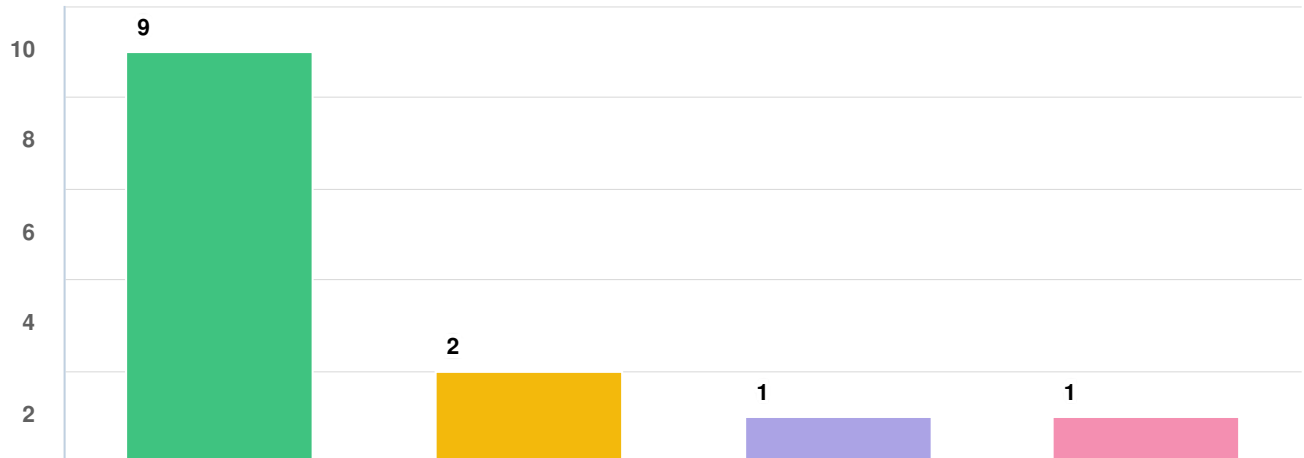


Question options

Very important Somewhat important Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q23 Ensure treatment of wastewater exceeds current standards.

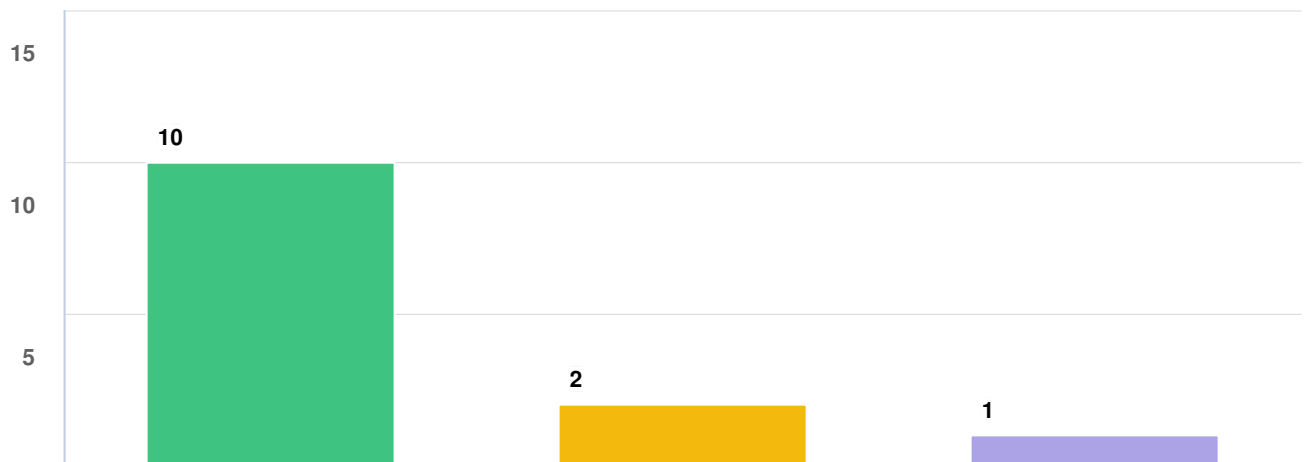


Question options

Very important Somewhat important Neither important or unimportant Somewhat unimportant

Optional question (14 responses, 0 skipped)

Q24 Remove artificial contaminants such as pharmaceuticals and microplastics from wastewater.

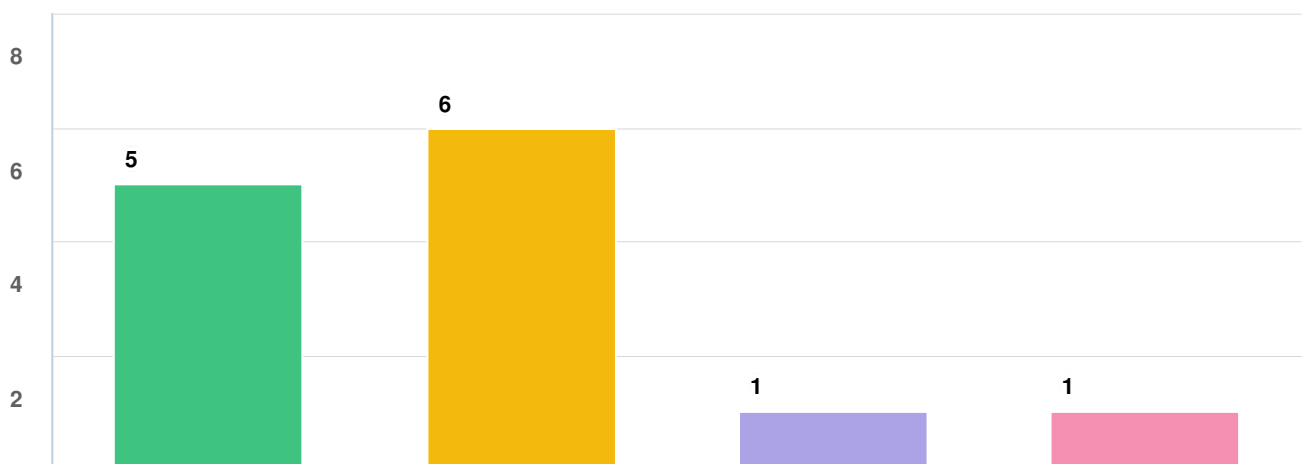


Question options

Very important Somewhat important Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q25 Maximize energy efficiency and mitigate climate change impacts.

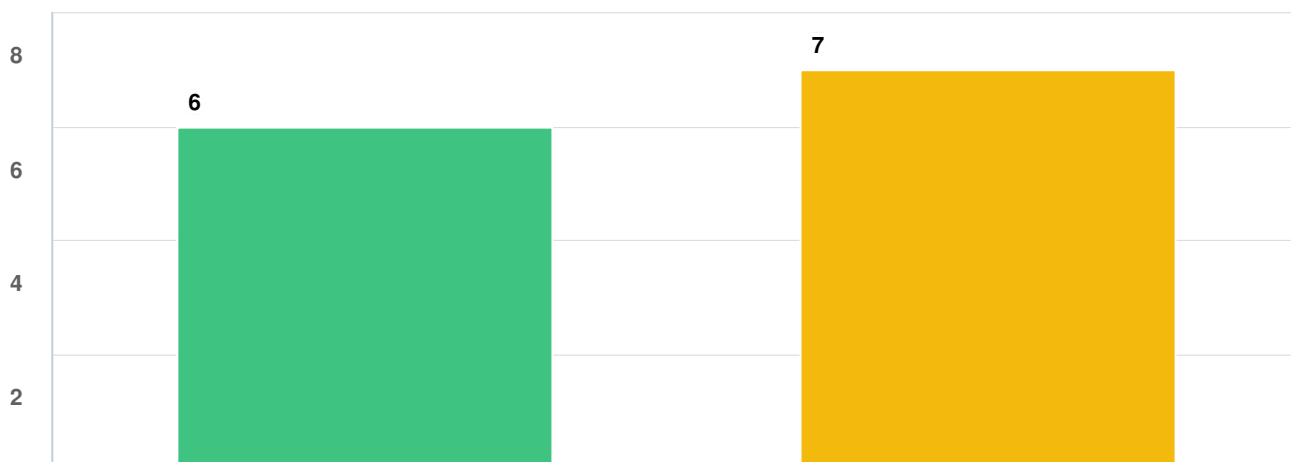


Question options

Very important Somewhat important Neither important or unimportant Somewhat unimportant

Optional question (14 responses, 0 skipped)

Q26 Minimize noise and odour from treatment plant

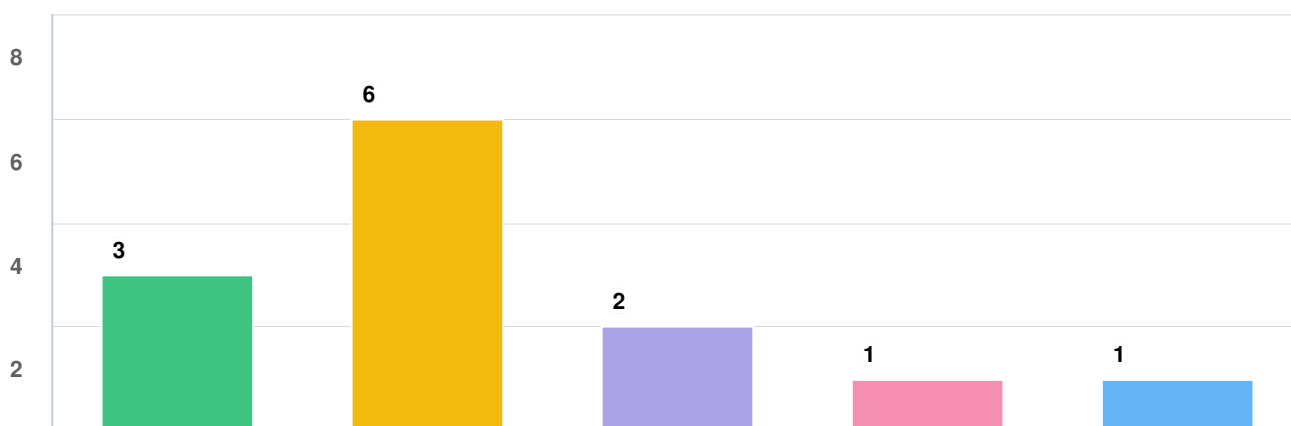


Question options

Very important Somewhat important

Optional question (14 responses, 0 skipped)

Q27 Maximize opportunities for partnerships that achieve a community benefit.

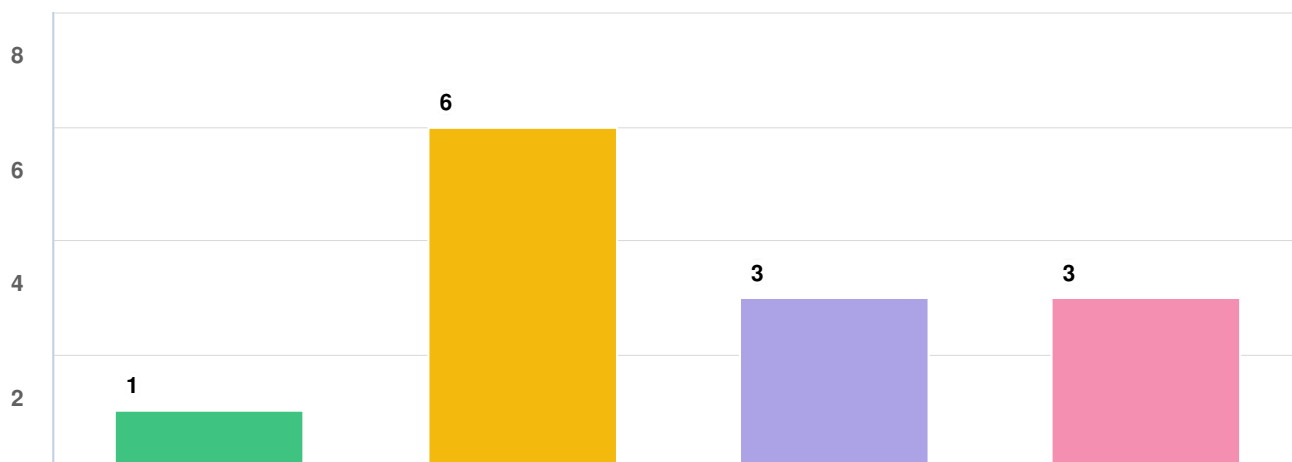


Question options

Very important Somewhat important Neither important or unimportant Somewhat unimportant
Not important

Optional question (14 responses, 0 skipped)

Q28 Maximize opportunities for community and recreational amenities at/around the treatment plant.



Question options

Very important Somewhat important Neither important or unimportant Not important

Optional question (14 responses, 0 skipped)

Q29 Are there any goals you think should be deleted regarding TREATMENT?

DaveM

11/29/2018 10:27 AM

no

Linvann

12/03/2018 09:13 AM

Cost is the critical factor a goal may be to remove all pharmaceutical but if the cost is exorbitant the goal can not be met.

Poorpi

12/05/2018 06:01 PM

Mitigate climate change should go but energy efficiencies must stay

Susan Ruth

12/06/2018 07:24 PM

if "Maximize opportunities for partnerships that achieve a community benefit " code for public-private partnerships, absolutely not. Thanks.

Jennysteel

12/06/2018 09:29 PM

Minimize odour and noise is NOT acceptable -- they both must be eliminated. CVRD placed its plant in a residential community so there should be no odour or noise beyond the plant boundaries.

ggeiger

12/08/2018 10:02 AM

I dont know what the goals are i can't find them.

Optional question (6 responses, 8 skipped)

Q30 | Are there any goals missing that you think should be added regarding TREATMENT?

DaveM

11/29/2018 10:27 AM

no

Albert Englehart

11/30/2018 10:54 AM

Continue to expand the sewer system to include as many residents of the CVRD as possible

mary.payne

12/01/2018 09:13 AM

Timeline

Linvann

12/03/2018 09:13 AM

Reporting and what will be done to dispose of whatever contamination is removed ie what will you do with micro plastics, or chemicals once removed?

Amanda Smith

12/06/2018 08:53 AM

Are you going to use ozone and this system to treat our waste?
<https://www.rdkb.com/Services/EnvironmentalServices2014/LiquidWaste.aspx>

Eugene

12/07/2018 04:19 PM

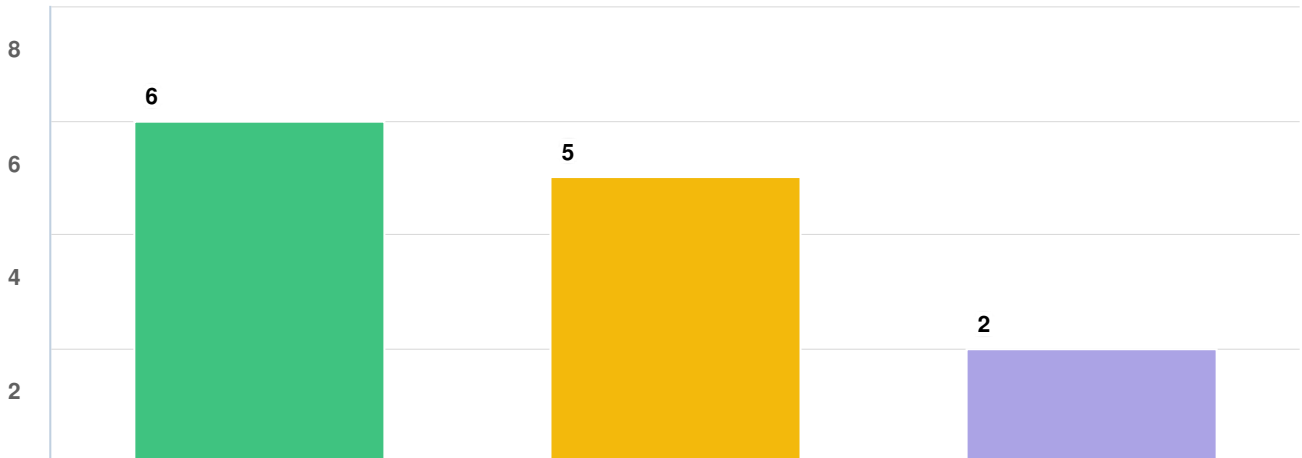
Maximize energy generation potential

Optional question (6 responses, 8 skipped)

RESOURCE RECOVERY

This third series of questions focuses on **RESOURCE RECOVERY**: How important are these goals to you when it comes to exploring opportunities to recover and reuse resources from wastewater (ie: water, heat/energy/nutrients) rather than releasing/discharging.

Q31 Use commercially available technology.

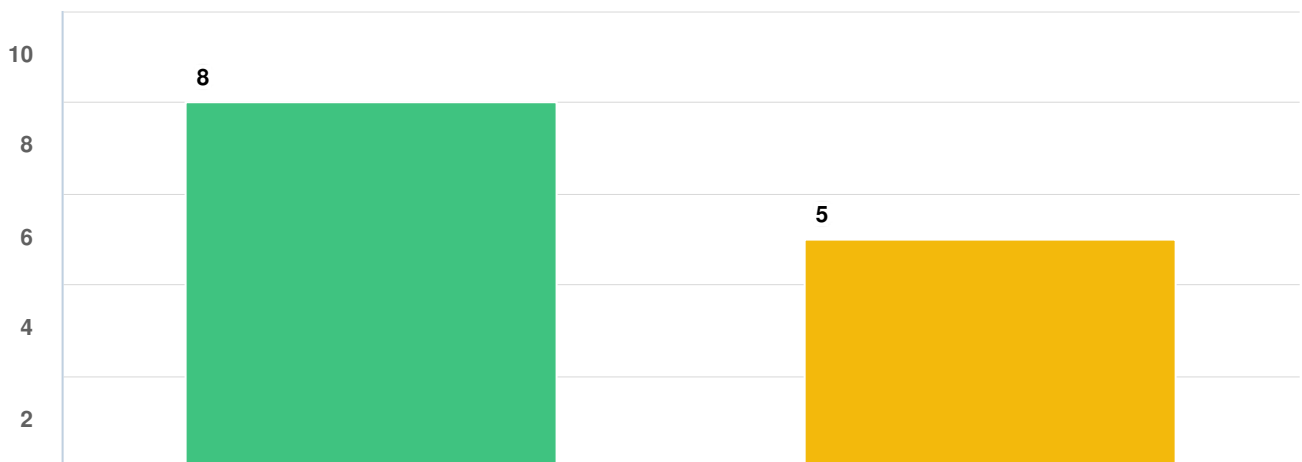


Question options

Very important Somewhat important Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q32 Anticipate future demand for resources

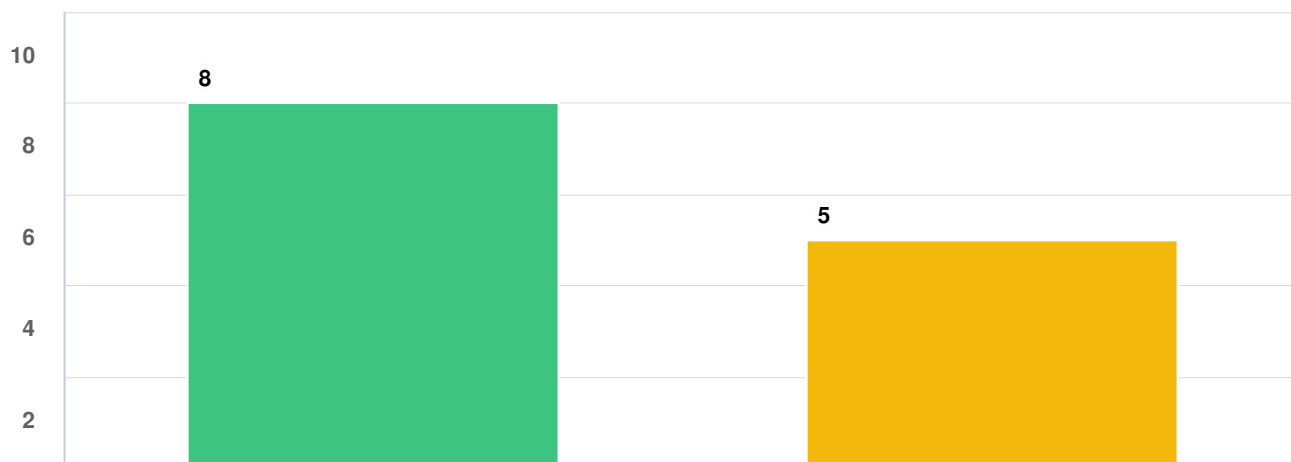


Question options

Very important Somewhat important

Optional question (14 responses, 0 skipped)

Q33 Improve performance of treatment plant.

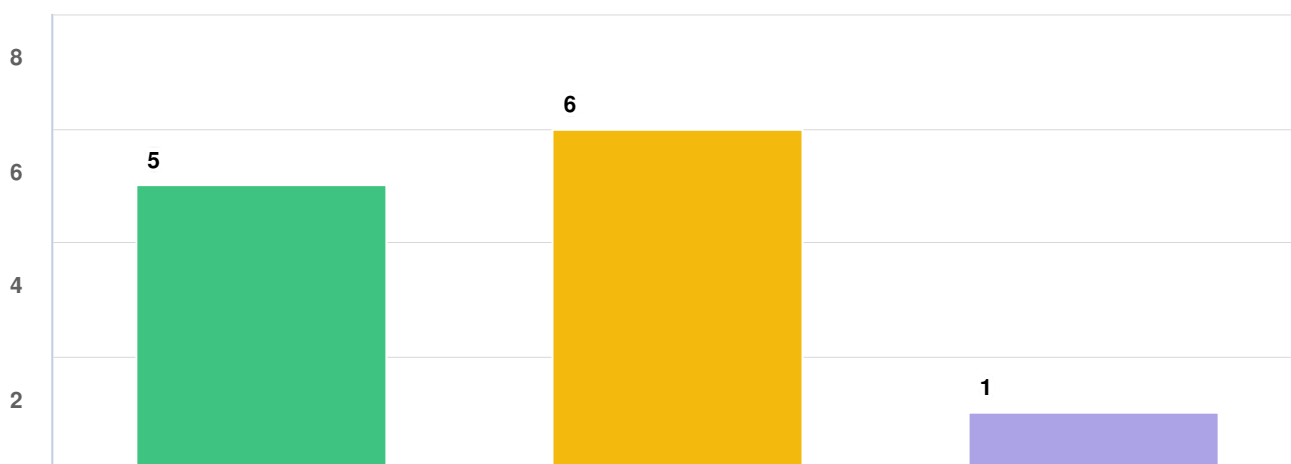


Question options

● Very important ● Somewhat important

Optional question (14 responses, 0 skipped)

Q34 Explore opportunities to recover heat and energy and offset costs at treatment plant.

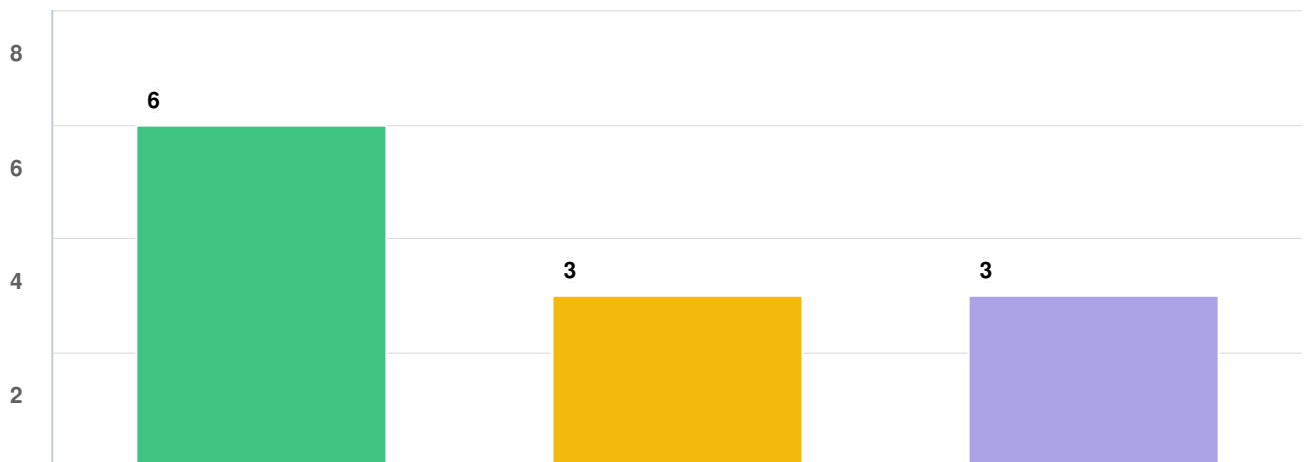


Question options

● Very important ● Somewhat important ● Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q35 Explore economically productive use of reclaimed water.

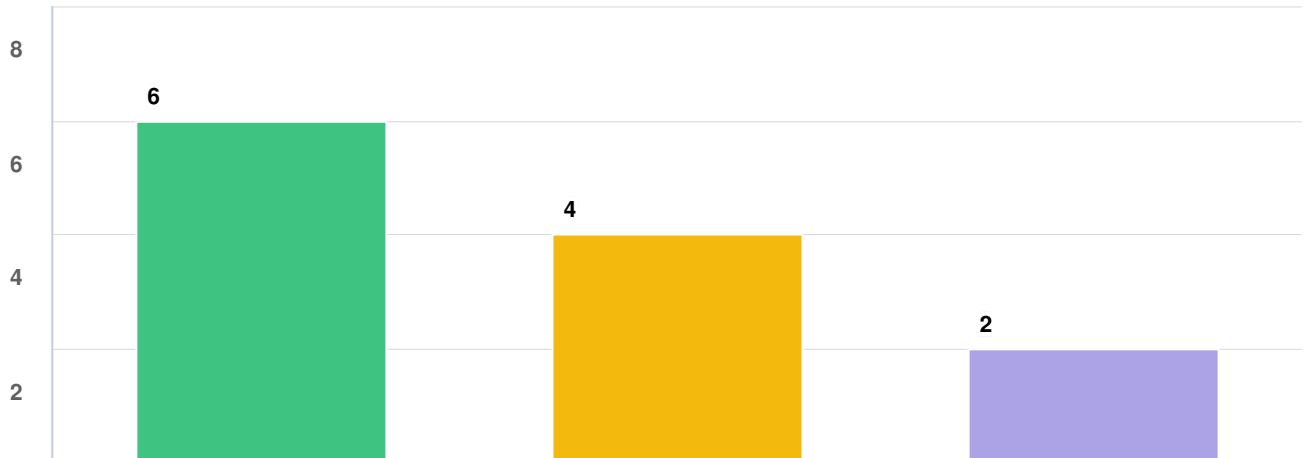


Question options

Very important Somewhat important Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q36 Select resource recovery options that will maximize grant funding opportunities.

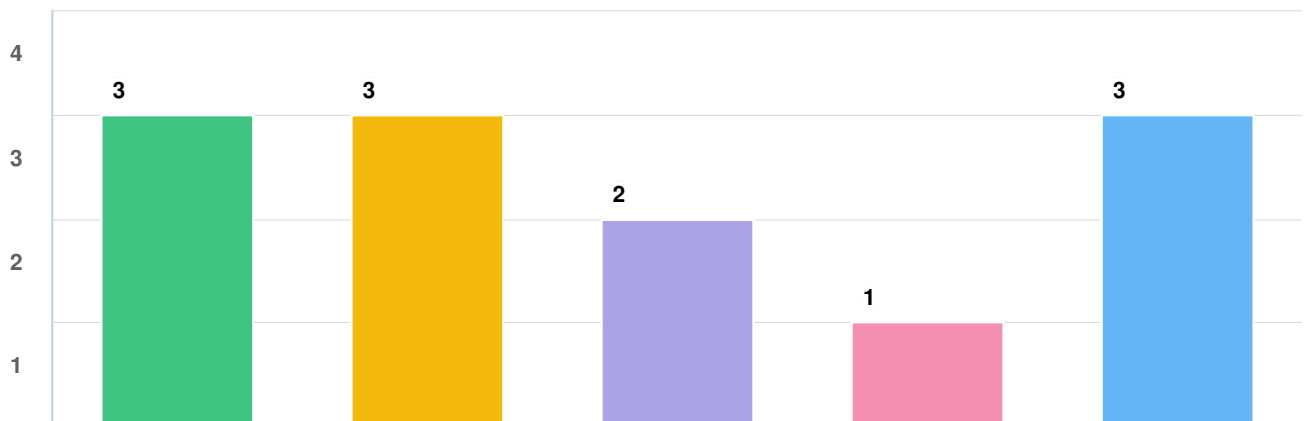


Question options

Very important Somewhat important Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q37 Explore the potential for external partners to help reduce capital costs.

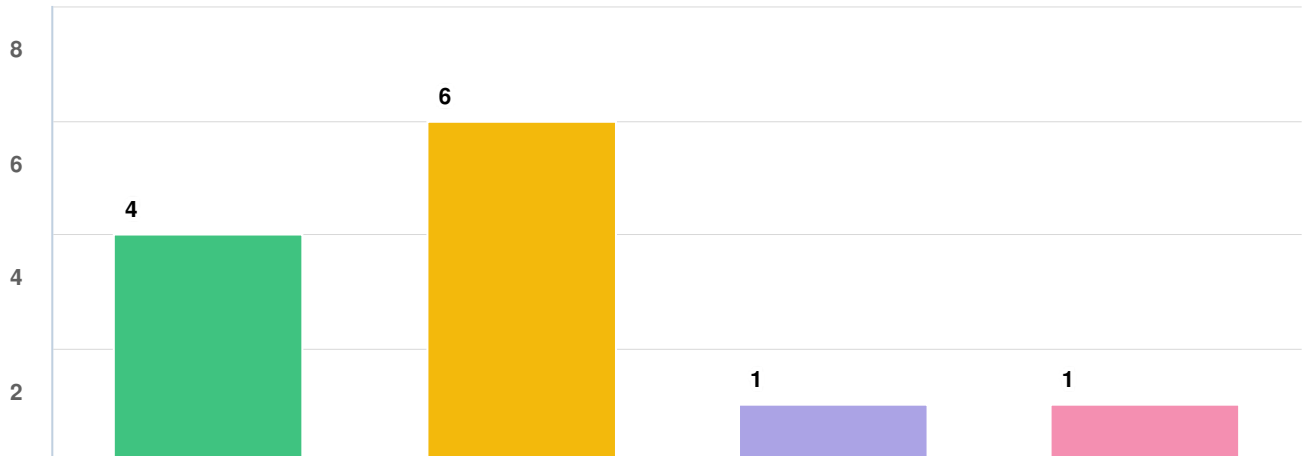


Question options

Very important Somewhat important Neither important or unimportant Somewhat unimportant
Not important

Optional question (14 responses, 0 skipped)

Q38 Explore options that can have a positive impact on or grow the local economy.

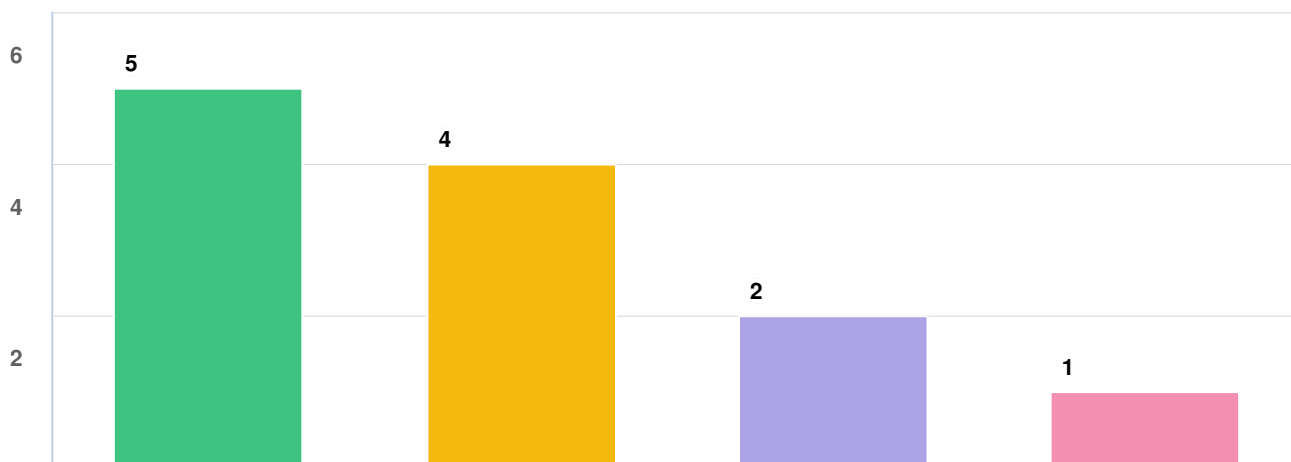


Question options

Very important Somewhat important Neither important or unimportant Somewhat unimportant

Optional question (14 responses, 0 skipped)

Q39 Maximize climate change mitigation

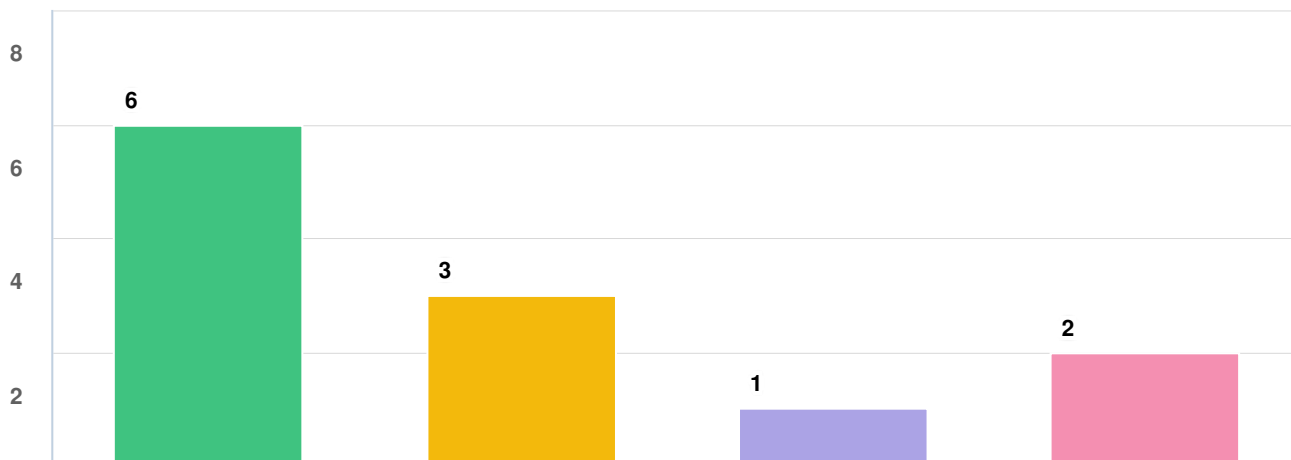


Question options

Very important Somewhat important Neither important or unimportant Not important

Optional question (14 responses, 0 skipped)

Q40 Restore or enhance environmental habitat

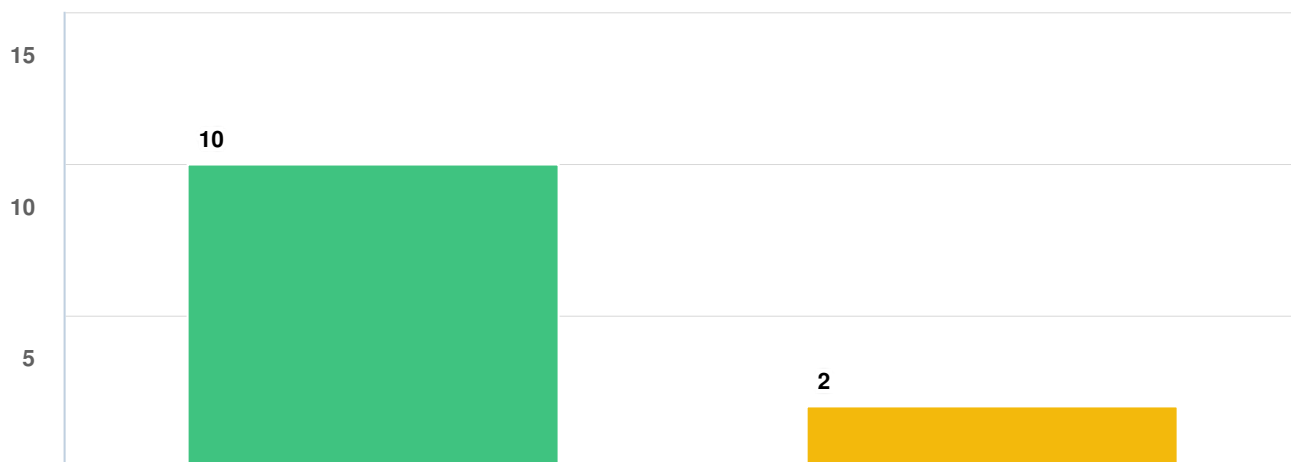


Question options

Very important Somewhat important Neither important or unimportant Not important

Optional question (14 responses, 0 skipped)

Q41 Protect public health

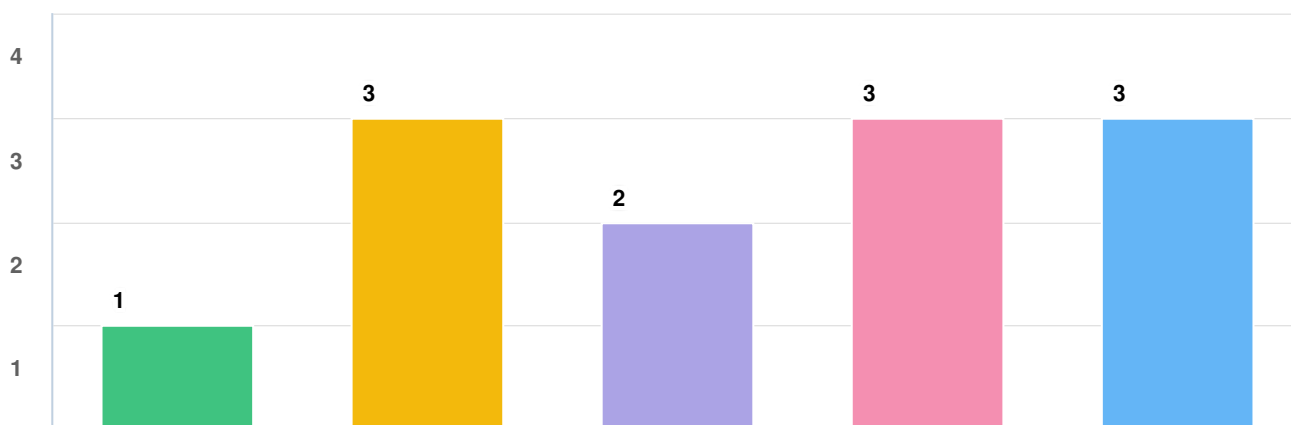


Question options

Very important Somewhat important

Optional question (14 responses, 0 skipped)

Q42 Ensure ability to maintain irrigation of public parks and gardens during water restrictions.



Question options

Very important Somewhat important Neither important or unimportant Somewhat unimportant
Not important

Optional question (14 responses, 0 skipped)

Q43 | Are there any goals missing that you think should be included regarding RESOURCE RECOVERY?

Linvann

12/03/2018 09:13 AM

Check out success of Okotoks Ab water treatment and their objectives for downstream Sheep River. Learn from the best on what is economically achievable.

Poorpi

12/05/2018 06:01 PM

Composting

ggeiger

12/08/2018 10:02 AM

Using treated waste water for irrigation to Local farms

Optional question (3 responses, 11 skipped)

Q44 | **Are there any goals you think should be deleted regarding RESOURCE RECOVERY?**

Linvann

12/03/2018 09:13 AM

Restore or enhance env habitat. Scope is too big, focus down to what is achievable.

Poorpi

12/05/2018 06:01 PM

Watering parks and gardens, only high cost playing fields should be maintained

Susan Ruth

12/06/2018 07:24 PM

"Maximize opportunities for partnerships that achieve a community benefit." would this mean that the solid waste used for composting would no longer be possible. What is the cost benefit analysis trading one for the other?

Optional question (3 responses, 11 skipped)

Q45 | **Where do you live? (Courtenay/Comox/Electoral Area?)**

Albert Englehart

11/30/2018 10:54 AM

Comox

mary.payne

12/01/2018 09:13 AM

Courtenay

jonmcdon23

12/02/2018 09:07 AM

Courtenay

Linvann

12/03/2018 09:13 AM

Courtenay

salty

12/04/2018 10:36 AM

Area B

Poorpi

12/05/2018 06:01 PM

Courtenay

Amanda Smith

12/06/2018 08:53 AM

Comox

Susan Ruth

12/06/2018 07:24 PM

Electoral area B, north Courtenay

Jennysteel

12/06/2018 09:29 PM

Electoral Area B - Curtis RAoad

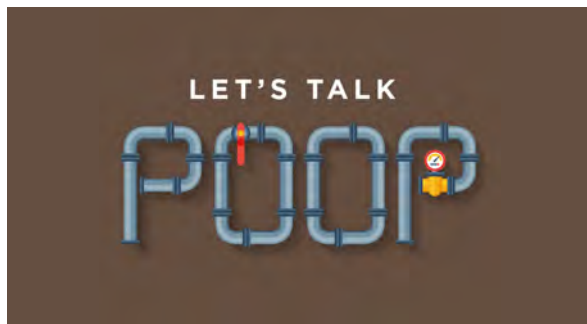
ggeiger

12/08/2018 10:02 AM

Courtenay and area c

Optional question (10 responses, 4 skipped)

APPENDIX 4 – SAMPLE ADVERTISEMENTS



Come Learn About Your Sewer Service

Ever wonder what happens after you flush? Attend an open house at the sewage treatment plant and take a tour of the facility to learn more about our sewer system and help us plan for the future.

JOIN US:

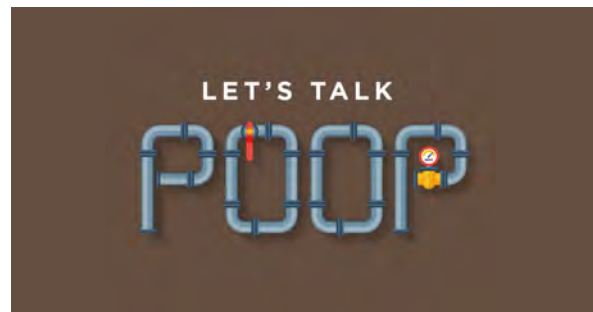
Tuesday, November 6 or Thursday, November 8
5:00 pm to 7:00 pm
Comox Valley Water Pollution Control Centre
445 Brent Road, Comox

Or learn more online at: connectcvrd.ca/lwmp

For more information:

Call: 250-334-6000

Visit: comoxvalleyrd.ca/lwmp



Setting Goals for Sewer Service Planning

We're planning for the future of our sewer service, and we need your help. Committees are working to set the goals and objectives that will guide our planning and help us arrive at long term solutions for our sewer service. We've got some ideas and we're asking the community if we are on the right track.

JOIN US IN PERSON:

Tuesday, November 27	Wednesday, November 28
5:00 pm to 7:00 pm	5:00 pm to 7:00 pm
Comox Golf Club	The Westerly Hotel
1718 Balmoral Ave, Comox	1590 Cliffe Ave, Courtenay

JOIN US ONLINE: connectcvrd.ca/lwmp

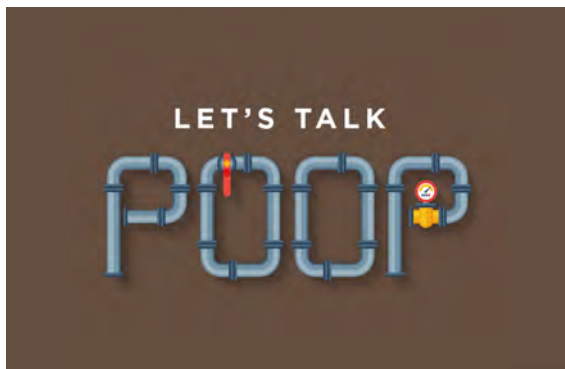
For more information:

Call: 250-334-6000

Visit: comoxvalleyrd.ca/lwmp



Posters: Distributed at recreational facilities throughout Courtenay/Comox area



Come Learn About Your Sewer Service

Ever wonder what happens after you flush? Attend an open house at the sewage treatment plant and take a tour of the facility to learn more about our sewer system and help us plan for the future.

JOIN US:

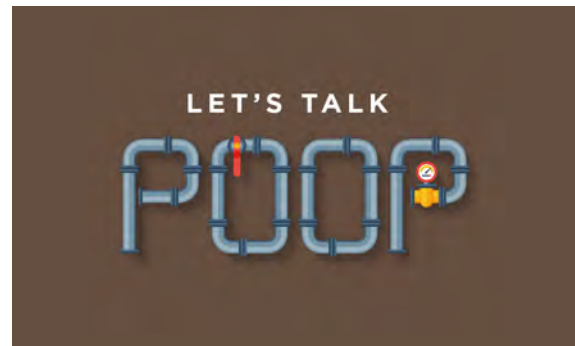
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JOIN US ONLINE: connectcvrd.ca/lwmp

For more information:

Call: 250-334-6000

Visit: comoxvalleyrd.ca/lwmp



Social Media Ads: Facebook & Instagram



Comox Valley Regional District (CVRD)
Sponsored · 

We are starting work on a long term plan for the sewer system in Courtenay and Comox.



CONNECTCVRD.CA


We Want to Hear From You
No need to hold it in! Tell us if we are off to a good start.

Learn More

 Like


 Comment

 Share



Comox Valley Regional District (CVRD)
Sponsored · 

We are starting work on a long term plan for the sewer system in Courtenay and Comox.





CONNECTCVRD.CA

We Want to Hear From You
Review our work to-date and let us know if we are on the right track.

Learn More

 Like

 Comment

 Share

PROJECT: CV Sewer Service LWMP Open House
MEDIA: 30 second ads
CAMPAIGN: Open House Invite
RUN DATES: Oct 29-Nov 5, 2018
FREQUENCY: TBD

SCRIPT

SOUND OF TOILET FLUSHING

Ever wonder what happens to the water when you hear that sound? Learn more and help plan for the future of our sewer service at two wastewater treatment plant open houses, hosted by the Comox Valley Regional District.

Stop by to take a tour and learn about the planning process getting started for sewer service in Courtenay and Comox. Your input is important.

So – if you want to make sure this <TOILET FLUSH> keeps working for us all, join us between 5 and 7 Tuesday November 6th or Thursday November 8th at 445 Brent Road.

Learn more and share your comments at connectcvrd.ca

PROJECT: CV Sewer Service LWMP
MEDIA: 30 second ads
CAMPAIGN: Facilitated Session 2 Invite
RUN DATES: Nov 19-26
FREQUENCY: TBD

SCRIPT

We're planning for the future of our sewer service, and we need your help.

Join us to provide input on what the main goals and objectives should be for the planning process that is now underway. Our staff and committees have some ideas – and we want to make sure we're on the right track from the beginning.

Facilitated sessions will be held Tuesday November 27 at Comox Golf Club OR Wednesday November 28 at the Westerly Hotel. Both from 5 to 7 p.m. Can't be there in person? Share your feedback online at [connect cvrd<dot>c-a<backslash>l-w-m-p](http://connectcvrd.ca/l-w-m-p)

Learn more at [comoxvalleyrd<dot>c-a](http://comoxvalleyrd.ca).

APPENDIX 5 – INFORMATIONAL MATERIALS



Comox Valley Sewer Service

Liquid Waste Management Plan Project Backgrounder

Wastewater planning for Comox Valley

The Comox Valley Regional District is planning how the sewer service will be managed in the years and decades to come, and your feedback is critical to finding a solution that's appropriate and sustainable.

Liquid Waste Management Plans

The liquid waste management plan process is used by local governments in BC to develop strategies for managing wastewater. It includes:

- the collection/review of existing information
- development of options for future services
- identification of a preferred option
- completion of required studies/assessments on preferred option
- development of financial and implementation plans

The plan can take up to two years to move through the full process – and is ultimately submitted to the provincial government for review and consideration for approval.

What's being planned:

The planning process will look at the Comox Valley Sewer Service, which services Courtenay and Comox, and how best to address the future needs of those communities and inevitable infrastructure upgrades that will be required. It includes collection, conveyance (pipes and pump stations) and the treatment plant. It will consider options for providing reliable sewer service for the years to come, including consideration of anticipated future growth in our communities.

Hearing from you

Members of the public are encouraged to weigh-in by attending workshops and open houses, or contributing to online consultations. To get involved:

Visit our website at www.comoxvalleyrd.ca/lwmp

Or join the online discussion at www.connectcvrd.ca/lwmp

Timeline

Step-by-step wastewater planning

- **Setting the Stage and Kick Off**
- **Goal Setting:** Determining what we want to achieve with this plan.
- **Establishing a Long List:** Options for the future of the sewer service will be presented in early 2019.
- **Narrowing Down a Short List:** Feedback to the long list will help committees narrow down to some preferred options.
- **Choosing the Preferred Option:** From the short list, the preferred option will be presented to the Sewage Commission and public.
- **Drafting the Report:** Includes a summary of all the work done to date – and a report on the public's feedback during the process.
- **Report Submitted:** Stages 1 and 2 final report submitted for review to the provincial government.
- **Financing + Implementation:** If approved, the final step is to confirm funding and plan to deliver the work as outlined.



What we have heard so far

The planning process officially launched in June 2018, with the first few months focused on raising awareness of sewer services and collecting feedback on community values for sewer system planning. About 150 people provided feedback either through the online survey or by attending in-person sessions. Here's some of what we heard:

- **Environmental Protection:** Many voiced the need to prioritize the environment in decision-making. Environmental considerations were ranked #1 by participants, but there was a concern the environment may take a backseat when it comes to decision-making and cost.
- **Long-Term Plan:** There was interest in seeing a long-term plan created, and followed, to ensure that it is in line with community development and land-use planning. Developing long-term plans for service outside of the existing service area was also identified.
- **Concern for Current System:** Many emphasized the importance of moving forward with improvements given risks posed by aging/over-stretched infrastructure and septic systems. There was eagerness to see solutions delivered as soon as possible.

Public Advisory Committee members announced

The Public Advisory Committee (PAC) is a group that represents community interests – the people, areas and environments that are served and potentially impacted by the Comox Valley Sewerage System. The PAC meets simultaneously with the Technical Advisory Committee (TAC), an advisory group of technical experts who also gather relevant input and provide recommendations.

PAC members play an essential role in:

- Reviewing and considering Official Community Plans, Sustainability Plans
- Considering public opinion and feedback
- Providing feedback on documents prepared by CVRD project staff and consultants
- Providing input and recommendations to the Comox Valley Sewage Commission

After extensive recruitment, eight residents were appointed to the PAC in September 2018:

- Area B (2): Marie Holm, Mary Lang
- Town of Comox (3): Ray Craig, Donald Jacquest, Kevin Van Velzen
- City of Courtenay (3): Sheila Carey, Kevin Niemi, Tamera Servizi

To get in touch with a PAC member from your area, or to ask questions about the planning process, contact the CVRD offices at **250-334-6000** or send an email to engineering@comoxvalleyrd.ca.



Comox Valley Water Pollution Control Centre

Sewage Treatment in the Comox Valley

Opened in 1984, the Comox Valley Water Pollution Control Centre is a sewage treatment facility operated by the Comox Valley Regional District (CVRD) for the communities of Courtenay, Comox and CFB Comox.

The sewage treatment plant processes wastewater from 40,000 users, discharging an average daily flow of 17,000m³ of treated water to the Strait of Georgia 3km offshore – the equivalent of about seven Olympic-sized swimming pools.

How is the sewage treated?

Treatment includes physical and biological processes to remove solids and ensure the water meets regulatory standards prior to discharge. Regular testing is conducted to ensure the system is working effectively.

Solids from the treatment process are collected and taken to the CVRD's biosolids composting facility, where the biosolids are used to produce the CVRD's Skyrocket, a nutrient-rich mulch that can be used for landscaping, orchards, flower gardens and lawns.

How are odour issues being addressed?

Odour from the plant has been a concern for residents near the facility since shortly after the plant opened, with the CVRD working for many years to address the complaints. Remediation work included the installation of a wet chemical air scrubber system and moving the composting facility off-site.

Over the summer/fall of 2018 several additional upgrades to the treatment plant were installed to further reduce odour:

- Retrofitting the existing air scrubber to increase efficiency
- Installation of permanent covers over the primary clarifiers and permanent ducting to collect foul air
- Installation of dual bed activated carbon (AC) polisher to treat air and reduce odours before discharge to the environment



The dual bed activated carbon polisher 'polishes' air by filtering out odour.



The existing air scrubber – which cleans the air of odour – undergoes a retrofit.

Share your voice online

Connecting with ConnectCVRD

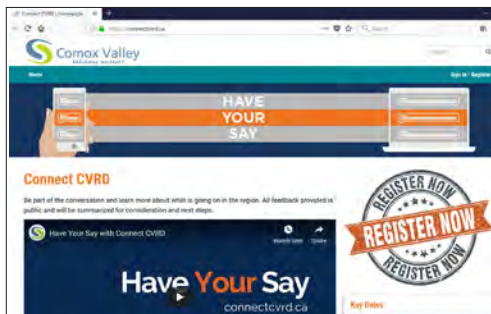


Offering more ways to share your feedback

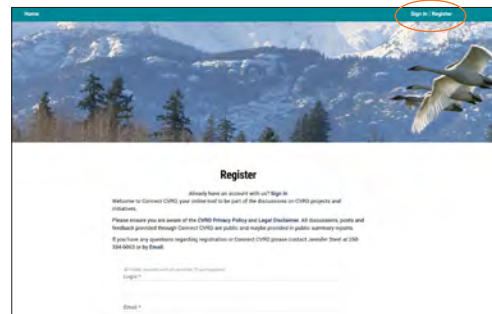
ConnectCVRD is an online engagement tool the Comox Valley Regional District introduced in order to offer a new opportunity for the community to provide feedback on important initiatives. Accessible from home, any day at any time, ConnectCVRD allows people to review information and provide their comments when it's suitable for them.

Ready to sign up? Here's how:

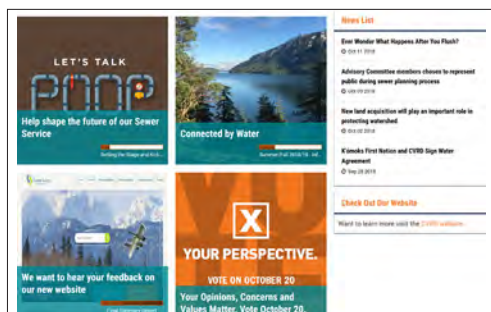
Step 1: Visit <https://connectcvr.ca> in your favourite Internet browser.



Step 2: Click on "Register" at top, right hand menu bar, fill out the form, and submit.



Step 3: You're In! Click on the topic you're interested in.



Step 4: Participate: Ask questions, fill out surveys, review posted materials.



Hearing from you

You're invited to participate in as many of the topic pages as you'd like. Your voice is important – share your thoughts.

Questions? Email engineeringservices@comoxvalleyrd.ca or call 250-334-6000.



comoxvalleyrd.ca   

Comox Valley Sewer Service

Public Consultation Workshops
November 27 & 28



WELCOME!

We're planning for the future of our sewer service and committees are working to set the goals and objectives that will guide our planning. We've got some ideas and tonight we're asking you for feedback on whether we're on the right track.

What to expect tonight:

- **Welcome**

Please sign in, create a nametag, grab some refreshments and find a seat.

- **Introduction to the Sewer Planning Process**

CVRD staff will give an overview of the liquid waste management planning process and how our infrastructure may be affected by this process into the future.

- **Goals and Objectives Review**

Learn about the goals/objectives that have been drafted by the advisory committees – we invite you to speak up about any additional goals you feel are missing from the list.

- **Provide Feedback**

Move through a discussion within a group, to review each of the goals/objectives and complete a feedback form with your final input on each goal.

- **Questions?**

The project team are wearing nametags identifying themselves – please feel free to ask questions and share your feedback with them.

ALSO: Learn about ConnectCVRD

Are you connected? Ask us about our online consultation tool.

How your feedback will be used

Feedback from this workshop will be provided to the public and technical advisory committees at their next meeting. Comments will be considered as the goals and objectives are finalized and the planning process moves forward.

Welcome to the Comox Valley Water Pollution Control Centre

Today, you can take a tour of the facility to learn more about our sewer system. You can also find out more about the management planning process – and how you can help us plan for the future of sewer services in Courtenay and Comox.

1. Welcome

- Please sign in, create a nametag and help yourself to refreshments.

2. Gather Info

- Review the info boards situated around the room.
- Grab some takeaway information to learn more about the treatment plant and/or the management planning process.

3. Take a Tour

- Tour times are: **5:30, 6:00 & 6:30**
- Tours will be directed by a treatment plant staff member, and last about 20 minutes.

4. Let Us Know What You Think

- Feel free to ask questions and share your feedback with members of the project team.
- Complete a comment/feedback form.



→ ALSO: Learn about ConnectCVRD

Let us introduce you to our new online consultation tool.

Visit: www.comoxvalleyrd.ca/lwmp

Email: engineering@comoxvalleyrd.ca

Phone: 250-334-6000

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WHAT HAPPENS AFTER YOU FLUSH?

Wastewater Management in the CVRD

1
HOMES & BUSINESSES
Wastewater is collected

2
COLLECTION SYSTEM
Gravity pipe collects waste

3
PUMP STATION
Collects and pushes waste to treatment plant

4
FORCEMAIN
Carries waste in high pressure pipe to treatment plant

5
WASTEWATER TREATMENT
Four steps of treatment completed

6
OUTFALL
3 kms off of Cape Lazo (depth: 60m)

Comox Valley Water Pollution Control Centre

Visit: www.comoxvalleyrd.ca/lwmp

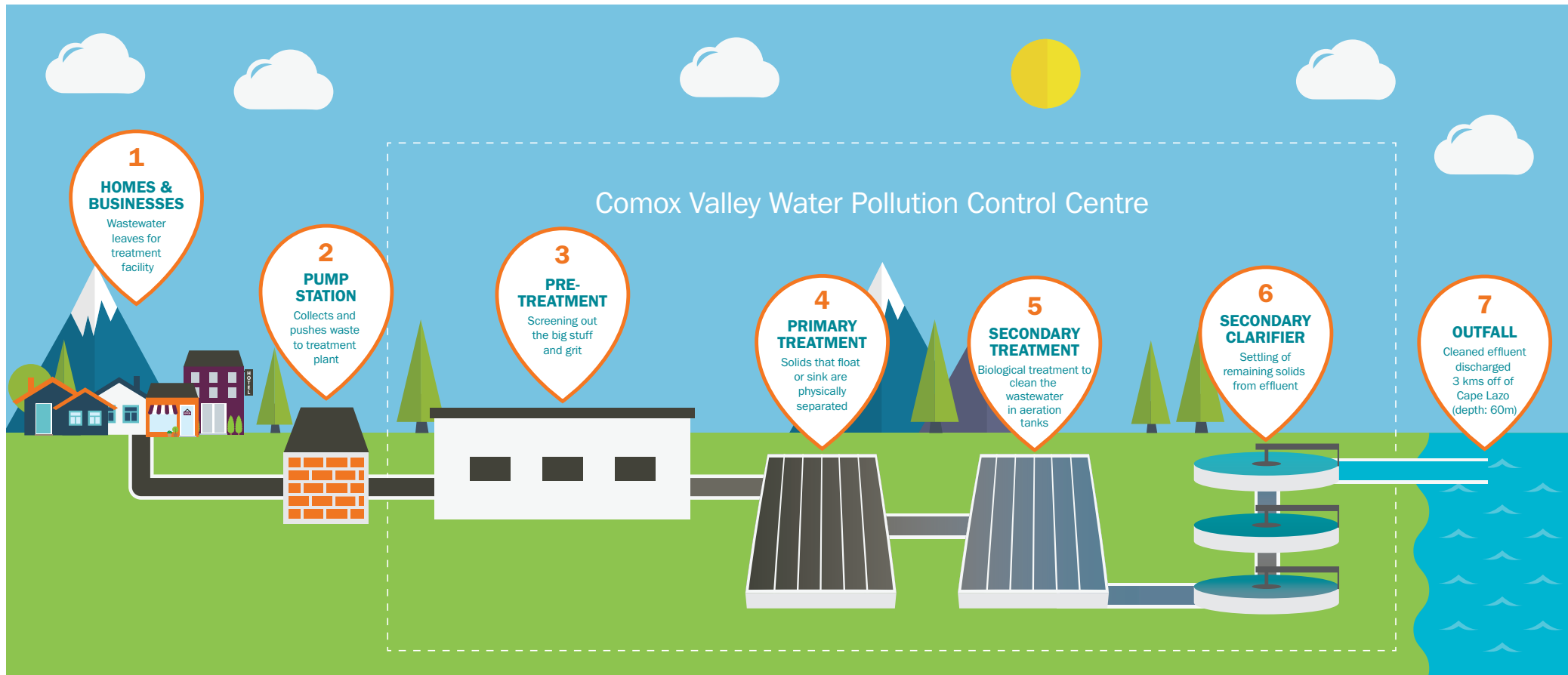
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Phone: 250-334-6000

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REGIONAL DISTRICT

WHAT HAPPENS AFTER YOU FLUSH?

Treating wastewater in the CVRD



Visit: www.comoxvalleyrd.ca/lwmp

Email: engineering@comoxvalleyrd.ca

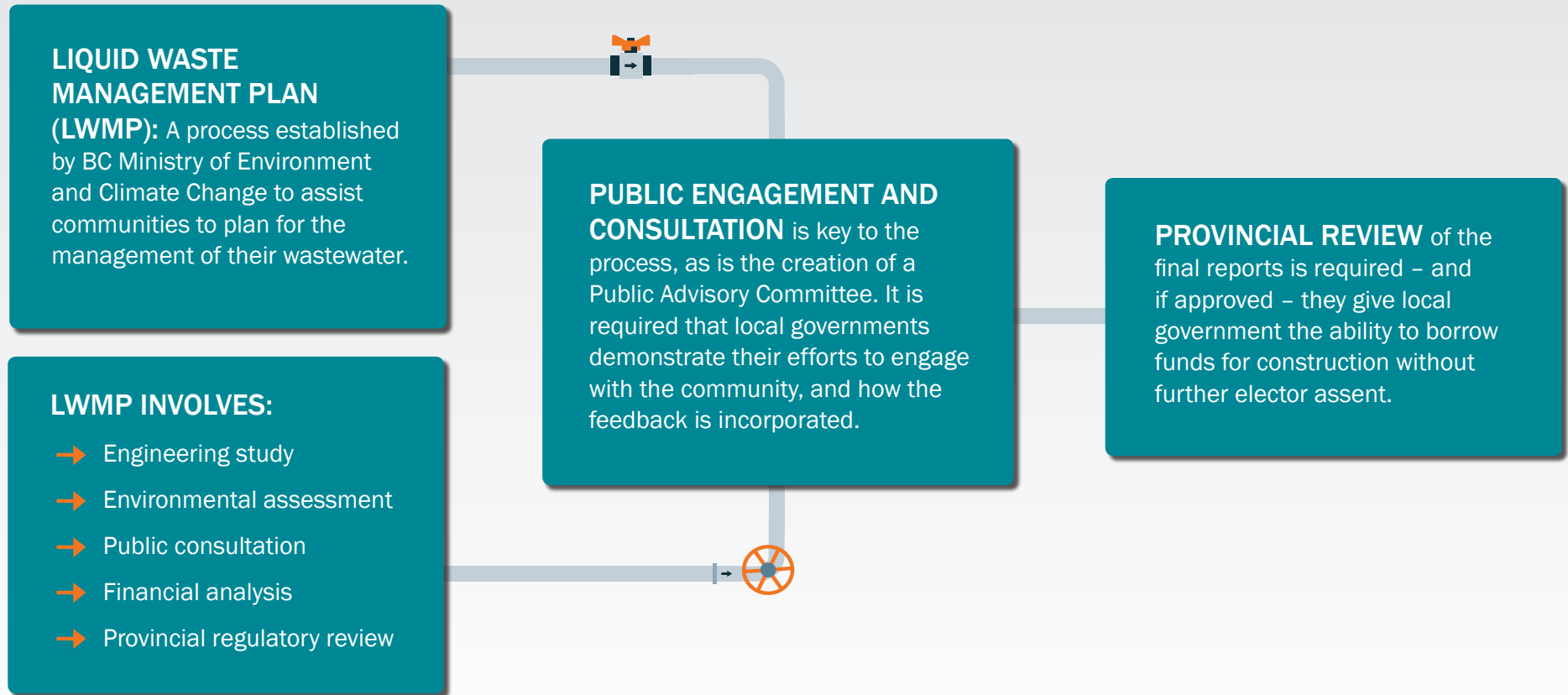
Phone: 250-334-6000

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Planning a Future for Our Liquid Waste

Long-term planning for liquid waste management can be a complicated process. To help streamline these big projects and give local governments the ability to deliver agreed-on plans, liquid waste management plans are often used.



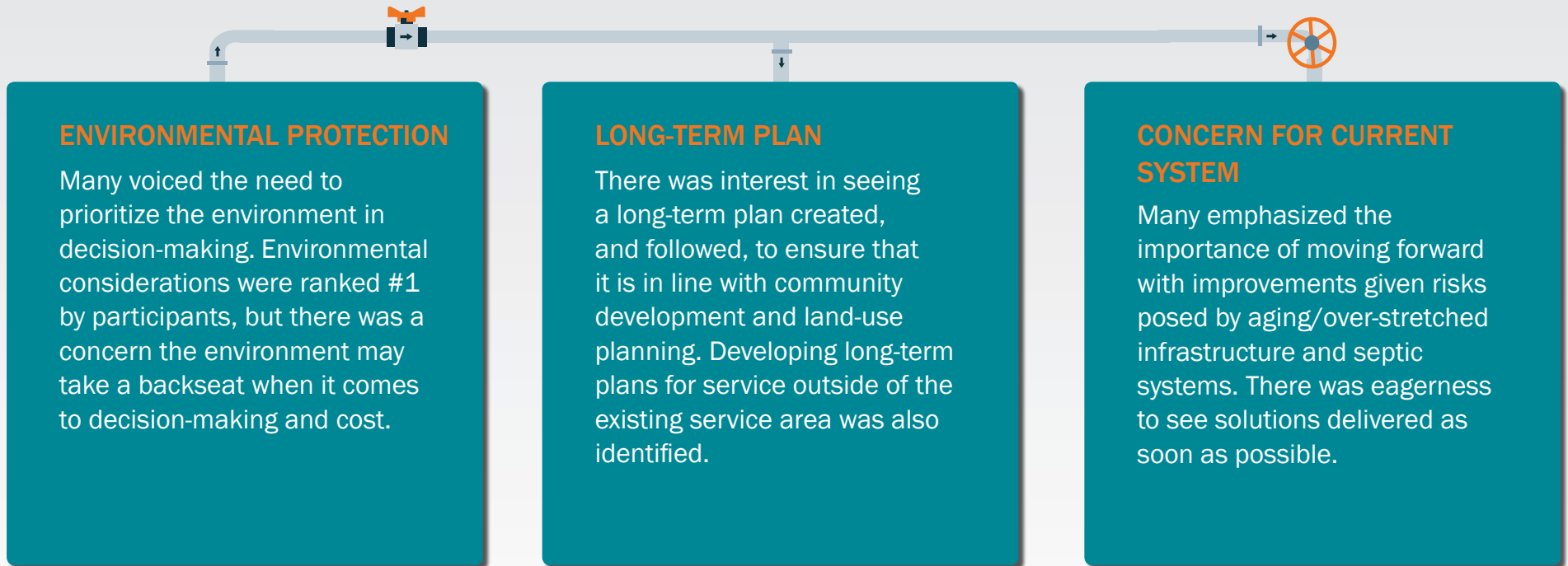
Visit: www.comoxvalleyrd.ca/lwmp

Email: engineering@comoxvalleyrd.ca

Phone: 250-334-6000

Let's Talk Poop: What We Heard

The planning process officially launched in June 2018, with the first few months focused on raising awareness of sewer services and collecting feedback on community values for sewer system planning. Here's some of what we heard:



DID YOU KNOW? About 150 people provided feedback on this stage either through the online survey or by attending in-person sessions.

Visit: www.comoxvalleyrd.ca/lwmp

Email: engineering@comoxvalleyrd.ca

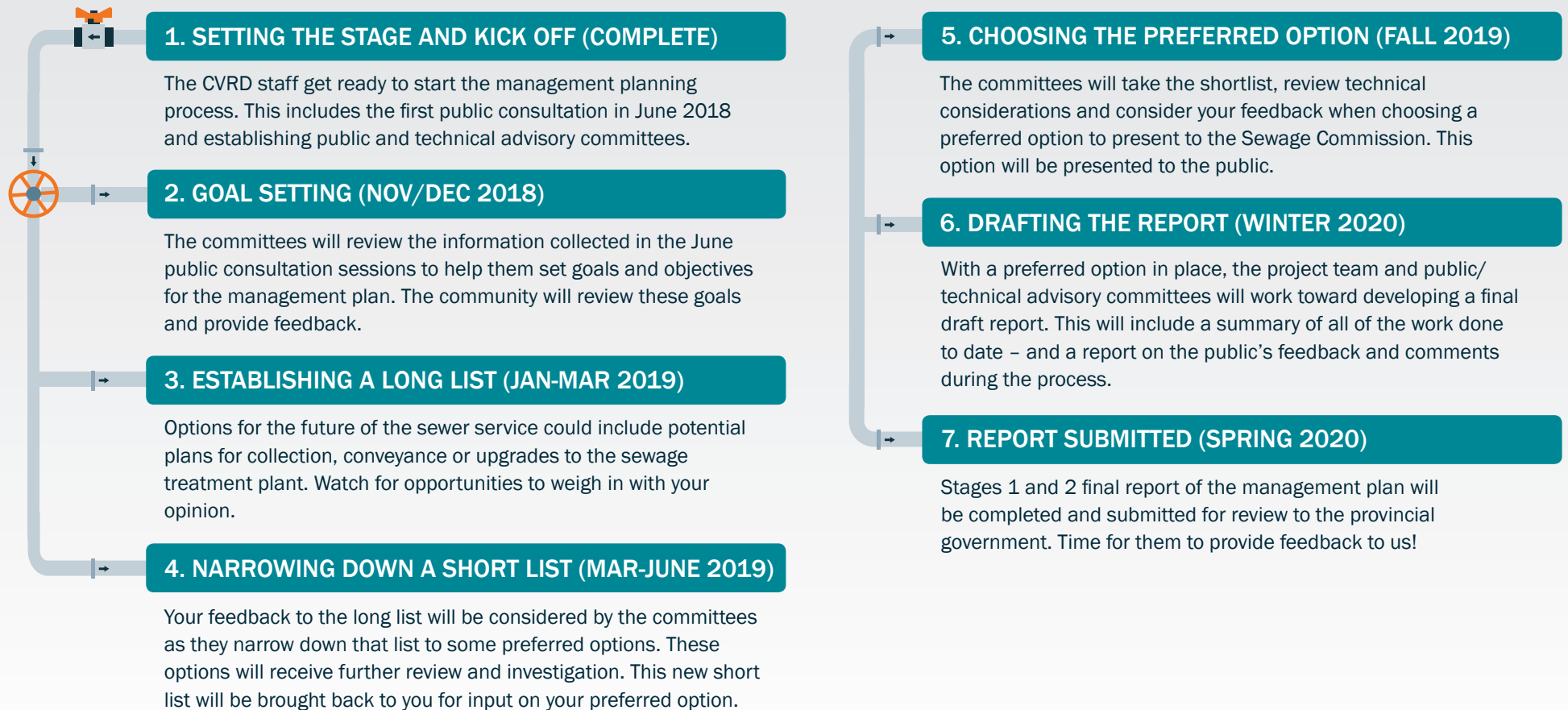
Phone: 250-334-6000

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Planning and Public Engagement: Timeline

The Liquid Waste Management Plan process is roughly 18 months with some distinct stages that require public input.



Visit: www.comoxvalleyrd.ca/lwmp

Email: engineering@comoxvalleyrd.ca

Phone: 250-334-6000

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Public Advisors Provide Direction

The public advisory committee (PAC) is a group that represents community interests – the people, areas and environments that are served and potentially impacted by the Comox Valley Sewerage System. The PAC meets simultaneously with the Technical Advisory Committee (TAC), an advisory group of technical experts who also gather relevant input and provide recommendations.

After extensive recruitment, eight residents were appointed to the PAC in September 2018:

AREA B



MARIE HOLM



MARY LANG

TOWN OF COMOX



RAY CRAIG



DONALD JACQUEST



KEVIN VAN VELZEN

CITY OF COURTENAY



SHEILA CAREY



KEVIN NIEMI



TAMERA SERVIZI

MEMBERS PLAY AN ESSENTIAL ROLE IN:

- Reviewing and considering Official Community Plans, Sustainability Plans
- Considering public opinion and feedback
- Providing feedback on documents prepared by CVRD project staff and consultants
- Providing input and recommendations to the Comox Valley Sewage Commission

Visit: www.comoxvalleyrd.ca/lwmp

Email: engineering@comoxvalleyrd.ca

Phone: 250-334-6000



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Upgrading Our Treatment Plant

The Comox Valley Water Pollution Control Centre (treatment plant) was opened in 1984 and services the City of Courtenay, Town of Comox and CFB Comox – roughly 40,000 users. To keep it operating well, and to make improvements to odour management, a series of upgrades was undertaken this year. All of this work is now complete.



Improving Efficiency: Retrofitting existing air scrubber – which cleans the air of odour – to increase efficiency.



Block/redirecting smells: Installation of permanent covers over primary clarifiers and permanent ducting to collect foul air.



Odour Reduction: Installation of dual bed activated carbon (AC) polisher to treat air and reduce odours before discharge to the environment.

Visit: www.comoxvalleyrd.ca/lwmp

Email: engineering@comoxvalleyrd.ca

Phone: 250-334-6000

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SkyRocket Compost

What happens to remaining biosolids (solid waste particles) once wastewater has been treated? These biosolids are mixed with wood chips and cured over time to make up SkyRocket compost, a nutrient-rich gardening mulch. SkyRocket is available for purchase at the Comox Valley Waste Management Centre.

DID YOU KNOW?

- The facility uses aerated bunker technology to cure solids removed from the wastewater system. These biosolids contain macronutrients and organic matter that can replenish soil and help it to retain moisture.
- SkyRocket is ideal for use in large-scale landscaping and planting projects and can also be used for residential landscaping as a soil conditioner/supplement.
- SkyRocket meets/exceeds the regulations for a Class A compost – the highest level for organic matter recycling.
- In Summer 2018, construction for an expansion to the biosolids composting facility began. The expansion will increase the facility's capacity by 35 per cent and is expected to be complete by Spring 2019.
- The expansion will include retrofits to the current infrastructure, addition of a new mixer and primary screening system, development of a new curing building and turner and replacement of the existing surface pond. It will also incorporate new heat exchanges to reduce composting time in the winter and provide additional storage room for finished product.



Finished SkyRocket is ready to be added to any garden as a soil amendment.

Visit: www.comoxvalleyrd.ca/lwmp

Email: engineeringervices@comoxvalleyrd.ca

Phone: 250-334-6000

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APPENDIX 1 – EVENT REPORT NOV. 6 & 8, 2018, OPEN HOUSES

EVENT SUMMARY & FEEDBACK OVERVIEW

OPEN HOUSES, Comox Valley Sewer Service LWMP + Treatment Plant



Date/Location: Nov. 6 & 8, Comox Valley Water Pollution Control Centre, 5-7 pm

Prepared By: ZINC Strategies

Prepared For: Christianne Wile (Manager, External Relations)

OVERVIEW

As the Comox Valley Regional District launches the Comox Valley Sewer Service Liquid Waste Management Plan process, an opportunity to teach the public about the existing service and the basics of the planning process was identified. To inform the public, two open houses were held at the sewage treatment plant, incorporating open house-style displays and tours of the facility.

1. EVENT DETAILS

- Approximately 110 people attended the open houses: est. 52 at the first (Nov. 6) and est. 60 at the second (Nov. 8).
- Eight information display boards were on display in the facility's atrium, outlining the sewer service, upgrades to the treatment plant and introducing the LWMP process.
- The wastewater treatment plant staff worked hard leading to the event to make sure all was tidy, ensuring small repairs were complete, additional lighting was available and the facility was highly presentable.
- Reflective open house signs were created and posted at intersection to help direct visitors to the event despite the dark area and night-time event.
- Tours beginning and ending at the atrium ran intermittently as groups collected throughout the evening. Roughly four/five tours ran each night, with stops at each stage of treatment, the air scrubber system and the lab.
- Kris La Rose, senior manager, water & wastewater, served as event host, with support from other CVRD staff (Marc Rutten, Mike Imrie + treatment plant crews). They were supported by ZINC Strategies consultants.
- Comment forms were available to all, however 0 were received.
- Seven members of the LWMP public advisory committee attended to hear feedback from the public, as did seven elected officials from Courtenay, Comox + CVRD.

2. PROMOTION/OUTREACH

As free, public events, the Open Houses were promoted via regular media and social media channels, specifically:

- A news release was issued Oct 22 and was published in local media outlets.
- Newspaper print ads ran Oct 25, 30 & Nov. 1, radio ads ran Oct 29 – Nov 5 inclusive.
- Posters and save-the-date cards were shared at community hubs (rec centre, coffee shops, etc).
- Social media event was posted on Facebook and promoted, reaching 2,617 people and generating 35 event responses.
- Sewage commission members were advised/invited by email

3. THEMES OF FEEDBACK

The open houses provided a learning opportunity for many in the service area with a wide range of understanding about the system and LWMP processes. Attendees were enthusiastic about learning about the process and asked many questions of the tour guide and the public.

Attendees were engaged, prepared with questions and comments, and were very respectful and appreciative of answers provided by the project team.

WASTEWATER TREATMENT PLANT OPERATIONS
<ul style="list-style-type: none">• Degree of treatment: How compare to other areas? How are pharmaceuticals treated? Paint/heavy metals/perfumes?• Interest in odour management, and potential impact of increased flows. Opinions ranged on level of odour. Regardless, smell generally – and mitigation - was focus for many participants.• Concerns raised over potential impact of natural disasters• Interest in learning about how homeowners can make the system work better: ie: help educate about dental floss/wipes issues, reduce water use with number of flushes.
ENGAGEMENT IN WASTE MANAGEMENT PLANNING
<ul style="list-style-type: none">• A fair amount of education required about the basics of the service area (ie: including both Courtenay and Comox, and that local septic waste is processed at the plant).• Questions about what components of the system are included in the planning process• General positive response to the plan getting underway and the attendance by advisory committee members. Interest in ongoing/future engagement opportunities.
PLANNING FOR THE FUTURE
<ul style="list-style-type: none">• High interest in whether the plant can serve growing area, and if not, how it will be accommodated.• Concern about what will be needed in the future throughout the sewer system given the ongoing population increases in the Comox Valley• Comments about the challenges of wastewater infrastructure planning + construction in established areas where existing residences are.

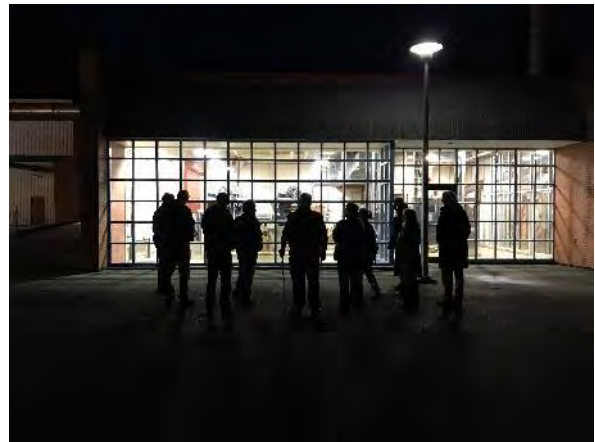
4. SUMMARY AND FOLLOW-UP

The event was a good introduction to the community -teaching them about the treatment plant and the start of the sewer planning process. People who attended were enthusiastic about the opportunity to learn more about this key infrastructure – with families coming with children, along with engaged, informed adults on their own.

As follow up to the Open Houses, the below actions will be taken

- **CONTACT LIST UPDATED:** New addresses provided at the event will be added to the email list.
- **EVENT MATERIAL SHARED:** Images of posters and informational handouts will be shared on the LWMP website + the ConnectCVRD page.

IMAGES



APPENDIX 2 – FACILITATOR’S REPORT: NOV. 27 & 28, 2018, FACILITATED SESSIONS

CVRD LWMP Public Consultation Report



December 10, 2018

**Revised January 7, 2019 to include
feedback comments**

BACKGROUND

This report documents the outcomes of the two public consultation workshops held November 27 & 28, 2018 conducted to solicit feedback on goals developed for the CVRD LWMP by the Technical Advisory Committee and Public Advisory Committee (TACPAC) meeting held November 30, 2018.

The Comox Valley Regional District (CVRD) provides liquid waste management for the City of Courtney and the Town of Comox at the Comox Valley Water Pollution Control Centre (CVWPCC). As the communities grow capacity to deliver liquid waste to the CVWPCC must be expanded by increasing conveyance capacity (installing new pipes in the ground) and potentially upgrading of the CVWPCC to provide a higher level of wastewater treatment.

Consultation for the LWMP is proposed to include four sessions over the life of the Liquid Waste Management Plan development process. The first phase included an online consultation and two workshops sessions held in June of 2018. This report documents the workshop components of the second phase of the public consultation process which will also include a parallel online consultation process.

The input from the workshops and online process will provide input to the PACTAC as they develop a shortlist of options to review.

Future consultation phases are proposed to include:

Mar 2020 Open House #2 (CVRD) - Report back to community on consultation value, results and affect. Supported with online information.

THE PURPOSE OF THE PHASE 2 CONSULTATION WORKSHOPS

The purpose of the workshops was to gain feedback on the goals for the Liquid Waste Management Plan (LWMP) components developed by the PACTAC.

THE WORKSHOP CONSULTATION PROCESS

At each of the two workshops attendees were organized in small groups to discuss and then rank the importance of goals developed for each of the LWMP components: conveyance, treatment and resource recovery. The goals generated by the PACTAC were distributed to each participant in a workbook; copies of the workshop workbook and ranking sheets are attached to this report as Appendix 1.

In total 37 complete ranking sheets were submitted. Attendees were asked to record where they live, and data was sorted by place of residence. The following table shows the distribution by place of residence of attendees. It is interesting to note that there were virtually equal numbers of residents from Courtenay and Comox and a significantly high number of attendees from Area B which is not a participant in the service but is impacted by the service.

Workshop Attendees by residence location	
Comox	10
Courtenay	11
Electoral Area A	1
Electoral Area B	15

WHAT DID THE PUBLIC TELL US?



Workshop results are summarized in the tables below and is presented by component and participant place of residence

CONVEYANCE: November 27 & 28 Workshop Results Courtenay and Comox

	CONVEYANCE Courtenay					CONVEYANCE Comox					CONVEYANCE Area A					CONVEYANCE Area B				
	VI	SI	NIU	SU	NI	VI	SI	NIU	SU	NI	VI	SI	NIU	SU	NI	VI	SI	NIU	SU	NI
Technical Goals																				
Ensure infrastructure is resilient to climate change, natural disasters and seasonal impacts.	9	1				9					1					14		1		
Ensure operations are able to adapt to changing conditions.	9	1				8	1				1					14		1		
Maximize the use of existing infrastructure and road right-of-ways.	4	4	3			2	5	1				1				2	4	4	2	3
Ensure long term viability of infrastructure.	9	1				7	1	1			1					10	3	2		
Utilize innovative design.	3	5	2			6	3	1			1					9	3	3		
Affordability Goals																				
Consider long term financial impact, including minimizing lifecycle costs through asset management.	4	1	3	2		6	3				1					4	7	4		
Maximize opportunity for grant funding.	9		1			5	3				1					6	4	3	1	
Economic Goals																				
Maximize opportunities to enhance the local economy.	3	5	2			4	3	2					1			3	6	4		2
Environment Goals																				
Minimize risks and potential impacts to sensitive environments.	9	1				9					1					13	1	1		
Maximize energy efficiency and mitigate climate change impacts.	5	5				9					1					9	4	2		
Social Goals																				
Minimize noise and odour impacts to community.	7	1	1			6	2	1			1					14	1	4		
Minimize disruptions to communities along conveyance routes.	3		3	2		1	6	2					1			10		8		1
Maximize opportunities for community and recreational amenities.	3	5	1	1		2		4							1	3	1			1

CONVEYANCE COMMENTS FROM FEEDBACK FORMS:

Courtenay:

Are there any goals you think should be deleted?

- Innovative design

Are there any goals missing that you think should be included?

- Maximize fairness in impact and cost to residents?
- Fairness
- 1 Assessment from other communities that e.g. in last 5 years have funding similar issues e.g. Gibsons 0 over investment 2) historical dimension of dealing with crises complaints controversy 2a) lawsuits

Other

- Let's not pay for someone to develop a new system/process
- Noise and odor impacts – not likely to work well

Comox

Are there any goals you think should be deleted?

- Some need to be elaborated upon

Are there any goals missing that you think should be included?

- Reduce rainwater infiltration

None

Other

- Minimize the number of septic systems and make them hook up to system
- I would have found it helpful for these goals to be explained by the PAC with examples
- Get the sewage lines away from the foreshore. The sooner we begin to do this the sooner this probably long-term project can be completed.
- Minimize septic systems consider more real regionalization
- No loss of salmon habitat
- Minimize gas emissions

Area A

Are there any goals you think should be deleted?

None

Are there any goals missing that you think should be included?

- Reduce rainwater infiltration

Area B

Are there any goals you think should be deleted?

Utilize innovative design. Maximize opportunity for grant funding.

Are there any goals missing that you think should be included?

- Fairness to users
- Risk management because of previous law suites and public demonstrations – nuisance law

Other:

- Get an Area B rep on the sewerage commission, building a newer better treatment plant
- Planning to create development where there are existing services
- These are mandatory not important
- 30-year-old plant there is a limit on what you can change
- Infrastructure should remain in jurisdiction it serves. Impact on adjacent properties such as smell, noise, pollution.
- Inclusion of all end users
- Revise principle objective – get all the pipes out of the estuary and convey all overland route
- Decommission all pipes in estuary – do all overland as only option – representative for areas affected
- Removal of existing pipes in the estuary that potentially affect environment in the long run.
- The use of existing infrastructure could very well mean we are pigeon holing ourselves. Have all options been explored?

Observations on the Conveyance data overall:

- The rankings for all goals from Courtenay and Comox residents are very similar.
- Overall all goals were ranked relatively high – the majority were ranked very important and important.
- There were a minority of rankings in the somewhat and not important categories.



Observations on the technical goals (Courtenay & Comox):

- rankings were highest for:
 - *Ensure infrastructure is resilient to climate change, natural disasters and seasonal impacts.*
 - *Ensure operations are able to adapt to changing conditions.*
 - *Ensure long term viability of infrastructure.*
- rankings were significantly lower for:
 - *Maximize the use of existing infrastructure and road right-of-ways.*
 - *Utilize innovative design.*
- Rankings for the technical goals from residents of Area B are similar to those from Courtenay and Comox residents except for a higher rating for innovative design from Area B residents

Observations on the affordability goals (Courtenay & Comox):

- rankings were highest for:
 - *Maximize opportunity for grant funding.*
- rankings were lower for:
 - *Consider long term financial impact, including minimizing lifecycle costs through asset management.*
- rankings for the affordability goals from residents of Area B were more distributed across the rankings.

Observations on the economic goal (Courtenay & Comox):

- rankings for the economic goal *Maximize opportunities to enhance the local economy* were relatively evenly distributed across the rankings by all participants.

Observations on the environment goals (Courtenay & Comox):

- rankings were highest for:
 - *Minimize risks and potential impacts to sensitive environments from Courtenay residents and Area B residents.* Comox residents ranked this goal equally with *Maximize energy efficiency and mitigate climate change impacts.*
- rankings were lower for:
 - *Maximize energy efficiency and mitigate climate change impacts* from Courtenay residents and Area B residents

Observations on the social goals (Courtenay & Comox):

- rankings were highest for:
 - *Minimize noise and odour impacts to community including Area B residents*
- rankings were lower for:
 - *Minimize disruptions to communities along conveyance routes except Area B residents ranked this goal higher*
 - *Maximize opportunities for community and recreational amenities.*

TREATMENT: November 27 & 28 Workshop Results Courtenay and Comox



	TREATMENT Courtenay					TREATMENT Comox					TREATMENT Area A					TREATMENT Area B				
	VI	SI	NIU	SU	NI	VI	SI	NIU	SU	NI	VI	SI	NIU	SU	NI	VI	SI	NIU	SU	NI
Technical Goals																				
Ensure infrastructure and operations are resilient to climate change, natural disasters and seasonal impacts.	8	1				10					1					13				
Ensure operations are able to adapt to changing conditions.	8		1			7	3				1					11	4			
Maximize the use of existing infrastructure and road right of ways.	2	4	1			3	4	3				1				3	5	1	5	
Ensure assets are relevant for the long term.	7	1	1			7	2	1			1					9	6	1		
Ensure the system has enough capacity to meet future growth.	7	2				8	1	1								8	2	1		
Affordability Goals																				
Consider long term financial impact, including minimizing lifecycle costs through asset management.	4	2	2	1		5	4	1				1				4	7	5		
Maximize opportunity for grant funding.	3		1			6	3	1			1					12	3	3		
Environment Goals																				
Ensure treatment of wastewater exceeds current standards	9					5	3				1					11	4			
Remove artificial contaminants such as pharmaceuticals and micro plastics from wastewater.	6	2	1			8	2				1					13	1			
Ensure energy efficiency and mitigate climate change impacts.	6	1	2			8	2				1					10	4	1		
Social Goals																				
Minimize noise and odour from treatment plant	5	3	1			5	4	1				1				13				
Maximize opportunities for partnerships that achieve a community benefit	4	3	2			5	2	3					1			6	5	3		
Maximize opportunities for community and recreational amenities at/around the treatment plant.	2	2	2	1	1	1	4	3	1				1			4	4	4	2	

TREATMENT COMMENTS FROM FEEDBACK FORMS:

Courtenay:

Are there any goals you think should be deleted?

None

Are there any goals missing that you think should be included?

None

Other

- Anticipate flexible design for add-on capacity; Must be tertiary at minimum; Generating employment and local big opportunities; Maintain standard that was a hard-fought victory in the late 70's and early 80's protect fisheries and beach
- 1) develop the economic opportunities for Comox Valley and Vancouver Island 2) ? bounce the plans or e.g. project watershed polling, market & commodity research – synergies ecological and technical opportunities 3) what are possible components for community fundraising hub? Life after Cumberland's
- To me these questions seem to be very directed to have us come to an already decided outcome
- Exploring opportunities to decentralize operations e.g. Kingfisher Hotel, utilizing parks or liquid distribution
- Stop storm water effluent as best you can and start the process as soon as you can before this study goes to politics

Comox

Are there any goals you think should be deleted?

None

Are there any goals missing that you think should be included?

None

Other

- We need to take into consideration all sources of wastewater including septic systems stormwater and commercial sanitary waste
- 100 year storms
- Any work with other ?? should be considered. Consider more regional solutions.
- Cost of conveyance to a central treatment plant compared to two or more local plants. The existing plant is very nearly if not already at capacity. Further treatment options should be localized and decentralized plants rather than enlarging the existing plant.
- Once again, an example would have been helpful to go from

Area A

Are there any goals you think should be deleted?

None

Are there any goals missing that you think should be included?

- Nitrates endocrines? Use of modular units Meet expected 50 year standards

Area B

Are there any goals you think should be deleted?

None

Are there any goals missing that you think should be included?

Zero nuisance at perimeter of plant, mandatory criteria to not meet these constitutes public nuisance!

Risk management because of previous lawsuits – nuisance law

Other

- An Area B rep on the sewer commission, a new treatment plant
- Decommission all pipes in the estuary, all should be overland, representative from all areas affected
- Apparently, the state of the art system in Sechelt is already over capacity
- Allow development or at least prioritize development along existing lines to minimize adverse effects of septic
- Disaster recovery plan made available to neighbours of plant
- Include a rep from Area B we get all the noise smell and no say protection of well water
- Whole valley solution not just population growth
- Remove all pipes from the estuary – keep pipes overland representatives for areas affected
- I stress that the Brent Road plant is built on a sandpile and we should consider other options rather than put all eggs into one sandy basket

Observations on the Treatment data overall:

- The rankings for all goals from Courtenay and Comox residents are relatively similar.
- Overall all goals were ranked relatively high – the majority falling into the very important and important categories.
- A small proportion of the rankings fall into the neither important or unimportant categories.
- Area B residents tended to rank all of the goals higher than did Courtenay and Comox residents.



Observations on the technical goals (Courtenay & Comox):

- rankings were highest for:
 - *Ensure infrastructure and operations are resilient to climate change, natural disasters and seasonal impacts.*
 - *Ensure operations are able to adapt to changing conditions.*
 - *Ensure assets are relevant for the long term.*
 - *Ensure the system has enough capacity to meet future growth.*
- rankings were significantly lower for:
 - *Maximize the use of existing infrastructure and road right of ways*
- Rankings for the technical goals from residents of Area B are similar to those from Courtenay and Comox.

Observations on the affordability goals (Courtenay & Comox):

- rankings for the affordability goals tended to be distributed except for a high very important ranking for *Maximize opportunity for grant funding*

Observations on the environment goals (Courtenay & Comox):

- rankings were highest for:
 - *Ensure treatment of wastewater exceeds current standards*
- rankings were lower for:
 - *Remove artificial contaminants such as pharmaceuticals and micro plastics from wastewater.*
 - *Ensure energy efficiency and mitigate climate change impacts.*
- Rankings from Area B residents were very high for all environment goals with the majority of them in the very important category.

Observations on the social goals (Courtenay & Comox):

- rankings were highest for:
 - *Minimize noise and odour from treatment plant including Area B residents*
- rankings were lower for:
 - *Maximize opportunities for partnerships that achieve a community benefit*
 - *Maximize opportunities for community and recreational amenities at/around the treatment plant.*

RESOURCE RECOVERY November 27 & 28 Workshop Results Courtenay and Comox



	Resource Recovery Courtenay					Resource Recovery Comox					Resource Recovery Area A					Resource Recovery Area B				
	VI	SI	NIU	SU	NI	VI	SI	NIU	SU	NI	VI	SI	NIU	SU	NI	VI	SI	NIU	SU	NI
Technical Goals																				
Use commercially available technology.	5	2	3			4	2	2				1				11	2	2		
Anticipate future demand for resources.	7		3			7	1	1			1					10	3	2		
Improve performance of treatment plant.	6	2	1			6	2	1			1					13		2		
Affordability Goals																				
Explore opportunities to recover heat and energy and offset costs at CVWPCC	8	1	1			5	4				1					11	2	2		
Explore economically productive use of reclaimed water.	9					4	4	1				1				10	4			1
Select resource recovery options that will maximize grant funding opportunities.	8	1	1			4	4	1			1					11	2	1	1	
Explore the potential for external partners to help reduce capital costs.	4	1	3			3	2	4								5	2	6		1
Economic Goals																				
Explore options that can have a positive impact on or grow the local economy	6	1	3			5	1	3					1			6	5	2	1	
Environment Goals																				
Maximize climate change mitigation	6	3	1			8	1					1				9	4	2		
Restore or enhance environmental habitat	7	3				7	1	1			1					10	4	1		
Social Goals																				
Protect public health	9					8	1				1					15				
Ensure ability to maintain irrigation of public parks and gardens during water restrictions.	4	6	1	2		3	4	1		1		1				8	2	3	2	

RESOURCE RECOVERY COMMENTS FROM FEEDBACK FORMS:

Courtenay:

Are there any goals you think should be deleted?

- No external partners

Are there any goals missing that you think should be included?

- Community garden is important to keep irrigation during restrictions

Comox

Are there any goals you think should be deleted?

Are there any goals missing that you think should be included?

Other

- Too vague, too aspirational. Would be preferable to have 3 different examples of a plan to work from.
- Quite vague goals without knowledge of more presentation of technical solutions
- Series of notes on form: new plants, design competition by local construction groups, DFO and salmon, global warming, remove phosphorous, fertilizer and RNG by Fortis BC, hands free public address

Area A

Are there any goals you think should be deleted?

Are there any goals missing that you think should be included?

- Explore opportunities for carbon sequestration. Explore UV decontamination as opposed to Ch

Other

- PPP?

Area B

Are there any goals you think should be deleted?

- Irrigating people's gardens is a nice product but shouldn't be a goal
- Protecting public health is not a goal but a mandatory criterion
- Overflow ponds what capacity to adversely affect other development?
- Be careful of public – private partnerships

Are there any goals missing that you think should be included?

- Protection of residential areas having wells and septic systems
- Protection of ground water – wells aquifer

Other

- Electoral Area B should have input in the decision making. The goal is to have full public representation.
- It is a vast improvement over what we had with the last sewage commission. We hope town councillors are more open to listening respectfully and hearing feedback

- Would like to have more input on principal objectives
- There is no one representing our Area on the sewage commission Area B
- Hard to comment when we haven't seen what is planned
- Better representation for Area B on sewage commission!
- Plans to include Area B on sewerage commission, discussion of a new state of the art treatment plant

Observations on the Resource Recovery data overall:

- The rankings for all goals from Courtenay and Comox residents are relatively similar.
- Overall all goals were ranked relatively high – the majority falling into the very important and important categories.
- A small proportion of the rankings fall into the neither important or unimportant categories.
- More rankings in the neither important or unimportant category in the Resource Recovery rankings.
- Area B residents tended to rank the resource recovery goals more highly than did Courtenay and Comox residents.



Observations on the technical goals (Courtenay & Comox):

- rankings were fairly distributed across the very, somewhat and neither important or unimportant categories.
- Area B residents ranked these goals very high compared with Courtenay and Comox residents

Observations on the affordability goals (Courtenay & Comox):

- rankings were highest for:
 - *Explore opportunities to recover heat and energy and offset costs at CVWPCC*
 - *Explore economically productive use of reclaimed water.*
 - *Select resource recovery options that will maximize grant funding opportunities.*
- Rankings were lower for: *Explore the potential for external partners to help reduce capital costs.*
- Courtenay, Comox & Area B ranking were quite similar

Observations on the economic goal (Courtenay & Comox):

- Courtenay, Comox & Area B ranking were quite similar (VI & SI) for: *Explore options that can have a positive impact on or grow the local economy*

Observations on the environment goals (Courtenay & Comox):

- Courtenay, Comox & Area B ranking were quite similar (VI & SI) for: *Maximize climate change mitigation & Restore or enhance environmental habitat*

Observations on the social goals (Courtenay & Comox):

- Courtenay, Comox & Area B ranking were quite similar (VI) for: Protect public health
- rankings were lower for:
 - *Ensure ability to maintain irrigation of public parks and gardens during water restrictions.*

NEXT STEPS

The results of the two consultation workshops will be discussed at the Dec 11, 2018 Technical Advisory and Public Advisory Committees (PAC/TAC) along with the online consultation results and will be considered as they develop a shortlist of options to review.

Appendix 1: Workshop Instructions and ranking pages



CVRD LWMP Public Engagement Workshop Instructions

Background: The CVRD is developing a liquid waste management plan (LWMP) for the City of Courtenay and the Town of Comox. The LWMP process is being guided and supported by Technical and Public Advisory Committees (PACTAC) made up of professionals, elected officials from Courtenay and Comox, and members of the public.

One of the early steps in the LWMP process is to develop goals for the management of liquid waste. These goals will ultimately be used to evaluate different options for conveyance, treatment and resource recovery of liquid waste.

Draft goals were developed by the Technical and Public Advisory Committees at a meeting held on November 23, 2018.

The purpose of this workshop is to gain feedback from the public on the draft goals developed by the Technical and Public Advisory Committees to ensure they reflect the goals of the community.

The process for this evening includes:

- A short presentation on the LWMP process
- A short presentation on the existing CVRD liquid management system
- Presentation of the PACTAC draft goals
- Small group discussion of the draft goals
- Individual feedback on the draft goals

Following the presentations there will be an opportunity to discuss the various goals with a small number of workshop participants. Take time to consider some of the following questions in your discussions:

- Do you agree with the goals outlined by the PACTAC?
- Are there goals that you think should be removed?
- Are there any goals missing that you think should be included?

Following the group discussion please record your individual thoughts on the relative importance of the draft goals on the attached form. Also note any goals you think should not be included and any goals you think should be added.

When you are finished please drop the form at the door before you leave.

How important are these goals to you?

I live in ☐ Courtenay ☐ Comox ☐ Other please specify where _____

CONVEYANCE

Principal Objectives:

Decommission Willemar Bluffs section of pipeline

Increase capacity for future growth

	Very important	Somewhat important	Neither important or unimportant	Somewhat unimportant	Not important
Technical Goals					
Ensure infrastructure is resilient to climate change, natural disasters and seasonal impacts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ensure operations are able to adapt to changing conditions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maximize the use of existing infrastructure and road right-of-ways.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ensure long term viability of infrastructure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Utilize innovative design.					
Affordability Goals					
Consider long term financial impact, including minimizing lifecycle costs through asset management.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maximize opportunity for grant funding.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Economic Goals					
Maximize opportunities to enhance the local economy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environment Goals					
Minimize risks and potential impacts to sensitive environments.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ensure energy efficiency and mitigate climate change impacts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Social Goals					
Minimize noise and odour impacts to community.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Minimize disruptions to communities along conveyance routes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maximize opportunities for community and recreational amenities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Are there any goals you think should be deleted?

Are there any goals missing that you think should be included?

How important are these goals to you?

TREATMENT

Principal Objectives:

Upgrades to meet regulatory requirements

Increase capacity for future growth

	Very important	Somewhat important	Neither important or unimportant	Somewhat unimportant	Not important
Technical Goals					
Ensure infrastructure and operations are resilient to climate change, natural disasters and seasonal impacts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ensure operations are able to adapt to changing conditions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maximize the use of existing infrastructure and road right of ways.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ensure assets are relevant for the long term.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ensure the system has enough capacity to meet future growth.					
Affordability Goals					
Consider long term financial impact, including minimizing lifecycle costs through asset management.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maximize opportunity for grant funding.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environment Goals					
Ensure disinfection of wastewater exceeds current standards.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ensure treatment of wastewater exceeds current standards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Remove artificial contaminants such as pharmaceuticals and micro plastics from wastewater.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ensure energy efficiency and mitigate climate change impacts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Social Goals					
Minimize noise and odour from treatment plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maximize opportunities for partnerships that achieve a community benefit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maximize opportunities for community and recreational amenities at/around the treatment plant.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Are there any goals you think should be deleted?

Are there any goals missing that you think should be included?

How important are these goals to you?

RESOURCE RECOVERY

Principal Objectives:

Explore opportunities to recover and reuse resources from wastewater

- Water
- Heat/energy
- Nutrients

	Very important	Somewhat important	Neither important or unimportant	Somewhat unimportant	Not important
Technical Goals					
Use commercially available technology.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Anticipate future demand for resources.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improve performance of treatment plant.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Affordability Goals					
Explore opportunities to recover heat and energy and offset costs at CVWPCC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Explore economically productive use of reclaimed water.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Select resource recovery options that will maximize grant funding opportunities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Explore the potential for external partners to help reduce capital costs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Economic Goals					
Explore options that can have a positive impact on or grow the local economy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environment Goals					
Maximize climate change mitigation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restore or enhance environmental habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Social Goals					
Protect public health	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ensure ability to maintain irrigation of public parks and gardens during water restrictions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Are there any goals you think should be deleted?

Are there any goals missing that you think should be included?

How satisfied are you with this workshop as an opportunity to have your voice heard?

Very satisfied

☐

Satisfied

☐

Somewhat satisfied

☐

Not satisfied

☐

APPENDIX 3 – CONNECTCVRD ANALYTICS: NOV. 28-DEC. 7, 2018, GOALS AND OBJECTIVES

Survey Report

27 November 2018 - 09 December 2018

Goals and Objectives - Comox Valley Sewer Service Planning

PROJECT: Help shape the future of our Sewer System in
Courtenay and Comox

Connect CVRD

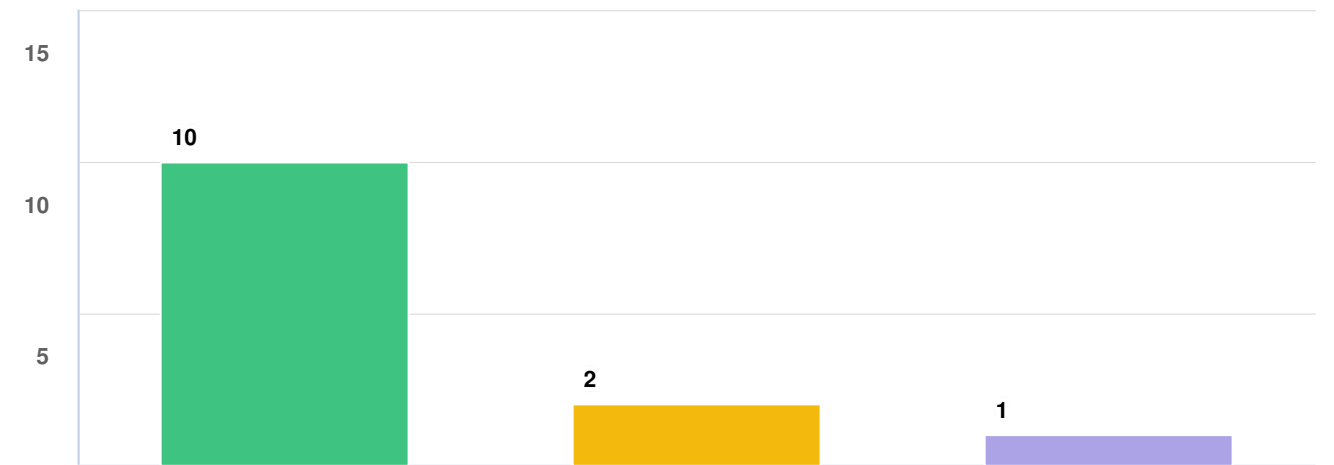


CONVEYANCE

The first series of questions focuses on CONVEYANCE: How important are these goals to you regarding conveyance (the pipes and pump stations that move wastewater from homes/businesses to the treatment plant).

Q1

Ensure infrastructure is resilient to climate change, natural disasters and seasonal impacts.



Question options

Very Important

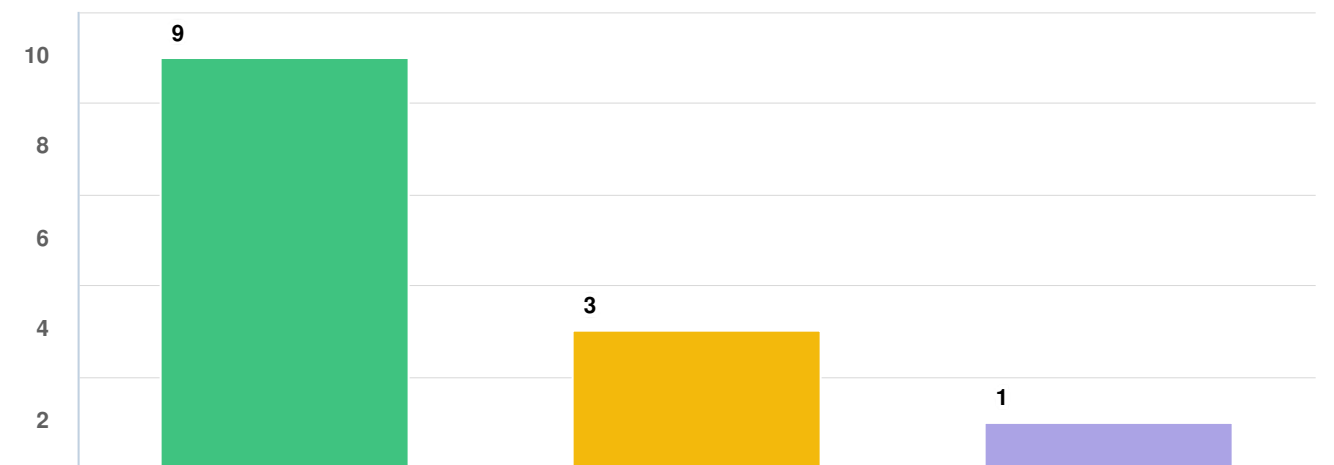
Somewhat important

Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q2

Ensure operations are able to adapt to changing conditions.



Question options

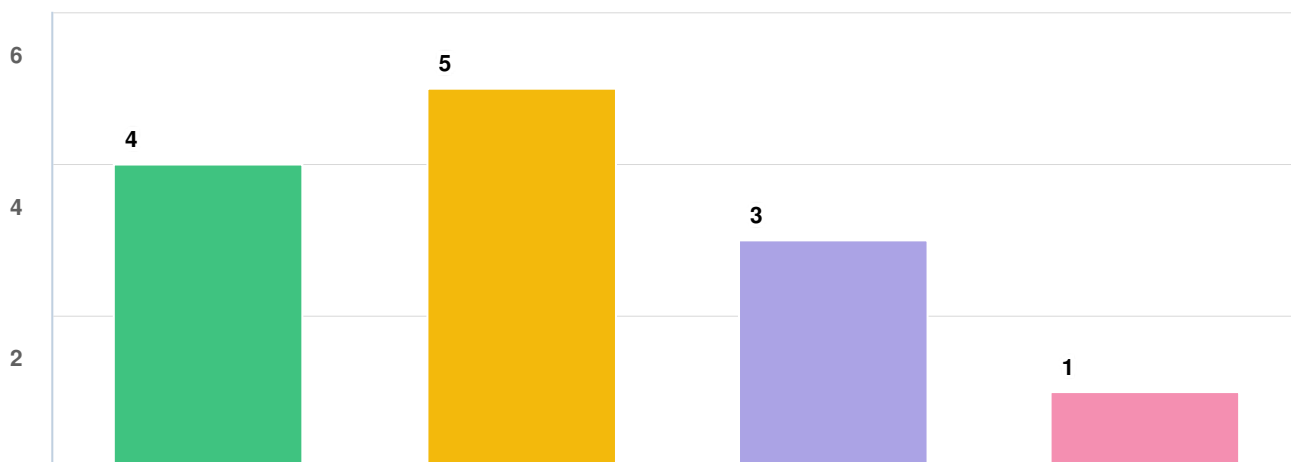
Very important

Somewhat important

Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q3 Maximize the use of existing infrastructure and road right of ways.

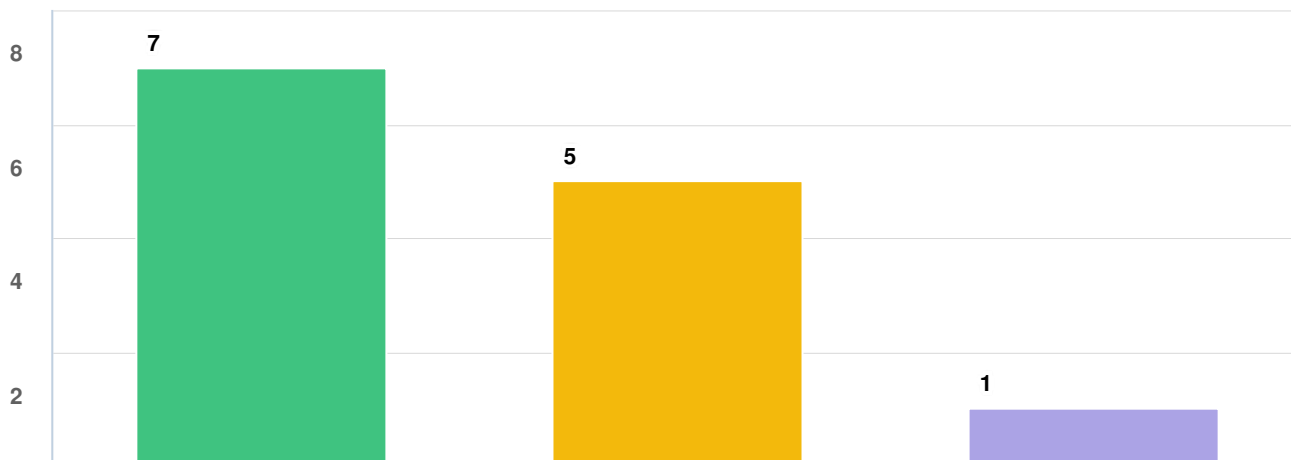


Question options

Very Important Somewhat important Neither important or unimportant Somewhat unimportant

Optional question (14 responses, 0 skipped)

Q4 Ensure long-term viability of infrastructure.

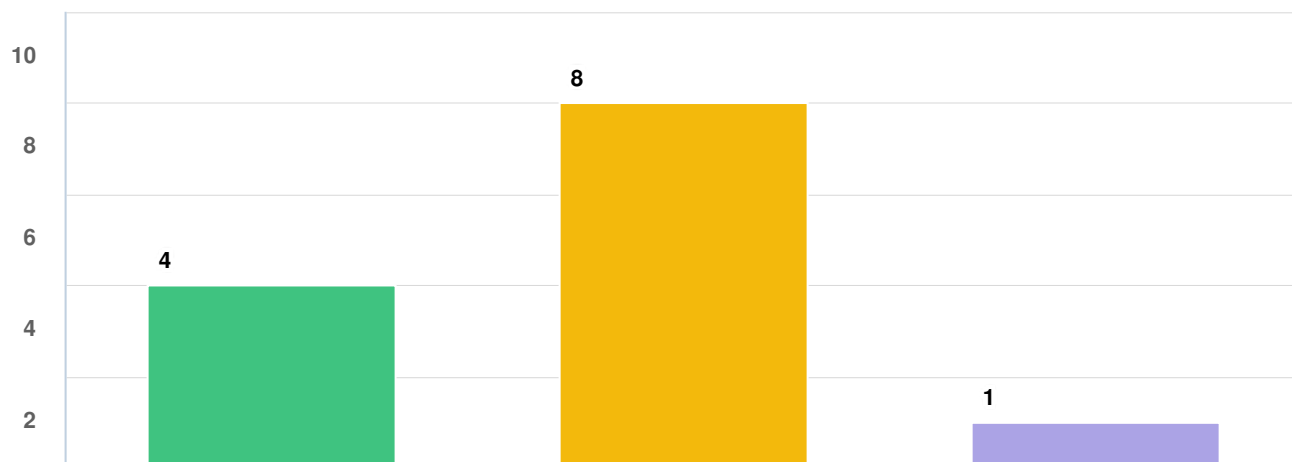


Question options

Very Important Somewhat important Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q5 Utilize innovative design.

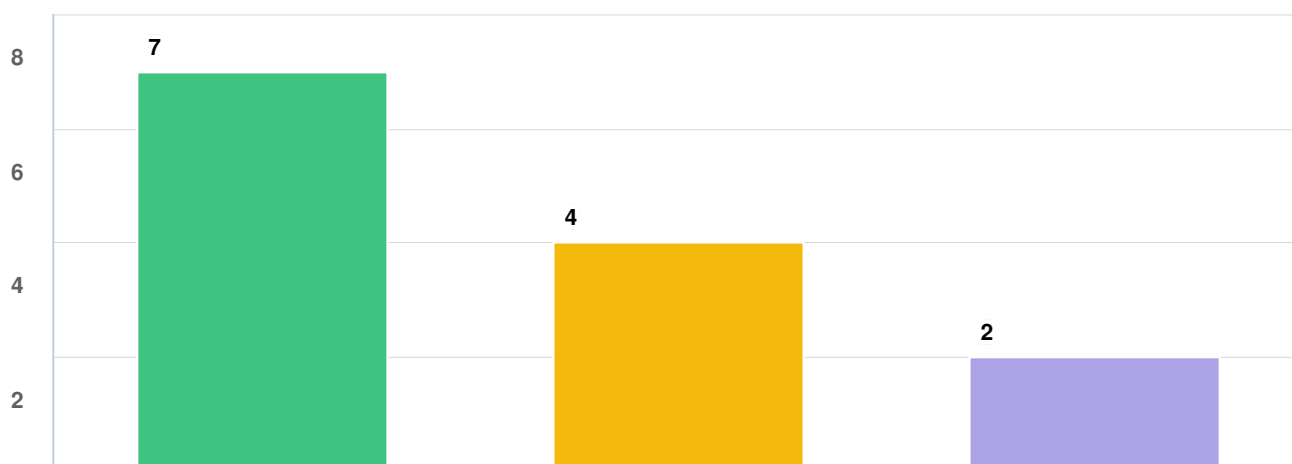


Question options

Very important Somewhat important Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q6 Consider long-term financial impact and minimize lifecycle costs

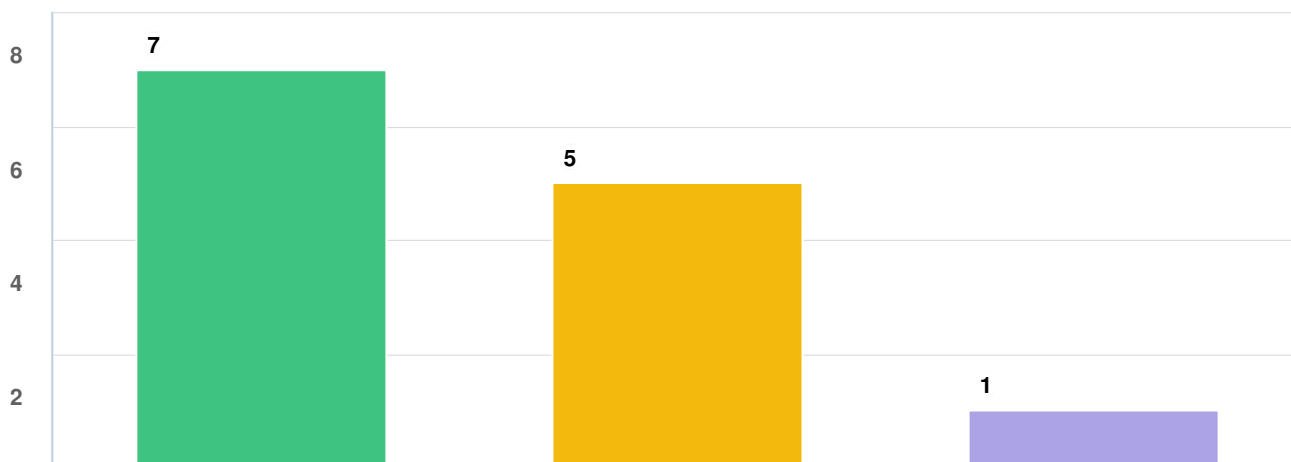


Question options

Very important Somewhat important Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q7 Maximize opportunity for grant funding.

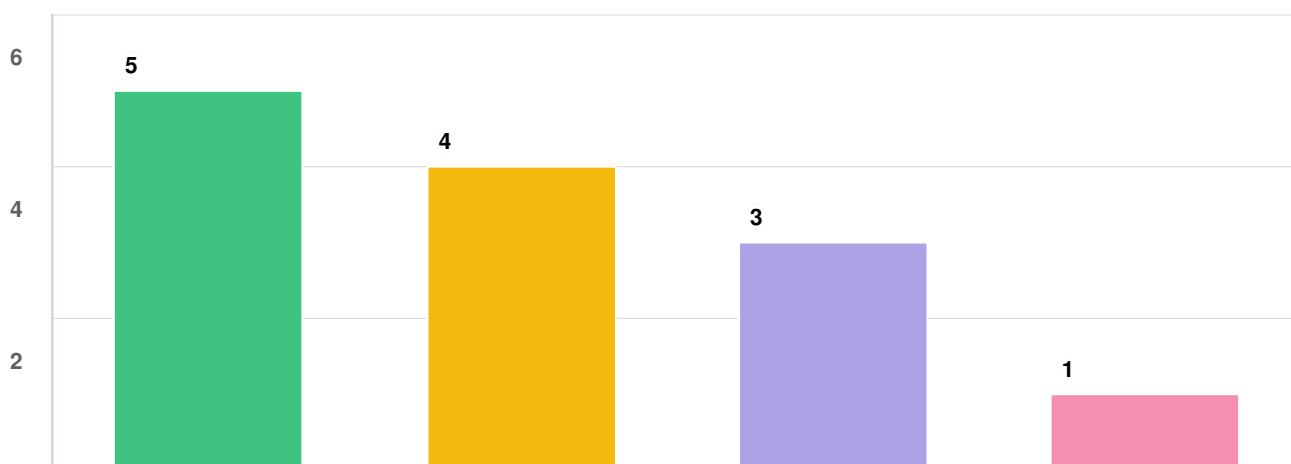


Question options

Very important Somewhat important Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q8 Maximize opportunities to enhance the local economy.

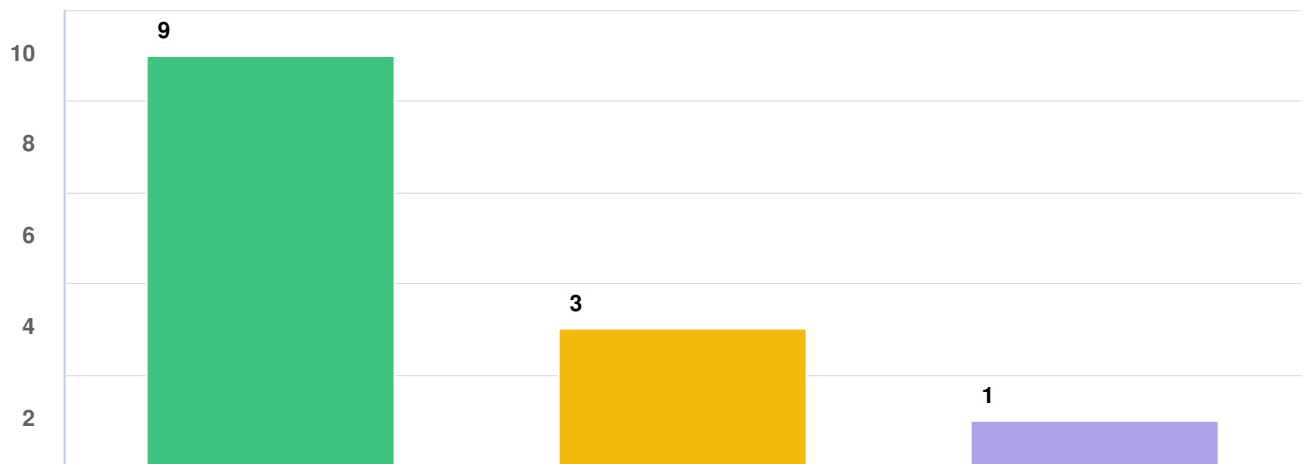


Question options

Very important Somewhat important Neither important or unimportant Not important

Optional question (14 responses, 0 skipped)

Q9 Minimize risks and potential impacts to sensitive environments.

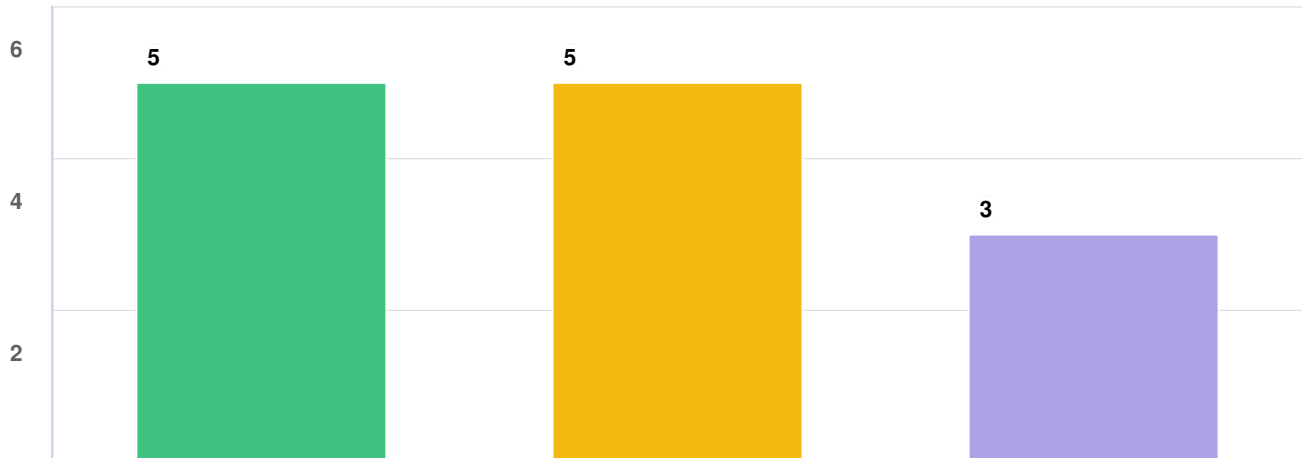


Question options

Very important Somewhat important Somewhat unimportant

Optional question (14 responses, 0 skipped)

Q10 Maximize energy efficiency and mitigate climate change impacts.

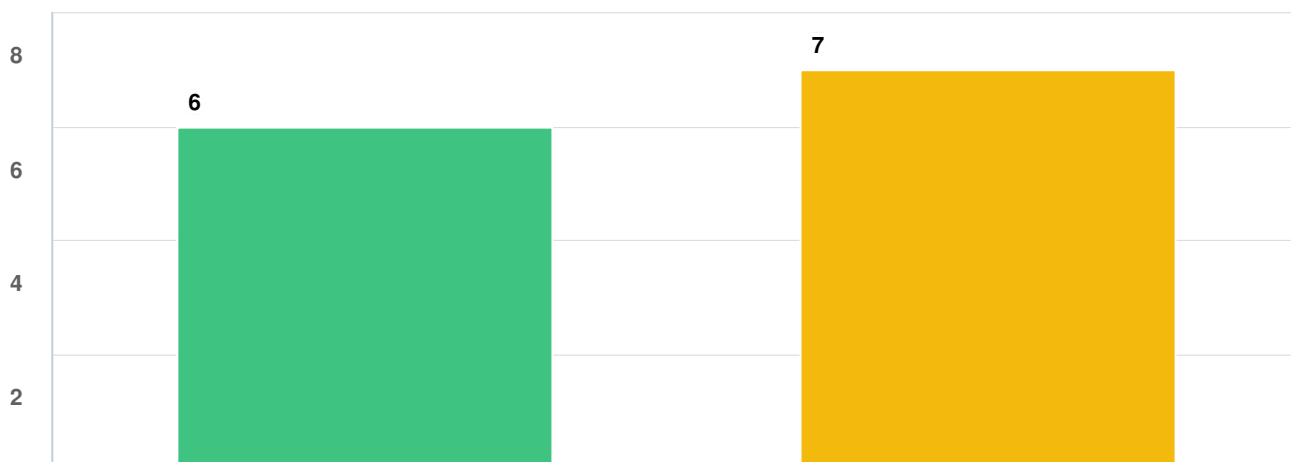


Question options

Very important Somewhat important Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q11 Minimize noise and odour impacts to the community.

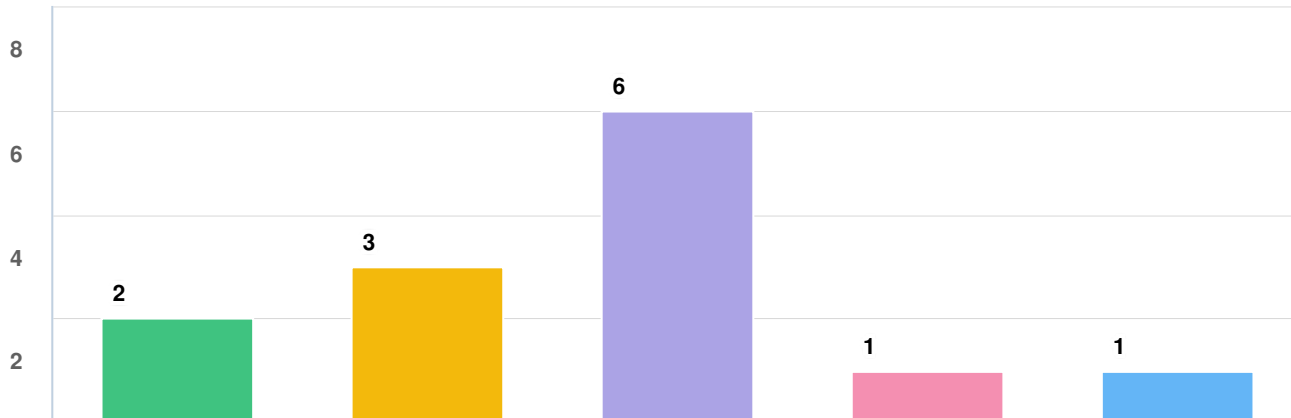


Question options

Very important Somewhat important

Optional question (14 responses, 0 skipped)

Q12 Minimize disruptions to communities along conveyance routes.

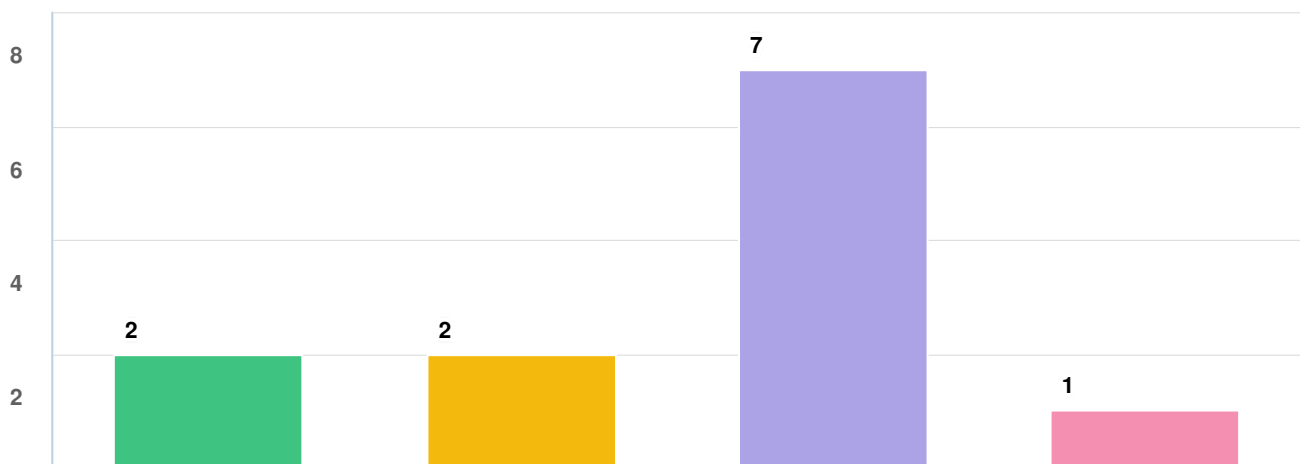


Question options

Very important Somewhat important Neither important or unimportant Somewhat unimportant
Not important

Optional question (14 responses, 0 skipped)

Q13 Maximize opportunities for community and recreational amenities.



Question options

● Very important ● Somewhat important ● Neither important or unimportant ● Not important

Optional question (14 responses, 0 skipped)

Q14 | **Are there any goals you think should be deleted regarding CONVEYANCE?**

peatrlorian

11/30/2018 11:57 AM

Less car focus

Linvann

12/03/2018 09:13 AM

On budget

salty

12/04/2018 10:36 AM

Maximize opportunities to enhance the local economy...

Jennysteel

12/06/2018 09:29 PM

Optional question (3 responses, 11 skipped)

Q15 | Are there any goals missing that you think should be included regarding CONVEYANCE?

Albert Englehart

11/30/2018 10:54 AM

At the very least, all areas in the city of Comox should be connected to the sewer system vice septic. We should not be dumping untreated waste back into the environment if we can help it.

peatrlorian

11/30/2018 11:57 AM

Bike lanes

mary.payne

12/01/2018 09:13 AM

A timeline was not part of the survey

Linvann

12/03/2018 09:13 AM

Progress reports with learnings and recommendations.

Amanda Smith

12/06/2018 08:53 AM

Are you going to use ozone and this system to treat our waste?
<https://www.rdkb.com/Services/EnvironmentalServices2014/LiquidWaste.aspx>

Susan Ruth

12/06/2018 07:24 PM

upgrading the storm water system so that it does not impact the sewage lines.

Jennysteel

12/06/2018 09:29 PM

Should try to reduce the amount and nature of the household effluent coming into the system through public education

Eugene

12/07/2018 04:19 PM

Energy generation potential of the project

ggeiger

12/08/2018 10:02 AM

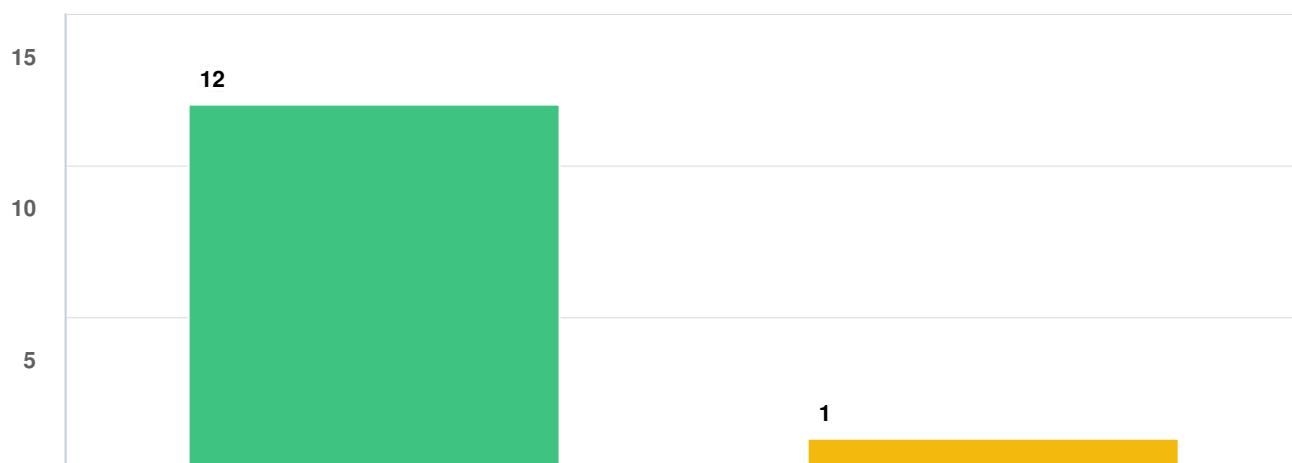
If there is a rural impact or ideas involving rural land , large land owners should be consulted eg. Comox Valley Farmers Institute .As they have a large impact on economy.

Optional question (9 responses, 5 skipped)

TREATMENT

This second series of questions focuses on TREATMENT: How important are these goals to you when it comes to treatment of wastewater (the collection and treatment of all wastewater collected - ensuring it's at a safe standard before discharging into the marine environment)?

Q16 | Ensure infrastructure and operations are resilient to climate change, natural disasters and seasonal impacts.

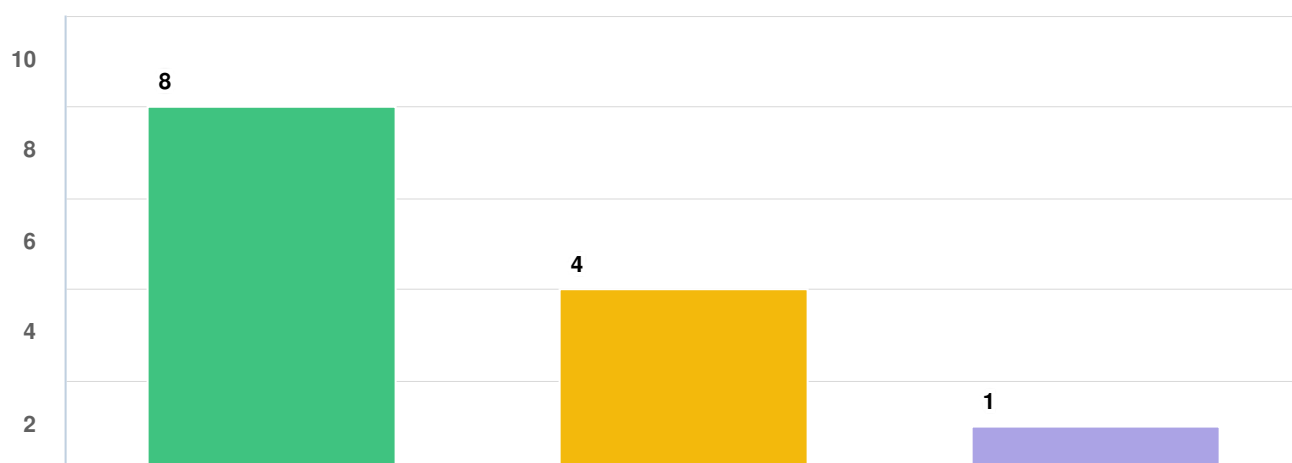


Question options

● Very important ● Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q17 | Ensure operations are able to adapt to changing conditions.

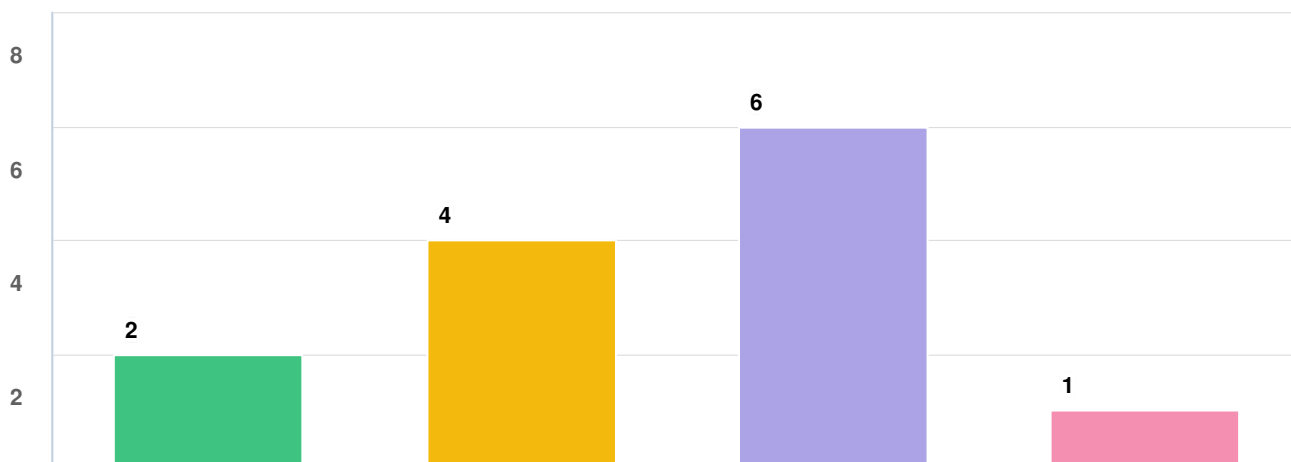


Question options

● Very important ● Somewhat important ● Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q18 Maximize the use of existing infrastructure and road right-of-ways.

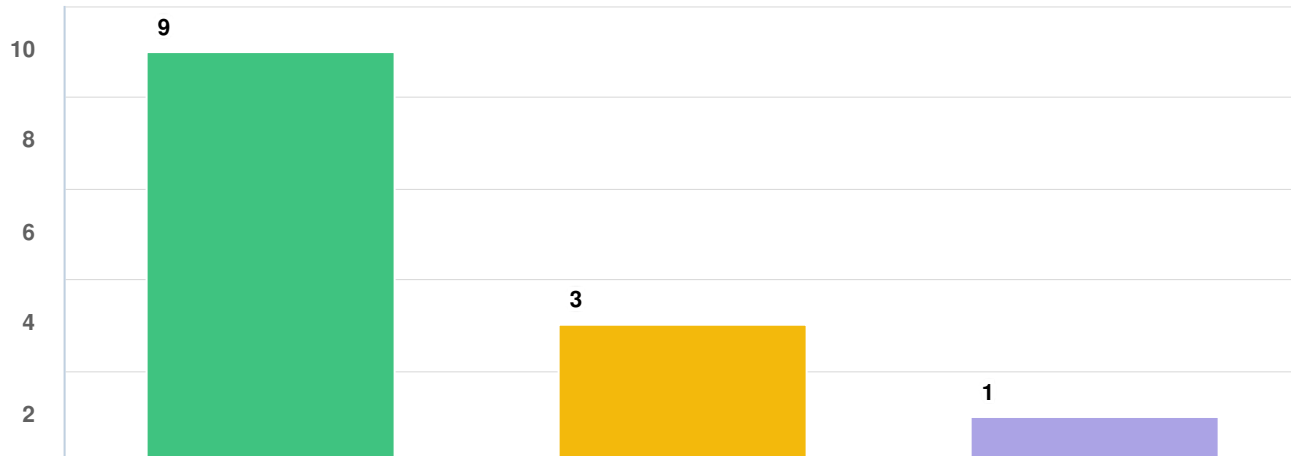


Question options

Very important Somewhat important Neither important or unimportant Somewhat unimportant

Optional question (14 responses, 0 skipped)

Q19 Ensure assets are relevant for the long term.

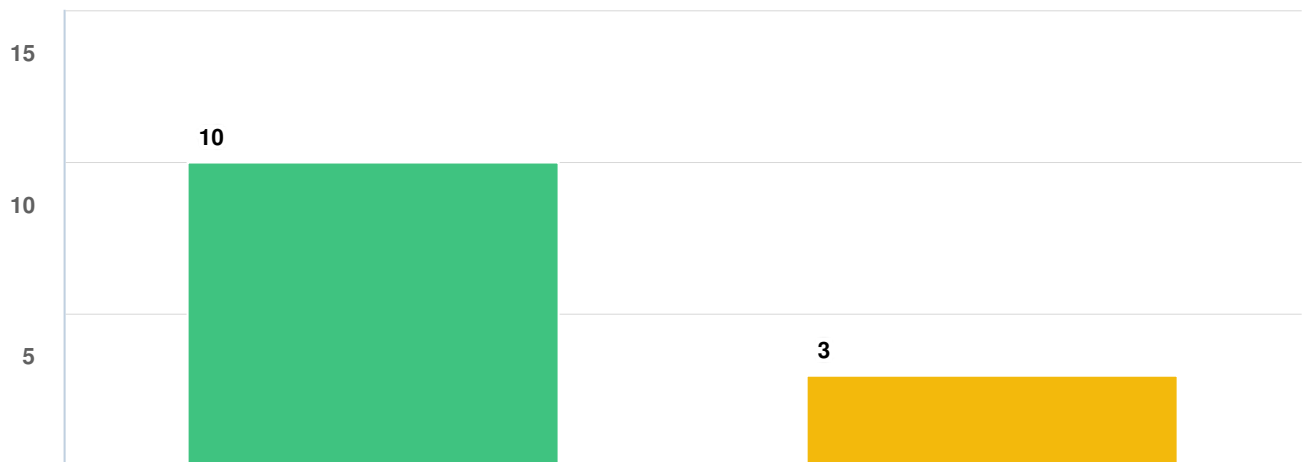


Question options

Very important Somewhat important Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q20 Ensure the system has enough capacity to meet future growth.

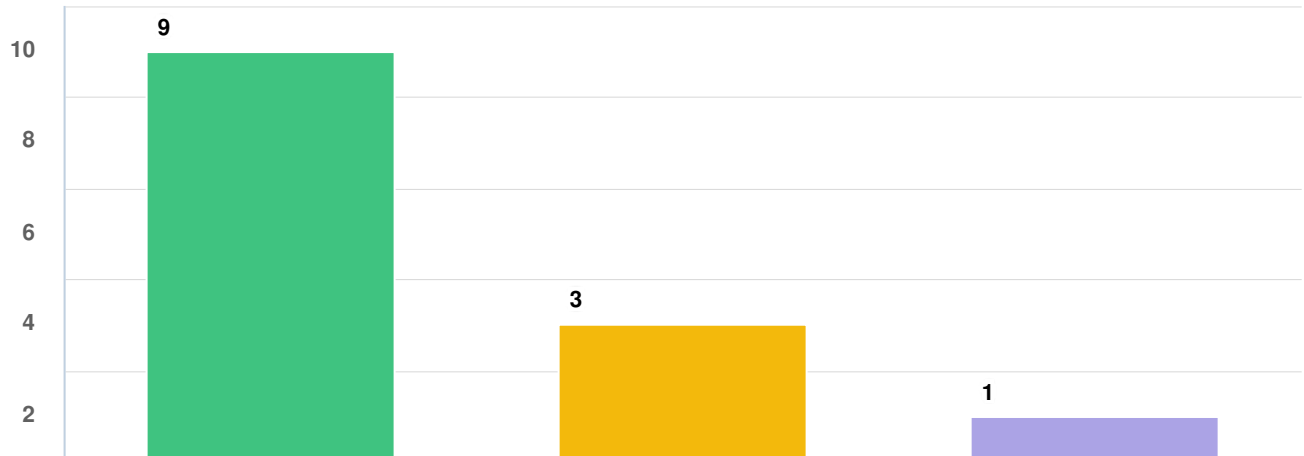


Question options

● Very important ● Somewhat important

Optional question (14 responses, 0 skipped)

Q21 Consider long-term financial impact and minimize life cycle costs.

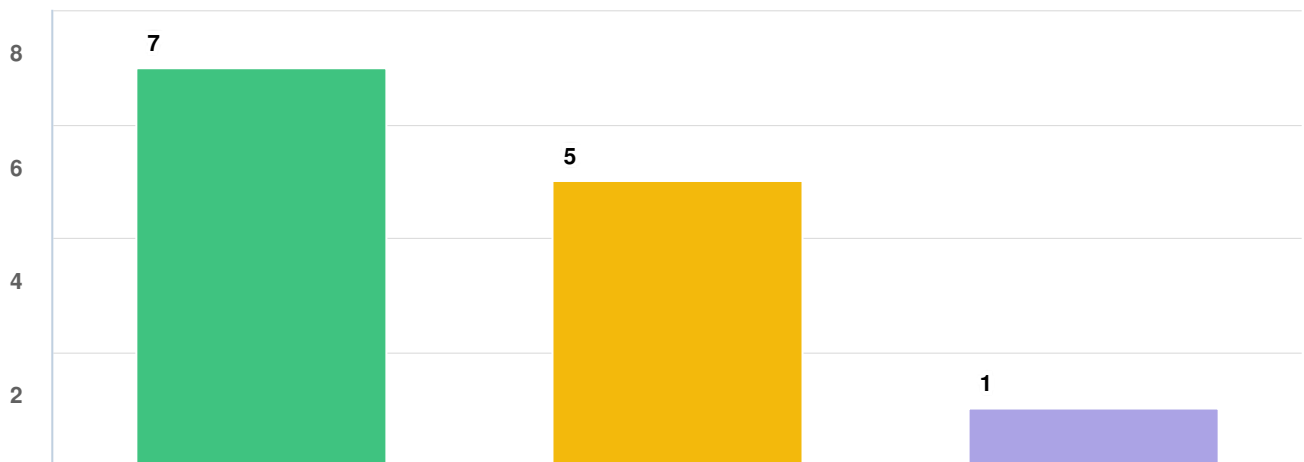


Question options

● Very important ● Somewhat important ● Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q22 Maximize opportunity for grant funding.

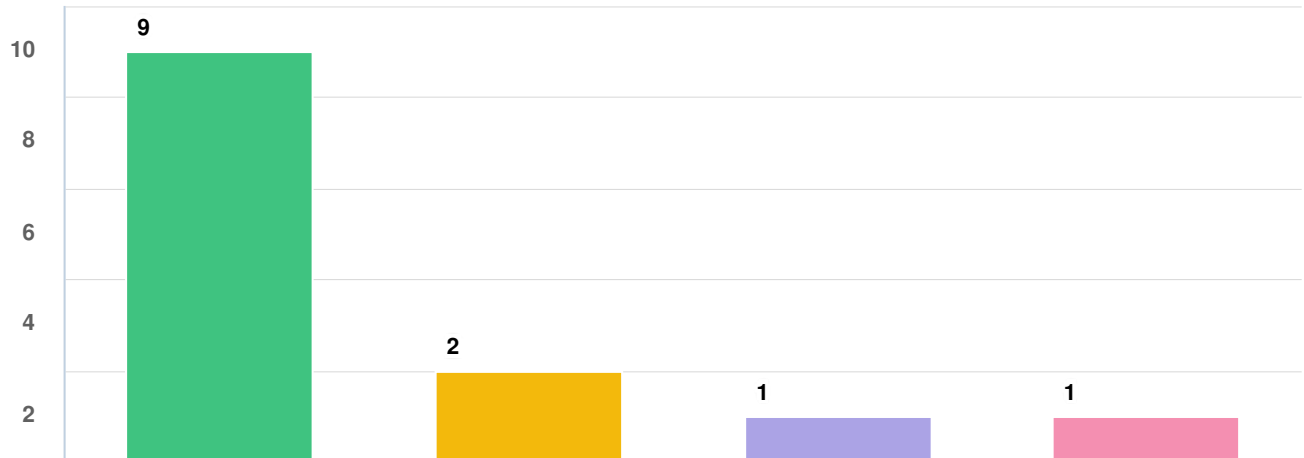


Question options

Very important Somewhat important Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q23 Ensure treatment of wastewater exceeds current standards.

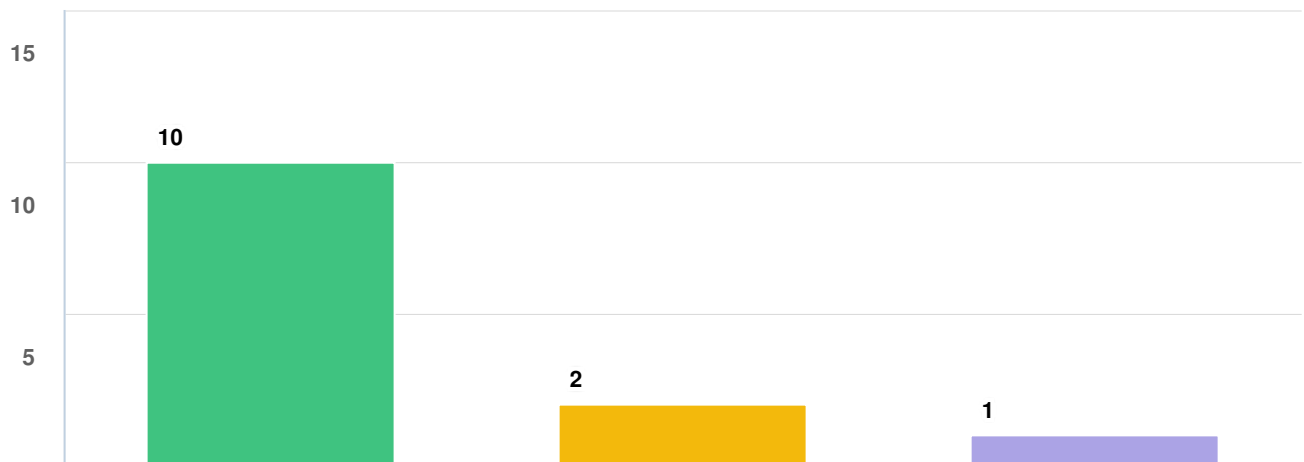


Question options

Very important Somewhat important Neither important or unimportant Somewhat unimportant

Optional question (14 responses, 0 skipped)

Q24 Remove artificial contaminants such as pharmaceuticals and microplastics from wastewater.

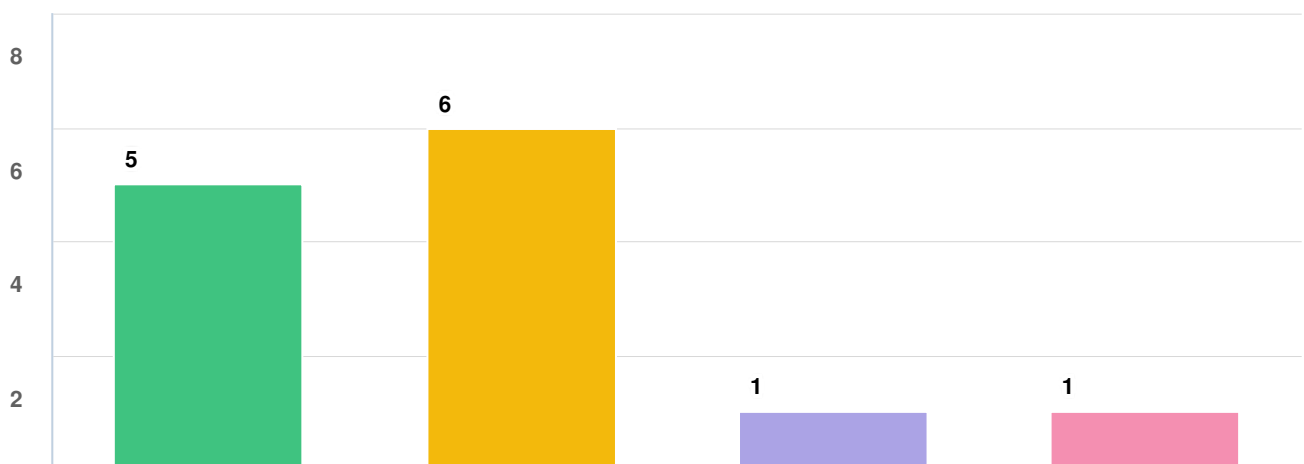


Question options

Very important Somewhat important Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q25 Maximize energy efficiency and mitigate climate change impacts.

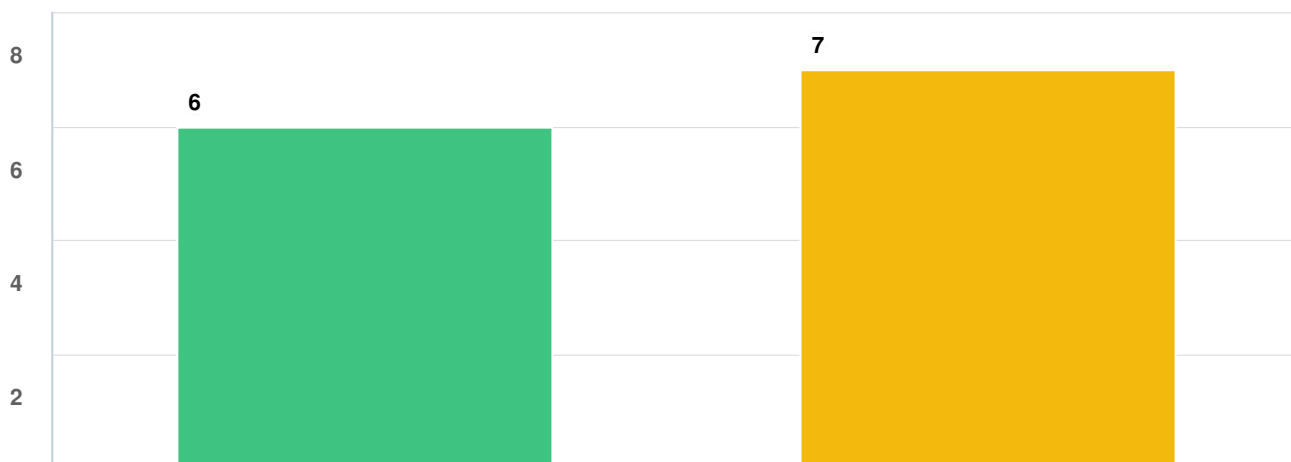


Question options

Very important Somewhat important Neither important or unimportant Somewhat unimportant

Optional question (14 responses, 0 skipped)

Q26 Minimize noise and odour from treatment plant

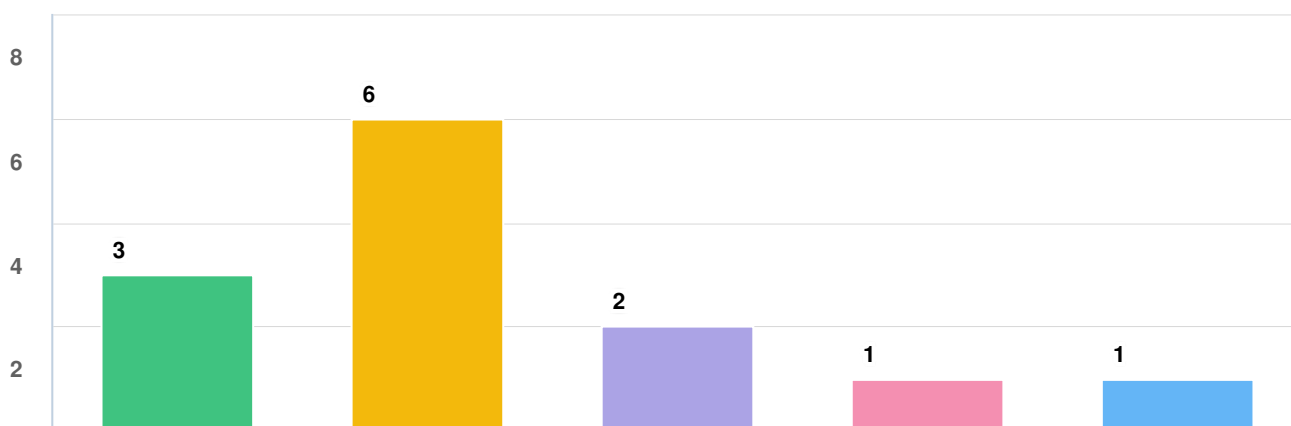


Question options

Very important Somewhat important

Optional question (14 responses, 0 skipped)

Q27 Maximize opportunities for partnerships that achieve a community benefit.

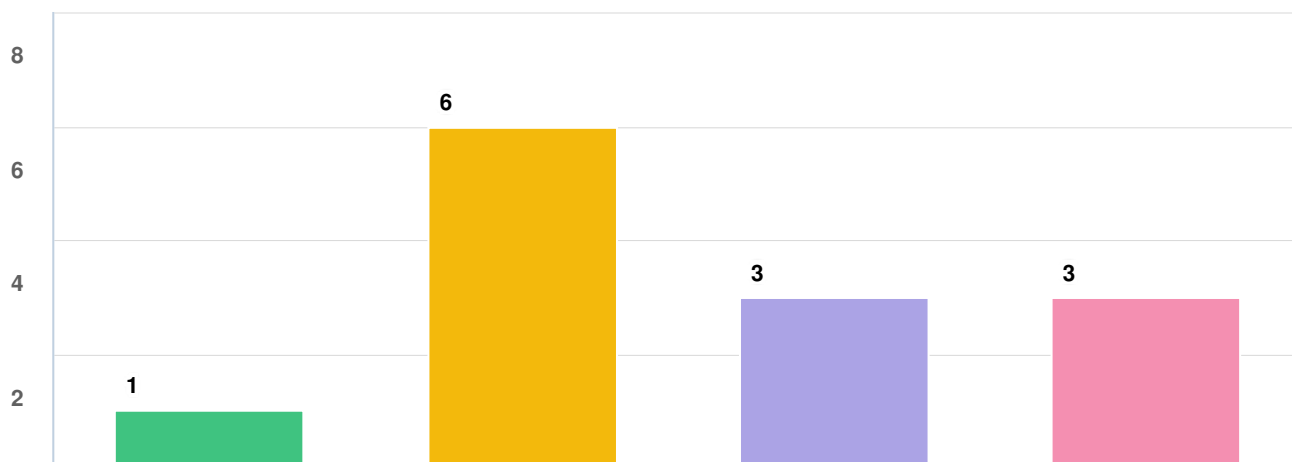


Question options

Very important Somewhat important Neither important or unimportant Somewhat unimportant
Not important

Optional question (14 responses, 0 skipped)

Q28 Maximize opportunities for community and recreational amenities at/around the treatment plant.



Question options

● Very important ● Somewhat important ● Neither important or unimportant ● Not important

Optional question (14 responses, 0 skipped)

Q29 Are there any goals you think should be deleted regarding TREATMENT?

DaveM

11/29/2018 10:27 AM

no

Linvann

12/03/2018 09:13 AM

Cost is the critical factor a goal may be to remove all pharmaceutical but if the cost is exorbitant the goal can not be met.

Poorpi

12/05/2018 06:01 PM

Mitigate climate change should go but energy efficiencies must stay

Susan Ruth

12/06/2018 07:24 PM

if "Maximize opportunities for partnerships that achieve a community benefit " code for public-private partnerships, absolutely not. Thanks.

Jennysteel

12/06/2018 09:29 PM

Minimize odour and noise is NOT acceptable -- they both must be eliminated. CVRD placed its plant in a residential community so there should be no odour or noise beyond the plant boundaries.

ggeiger

12/08/2018 10:02 AM

I dont know what the goals are i can't find them.

Optional question (6 responses, 8 skipped)

Q30 | Are there any goals missing that you think should be added regarding TREATMENT?

DaveM

11/29/2018 10:27 AM

no

Albert Englehart

11/30/2018 10:54 AM

Continue to expand the sewer system to include as many residents of the CVRD as possible

mary.payne

12/01/2018 09:13 AM

Timeline

Linvann

12/03/2018 09:13 AM

Reporting and what will be done to dispose of whatever contamination is removed ie what will you do with micro plastics, or chemicals once removed?

Amanda Smith

12/06/2018 08:53 AM

Are you going to use ozone and this system to treat our waste?
<https://www.rdkb.com/Services/EnvironmentalServices2014/LiquidWaste.aspx>

Eugene

12/07/2018 04:19 PM

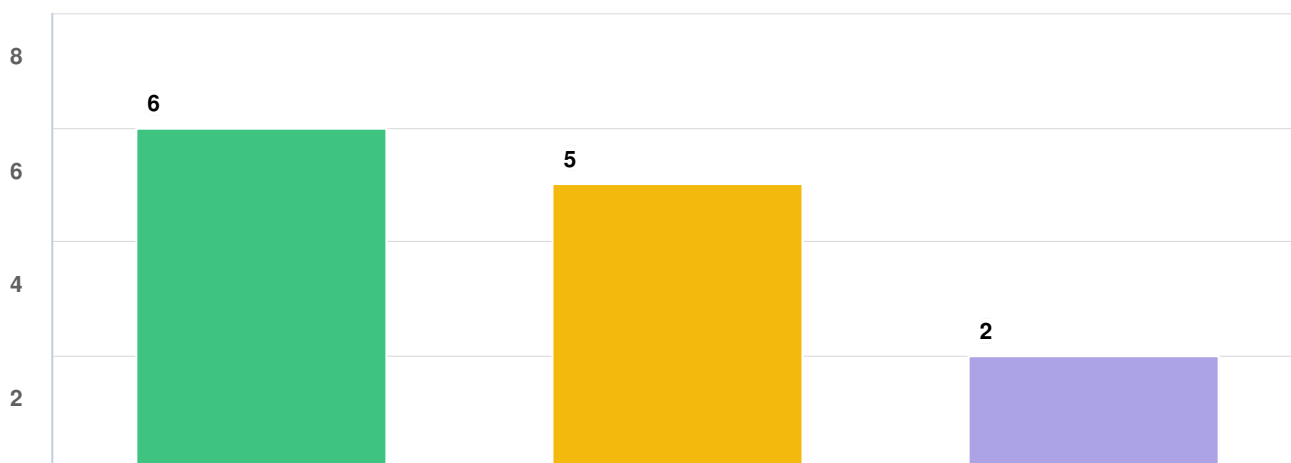
Maximize energy generation potential

Optional question (6 responses, 8 skipped)

RESOURCE RECOVERY

This third series of questions focuses on **RESOURCE RECOVERY**: How important are these goals to you when it comes to exploring opportunities to recover and reuse resources from wastewater (ie: water, heat/energy/nutrients) rather than releasing/discharging.

Q31 Use commercially available technology.

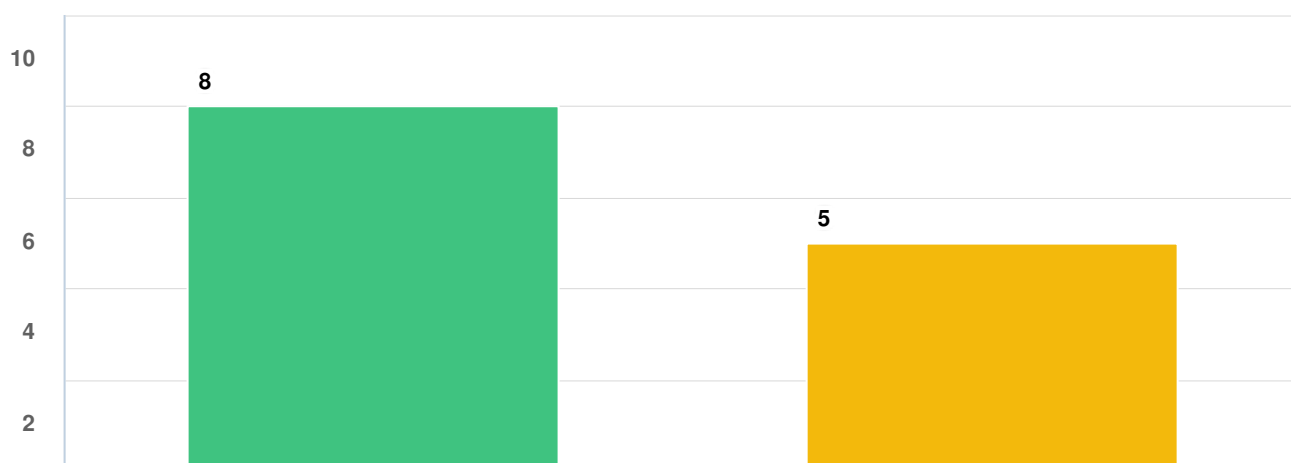


Question options

Very important Somewhat important Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q32 Anticipate future demand for resources

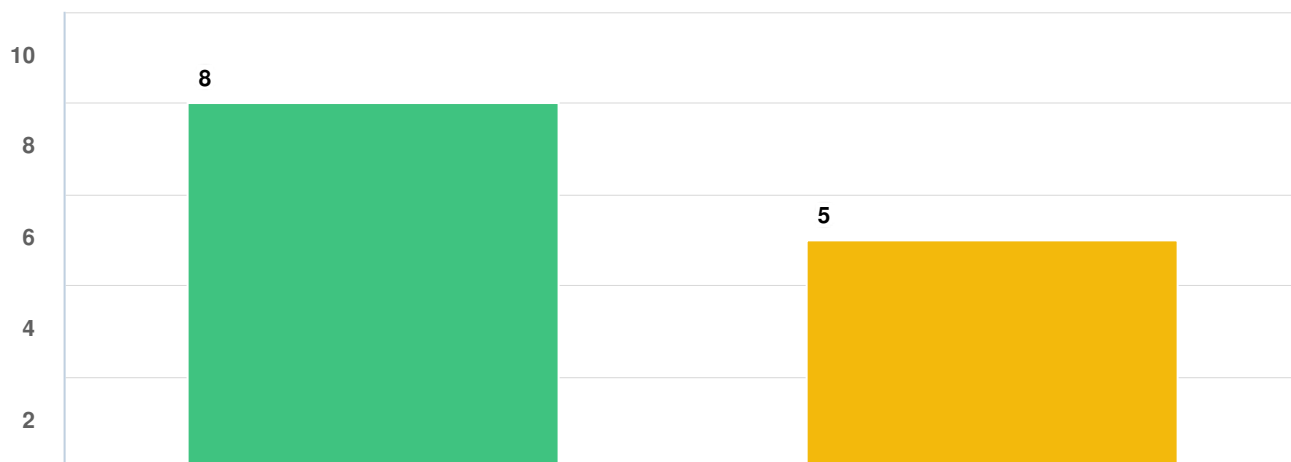


Question options

Very important Somewhat important

Optional question (14 responses, 0 skipped)

Q33 Improve performance of treatment plant.

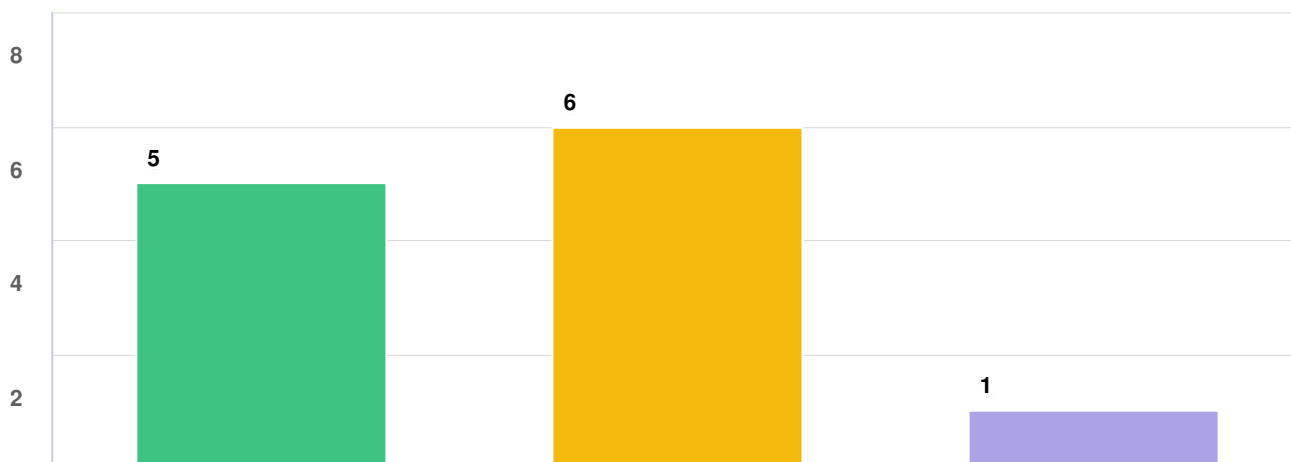


Question options

● Very important ● Somewhat important

Optional question (14 responses, 0 skipped)

Q34 Explore opportunities to recover heat and energy and offset costs at treatment plant.

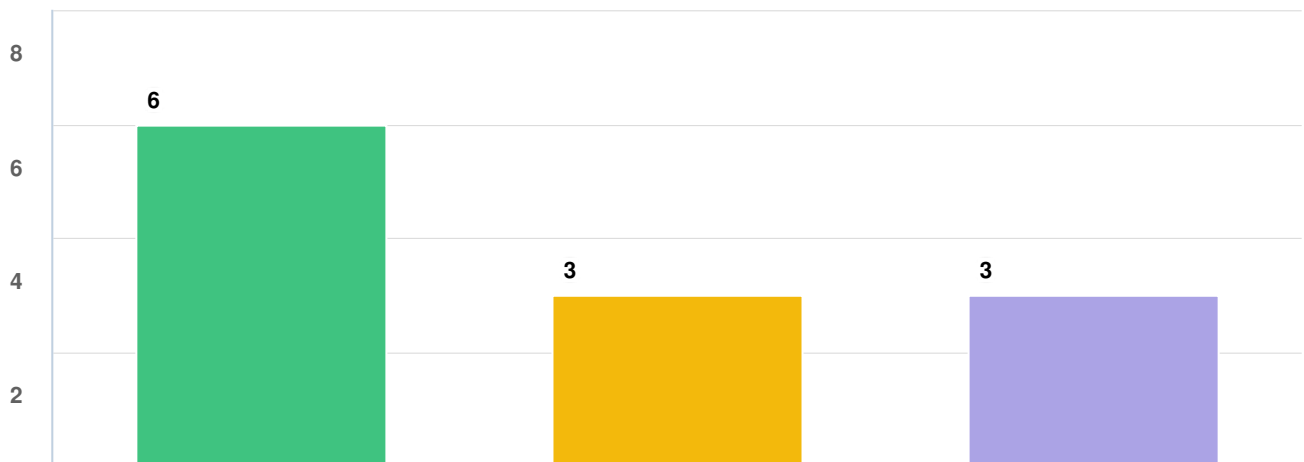


Question options

● Very important ● Somewhat important ● Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q35 Explore economically productive use of reclaimed water.

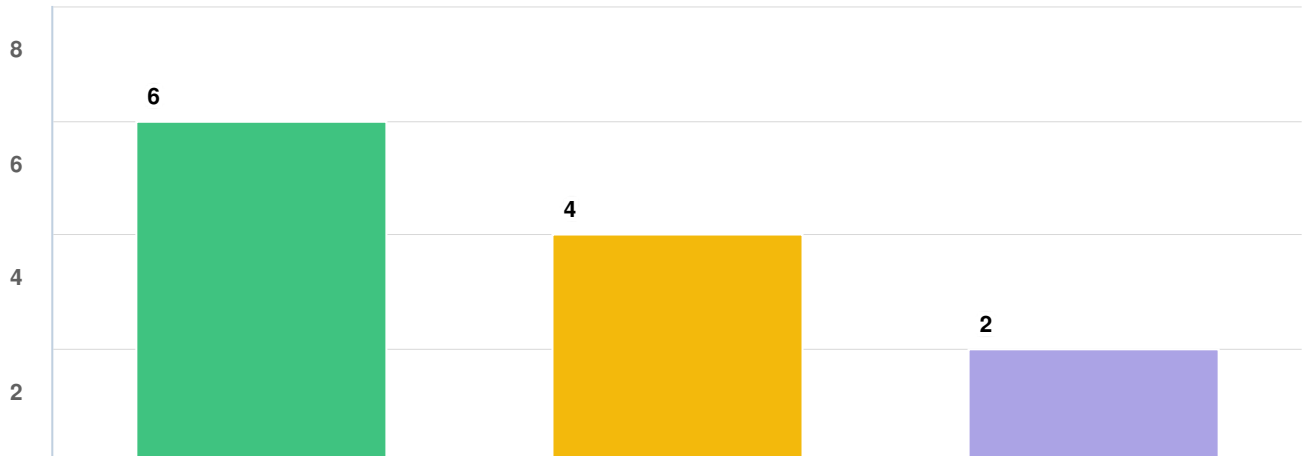


Question options

Very important Somewhat important Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q36 Select resource recovery options that will maximize grant funding opportunities.

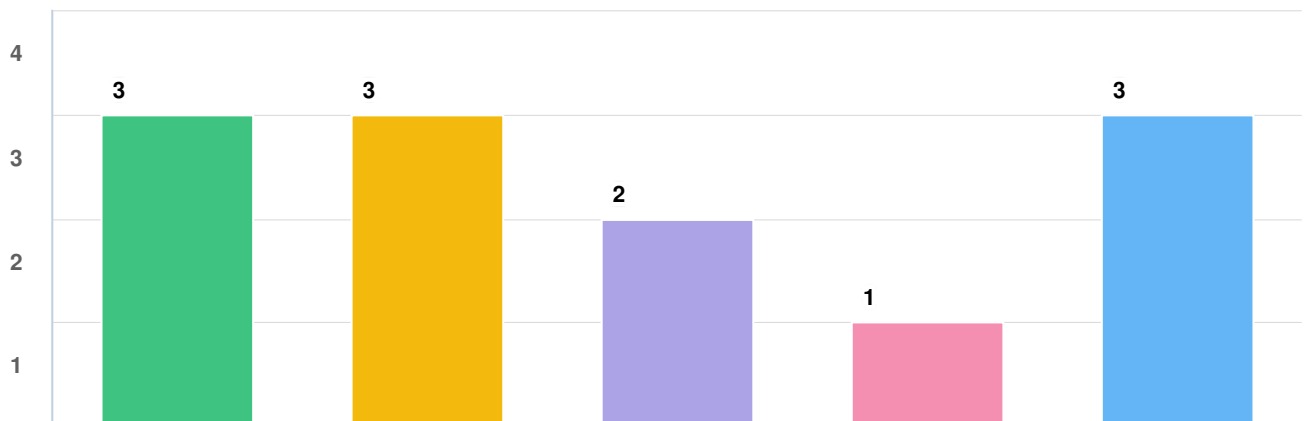


Question options

Very important Somewhat important Neither important or unimportant

Optional question (14 responses, 0 skipped)

Q37 Explore the potential for external partners to help reduce capital costs.

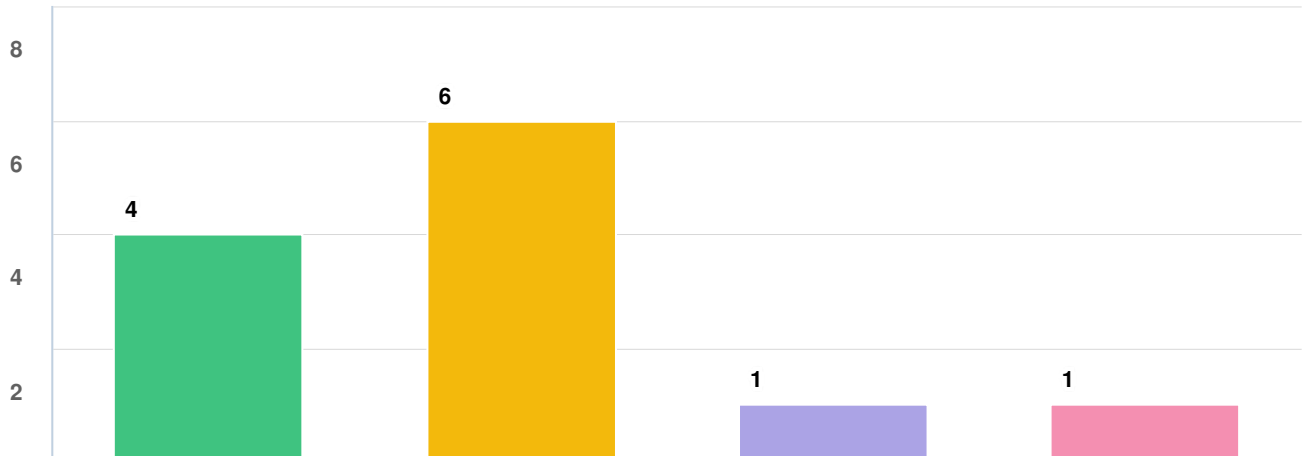


Question options

Very important Somewhat important Neither important or unimportant Somewhat unimportant
Not important

Optional question (14 responses, 0 skipped)

Q38 Explore options that can have a positive impact on or grow the local economy.

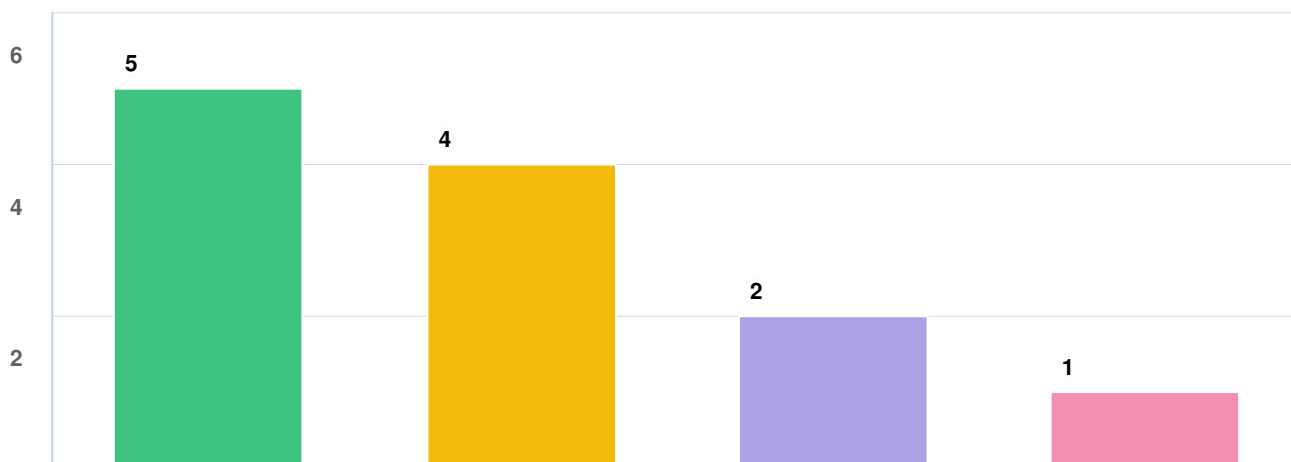


Question options

Very important Somewhat important Neither important or unimportant Somewhat unimportant

Optional question (14 responses, 0 skipped)

Q39 Maximize climate change mitigation

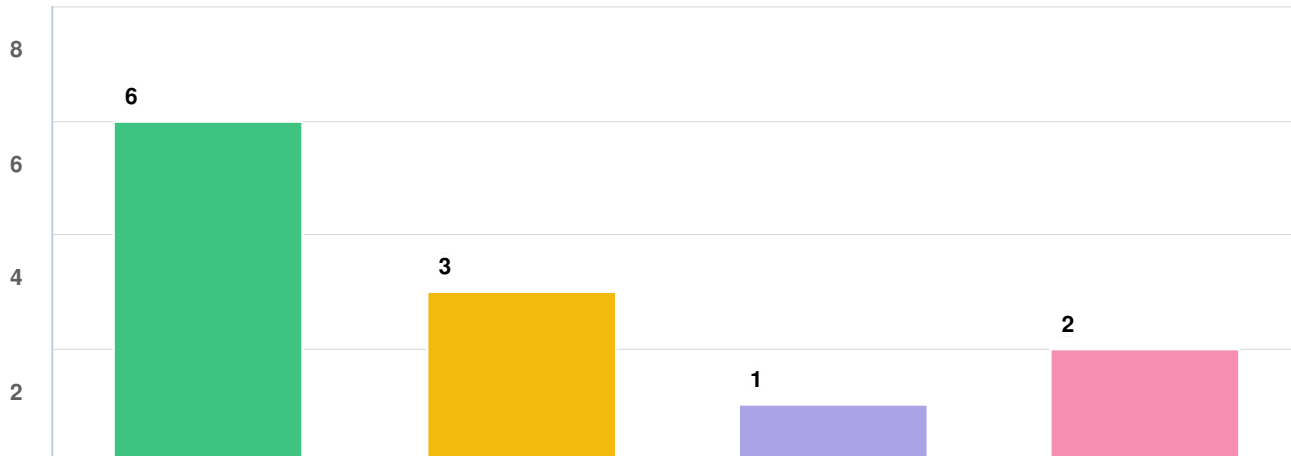


Question options

Very important Somewhat important Neither important or unimportant Not important

Optional question (14 responses, 0 skipped)

Q40 Restore or enhance environmental habitat

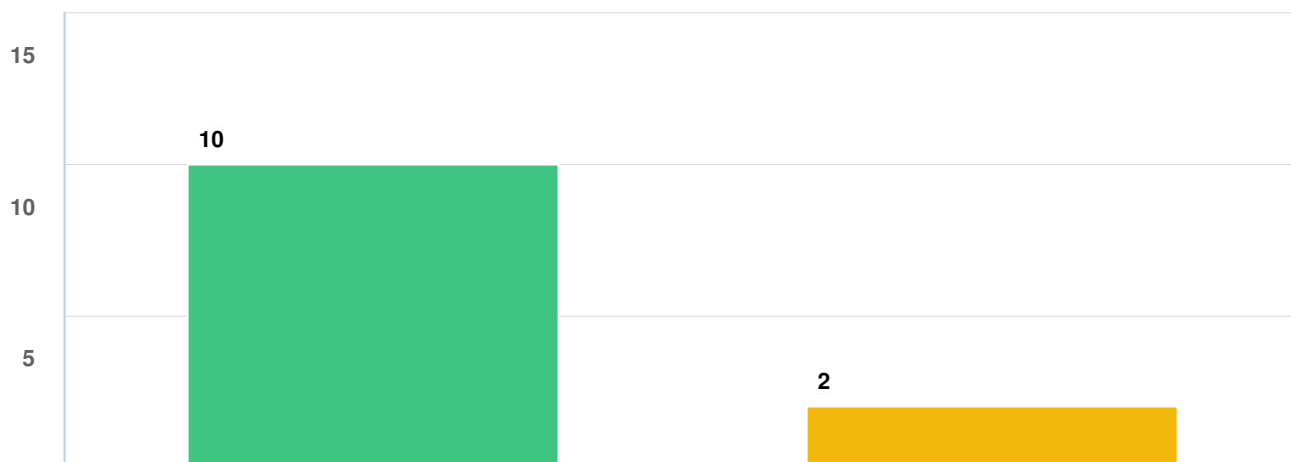


Question options

Very important Somewhat important Neither important or unimportant Not important

Optional question (14 responses, 0 skipped)

Q41 Protect public health

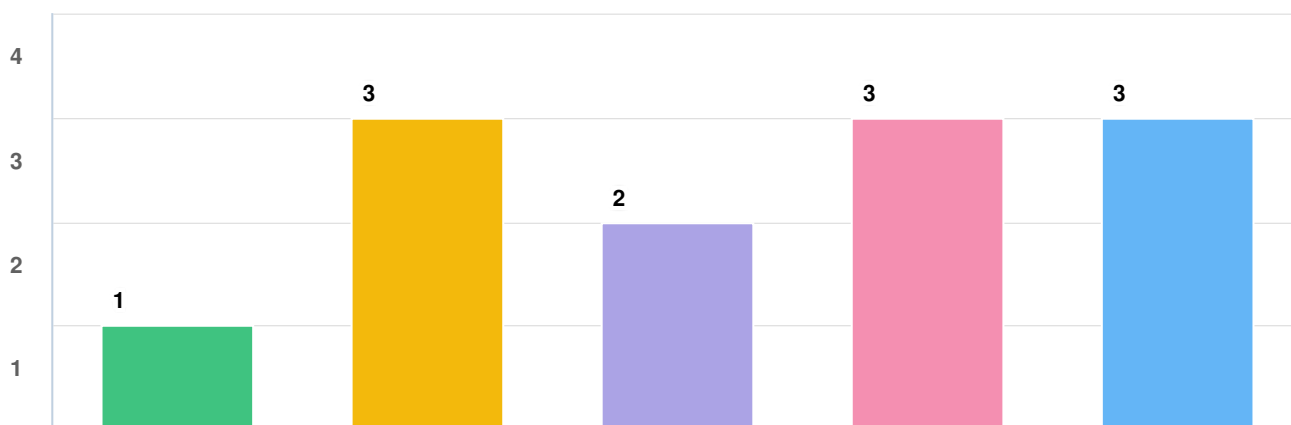


Question options

Very important Somewhat important

Optional question (14 responses, 0 skipped)

Q42 Ensure ability to maintain irrigation of public parks and gardens during water restrictions.



Question options

Very important Somewhat important Neither important or unimportant Somewhat unimportant
Not important

Optional question (14 responses, 0 skipped)

Q43 | Are there any goals missing that you think should be included regarding RESOURCE RECOVERY?

Linvann

12/03/2018 09:13 AM

Check out success of Okotoks Ab water treatment and their objectives for downstream Sheep River. Learn from the best on what is economically achievable.

Poorpi

12/05/2018 06:01 PM

Composting

ggeiger

12/08/2018 10:02 AM

Using treated waste water for irrigation to Local farms

Optional question (3 responses, 11 skipped)

Q44 | **Are there any goals you think should be deleted regarding RESOURCE RECOVERY?**

Linvann

12/03/2018 09:13 AM

Restore or enhance env habitat. Scope is too big, focus down to what is achievable.

Poorpi

12/05/2018 06:01 PM

Watering parks and gardens, only high cost playing fields should be maintained

Susan Ruth

12/06/2018 07:24 PM

"Maximize opportunities for partnerships that achieve a community benefit." would this mean that the solid waste used for composting would no longer be possible. What is the cost benefit analysis trading one for the other?

Optional question (3 responses, 11 skipped)

Q45 | **Where do you live? (Courtenay/Comox/Electoral Area?)**

Albert Englehart

11/30/2018 10:54 AM

Comox

mary.payne

12/01/2018 09:13 AM

Courtenay

jonmcdon23

12/02/2018 09:07 AM

Courtenay

Linvann

12/03/2018 09:13 AM

Courtenay

salty

12/04/2018 10:36 AM

Area B

Poorpi

12/05/2018 06:01 PM

Courtenay

Amanda Smith

12/06/2018 08:53 AM

Comox

Susan Ruth

12/06/2018 07:24 PM

Electoral area B, north Courtenay

Jennysteel

12/06/2018 09:29 PM

Electoral Area B - Curtis RAoad


ggeiger

12/08/2018 10:02 AM

Courtenay and area c

Optional question (10 responses, 4 skipped)

APPENDIX 4 – SAMPLE ADVERTISEMENTS



Come Learn About Your Sewer Service

Ever wonder what happens after you flush? Attend an open house at the sewage treatment plant and take a tour of the facility to learn more about our sewer system and help us plan for the future.

JOIN US:
Tuesday, November 6 or Thursday, November 8
5:00 pm to 7:00 pm
Comox Valley Water Pollution Control Centre
445 Brent Road, Comox

Or learn more online at: connectcvrd.ca/lwmp

For more information:
Call: 250-334-6000
Visit: comoxvalleyrd.ca/lwmp



Setting Goals for Sewer Service Planning

We're planning for the future of our sewer service, and we need your help. Committees are working to set the goals and objectives that will guide our planning and help us arrive at long term solutions for our sewer service. We've got some ideas and we're asking the community if we are on the right track.

JOIN US IN PERSON:

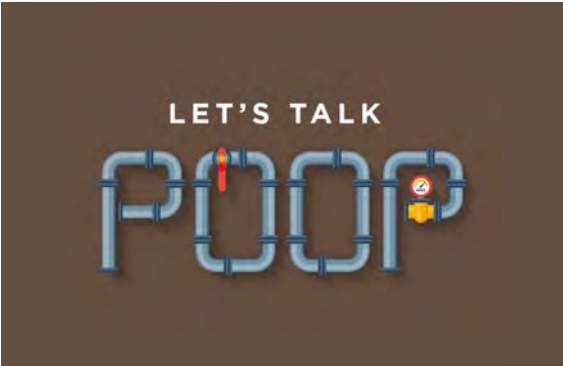
Tuesday, November 27 5:00 pm to 7:00 pm Comox Golf Club 1718 Balmoral Ave, Comox	Wednesday, November 28 5:00 pm to 7:00 pm The Westerly Hotel 1590 Cliffe Ave, Courtenay
---	--

JOIN US ONLINE: connectcvrd.ca/lwmp

For more information:
Call: 250-334-6000
Visit: comoxvalleyrd.ca/lwmp



Posters: Distributed at recreational facilities throughout Courtenay/Comox area




Come Learn About Your Sewer Service

Ever wonder what happens after you flush? Attend an open house at the sewage treatment plant and take a tour of the facility to learn more about our sewer system and help us plan for the future.

JOIN US:
Tuesday, November 6 or Thursday, November 8
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We're planning for the future of our sewer service, and we need your help. Committees are working to set the goals and objectives that will guide our planning and help us arrive at long term solutions for our sewer service. We've got some ideas and we're asking the community if we are on the right track.

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---	--

JOIN US ONLINE: connectcvrd.ca/lwmp

For more information:
Call: 250-334-6000
Visit: comoxvalleyrd.ca/lwmp



Social Media Ads: Facebook & Instagram



Comox Valley Regional District (CVRD)
Sponsored · 

We are starting work on a long term plan for the sewer system in Courtenay and Comox.




CONNECTCVRD.CA

We Want to Hear From You
No need to hold it in! Tell us if we are off to a good start.

Learn More

 Like  Comment  Share



Comox Valley Regional District (CVRD)
Sponsored · 



We are starting work on a long term plan for the sewer system in Courtenay and Comox.



CONNECTCVRD.CA

We Want to Hear From You
Review our work to-date and let us know if we are on the right track.

Learn More

 Like  Comment  Share

PROJECT: CV Sewer Service LWMP Open House
MEDIA: 30 second ads
CAMPAIGN: Open House Invite
RUN DATES: Oct 29-Nov 5, 2018
FREQUENCY: TBD

SCRIPT

SOUND OF TOILET FLUSHING

Ever wonder what happens to the water when you hear that sound? Learn more and help plan for the future of our sewer service at two wastewater treatment plant open houses, hosted by the Comox Valley Regional District.

Stop by to take a tour and learn about the planning process getting started for sewer service in Courtenay and Comox. Your input is important.

So – if you want to make sure this <TOILET FLUSH> keeps working for us all, join us between 5 and 7 Tuesday November 6th or Thursday November 8th at 445 Brent Road.

Learn more and share your comments at connectcvrd.ca

PROJECT: CV Sewer Service LWMP
MEDIA: 30 second ads
CAMPAIGN: Facilitated Session 2 Invite
RUN DATES: Nov 19-26
FREQUENCY: TBD

SCRIPT

We're planning for the future of our sewer service, and we need your help.

Join us to provide input on what the main goals and objectives should be for the planning process that is now underway. Our staff and committees have some ideas – and we want to make sure we're on the right track from the beginning.

Facilitated sessions will be held Tuesday November 27 at Comox Golf Club OR Wednesday November 28 at the Westerly Hotel. Both from 5 to 7 p.m. Can't be there in person? Share your feedback online at [connect cvrd<dot>c-a<backslash>l-w-m-p](http://connectcvrd.ca/l-w-m-p)

Learn more at [comoxvalleyrd<dot>c-a](http://comoxvalleyrd.ca).

APPENDIX 5 – INFORMATIONAL MATERIALS



Comox Valley Sewer Service

Liquid Waste Management Plan Project Backgrounder

Wastewater planning for Comox Valley

The Comox Valley Regional District is planning how the sewer service will be managed in the years and decades to come, and your feedback is critical to finding a solution that's appropriate and sustainable.

Liquid Waste Management Plans

The liquid waste management plan process is used by local governments in BC to develop strategies for managing wastewater. It includes:

- the collection/review of existing information
- development of options for future services
- identification of a preferred option
- completion of required studies/assessments on preferred option
- development of financial and implementation plans

The plan can take up to two years to move through the full process – and is ultimately submitted to the provincial government for review and consideration for approval.

What's being planned:

The planning process will look at the Comox Valley Sewer Service, which services Courtenay and Comox, and how best to address the future needs of those communities and inevitable infrastructure upgrades that will be required. It includes collection, conveyance (pipes and pump stations) and the treatment plant. It will consider options for providing reliable sewer service for the years to come, including consideration of anticipated future growth in our communities.

Hearing from you

Members of the public are encouraged to weigh-in by attending workshops and open houses, or contributing to online consultations. To get involved:

Visit our website at www.comoxvalleyrd.ca/lwmp

Or join the online discussion at www.connectcvrd.ca/lwmp

Timeline

Step-by-step wastewater planning

- **Setting the Stage and Kick Off**
- **Goal Setting:** Determining what we want to achieve with this plan.
- **Establishing a Long List:** Options for the future of the sewer service will be presented in early 2019.
- **Narrowing Down a Short List:** Feedback to the long list will help committees narrow down to some preferred options.
- **Choosing the Preferred Option:** From the short list, the preferred option will be presented to the Sewage Commission and public.
- **Drafting the Report:** Includes a summary of all the work done to date – and a report on the public's feedback during the process.
- **Report Submitted:** Stages 1 and 2 final report submitted for review to the provincial government.
- **Financing + Implementation:** If approved, the final step is to confirm funding and plan to deliver the work as outlined.



What we have heard so far

The planning process officially launched in June 2018, with the first few months focused on raising awareness of sewer services and collecting feedback on community values for sewer system planning. About 150 people provided feedback either through the online survey or by attending in-person sessions. Here's some of what we heard:

- **Environmental Protection:** Many voiced the need to prioritize the environment in decision-making. Environmental considerations were ranked #1 by participants, but there was a concern the environment may take a backseat when it comes to decision-making and cost.
- **Long-Term Plan:** There was interest in seeing a long-term plan created, and followed, to ensure that it is in line with community development and land-use planning. Developing long-term plans for service outside of the existing service area was also identified.
- **Concern for Current System:** Many emphasized the importance of moving forward with improvements given risks posed by aging/over-stretched infrastructure and septic systems. There was eagerness to see solutions delivered as soon as possible.

Public Advisory Committee members announced

The Public Advisory Committee (PAC) is a group that represents community interests – the people, areas and environments that are served and potentially impacted by the Comox Valley Sewerage System. The PAC meets simultaneously with the Technical Advisory Committee (TAC), an advisory group of technical experts who also gather relevant input and provide recommendations.

PAC members play an essential role in:

- Reviewing and considering Official Community Plans, Sustainability Plans
- Considering public opinion and feedback
- Providing feedback on documents prepared by CVRD project staff and consultants
- Providing input and recommendations to the Comox Valley Sewage Commission

After extensive recruitment, eight residents were appointed to the PAC in September 2018:

- Area B (2): Marie Holm, Mary Lang
- Town of Comox (3): Ray Craig, Donald Jacquest, Kevin Van Velzen
- City of Courtenay (3): Sheila Carey, Kevin Niemi, Tamera Servizi

To get in touch with a PAC member from your area, or to ask questions about the planning process, contact the CVRD offices at **250-334-6000** or send an email to engineering@comoxvalleyrd.ca.



Comox Valley Water Pollution Control Centre

Sewage Treatment in the Comox Valley

Opened in 1984, the Comox Valley Water Pollution Control Centre is a sewage treatment facility operated by the Comox Valley Regional District (CVRD) for the communities of Courtenay, Comox and CFB Comox.

The sewage treatment plant processes wastewater from 40,000 users, discharging an average daily flow of 17,000m³ of treated water to the Strait of Georgia 3km offshore – the equivalent of about seven Olympic-sized swimming pools.

How is the sewage treated?

Treatment includes physical and biological processes to remove solids and ensure the water meets regulatory standards prior to discharge. Regular testing is conducted to ensure the system is working effectively.

Solids from the treatment process are collected and taken to the CVRD's biosolids composting facility, where the biosolids are used to produce the CVRD's Skyrocket, a nutrient-rich mulch that can be used for landscaping, orchards, flower gardens and lawns.

How are odour issues being addressed?

Odour from the plant has been a concern for residents near the facility since shortly after the plant opened, with the CVRD working for many years to address the complaints. Remediation work included the installation of a wet chemical air scrubber system and moving the composting facility off-site.

Over the summer/fall of 2018 several additional upgrades to the treatment plant were installed to further reduce odour:

- Retrofitting the existing air scrubber to increase efficiency
- Installation of permanent covers over the primary clarifiers and permanent ducting to collect foul air
- Installation of dual bed activated carbon (AC) polisher to treat air and reduce odours before discharge to the environment



The dual bed activated carbon polisher 'polishes' air by filtering out odour.



The existing air scrubber – which cleans the air of odour – undergoes a retrofit.

Share your voice online

Connecting with ConnectCVRD

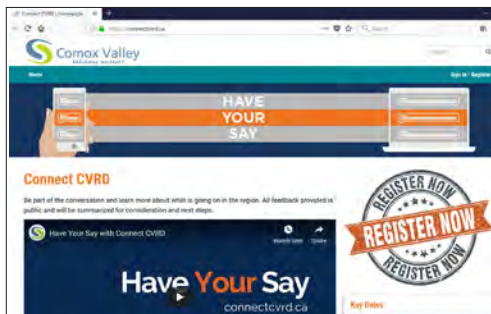


Offering more ways to share your feedback

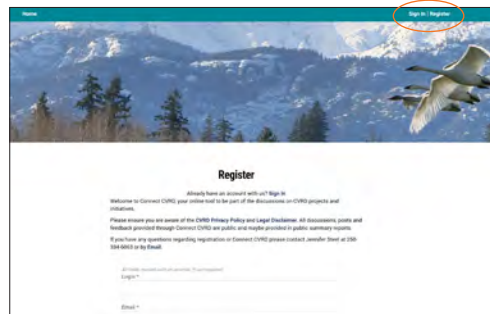
ConnectCVRD is an online engagement tool the Comox Valley Regional District introduced in order to offer a new opportunity for the community to provide feedback on important initiatives. Accessible from home, any day at any time, ConnectCVRD allows people to review information and provide their comments when it's suitable for them.

Ready to sign up? Here's how:

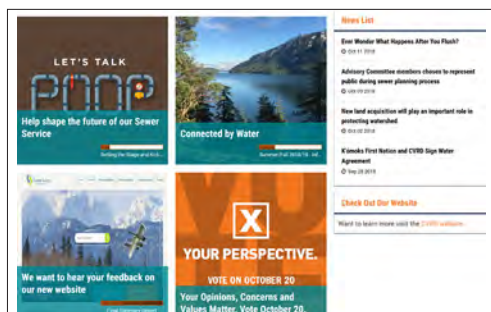
Step 1: Visit <https://connectcvr.ca> in your favourite Internet browser.



Step 2: Click on "Register" at top, right hand menu bar, fill out the form, and submit.



Step 3: You're In! Click on the topic you're interested in.



Step 4: Participate: Ask questions, fill out surveys, review posted materials.



Hearing from you

You're invited to participate in as many of the topic pages as you'd like. Your voice is important – share your thoughts.

Questions? Email engineeringservices@comoxvalleyrd.ca or call 250-334-6000.



comoxvalleyrd.ca   

Comox Valley Sewer Service

Public Consultation Workshops
November 27 & 28



WELCOME!

We're planning for the future of our sewer service and committees are working to set the goals and objectives that will guide our planning. We've got some ideas and tonight we're asking you for feedback on whether we're on the right track.

What to expect tonight:

- **Welcome**

Please sign in, create a nametag, grab some refreshments and find a seat.

- **Introduction to the Sewer Planning Process**

CVRD staff will give an overview of the liquid waste management planning process and how our infrastructure may be affected by this process into the future.

- **Goals and Objectives Review**

Learn about the goals/objectives that have been drafted by the advisory committees – we invite you to speak up about any additional goals you feel are missing from the list.

- **Provide Feedback**

Move through a discussion within a group, to review each of the goals/objectives and complete a feedback form with your final input on each goal.

- **Questions?**

The project team are wearing nametags identifying themselves – please feel free to ask questions and share your feedback with them.

ALSO: Learn about ConnectCVRD

Are you connected? Ask us about our online consultation tool.

How your feedback will be used

Feedback from this workshop will be provided to the public and technical advisory committees at their next meeting. Comments will be considered as the goals and objectives are finalized and the planning process moves forward.

Welcome to the Comox Valley Water Pollution Control Centre

Today, you can take a tour of the facility to learn more about our sewer system. You can also find out more about the management planning process – and how you can help us plan for the future of sewer services in Courtenay and Comox.

1. Welcome

- Please sign in, create a nametag and help yourself to refreshments.

2. Gather Info

- Review the info boards situated around the room.
- Grab some takeaway information to learn more about the treatment plant and/or the management planning process.

3. Take a Tour

- Tour times are: **5:30, 6:00 & 6:30**
- Tours will be directed by a treatment plant staff member, and last about 20 minutes.

4. Let Us Know What You Think

- Feel free to ask questions and share your feedback with members of the project team.
- Complete a comment/feedback form.



→ ALSO: Learn about ConnectCVRD

Let us introduce you to our new online consultation tool.

Visit: www.comoxvalleyrd.ca/lwmp

Email: engineering@comoxvalleyrd.ca

Phone: 250-334-6000

 **Comox Valley**
REGIONAL DISTRICT

comoxvalleyrd.ca   

WHAT HAPPENS AFTER YOU FLUSH?

Wastewater Management in the CVRD

1
HOMES & BUSINESSES
Wastewater is collected

2
COLLECTION SYSTEM
Gravity pipe collects waste

3
PUMP STATION
Collects and pushes waste to treatment plant

4
FORCEMAIN
Carries waste in high pressure pipe to treatment plant

5
WASTEWATER TREATMENT
Four steps of treatment completed

6
OUTFALL
3 kms off of Cape Lazo (depth: 60m)

Comox Valley Water Pollution Control Centre

Visit: www.comoxvalleyrd.ca/lwmp

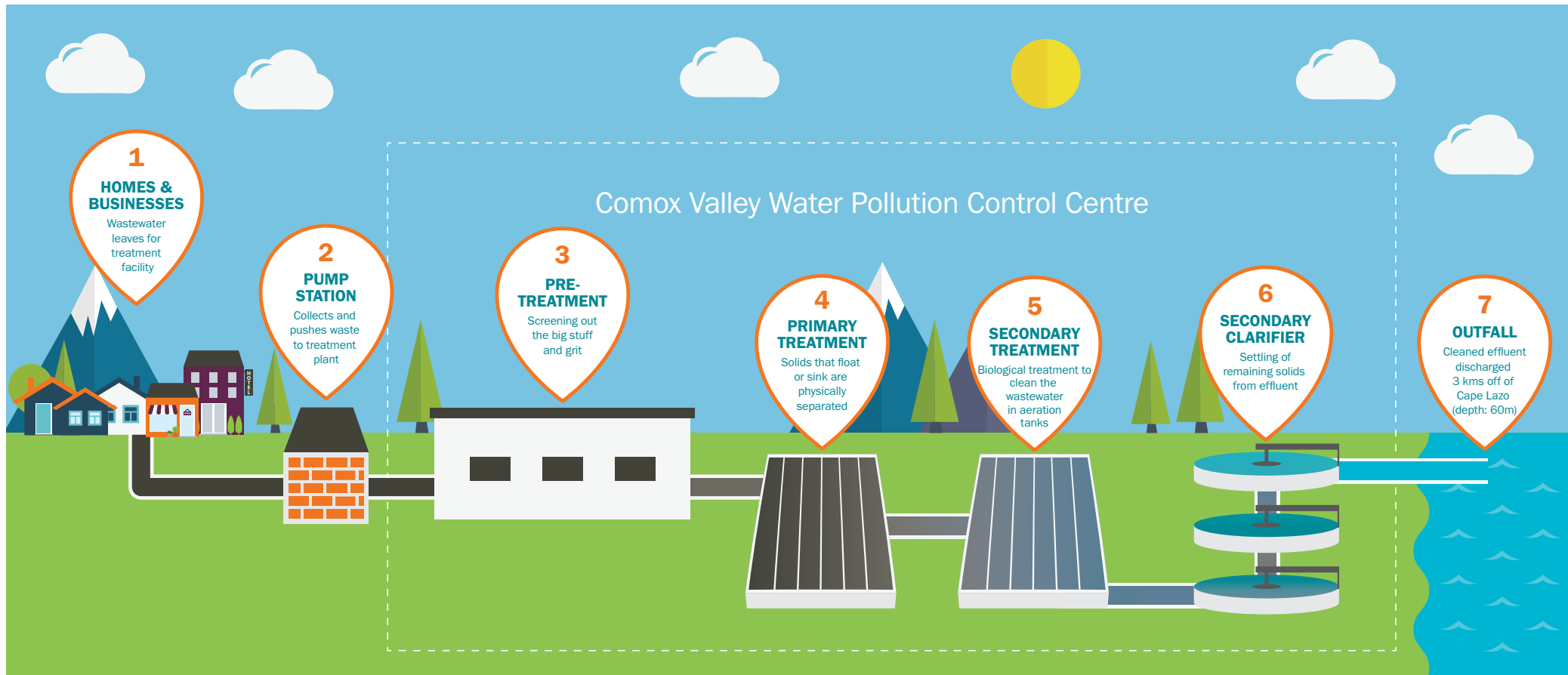
Email: engineeringservices@comoxvalleyrd.ca

Phone: 250-334-6000

 **Comox Valley**
REGIONAL DISTRICT

WHAT HAPPENS AFTER YOU FLUSH?

Treating wastewater in the CVRD



Visit: www.comoxvalleyrd.ca/lwmp

Email: engineeringservices@comoxvalleyrd.ca

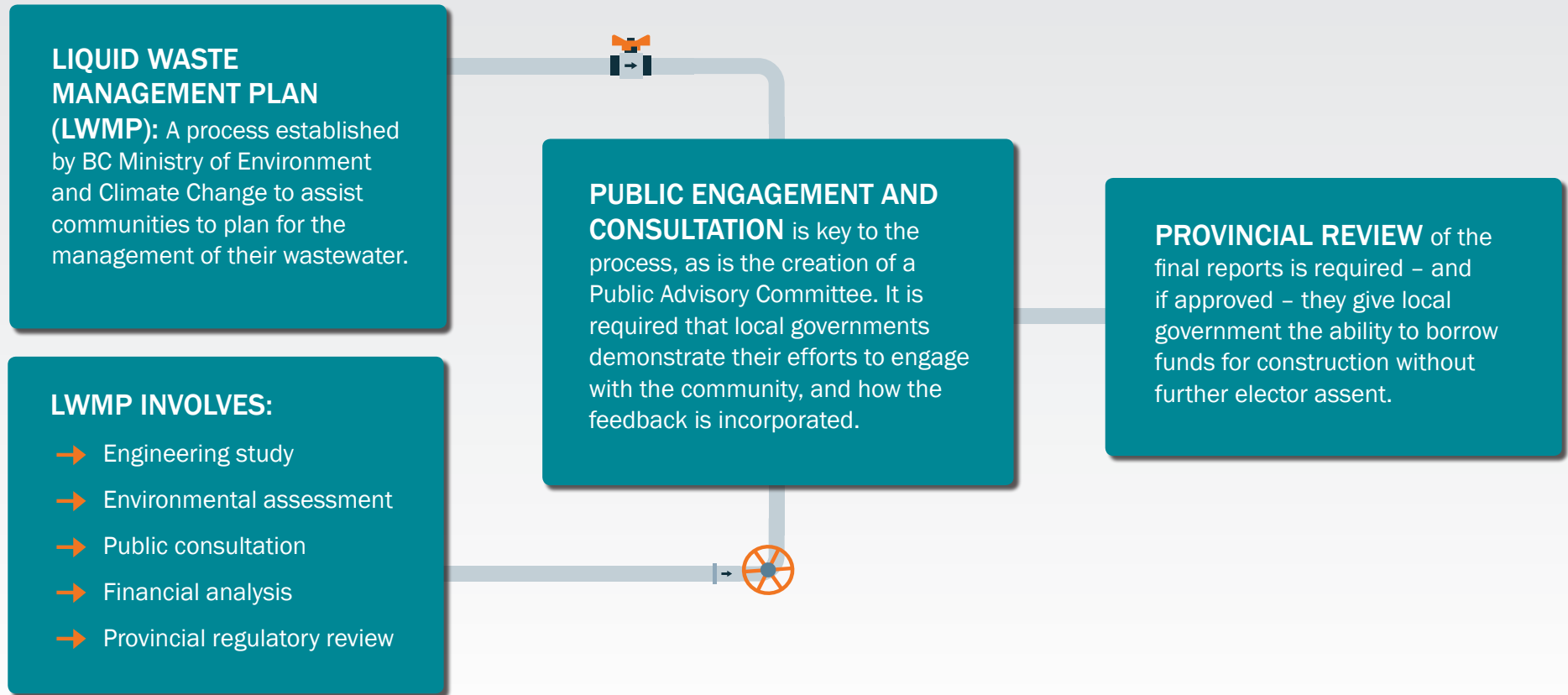
Phone: 250-334-6000

 **Comox Valley**
REGIONAL DISTRICT

comoxvalleyrd.ca   

Planning a Future for Our Liquid Waste

Long-term planning for liquid waste management can be a complicated process. To help streamline these big projects and give local governments the ability to deliver agreed-on plans, liquid waste management plans are often used.



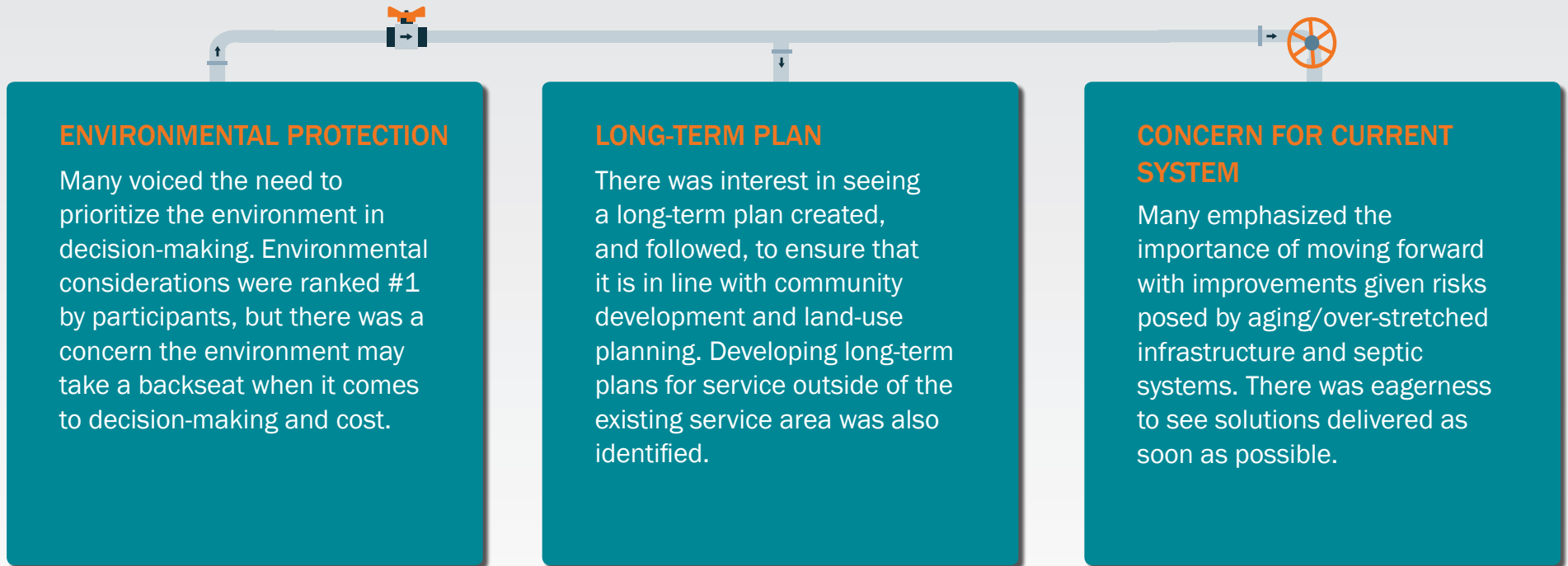
Visit: www.comoxvalleyrd.ca/lwmp

Email: engineeringervices@comoxvalleyrd.ca

Phone: 250-334-6000

Let's Talk Poop: What We Heard

The planning process officially launched in June 2018, with the first few months focused on raising awareness of sewer services and collecting feedback on community values for sewer system planning. Here's some of what we heard:



DID YOU KNOW? About 150 people provided feedback on this stage either through the online survey or by attending in-person sessions.

Visit: www.comoxvalleyrd.ca/lwmp

Email: engineering@comoxvalleyrd.ca

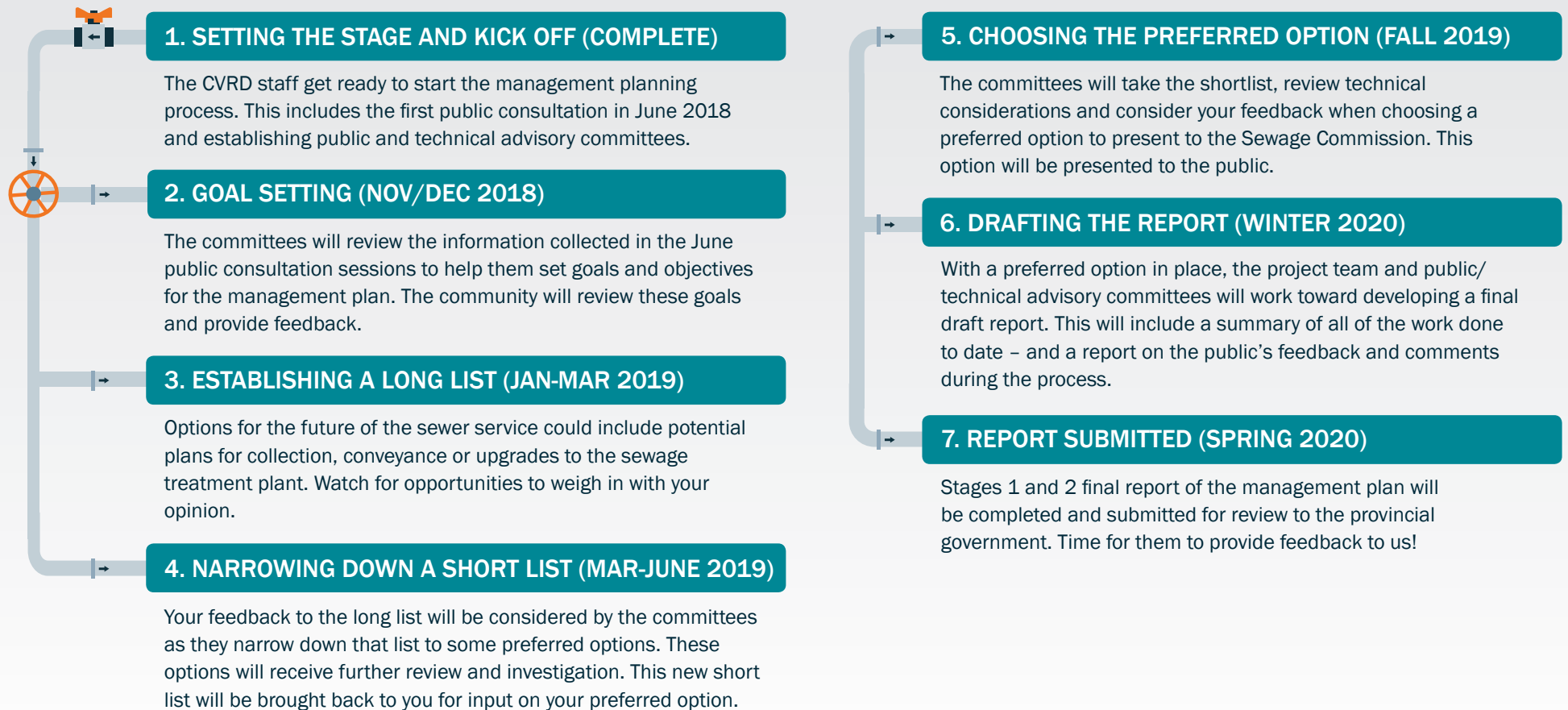
Phone: 250-334-6000

 **Comox Valley**
REGIONAL DISTRICT

comoxvalleyrd.ca   

Planning and Public Engagement: Timeline

The Liquid Waste Management Plan process is roughly 18 months with some distinct stages that require public input.



Visit: www.comoxvalleyrd.ca/lwmp

Email: engineering@comoxvalleyrd.ca

Phone: 250-334-6000

 **Comox Valley**
REGIONAL DISTRICT

comoxvalleyrd.ca   

Public Advisors Provide Direction

The public advisory committee (PAC) is a group that represents community interests – the people, areas and environments that are served and potentially impacted by the Comox Valley Sewerage System. The PAC meets simultaneously with the Technical Advisory Committee (TAC), an advisory group of technical experts who also gather relevant input and provide recommendations.

After extensive recruitment, eight residents were appointed to the PAC in September 2018:

AREA B



MARIE HOLM



MARY LANG

TOWN OF COMOX



RAY CRAIG



DONALD JACQUEST



KEVIN VAN VELZEN

CITY OF COURTENAY



SHEILA CAREY



KEVIN NIEMI



TAMERA SERVIZI

MEMBERS PLAY AN ESSENTIAL ROLE IN:

- Reviewing and considering Official Community Plans, Sustainability Plans
- Considering public opinion and feedback
- Providing feedback on documents prepared by CVRD project staff and consultants
- Providing input and recommendations to the Comox Valley Sewage Commission

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Phone: 250-334-6000



comoxvalleyrd.ca   

Upgrading Our Treatment Plant

The Comox Valley Water Pollution Control Centre (treatment plant) was opened in 1984 and services the City of Courtenay, Town of Comox and CFB Comox – roughly 40,000 users. To keep it operating well, and to make improvements to odour management, a series of upgrades was undertaken this year. All of this work is now complete.



Improving Efficiency: Retrofitting existing air scrubber – which cleans the air of odour – to increase efficiency.



Block/redirecting smells: Installation of permanent covers over primary clarifiers and permanent ducting to collect foul air.



Odour Reduction: Installation of dual bed activated carbon (AC) polisher to treat air and reduce odours before discharge to the environment.

Visit: www.comoxvalleyrd.ca/lwmp

Email: engineeringervices@comoxvalleyrd.ca

Phone: 250-334-6000

 **Comox Valley**
REGIONAL DISTRICT

comoxvalleyrd.ca   

SkyRocket Compost

What happens to remaining biosolids (solid waste particles) once wastewater has been treated? These biosolids are mixed with wood chips and cured over time to make up SkyRocket compost, a nutrient-rich gardening mulch. SkyRocket is available for purchase at the Comox Valley Waste Management Centre.

DID YOU KNOW?

- The facility uses aerated bunker technology to cure solids removed from the wastewater system. These biosolids contain macronutrients and organic matter that can replenish soil and help it to retain moisture.
- SkyRocket is ideal for use in large-scale landscaping and planting projects and can also be used for residential landscaping as a soil conditioner/supplement.
- SkyRocket meets/exceeds the regulations for a Class A compost – the highest level for organic matter recycling.
- In Summer 2018, construction for an expansion to the biosolids composting facility began. The expansion will increase the facility's capacity by 35 per cent and is expected to be complete by Spring 2019.
- The expansion will include retrofits to the current infrastructure, addition of a new mixer and primary screening system, development of a new curing building and turner and replacement of the existing surface pond. It will also incorporate new heat exchanges to reduce composting time in the winter and provide additional storage room for finished product.



Finished SkyRocket is ready to be added to any garden as a soil amendment.

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REGIONAL DISTRICT

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Comox Valley Sewer Service LWMP

Phase 3 Outreach – Summary Report Long List of Options

March 6, 2019

CONTENTS

1.0	Executive Summary	1
2.0	Introduction	1
2.1	Project Brief & Consultation Overview	1
2.2	Overview of Previous Phases	3
3.0	Phase 3 Consultation Results.....	3
3.1	By the Numbers.....	3
3.2	Themes of Feedback.....	3
3.3	Consultation with K’òmoks First Nation	4
4.0	Conclusion.....	4
5.0	Next Steps	4

APPENDICES

APPENDIX 1 – EVENT AND FEEDBACK REPORT: JAN. 29 + 30, INFORMATION SESSIONS
APPENDIX 2 – CONNECTCVRD ANALYTICS: JAN. 28-FEB. 5, LONG LIST OPTIONS
APPENDIX 3 – SAMPLE ADVERTISEMENTS
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1.0 Executive Summary

With the education and goals and objectives phase of public consultation complete, the third phase of public engagement – conducted in a tight timeline through January 2019 – introduced a long list of options for the conveyance and treatment of liquid waste and resource recovery options resulting from those operations.

The public participation focus in this phase was largely to INFORM the public about the ideas on the long list. Residents were also asked about any options that may have been missed. This feedback is important to ensure that technical consultants are assessing all possible options to help the advisory committees form a short list.

Two key tools were used to complete this stage of work:

- *Information Sessions:* Two events were held (one at K'omoks Community Hall and the other at Rotary Hall – lower Filberg Centre in Courtenay). These included a series of informational displays providing overviews of the options, an informational handout with more technical details and representation from technical experts to provide information and answer questions.
- *Online Consultation:* To supplement the information sessions, a survey was created on ConnectCVRD to mimic the feedback process at the in-person events. An online ad campaign was implemented to draw audiences to the online engagement tool.

The results of this outreach included interaction with roughly 160 people through both the online and in-person components. About 75 of those were actively engaged – attending an event or submitting a survey online.

Themes of feedback included a focus on protecting the foreshore, interest in high treatment standards, and continued concern with the any option that includes a Comox No. 2 pump station.

The Long List was also presented to K'omoks First Nation Chief and Council. The project team will return to Chief and Council and to the broader KFN community to CONSULT on the shortlist of options under consideration in the spring.

Following consultation with KFN, the project team will hold additional public events to seek more specific feedback from the community on the options. The consistency of this engagement has allowed for the establishment of a relationship with those members of the public interested in participating, and this approach will continue.

2.0 Introduction

2.1 PROJECT BRIEF & CONSULTATION OVERVIEW

The Comox Valley Regional District launched the public consultation process for the Comox Valley Sewer System LWMP in June 2018. While work in 2018 was focused on establishing the process (ie: forming public and technical advisory committees, retaining technical consultants, confirming goals and objectives), 2019's workplan will include three very concrete steps required to achieve a draft plan. In January 2019, the first of those steps was completed with the identification of a long-list of options that were presented to the community.

This report summarizes the findings from Phase 3 of the public engagement plan for this LWMP. The chart below provides an outline of the five-phase consultation process.

PHASE	OBJECTIVES	TOOLS
PHASE 1: Educate/Kick-Off (May-Aug. 2018) COMPLETE	<ul style="list-style-type: none"> • INFORM: provide info about the sewer system and LWMP start • INVOLVE: connect with public to collect feedback on goals/values in sewer planning 	<ul style="list-style-type: none"> • Project Webpage: create dedicated pages on regional district + ConnectCVRD websites • Advertisements: Promote online tool and sessions • Public Sessions #1 • Online Consultation Survey
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The goals set to guide this engagement are:

1. Provide information about the LWMP process.
2. Offer opportunities for active public involvement.
3. Clearly explain how feedback will be received and considered.
4. Create a record of engagement at the end of the process.
5. Demonstrate how engagement was considered and how input influenced final decisions.

2.2 OVERVIEW OF PREVIOUS PHASES

Phase 1 of consultation centered on collecting feedback to establish the values of the community as they pertain to decision making in the sewer planning process, along with promoting the new online consultation tool and advertising for public advisory committee nominees.

Phase 2 of engagement asked for the community's input in establishing the goals and objectives for the planning process.

Both phases have included hosting two public sessions (one in each impacted community) as well as online consultation opportunities to collect feedback on priorities and values for sewer planning.

3.0 Phase 3 Consultation Results

The primary objective of this phase of consultation was to bring forward the long list of options identified by the technical consultants and the public and technical advisory committees for review by the community. Engaged residents were asked to identify any options that have been missed to date, or to highlight any considerations they felt should be looked at as a short list is determined.

3.1 BY THE NUMBERS

497	Visitors to the project page
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3.2 THEMES OF FEEDBACK

- *Concern over protection of the foreshore:* The most consistent comments were centered around interest in protecting the foreshore of Comox estuary in the long term, with interest particularly in options that would see all new conveyance piping kept out of the estuary.
- *Interest in new ideas:* Both the highest degree of treatment standards and the idea of tunneling for conveyance stood out to those who participated in the online and in-person consultation. At in-person events, the issue of higher costs associated with those options was raised by technical consultants, but there was still general interest from the public in learning more about the options and about their associated costs before removing from the table.
- *Continued opposition to Comox No. 2 Pump Station:* Many of those attending the open houses remained generally opposed to any option that included the Comox No. 2 Pump Station, regardless of impacts of alternatives to cost and other areas.

A full breakdown of the feedback is included in appendices to this report.

3.3 CONSULTATION WITH K'OMOKS FIRST NATION

Phase 3 involved the presentation of the Long List to K'ómoks First Nation Chief and Council. KFN is in support of the objective of the LWMP but is opposed to any options involving a forcemain to be installed along the foreshore, or within the inter-tidal zone, due to the high cultural value of the area. Chief and Council also indicated a preference for UV disinfection of treated effluent to minimize the potential for contamination to Baynes Sound.

4.0 Conclusion

The community is responding well to the options for participation in the LWMP process and interested residents continue to provide input when provided with the opportunity to do so. There is interest in the coming steps as more tangible solutions are presented and opportunities for direct feedback increase.

There is now an established core group of public participants who are following and providing feedback, and watching for subsequent steps.

5.0 Next Steps

- *Maintain online information hubs and ensure content is up to date.* Ensuring that informational materials are available online and accessible during this interim period will be important to maintaining interest in the project.
- *Prepare for next step of engagement.* With an established structure now for outreach to the community, the project team can prepare ahead for the next phase of consultation.

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CONTENTS

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2.2	Overview of Previous Phases	3
3.0	Phase 3 Consultation Results.....	3
3.1	By the Numbers.....	3
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APPENDIX 1 – EVENT AND FEEDBACK REPORT: JAN. 29 + 30, INFORMATION SESSIONS



EVENT SUMMARY & FEEDBACK OVERVIEW

Comox Valley Sewer Service Liquid Waste Management Plan – Long List Options

Public Information Sessions – January 30 & 31, 2019

Prepared By: ZINC Strategies

Prepared For: Christianne Wile (Manager, External Relations)

EXECUTIVE SUMMARY

In January 2019, phase three of the public consultation process for the Comox Valley Sewer Service planning process got underway. This stage followed earlier outreach steps focused on introducing the process (phase one) and collecting feedback on goals and objectives (phase 2).

Phase three focused on the presentation of the long-list of options for treatment, conveyance and resource recovery to the public, with the goal of collecting their feedback on whether any additional options should be considered.

Two information sessions were held in late January with 56 participants. Themes of feedback included a focus on foreshore/marine environment protection and ongoing opposition to the Comox No.2 Pump Station. Generally, there were no glaring oversights to the public, who was eager to start weighing in on the ideas as well. The events support the continued establishment of consistent and ongoing outreach for the liquid waste planning process.

PART 1 – EVENT SUMMARY

OVERVIEW

Tools used to collect feedback on the long list options included two information sessions held January 30 and 31, 2019. These public events offered an opportunity for community members to learn about the liquid waste management planning process, review the long list options and provide thoughts on any options that have been missed or comment on other factors that should be considered.

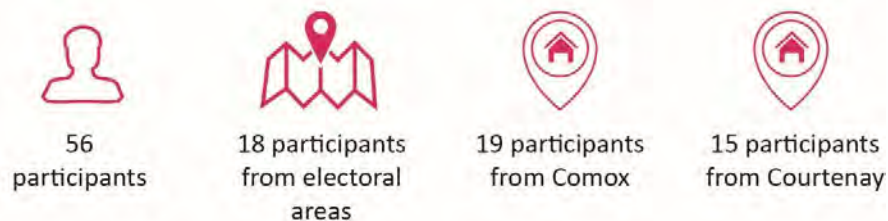
The drop-in sessions were held at two locations: in Comox at the K'òmoks First Nation Hall, and in Courtenay at the Rotary Hall (Florence Filberg Centre) – from 5-7 pm both evenings.

The below report summarizes the event and feedback collected.

1. EVENT GOALS

- To inform the public about details of each of the long list options selected by the Public and Technical Advisory Committees (PAC/TAC).
- To gather feedback on the long list options, and understand whether any relevant options have been missed and should be considered.
- To provide information on the LWMP process and future opportunities for public engagement.
- To provide residents with an overview of the current Comox Valley sewer system, and explain why the management planning process is needed.
- To bring awareness to and encourage residents to register for the online tool, ConnectCVRD.

2. BY THE NUMBERS



3. EVENT DETAILS

- Approximately 56 people attended the open houses: est. 27 at the first (Jan. 30) and est. 29 at the second (Jan. 31).
- Thirteen information boards were on display, outlining the planning process, public engagement timeline and long list options for treatment, conveyance and options for resource recovery.
- Two of these boards offered a direct opportunity for feedback – residents were encouraged to write down thoughts/ideas and place on boards as a method of sharing.
- Sixteen-page booklets, detailing technical specifications of each long list option for treatment and conveyance, were made available to attendees, in addition to an LWMP backgrounder.
- Reflective outdoor open house signs were posted to help direct visitors to event locations.
- Kris La Rose, senior manager, water & wastewater, was event host, with support from CVRD staff Marc Rutten, Adem Idris and Christianne Wile. They were supported by ZINC Strategies consultants + Walt Bayliss of WSP.
- While the majority of feedback was received directly by team members, seven feedback forms were submitted.
- Two members of the LWMP public advisory committee attended to hear feedback from the public, as did three elected officials from Courtenay, Comox + CVRD.

PROMOTION/OUTREACH

As free, public events, the info sessions were promoted via regular media and social media channels:

- A [news release](#) was issued Jan. 8 and was published in local media outlets.
- Newspaper print ads ran Jan. 17, 24 & 29.
- Radio ads ran Jan. 14-28 inclusive.
- Posters and save-the-date cards were shared at community hubs (rec centres, municipal halls).
- The event was posted on Facebook and promoted, reaching 2,327 people and generating 21 event responses.
- Sewage commission members were advised/invited by email.

PART 2 – FEEDBACK THEMES

THEMES OF COMMENTS

The info sessions provided an opportunity for many in the service area to better understand the LWMP process and have a first look at the long list of options. Comments gathered by regional district staff and consultants at the events generally fell into the following themes:

1. **Focus on Foreshore Protection:** There is strong concern about conveyance routes along the estuary/foreshore – environmental protection should be a priority.
2. **High Treatment Standards:** There is strong support to further investigate options for higher/highest level of treatment.
3. **Tunneling Peaks Interest:** There is generally support for tunneling and for “doing it right the first time”, no matter the costs – though there is some concern about impacts to groundwater from tunneling and overland conveyance.
4. **Comox No. 2 Opposition Remains:** Participants attending from Lazo Road area are strongly opposed to the long list options that involve the addition of Comox No.2 Pump Station.

FEEDBACK SUMMARY

The following feedback was collected from the feedback forms, interactive boards and summary notes from staff participants. Note: comments are shared as written.

WASTEWATER TREATMENT + RESOURCE RECOVERY

Are there any other options that should be considered?

- Limiting the size of the population of the Comox Valley. If we can't handle more sewage, why should we allow more people to live here?
- Why not a total system at Fields site where sewage is treated and returned to water clean + potable, Alert Bay has such a system

Is there any other information you would like the committee to consider?

- Recovery of as much as possible
- Ideally, I would like to see all wastewater re-used
- Perhaps beyond your scope, but reducing the amount of effluent – particularly stormwater
- What are the possibilities of dealing with waste in neighbourhood manure composting facilities?
- Why is the area south (Baynes Sound), which has no sewer service, not a higher priority?

Additional comments:

- If possible, for each option could info about energy requirements be included?
- More info, if possible, on technologies for secondary + tertiary processes
- It may be useful to research efficacy of microplastic washing machine filters to reduce household laundry sources
- Support Option 4 + recovery of resources
- Build in capabilities for future improvements in sewage treatment and resource recovery. Even if non-economical now.
- Recovering resources should be explored to the full extent. Option 4 – spend money now!
- Where will the \$\$ come from to implement these options?
- Requesting more info around disinfection technologies (UV, Ozone, Chlorine, etc.)
- Will the odour implications of the various options be evaluated?
- Why keep using a system that was a bad idea to start with: Brent Rd. plant stinks, Forcemain in foreshore
- Any system that adds pollutants to the straight is clearly not sustainable

CONVEYANCE

Are there any other options that should be considered?

- N/A

Is there any other information you would like the committee to consider?

- Use 3C if possible

- What is the approximate size of these main lines? RE: Deep marine concept – how is the condition of the exposed pipe going to be monitored? Would you use “smart pigs” like those used in the oil patch?

Additional comments:

- No option in the estuary is the only way to keep it half decent. Did you look at the old pipe from the base? It was a sieve.
- Option # 4 or 5 only ones acceptable
- With the least risk of contaminating marine environment
- More info please on lifespan of each option if there is any difference
- Option #1 goes through a swath of area that is on well water. My understanding is that projects must not put potable water at risk. A sewer line going through an area where residents rely on well water puts their water source at risk. How can this proposal be justified?
- 3 A, B, C – Spend the money now
- Why is Area B not represented on Sewage Commission? Why is Croteau Beach still in the crosshairs of a system we can't access?
- Why is Regional District not on the sewage board? We need system that keeps the s*** out of the bay (Comox).

PHOTOS



CONCLUSION

These events were another positive step to engage the public in the LWMP process, with clear feedback from many that the outreach process has been reliable and consistent. Attendees now have an understanding of the options being considered, and while there was interest and discussion, no large “gaps” were identified in the list.

The feedback collected at these events, in combination with input collected through the online consultation tool ConnectCVRD, will serve as valuable insight for committees as they consider options for the short list.

APPENDIX 2 – CONNECTCVRD ANALYTICS: JAN. 28-FEB. 5, LONG LIST OPTIONS

Survey Report

28 January 2019 - 06 February 2019

Reviewing the Long List: Are we on track?

PROJECT: Help shape the future of our Sewer System
in Courtenay and Comox

Connect CVRD



VISITORS

111

CONTRIBUTORS

19

CONTRIBUTIONS

19

19

Registered

0

Unverified

0

Anonymous

Q1 | Are there any other treatment plant options you would like considered? Please share.

RPearson

1/30/2019 10:59 AM

No other considerations

Edi Johnston

1/30/2019 12:24 PM

Is tertiary the same as "Disinfection" if not, please consider tertiary as well.

gu3

1/30/2019 07:19 PM

Our preferred option is #4 - the community and the CVRD have Stewardship Responsibilities that extend well into the future. Option #4 sets the stage to deliver on those responsibilities. This is the option we can be proud of for years to come as we will have made the effort and investment to do our best for the long-term health and sustainability of the environment, and related resources such as shellfish.

fmayhood

1/31/2019 09:31 AM

Separate storm water and waste water systems. Reuse grey water locally, rather than dump it in the ocean.

dbroten

1/31/2019 01:10 PM

Capture and use of methane

jrsmith1

1/31/2019 08:07 PM

No

Michele.jones

2/02/2019 10:59 AM

No

johnrushforth

2/02/2019 11:18 PM

I don't know if it is economically viable but basically I think we should be studying/considering biomethane production from sewage and not dumping our poop in the ocean.

Linda-Claire Steager

2/04/2019 09:48 AM

Does biological treatment mean filtering through a wetland area with rushes similar to what has been used in apartment complexes in France and China?

edonalds

2/04/2019 10:21 AM

I support Option #3. We might as well pay now for the highest possible contamination-free system. it begins aging the minute it is in operation. Consider it a long -term investment. Hope it lasts longer than a new car!!

bcmills

2/04/2019 06:07 PM

This feedback is coming from Association for Denman Island Marine Stewards. We support advanced treatment of all flows (#4). This would prepare the region most effectively for the impact of climate change on the region. The idea of protecting shellfish removal of contaminants, reclaiming water for other uses and optimal filtration will make a difference as climate change and population increase effects us.

Optional question (11 responses, 8 skipped)

Q2 | Is there any other information on treatment you'd like the committee to consider? Please share.

Jennysteel

1/30/2019 10:50 AM

Elimination of odours in the surrounding community is mandatory. Even today there are still strong odours in the Curtis Rd community on a frequent basis. If this is not fixed and taken into consideration in any plans CVRD WILL face a nuisance law suit..

Edi Johnston

1/30/2019 12:24 PM

As our oceans are in crisis, what can be done to remove excreted pharmaceuticals, micro-plastics etc.?

fmayhood

1/31/2019 09:31 AM

Ballpark costs and benefits for each option? Why do storms double (or more) inflow to the treatment plant?

vincevt

1/31/2019 11:29 AM

Some discussion on source control to raise public awareness of their role in keeping emerging contaminants out of the wastewater system

jrsmith1

1/31/2019 08:07 PM

No

Michele.jones

2/02/2019 10:59 AM

Not at this time

Tim

2/02/2019 08:40 PM

The 4 options presented are a good template for a series of long term plans. Option 1 is current practice. Option 2 should be considered the goal of a 5 (?) year plan to reduce the # of days >2xADWF to zero (if possible) through the reduction of I & I. This would reduce or eliminate the need for additional capacity. Option 3/4 should be considered the goal for a 20(?) year plan to move to tertiary treatment which I imagine is the ultimate long term goal for any waste treatment system. Included in this goal would be the future inclusion of any new technologies to deal with emerging contaminants. The above mentioned method if not being considered.

Linda-Claire Steager

2/04/2019 09:48 AM

edonalds

2/04/2019 10:21 AM

My main concern is the 1. The Estuary is not negatively affected – for any species that uses the waterways 2. The smelly station at the end of 20 ST becomes redundant or is updated 3. The ocean is not negatively impacted. 4. Tax increases are related and reasonable.

bcmills

2/04/2019 06:07 PM

WE wonder about the taking of solid wastes to the landfill, as the pharmaceuticals and microplastics that are inevitably in the solid waste will just be returning to the water table and thus ultimately into the ocean.

salty

2/06/2019 08:20 AM

Seems like option number 4 is the obvious choice. Will be interesting to see the difference in capital and operating costs between options 3 and 4.

Optional question (11 responses, 8 skipped)

Q3 | **Are there any other conveyance options you'd like considered? Please share.**

RPearson

1/30/2019 10:59 AM

Efficiencies and costs should be the consideration and not local interests in what might be the best approach for a route. Let the engineers decide what is best for the community.

gu3

1/30/2019 07:19 PM

The deep sea conveyance option sounds very expensive. It also hints at potential problems related to spills, leakages, challenging maintenance, and so forth. I don't have a clear understanding of the benefits and drawbacks of each option, but like the idea of upgrading the Courtenay station.

Decentralized sounds reasonable, but would there be unnecessary duplications of infrastructure?

Above ground/elevated pipe?

fmayhood

1/31/2019 09:31 AM

Jill

1/31/2019 04:47 PM

I like the overland option 4. No pipes in the water, please

edonalds

2/04/2019 10:21 AM

I was the best possible long-term option for ALL Species that share this habitat. If it means front end loading, then so be it.

bcmills

2/04/2019 06:07 PM

Conveyance systems #3 or #4 seem appropriate to us. We support no system that requires tunneling through archeological sites, estuaries, or marine areas. These methods would impact vital spawning and nursery grounds, would disrupt marine habitat and vegetation, and would result in the release of persistent organic pollutants, microplastics, and stored CO2 into the atmosphere or water column.

Optional question (6 responses, 13 skipped)

**Q4 | Is there any other information on conveyance that you'd like the committee to consider?
Please share.**

Edi Johnston

1/30/2019 12:24 PM

With sea level rise, increased tide height and storm damage, please stay away from the shoreline or any marine involvement.

gu3

1/30/2019 07:19 PM

What are the implications for each option in the event of an earthquake?

fmayhood

1/31/2019 09:31 AM

Earthquake survival properties of each option?

vincevt

1/31/2019 11:29 AM

Unless costs are significantly lower for options that include Comox #2 pump station, it seems that proceeding with any of those options would be a tough sell given the prior public backlash. Tunnelling seems like the least disruptive option for construction, but it will be interesting to see how costs compare. I believe that any new conveyance system must be overland in order to avoid any undue threat to our estuary, the health of our marine environment, and the shellfish industry among others. It is also my understanding that designing a conveyance system where these types of pump stations are built in series is considered "not best practice" and results in high risk of disaster. These considerations seem to eliminate 5 of the 11 options right off the bat. (1A,B& C. 2A. and 6) Option 4 seems to require very high head (79m?) and seems a bit fanciful. Option 5 seems to involve very high costs for very little benefit. The tunnelling options seem to allow us to avoid major pump station construction and long term maintenance of same. Option 3C seems to be optimal.

Tim

2/02/2019 08:40 PM

I believe that any new conveyance system must be overland in order to avoid any undue threat to our estuary, the health of our marine environment, and the shellfish industry among others. It is also my understanding that designing a conveyance system where these types of pump stations are built in series is considered "not best practice" and results in high risk of disaster. These considerations seem to eliminate 5 of the 11 options right off the bat. (1A,B& C. 2A. and 6) Option 4 seems to require very high head (79m?) and seems a bit fanciful. Option 5 seems to involve very high costs for very little benefit. The tunnelling options seem to allow us to avoid major pump station construction and long term maintenance of same. Option 3C seems to be optimal.

Linda-Claire Steager

2/04/2019 09:48 AM

How safe is each location, ie pipes bursting or leaking with resulting contamination of the land and water?

edonalds

2/04/2019 10:21 AM

I think that one-way streets should be attempted for 5 years as a minimum. Traffic flows lights on 17th St bridge. No one knows whether traffic will increase given electronic vehicles, improved public transportation, again populations possible train service etc. I do think that large trucks and other such vehicles should use By pass roads and not go through the urban environment.

salty

2/06/2019 08:20 AM

Would an upgrade to the KFN pump station help alleviate pressure on the Courtenay Pump station (help to get waste up and over the hill) in any of the overland/tunnelling options?

Optional question (8 responses, 11 skipped)

Q5 | **Are there any other resource recovery options you'd like considered? Please share.**

RPearson

1/30/2019 10:59 AM

I am in favor of any of the recovery solutions if they have a sound ROI on the community over the long run.

Edi Johnston

1/30/2019 12:24 PM

Please explore all options, the less we pump into the ocean, the better.

gu3

1/30/2019 07:19 PM

Please take a look at Abbotsford's system. We toured it years ago and were very impressed. Abbotsford uses treated solids and reclaims water. Very impressive system and approach, but have to assume that things have advanced even further.

dbroten

1/31/2019 01:10 PM

METHANE - biodigester

Linda-Claire Steager

2/04/2019 09:48 AM

Has methane capture from sewage been considered?. We could generate power. The library has a small book- the Pooh Book, I think. It tells of a city in Sweden that captures the methane from excrement and powers the city. Toronto is now using zoo pooh to capture methane.

edonalds

2/04/2019 10:21 AM

solar solar, solar find out what other other nordic countries are doing. Possibly also China. They are far ahead of us regarding green alternatives.

bcmills

2/04/2019 06:07 PM

We support both the recovery of reclaimed water and heat recovery. We support innovating for future health of the planet and its resources. Thank you

Optional question (7 responses, 12 skipped)

Q6 | Is there any other information on resource recovery you'd like the committee to consider? Please share.

gu3

1/30/2019 07:19 PM

Please tour Abbotsford's system and consider their approach . . . with perhaps some advances that have evolved as a result of their system.

vincevt

1/31/2019 11:29 AM

The ability to use reclaimed water for irrigation seems compelling, considering long-term climatic trends towards drier summers, and the impacts that will have on local agriculture

Linda-Claire Steager

2/04/2019 09:48 AM

Use of excrement to capture methane. Plus, the then clean poop can be used as fertilizer.

edonalds

2/04/2019 10:21 AM

Are there no recycling of poop options? In China and Latin America human waste have been used for centuries.

Optional question (4 responses, 15 skipped)

IDEAS TOOL SUMMARY

IDEAS SUMMARY		TOP 3 IDEAS BASED ON CONTRIBUTORS		
3	Ideas	4	2	1
5	Contributors	Contributed to	Contributed to	Contributed to
7	Contributions	Treatment Solutions	Conveyance Solutions	Resource Recovery Solutions

IDEAS

Treatment Solutions

VISITORS 5	CONTRIBUTORS 4	CONTRIBUTIONS 4
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01 February 19 Sharon P.	<div> <div>VOTES</div> <div>0</div> </div> <div> <div>UNVOTES</div> <div>0</div> </div>	<p>Mini Treat sewage at each pump station. By the time it gets to the sewage plant the process wouldn't have to be so intense.</p>
05 February 19 greendog	<div> <div>VOTES</div> <div>0</div> </div> <div> <div>UNVOTES</div> <div>0</div> </div>	<p>Get the system away from the water--off the foreshore, out of the estuary and off the ocean floor. Has the CVRD learned nothing in 40-years</p>
04 February 19 Kal	<div> <div>VOTES</div> <div>0</div> </div> <div> <div>UNVOTES</div> <div>0</div> </div>	<p>Biofuel production from the renewable sewage sludge is becoming a feasible reality all over the world . Why not here too?</p> <p>Biofuel</p>
04 February 19 Jim Elgie	<div> <div>VOTES</div> <div>0</div> </div> <div> <div>UNVOTES</div> <div>0</div> </div>	<p>Boydell Wastewater Technologies Inc. is a Vancouver Island company located in Chemainus. Very environmental and cost effective system.</p> <p>Boydell.ca</p>

IDEAS

Conveyance Solutions

VISITORS 7	CONTRIBUTORS 2	CONTRIBUTIONS 2
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05 February 19		Get the system away from the water--off the foreshore, out of the estuary, forget the ocean floor. Has the CVRD learned nothing in 40-years
greendog		
VOTES 0	UNVOTES 0	

23 January 19		Satellite sewer truck dumping station
Sid Lodewyk		
VOTES 0	UNVOTES 0	

To limit truck traffic through residential areas, trucking distances and odours associated with sewer truck dumping, the long term plan should include a dumping station in an industrial area.

IDEAS

Resource Recovery Solutions

VISITORS 1	CONTRIBUTORS 1	CONTRIBUTIONS 1
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05 February 19		<p>What do you intend to do by way of reclamation of the pipeline that should be taken off the foreshore and removed from the inland portion</p> <p>carrying sewage up to the plant. There are cost savings to be had!</p>
greendog		
VOTES	UNVOTES	
0	0	

APPENDIX 3 – SAMPLE ADVERTISEMENTS

Posters + “Save the Date” Cards: Distributed at recreational facilities throughout Courtenay/Comox



LET'S TALK

POOP


Review Our Long List of Options

Our committees have identified a long list of options for the future of the Comox Valley sewer system, and we want to share them with you. Your feedback will help us ensure that all appropriate options are considered before we narrow down the list.


Drop in to an information session:

Wednesday, January 30 5:00 pm to 7:00 pm K'ómoks First Nation Hall 3330 Comox Rd, Comox	Thursday, January 31 5:00 pm to 7:00 pm Rotary Hall @ Florence Filberg Centre 411 Anderton Ave, Courtenay
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For more information:
Call: 250-334-6000
Visit: comoxvalleyrd.ca/lwmp

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REGIONAL DISTRICT
comoxvalleyrd.ca

Print Ad: Comox Valley Record



LET'S TALK

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For more information:
Call: 250-334-6000
Visit: connectcvrd.ca/lwmp

 **Comox Valley**
REGIONAL DISTRICT
comoxvalleyrd.ca

Digital Display Ad: Displayed on screens at recreational facilities throughout Courtenay/Comox



LET'S TALK

POOP

Help us review long-term options for our sewer system

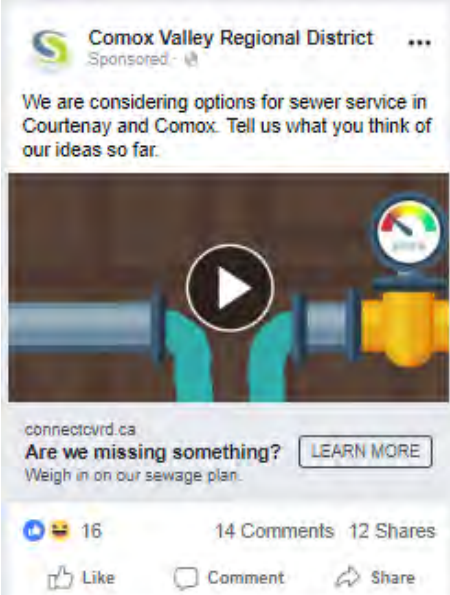
Drop in to an info session and tell us if we are on track:

Wednesday, January 30 K'ómoks First Nation Hall 5:00 pm to 7:00 pm	Thursday, January 31 Rotary Hall @ Florence Filberg Centre 5:00 pm to 7:00 pm
---	--

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Social Media Ad: Facebook & Instagram



Comox Valley Regional District

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We are considering options for sewer service in Courtenay and Comox. Tell us what you think of our ideas so far.

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Are we missing something? [LEARN MORE](#)

Weigh in on our sewage plan.

16 reactions 14 Comments 12 Shares

Like Comment Share

Radio Ad Script

PROJECT: CV Sewer Service LWMP
MEDIA: 30 second ads
CAMPAIGN: Facilitated Session 3 Invite
RUN DATES: Jan. 14-28, 2019
FREQUENCY: TBD

SCRIPT

Want your say on the future of sewer service in Courtenay and Comox?

Planning for the service is now underway and a long list of options has been developed. Now - it's your turn to learn more about the options and let us know if we've missed anything before the list is narrowed down.

Information sessions will be held Wednesday January 30th at the K'omoks First Nation Hall and Thursday January 31st at Rotary Hall in Courtenay's Filberg Centre. Both run from 5 to 7 p.m. – drop in when it suits you.

Learn more at comoxvalleyrd.ca/l-w-m-p.

APPENDIX 4 – INFORMATIONAL MATERIALS (EXAMPLES)

Long List Backgrounders

Long List Option No.1 – Conveyance (Estuary Alignments)

This alignment would involve installation of a new forcemain within or along the Comox harbour foreshore. The forcemain would transition to an overland pipe between Comox and the Lazo Road height of land. To convey the sewage over the Lazo Road height of land the following options are suitable:

1A. The forcemain from Courtenay Pump Station (PS) would continue directly to the treatment plant through a new tunnel at the Lazo Road height of land. The tunnel would reduce the required pressures in the system. Pending the tunnel elevation, a new pump station may be required in the general vicinity of the existing Jane Pl. Pump Station (PS). In which case, the existing Jane Pl. PS would be repurposed as a small subdivision pump station.

Advantages

- Potentially limited hydraulic changes to existing pump stations hydraulics subject to tunnel elevation.
- Minimizes construction of a forcemain through Comox.
- Involves only two large pump stations

Disadvantages

- Involves work along and potentially in the estuary, including environmentally and archaeologically sensitive areas
- Elevated maintenance and risk management needs due to proximity to marine environment
- Elevated construction and operational risk associated with a tunnel



1B. The forcemain from Courtenay Pump Station (PS) would continue directly to the treatment plant such that there is no in-line pump station. In order to overcome the Lazo Road height of land, Courtenay PS would be upgraded to ensure the forcemain pressure is sufficiently high. As a result, the existing Jane Pl. Pump Station (PS) would not be able to cope with this higher hydraulic requirement and a new pump station would be required to convey raw sewage into the forcemain between Courtenay PS and the treatment plant. The existing Jane Pl. PS would be repurposed as a small subdivision pump station.

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Advantages

- Minimizes construction of a forcemain through Comox
- Involves only two large pump stations (Jane Pl. PS repurposed as local facility only)

Disadvantages

- Involves work along and potentially in the estuary, including environmentally and archaeologically sensitive areas.
- Elevated maintenance and risk management needs due to proximity to marine environment

Option 1B: Addition of New Comox Pump Station



1C. A new pump station facility located somewhere between Comox and Lazo Road height of land. This would be an inline facility which receives raw sewage from Courtenay Pump Station (PS) discharge and pumps it over Lazo Road height of land to the treatment plant. The Jane Pl. Pump Station (PS) would tie-in to the Courtenay PS discharge forcemain at a location upstream of the new pump station. The elevation of the new pump station would have to be low enough to permit the Jane Pl. PS to hydraulically connect.

Advantages

- Minimize hydraulic changes to existing Courtenay and Jane Pl. Pump Stations
- Maximize useful life of existing foreshore forcemain
- Minimizes construction of a forcemain through Comox

Disadvantages

- Single point of failure of sewage conveyance system
- Involves operation and maintenance of three large pump stations, one highly critical
- Involves work along and potentially in the estuary, including sensitive areas
- Elevated maintenance and risk management needs due to proximity to marine environment

Option 1C: Addition of Comox No. 2



Long List Option No.2 – Conveyance (Overland Alignments)

This alignment would involve installation of a new forcemain overland from Courtenay Pump Station (PS) towards the treatment plant. This forcemain would pass over the Comox Rd. hill. Due to the change in discharge pressure a significant upgrade or rebuild would be required at the Courtenay PS. Several routing options are available, including:

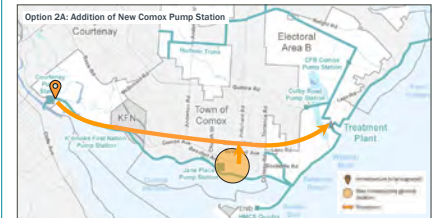
2A. The Courtenay PS would be upgraded to allow sewage from Courtenay to be pumped directly to the treatment plant. As a result, the existing Jane Pl. Pump Station (PS) would not be able to cope with this higher hydraulic requirement and a new high pressure head pump station would be required in the general vicinity of the existing Jane Pl. PS. This new facility would convey raw sewage into the forcemain between Courtenay PS and the treatment plant. The existing Jane Pl. PS would be repurposed as a small subdivision pump station.

Advantages

- No pipe in the estuary, mitigating environmental and archaeological risks
- All pipe and structures on-land to maximize maintenance accessibility
- Involves only two large pump stations (with Jane Pl. repurposed as local PS)

Disadvantages

- Significant hydraulic changes to the Courtenay PS and Jane Pl. PS
- Construction of new conveyance system through an area with significant existing infrastructure



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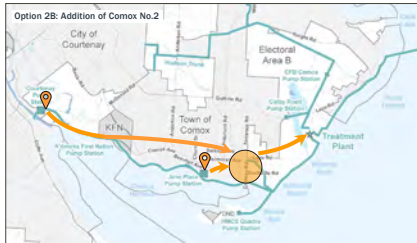
2B. The forcemain from the Courtenay Pump Station (PS) would convey raw sewage over the Comox Rd. hill and down into a new pump station located between Glacier View Drive and Comox Rd. The elevation of the new pump station must allow enough pressure to convey the sewage over Lazo Road to the treatment plant without exceeding the pressure capacity at Jane Pl. Pump Station (PS).

Advantages

- No pipe in the estuary mitigating environmental and archaeological risks
- All pipe and structures on-land to maximize maintenance accessibility
- Minimize hydraulic changes to existing Jane Pl. PS

Disadvantages

- Pump in series and single point of complete failure of sewage conveyance system
- Involves operation and maintenance of three large pump stations, one of high criticality
- Significant hydraulic changes to the Courtenay PS
- Construction of new conveyance system through an area with significant existing infrastructure



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Long List Option No.3 – Conveyance (Tunnelling Alignments)

This alignment would involve installing a combination of new forcemains and gravity sewer mains overland from the Courtenay Pump Station (PS) towards the treatment plant. The tunnel alignments would be selected to either minimize pumping requirements or, where possible, utilize gravity sewer mains. The primary areas where tunnelling would be appropriate are under the Comox Rd. and Lazo Rd heights of land. Several combinations of forcemain/gravity sewer mains are described below:

3A. Sewage would be pumped from the Courtenay PS to a tunnel constructed through Comox Rd. hill. The forcemain would transition to an open cut installation through Comox and back to a tunnel to pass under the Lazo Road height of land and down to the treatment plant. The Jane Pl. Pump Station (PS) could connect to the forcemain without modifications if the elevation of the tunnel does not require additional pumping capacity.

Advantages

- No pipe in the estuary mitigating environmental and archaeological risks
- Reduces pressures at the existing pump stations
- Significantly alleviates the high pressure head requirements for the Courtenay PS and Jane Pl. PS as compared to other overland options

Disadvantages

- Elevated costs and risks due to tunnelling
- Construction of new conveyance system through an area with significant existing infrastructure

Option 3A: From Comox Road Hill



3B. A new forcemain would be installed from the Courtenay Pump Station (PS) directly to the treatment plant with a tunnel installed for the forcemain to pass through the Lazo Rd height of land. The existing Jane Pl. Pump Station (PS) would likely not be able to cope with this higher hydraulic requirement and therefore a new high pressure head pump station would be required near the existing Jane Pl. PS. This new facility would convey raw sewage into the forcemain between Courtenay PS and the treatment plant. The existing Jane Pl. PS would be repurposed as a small subdivision pump station. If the tunnel elevation is sufficiently low, the existing Jane Pl. PS would be suitable.

Advantages

- No pipe in the estuary mitigating environmental and archaeological risks
- All pipe and structures on-land to maximize maintenance accessibility
- Alleviates some of the high pressure head requirements as compared to other overland options

Disadvantages

- Construction of new conveyance system through an area with significant existing infrastructure
- Higher upgrade requirements at the Jane Pl. PS as compared to the other tunnel options

Option 3B: From Lazo Road Hill Addition of New Comox Pump Station



3C. A new forcemain from Courtenay Pump Station (PS) would continue directly to the treatment plant. A gravity sewer main tunnel would pass through the Lazo Rd height of land at the required slope. The Jane Pl. Pump Station (PS) would connect to the gravity sewer main through a new forcemain and the tie-in location would depend on the gravity sewer main alignment. The elevation of the new tunnel would determine whether Jane Pl. PS would need to be replaced to accommodate a high pressure head pump.

Advantages

- No pipe in the estuary mitigating environmental and archaeological risks
- All pipe and structures on-land to maximize maintenance accessibility
- Alleviates some of the high pressure head requirements for the Courtenay PS and most of the high head requirements for the Jane Pl. PS as compared to other overland options

Disadvantages

- Construction of new conveyance system through an area with significant existing infrastructure
- Gravity sewer main alignment must follow a specific slope which is dependent on the topography.
- Gravity sewer mains are significantly larger diameter as compared to forcemains for the same flow



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Long List Backgrounders

Long List Option No.1 – Wastewater Treatment (Meet Regulatory Discharge Standards)

Option 1 would meet federal and provincial regulatory requirements for secondary treatment with discharge to open marine waters (the treatment plant outfall extends 2,825 m from shore at Cape Lazo into the Strait of Georgia and the discharge diffuser is 60 m below water at low tide). As with the other options, an updated Environmental Impact Study (EIS) would be required to identify any additional treatment requirements needed to protect the environment according to provincial regulations. If no additional requirements are identified, the B.C. Municipal Wastewater Regulation (MWR) and the Canada Wastewater Systems Effluent Regulations (WSER) would apply to Option 1. These include:

Municipal Wastewater Requirements

Secondary treatment for up to two times average dry weather flow (2xADWF):

- 5-day Biochemical Oxygen Demand (BOD5): max. day 45 mg/L
- Total suspended solids (TSS): max. day 45 mg/L
- pH 6 to 9
- Ammonia concentration does not cause chronic toxicity at the edge of the initial dilution zone (IDZ)

Primary treatment for flows in excess of 2xADWF (interim):

- 5-day Biochemical Oxygen Demand (BOD5): max. day 130 mg/L
- Total suspended solids (TSS): max. day 130 mg/L
- Note: If flows are > 2xADWF during storm or snowmelt event with a less than 5-year return period, a discharger must have a liquid waste management plan or specific study and implement the plan's or study's measures.


WSER

- 5-day Biochemical Oxygen Demand (BOD5): monthly avg. not to exceed 25 mg/L
- Total suspended solids (TSS): monthly avg. not to exceed 25 mg/L
- Total residual chlorine < 0.02 mg/L
- Un-ionized ammonia < 1.25 mg N/L at 15°C
- Note: The WSER standards apply to the combined discharge – this may require chemical addition to enhance primary treatment or other measures to ensure that the secondary treatment bypass does not cause the combined effluent to exceed the WSER discharge standards for BOD5 and TSS

An EIS was completed for the treatment plant discharge in 2010; this showed that disinfection of the effluent to achieve a fecal coliform count of less than 8000/100 mL in the discharge would be required to protect local shellfish resources outside the initial dilution zone (IDZ). Disinfection to this standard was assumed for Option 1.

Note: Plant data from 2013 to 2017 show that the number of days when flows exceeded 2xADWF ranged from 0 days (2013) to 31 days (2015) – over the 5 years of record, flow exceeded 2xADWF on a total of 58 days (the total volume of flow greater than 2xADWF represented only about 1% of the total plant flow over that period)

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Advantages


- Meets regulatory requirements for discharge to open marine waters
- Avoids the cost of subjecting relatively infrequent high wet weather flows to secondary treatment
- Coagulating (thickening) chemicals can be added to enhance primary treatment if needed when flows exceed average dry weather flows
- Includes disinfection to protect shellfish resources outside the initial dilution zone

Disadvantages

- Flows in excess of average dry weather flows would bypass secondary treatment and so would not receive biological treatment



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Long List Option No.2 – Wastewater Treatment (Provide Secondary Treatment for all Flows)

Option 2 is similar to Option 1, except that there would be no wet weather bypass of secondary treatment for increased flows. For Option 2, the entire plant influent flow would pass through secondary treatment (this is the current configuration of the treatment plant). As with the other options, an updated Environmental Impact Study (EIS) would be required to identify any additional treatment requirements that might be needed to address protection of the receiving environment. For Option 2, it was assumed that the disinfection process would be designed to achieve recreational standards in the undiluted effluent. The following treatment and discharge standards would apply to Option 2:

Secondary treatment for the entire plant flow:


- 5-day Biochemical Oxygen Demand (BOD5): max. day 45 mg/L, monthly avg. not to exceed 25 mg/L
- Total suspended solids (TSS): max. day 45 mg/L, monthly avg. not to exceed 25 mg/L
- pH 6 to 9
- Ammonia concentration does not cause chronic toxicity at the edge of the initial dilution zone (IDZ)
- Total residual chlorine < 0.02 mg/L
- Un-ionized ammonia < 1.25 mg N/L at 15°C
- Disinfection - fecal coliforms not to exceed 200 TC/100 mL

Advantages


- Exceeds regulatory requirements for discharge to open marine waters
- Entire plant flow is subjected to secondary (biological) treatment
- Includes enhanced disinfection to protect shellfish resources
- Effluent meets standards for reclaimed water use for lower likelihood for direct human contact

Disadvantages

- Secondary treatment must be sized to accommodate all wet weather flows, increasing capital and operating costs compared to Option 1



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Long List Option No.3 – Wastewater Treatment (Advanced Treatment for Increased Flows)

Option 3 would incorporate the same preliminary, primary and secondary treatment processes as Option 2. In addition, Option 3 would include advanced (tertiary) filtration of the secondary treated effluent for increased flows during wet weather events to enhance removal of suspended solids. As with the other options, an updated Environmental Impact Study (EIS) would be required to identify any additional treatment requirements that might be needed to address protection of the receiving environment. For Option 3, the disinfection process would be designed to achieve a higher standard than Option 2 but would still only be treated to a standard of 'lower likelihood for direct human contact'. The following treatment and discharge standards would apply to Option 3:

Advanced treatment (tertiary filtration) for flows up to 2xADWF:

- 5-day Biochemical Oxygen Demand (BOD5): max. day 10 mg/L, avg. 5 mg/L
- Total suspended solids (TSS): max. day 10 mg/L, avg. 5 mg/L
- pH 6 to 9
- Ammonia concentration does not cause chronic toxicity at the edge of the initial dilution zone (IDZ)
- Total residual chlorine < 0.02 mg/L
- Un-ionized ammonia < 1.25 mg N/L at 15°C
- Future addition of processes that are proven for removal of emerging contaminants at municipal wastewater plants


Primary treatment for flows in excess of 2xADWF (interim):

- 5-day Biochemical Oxygen Demand (BOD5): max. day 130 mg/L
- Total suspended solids (TSS): max. day 130 mg/L
- Note: If flows are > 2xADWF during a storm or equivalent snowmelt event with a less than 5-year return period, a discharger must have a liquid waste management plan or specific study and implement the plan's or study's measures.
- Disinfection of combined effluent - fecal coliforms not to exceed 200 TC/100 mL

Note: Plant data from 2013 to 2017 show that the number of days when flows exceeded 2xADWF ranged from 0 days (2013) to 31 days (2015) – over the 5 years of record, flow exceeded 2xADWF on a total of 58 days (the total volume of flow greater than 2xADWF represented only about 1% of the total plant flow over that period).

SEE OVER FOR FURTHER DETAILS

Visit: www.comoxvalleyrd.ca/wmp
Email: engineering@comoxvalleyrd.ca
Phone: 250-334-6000

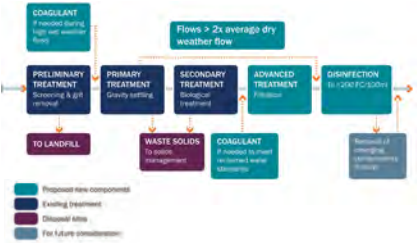


Advantages


- Exceeds regulatory requirements for discharge to open marine waters
- Majority of plant flow is subjected to advanced (tertiary) treatment
- Includes enhanced disinfection to protect shellfish resources
- Combined effluent meets standards for reclaimed water use for lower likelihood for direct human contact
- Ability to increase coagulation (thickening) and disinfection to meet standards for moderate or greater likelihood for direct human contact

Disadvantages

- Higher capital and operating costs than Options 1 and 2
- Flows > twice the average dry weather flow do not pass through advanced treatment
- Higher operational costs if treating reclaimed water to greater likelihood for direct human contact



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Long List Option No.4 – Wastewater Treatment (Provide Secondary Treatment for all Flows)

Option 4 would incorporate the same preliminary, primary, secondary, and advanced (tertiary) treatment processes as Option 3. However, for Option 4, the entire plant influent flow would pass through advanced (tertiary) filtration to enhance removal of suspended solids. As with the other options, an updated Environmental Impact Study (EIS) would be required to identify any additional treatment requirements that might be needed to address protection of the receiving environment. For Option 4, the disinfection process would be designed to achieve shellfish standards in the undiluted effluent, and disinfection could be increased to meet the reclaimed water standards for greater direct human contact if desired. This is the highest standard proposed. The following treatment and discharge standards would apply to Option 4:

Advanced (tertiary) treatment for the entire plant flow:

- 5-day Biochemical Oxygen Demand (BOD5): max. day 10 mg/L, avg. 5 mg/L
- Total suspended solids (TSS): max. day 10 mg/L, avg. 5 mg/L
- pH 6 to 9
- Ammonia concentration does not cause chronic toxicity at the edge of the initial dilution zone (IDZ)
- Total residual chlorine < 0.02 mg/L
- Un-ionized ammonia < 1.25 mg N/L at 15°C
- Disinfection - fecal coliforms not to exceed 14 TC/100 mL
- Future addition of processes that are proven for removal of emerging contaminants at municipal wastewater plants

Advantages

- Exceeds regulatory requirements for discharge to open marine waters
- Entire plant flow is subjected to advanced (tertiary) treatment
- Includes enhanced disinfection to protect shellfish resources
- Effluent meets standards for reclaimed water use for greater likelihood for direct human contact

Disadvantages

- Higher capital and operating costs than Options 1, 2 and 3
- Higher operational costs if treating reclaimed water to greater likelihood for direct human contact



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Treatment Planning Considerations

The Comox Valley Sewer Service treats its wastewater at a treatment plant located on Brent Road, Comox. That facility opened in 1984 and will require upgrades in order to accommodate our communities' continued growth and meet increasing environmental regulations.

To plan for the future of treatment for the service's wastewater, technical consultants and advisory committees have considered:



AREA GROWTH AND TREATMENT STANDARDS

- **FUTURE GROWTH:** Capacity of the treatment plant needs to increase to accommodate growth of the service area.
- **EFFLUENT QUALITY:** Federal and provincial regulations for effluent quality have changed. As a community should we be aiming to achieve or do better than regulatory limits?
- **ENVIRONMENTAL PROTECTION:** Cape Lazo and neighbouring Baynes Sound are environmentally sensitive areas that support many activities, including the shellfish aquaculture sector. Achieving a standard that best protects these resources is considered in options for the treatment plant.



COSTS OF WASTEWATER TREATMENT

- **COST:** Generally speaking, the higher the degree of treatment, the higher the construction and operating costs.
- **HOW TO PAY:** Future planning has to balance treatment goals with the financial resources available to the community. While capital costs can be eligible for grant funding, ongoing operations and maintenance costs are not.
- **SETTING GOALS:** One option presented on the long list meets the provincial standards while three offer a voluntary improvement to what is required.



EMERGING CONTAMINANTS

- **INCREASED FOCUS:** The impacts of emerging contaminants has drawn increasing attention in the public and was flagged as a concern in earlier stages of this planning process.
- **PREVENTION:** There is still a lot to learn about many contaminants (ie: antibiotics or personal care products), and limiting their entry into the system is likely the best approach to managing them.
- **LOOKING AT OPTIONS:** Including the necessary components to address metals or microplastics is being considered.

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Phone: 250-334-6000

Recovering Resources

In recent years, there has been increasing interest in recovering resources created through the collection and treatment of wastewater – such as reusable water, or heat. Resource recovery can have environmental benefits and generate revenue streams, but these must be weighed against increased capital and operations costs. As part of this planning process, options for resource recovery are being considered.



RECLAIMED WATER

- Some of the treatment plant options on the long list are designed to produce effluent that meets requirements for reclaimed water.
- Since this adds to cost of treatment, it's key to find a market for the resulting product.
- Onsite, this could include expanded use of reclaimed water, or offsite applications could use larger amounts (ie: irrigation or industrial use) – but this would require installation of pipes to get the water to where it is needed.



HEAT RECOVERY

- The use of heat extracted from the treatment process for space heating of buildings is becoming more common.
- Along with water reclamation, heat recovery for use onsite at wastewater treatment facilities is more cost effective than heat recovery at pump stations.
- Need to consider whether there's a nearby user who could use exported heat.



BENEFICIAL USE OF TREATED SOLIDS

- The CVRD already has a system in place to recover nutrients from the solids collected through the wastewater treatment process using a composting system.
- The final product – SkyRocket – is a Class A compost and is allowed for sale to individuals and commercial use.

Technical consultants also looked at other resource recovery options but suggest they are not feasible at this point:

- Production of Biogas: The current plant production is not large enough to make this economical.
- Extraction of Nitrogen and Phosphorus for Fertilizer Pellets: Due to the treatment processes currently in place, and cost, this is not feasible.
- Hydroelectric Turbine at Outfall: There is insufficient pressure head at the treatment plant's outfall for this.

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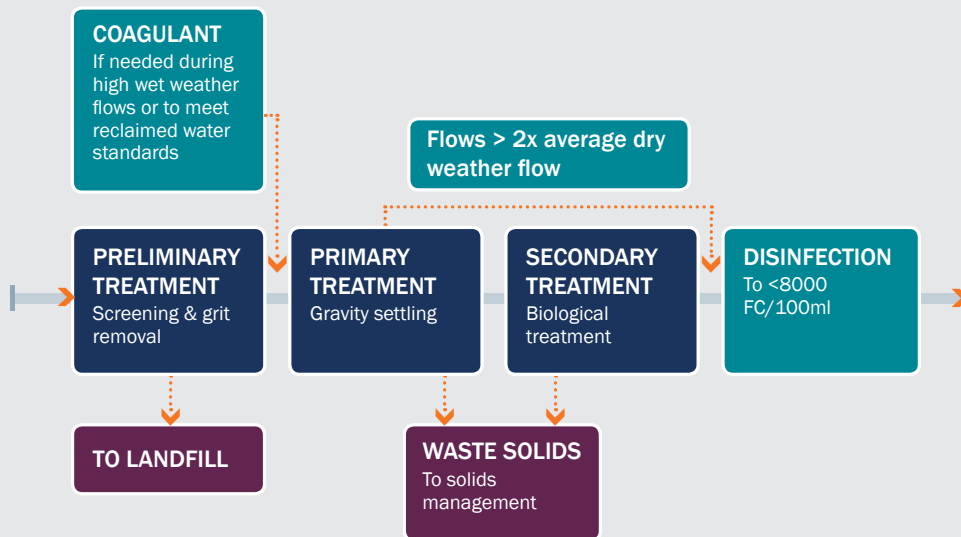
Phone: 250-334-6000

Treatment Planning: Options 1 and 2

Four options have been developed for consideration. Below is a summary of Options 1 and 2 – please refer to your background package for thorough details about treatment standards for each.

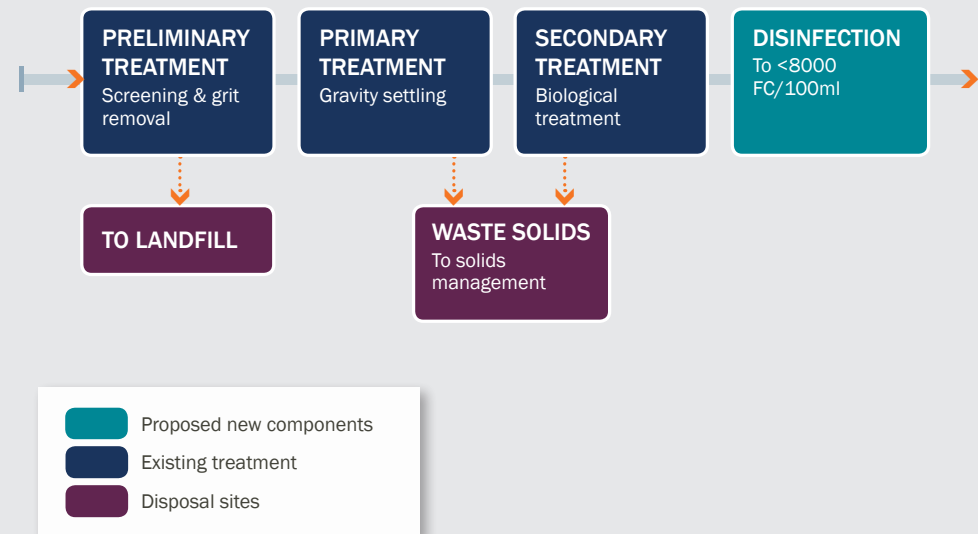
OPTION 1: Meets regulatory discharge standards

- Three-stage treatment (primary, secondary and disinfection)
- Bypass of secondary treatment for days of heavy inflows due to storms to avoid high infrastructure costs
- Addition of a coagulating (thickening) agent to enhance primary treatment in cases of high inflows
- Addition of disinfection to protect shellfish



OPTION 2: Secondary treatment for all flows (current system)

- Similar to Option 1, but with no bypass for heavy inflows, meaning all wastewater will move through secondary (biological) treatment
- Infrastructure must be sized to process max inflow - although majority of the time it is unused - resulting in increased capital and operating costs
- This is the current process at the treatment plant with the addition of disinfection for shellfish protection outside the initial dilution zone



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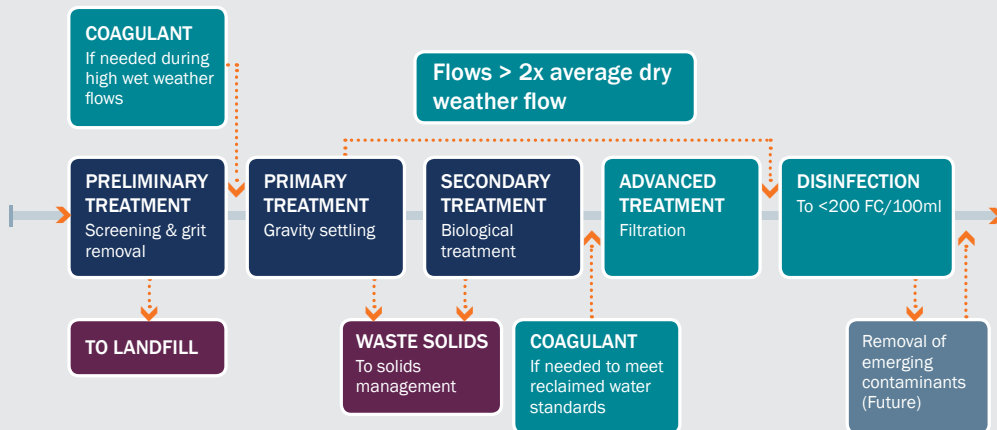
Phone: 250-334-6000

Treatment Planning: Options 3 and 4

Four options have been developed for consideration. Below is a summary of Options 3 and 4 – please refer to your background package for thorough details about treatment standards for each.

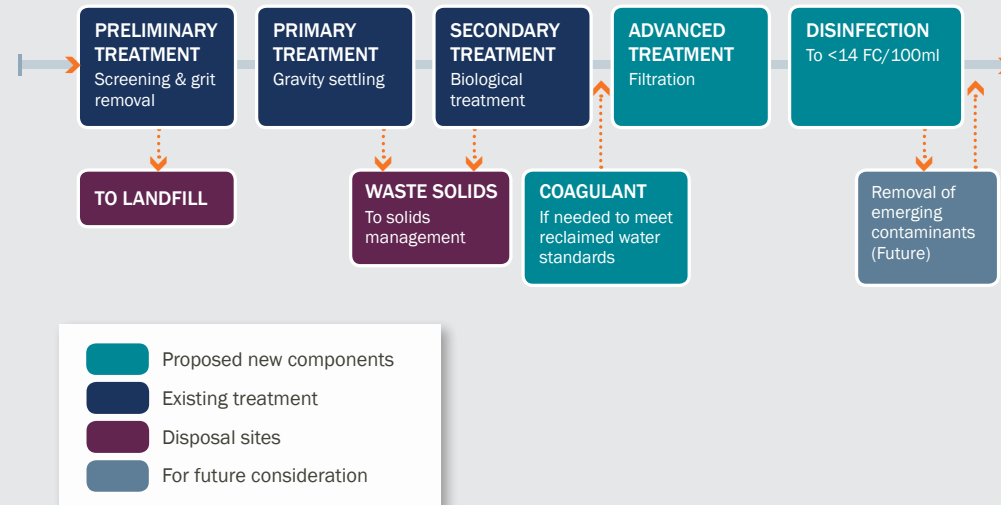
OPTION 3: Advanced treatment for up to 2x the average dry weather flow

- Similar to Option 2, with the addition of filtration for flows up to two times the average daily water flow
- Further protect shellfish and provide the best opportunity for reclaimed water by combining with installation of disinfection
- Increased capital/operating costs to Options 1 and 2



OPTION 4: Advanced treatment for all flows

- Similar to Option 3, but with all flows – regardless of amount – moving through filtration
- Further protect shellfish and provide the best opportunity for reclaimed water by treating and disinfecting all wastewater
- Increased capital/operating costs to Options 1, 2 and 3



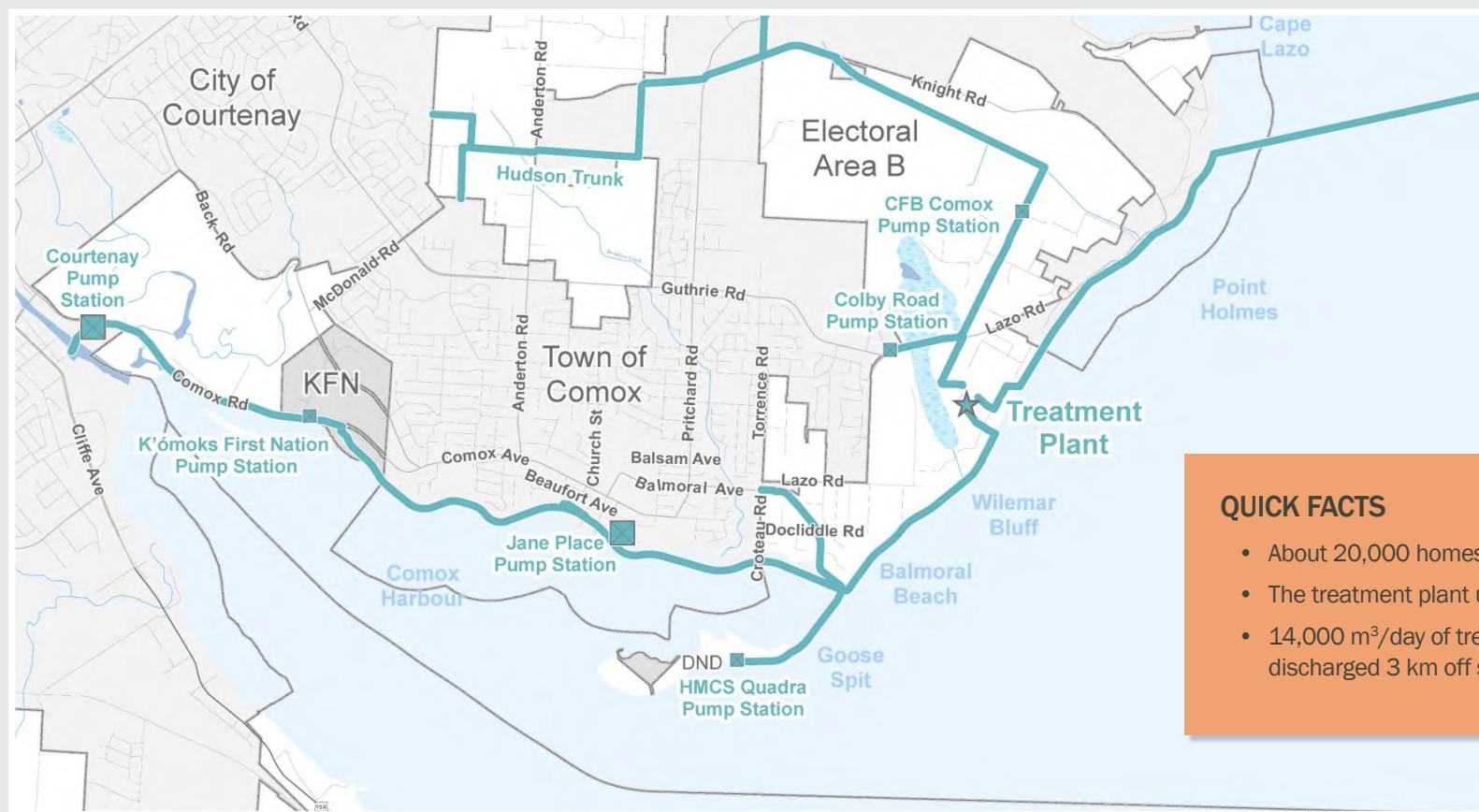
Visit: www.comoxvalleyrd.ca/lwmp

Email: engineering@comoxvalleyrd.ca

Phone: 250-334-6000

Sewer System Map

To understand the options proposed for a new conveyance system to serve Comox and Courtenay residents in the long term, it's important to understand the current system.



QUICK FACTS




- About 20,000 homes are connected to the service
- The treatment plant uses secondary treatment
- 14,000 m³/day of treated effluent on average is discharged 3 km off shore

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Phone: 250-334-6000

 **Comox Valley**
REGIONAL DISTRICT

comoxvalleyrd.ca   

Your Ideas: Treatment and Resource Recovery

Share your thoughts on the options presented for wastewater treatment and resource recovery here.
Have we missed anything? Are there any that should be removed?

Visit: www.comoxvalleyrd.ca/lwmp
Email: engineering@comoxvalleyrd.ca
Phone: 250-334-6000

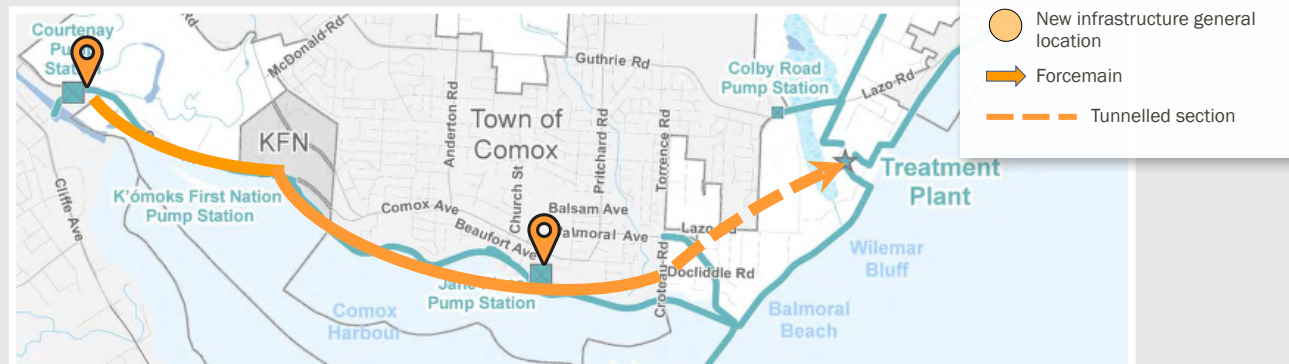


comoxvalleyrd.ca   

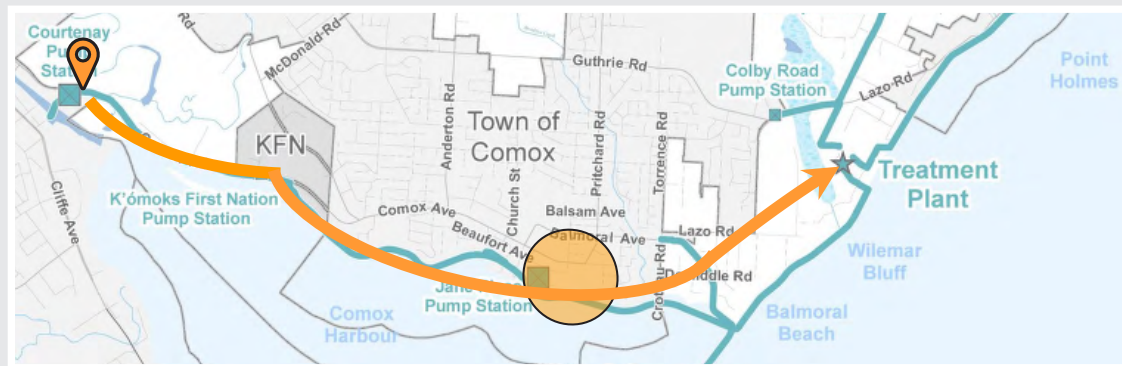
Moving Wastewater: Estuary Routes

Eleven options for conveyance are included on the long list. Below is a summary of the three options that use an estuary route for the conveyance system (moving wastewater from major pump stations to the treatment plant). Please refer to your background package for thorough details about each option.

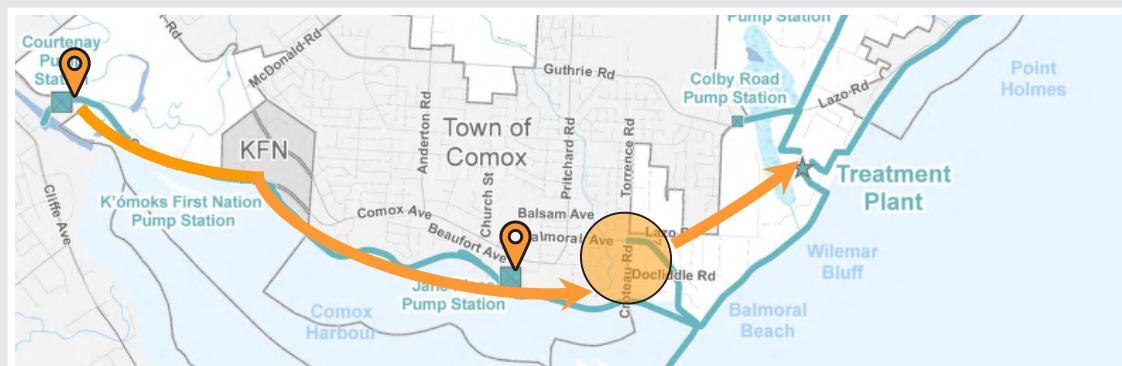
1a. Estuary Alignment – Tunnelling: Foreshore forcemain with tunneled route through Lazo Road height of land and (possibly) new pump station at low elevation in Comox.



1b. Estuary Alignment – Addition of New Comox Pump Station: Foreshore forcemain route with upgrades to Courtenay pump station and new high-head station at low elevation in Comox.



1c. Estuary Alignment – Addition of Comox No.2: Foreshore forcemain route with addition of new in-line pump station between Comox and Lazo Road height of land.

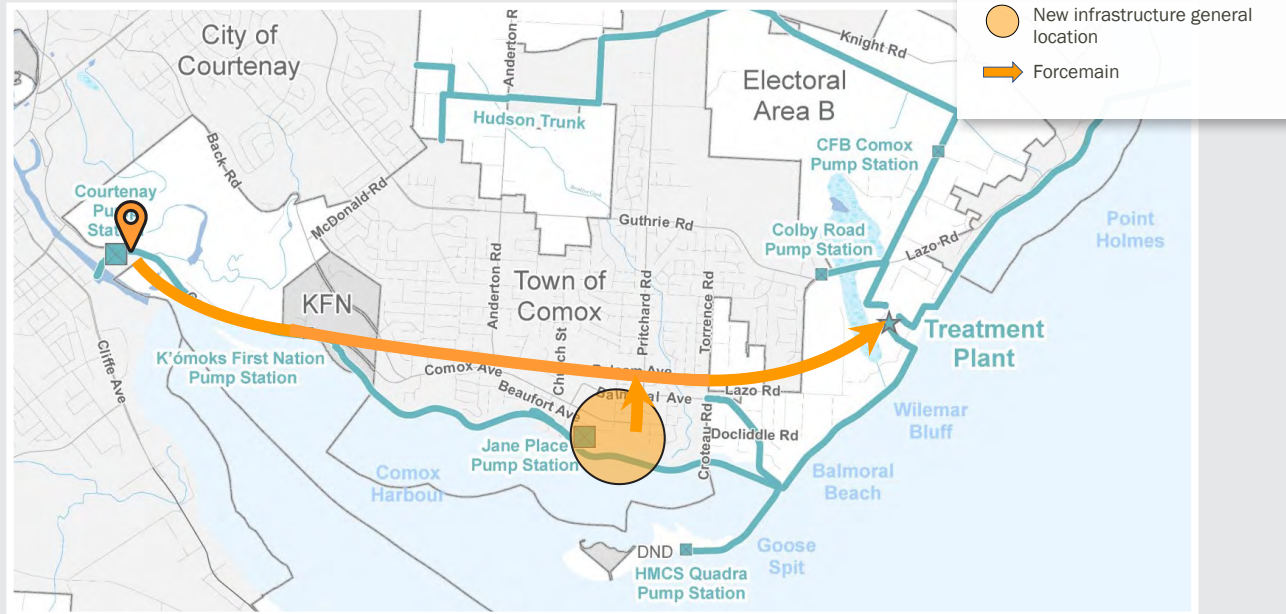


Moving Wastewater: Overland Routes

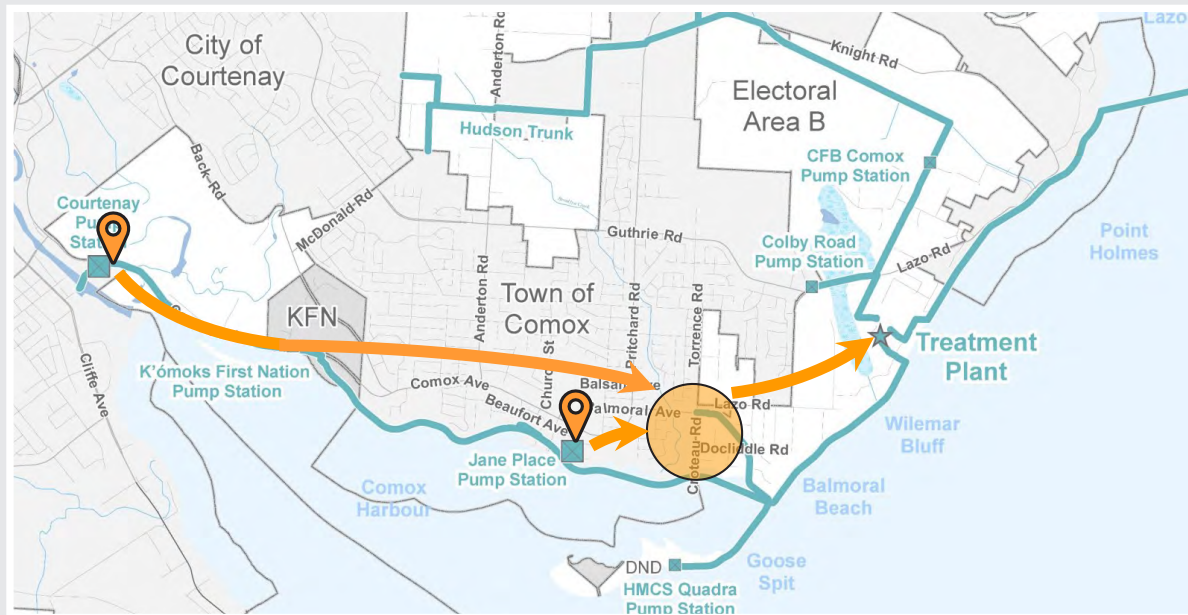
Eleven options for conveyance are included on the long list. Below is a summary of two options that include an alignment overland for the conveyance system (moving wastewater from major pump stations to the treatment plant). Please refer to your background package for thorough details about each option.

2a. Overland Alignment – Addition of New Comox Pump Station:

New forcemain along Comox Road from upgraded Courtenay pump station and new pump station at low elevation in Comox.



2b. Overland Alignment – Addition of Comox No.2: New forcemain from Courtenay pump station along Comox Road, with new in-line pump station.

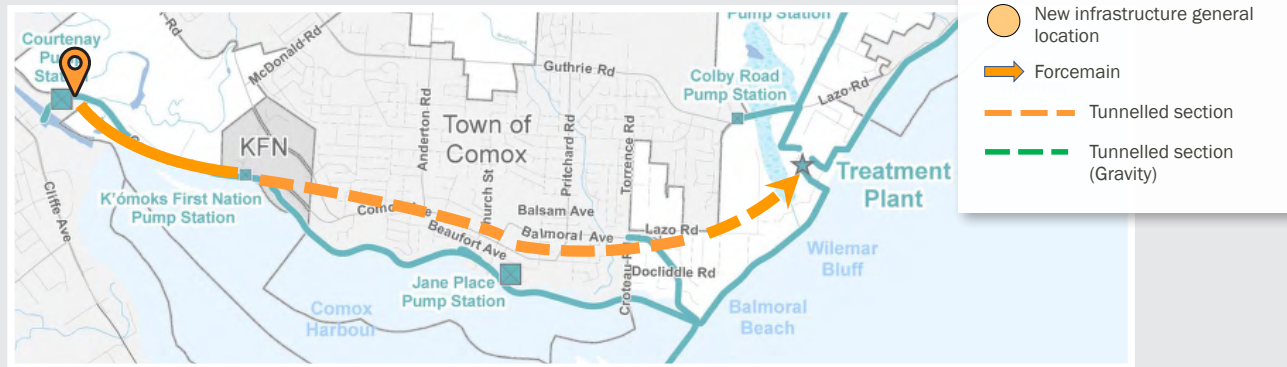


Moving Wastewater: Tunnelling

Eleven options for conveyance are included on the long list. Below are three options that include tunnelling for the conveyance system (moving wastewater from major pump stations to the treatment plant). Please refer to your background package for details about each option.

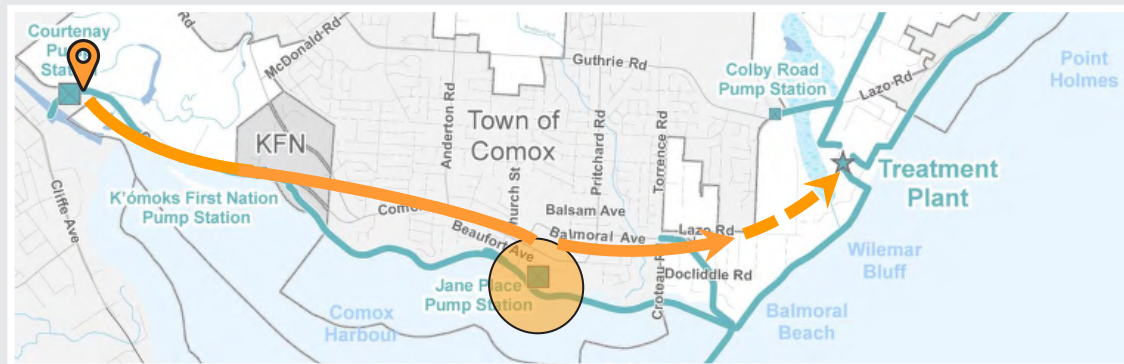
3a. Forcemain Tunnel Alignment – From Comox Road Hill:

Tunnel through Comox Road and Lazo Road hills and forcemain installed through Comox, with Jane Place connecting in.

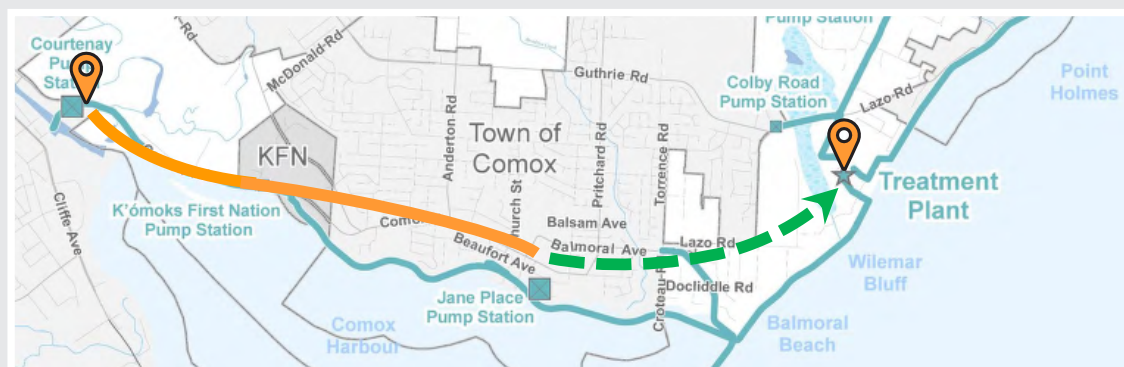


3b. Forcemain Tunnel Alignment – From Lazo Road Hill Addition of New Comox Pump Station:

Open cut forcemain with tunnel through Lazo Road hill and new pump station at low lying area in Comox (or modify existing pump station if possible).



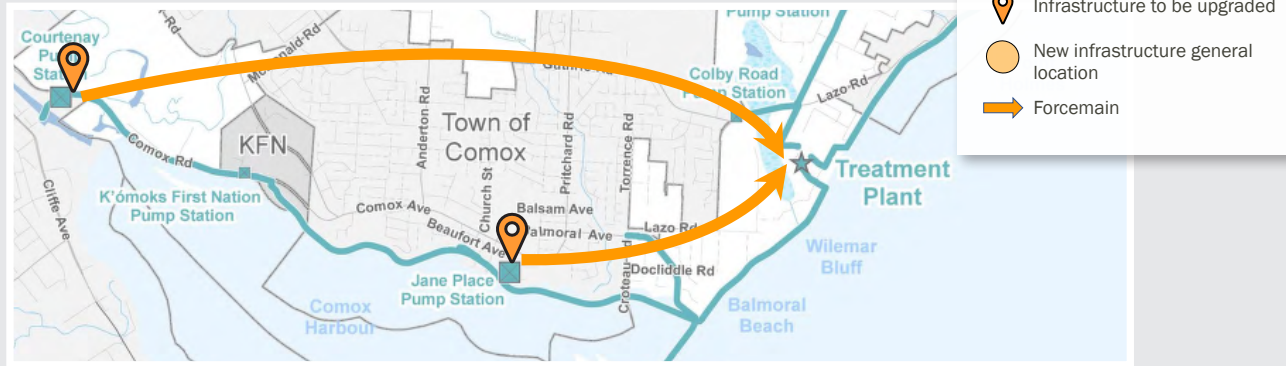
3c. Gravity Tunnel Alignment – From Lazo Road Hill: Open cut forcemain to gravity main at Lazo Road with route determined by required slope.



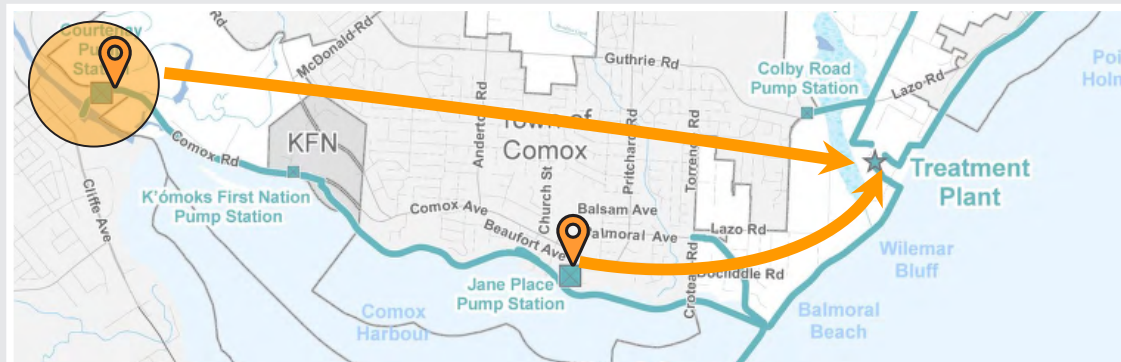
Moving Wastewater: Alternatives

Eleven options for conveyance are included on the long list. Below are three alternative options for the conveyance system (moving wastewater from major pump stations to the treatment plant). Please refer to your background package for thorough details about each option.

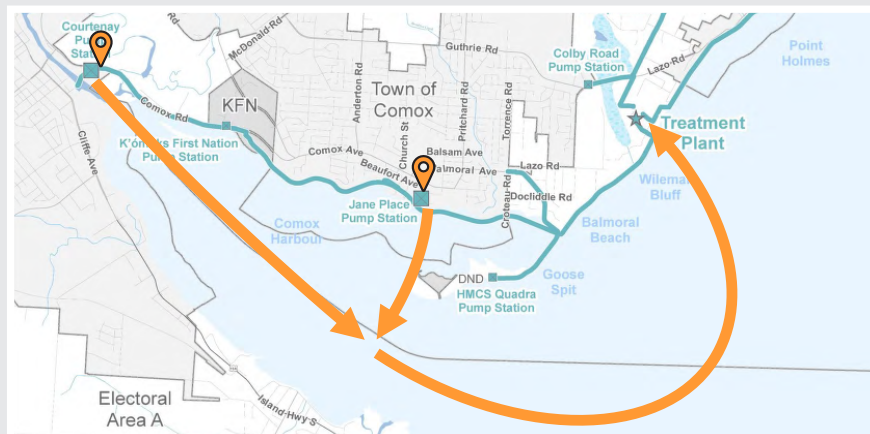
4. North Side Concept: Routing new forcemain to the north side of the service, maintaining separate one from Jane Place.



5. Decentralized Treatment: Addition of a new treatment plant near Courtenay pump station, treated effluent piped to existing outfall.



6. Deep Marine Concept: Siting forcemain in deep water, connecting existing pump stations to existing treatment and discharge points.



Your Ideas: Conveyance

Share your thoughts on the options presented for conveyance (moving wastewater) here.
Have we missed anything? Are there any that should be removed?

APPENDIX 1 – EVENT AND FEEDBACK REPORT: JAN. 29 + 30, INFORMATION SESSIONS



EVENT SUMMARY & FEEDBACK OVERVIEW

Comox Valley Sewer Service Liquid Waste Management Plan – Long List Options

Public Information Sessions – January 30 & 31, 2019

Prepared By: ZINC Strategies

Prepared For: Christianne Wile (Manager, External Relations)

EXECUTIVE SUMMARY

In January 2019, phase three of the public consultation process for the Comox Valley Sewer Service planning process got underway. This stage followed earlier outreach steps focused on introducing the process (phase one) and collecting feedback on goals and objectives (phase 2).

Phase three focused on the presentation of the long-list of options for treatment, conveyance and resource recovery to the public, with the goal of collecting their feedback on whether any additional options should be considered.

Two information sessions were held in late January with 56 participants. Themes of feedback included a focus on foreshore/marine environment protection and ongoing opposition to the Comox No.2 Pump Station. Generally, there were no glaring oversights to the public, who was eager to start weighing in on the ideas as well. The events support the continued establishment of consistent and ongoing outreach for the liquid waste planning process.

PART 1 – EVENT SUMMARY

OVERVIEW

Tools used to collect feedback on the long list options included two information sessions held January 30 and 31, 2019. These public events offered an opportunity for community members to learn about the liquid waste management planning process, review the long list options and provide thoughts on any options that have been missed or comment on other factors that should be considered.

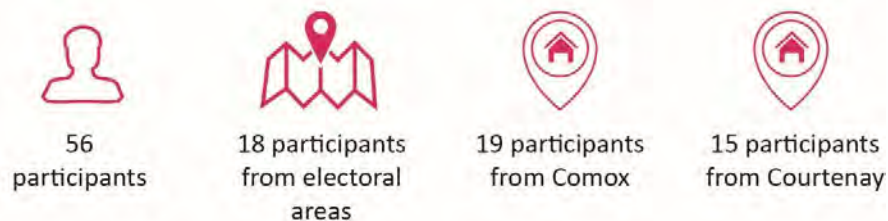
The drop-in sessions were held at two locations: in Comox at the K'òmoks First Nation Hall, and in Courtenay at the Rotary Hall (Florence Filberg Centre) – from 5-7 pm both evenings.

The below report summarizes the event and feedback collected.

1. EVENT GOALS

- To inform the public about details of each of the long list options selected by the Public and Technical Advisory Committees (PAC/TAC).
- To gather feedback on the long list options, and understand whether any relevant options have been missed and should be considered.
- To provide information on the LWMP process and future opportunities for public engagement.
- To provide residents with an overview of the current Comox Valley sewer system, and explain why the management planning process is needed.
- To bring awareness to and encourage residents to register for the online tool, ConnectCVRD.

2. BY THE NUMBERS



3. EVENT DETAILS

- Approximately 56 people attended the open houses: est. 27 at the first (Jan. 30) and est. 29 at the second (Jan. 31).
- Thirteen information boards were on display, outlining the planning process, public engagement timeline and long list options for treatment, conveyance and options for resource recovery.
- Two of these boards offered a direct opportunity for feedback – residents were encouraged to write down thoughts/ideas and place on boards as a method of sharing.
- Sixteen-page booklets, detailing technical specifications of each long list option for treatment and conveyance, were made available to attendees, in addition to an LWMP backgrounder.
- Reflective outdoor open house signs were posted to help direct visitors to event locations.
- Kris La Rose, senior manager, water & wastewater, was event host, with support from CVRD staff Marc Rutten, Adem Idris and Christianne Wile. They were supported by ZINC Strategies consultants + Walt Bayliss of WSP.
- While the majority of feedback was received directly by team members, seven feedback forms were submitted.
- Two members of the LWMP public advisory committee attended to hear feedback from the public, as did three elected officials from Courtenay, Comox + CVRD.

PROMOTION/OUTREACH

As free, public events, the info sessions were promoted via regular media and social media channels:

- A [news release](#) was issued Jan. 8 and was published in local media outlets.
- Newspaper print ads ran Jan. 17, 24 & 29.
- Radio ads ran Jan. 14-28 inclusive.
- Posters and save-the-date cards were shared at community hubs (rec centres, municipal halls).
- The event was posted on Facebook and promoted, reaching 2,327 people and generating 21 event responses.
- Sewage commission members were advised/invited by email.

PART 2 – FEEDBACK THEMES

THEMES OF COMMENTS

The info sessions provided an opportunity for many in the service area to better understand the LWMP process and have a first look at the long list of options. Comments gathered by regional district staff and consultants at the events generally fell into the following themes:

1. **Focus on Foreshore Protection:** There is strong concern about conveyance routes along the estuary/foreshore – environmental protection should be a priority.
2. **High Treatment Standards:** There is strong support to further investigate options for higher/highest level of treatment.
3. **Tunneling Peaks Interest:** There is generally support for tunneling and for “doing it right the first time”, no matter the costs – though there is some concern about impacts to groundwater from tunneling and overland conveyance.
4. **Comox No. 2 Opposition Remains:** Participants attending from Lazo Road area are strongly opposed to the long list options that involve the addition of Comox No.2 Pump Station.

FEEDBACK SUMMARY

The following feedback was collected from the feedback forms, interactive boards and summary notes from staff participants. Note: comments are shared as written.

WASTEWATER TREATMENT + RESOURCE RECOVERY

Are there any other options that should be considered?

- Limiting the size of the population of the Comox Valley. If we can't handle more sewage, why should we allow more people to live here?
- Why not a total system at Fields site where sewage is treated and returned to water clean + potable, Alert Bay has such a system

Is there any other information you would like the committee to consider?

- Recovery of as much as possible
- Ideally, I would like to see all wastewater re-used
- Perhaps beyond your scope, but reducing the amount of effluent – particularly stormwater
- What are the possibilities of dealing with waste in neighbourhood manure composting facilities?
- Why is the area south (Baynes Sound), which has no sewer service, not a higher priority?

Additional comments:

- If possible, for each option could info about energy requirements be included?
- More info, if possible, on technologies for secondary + tertiary processes
- It may be useful to research efficacy of microplastic washing machine filters to reduce household laundry sources
- Support Option 4 + recovery of resources
- Build in capabilities for future improvements in sewage treatment and resource recovery. Even if non-economical now.
- Recovering resources should be explored to the full extent. Option 4 – spend money now!
- Where will the \$\$ come from to implement these options?
- Requesting more info around disinfection technologies (UV, Ozone, Chlorine, etc.)
- Will the odour implications of the various options be evaluated?
- Why keep using a system that was a bad idea to start with: Brent Rd. plant stinks, Forcemain in foreshore
- Any system that adds pollutants to the straight is clearly not sustainable

CONVEYANCE

Are there any other options that should be considered?

- N/A

Is there any other information you would like the committee to consider?

- Use 3C if possible

- What is the approximate size of these main lines? RE: Deep marine concept – how is the condition of the exposed pipe going to be monitored? Would you use “smart pigs” like those used in the oil patch?

Additional comments:

- No option in the estuary is the only way to keep it half decent. Did you look at the old pipe from the base? It was a sieve.
- Option # 4 or 5 only ones acceptable
- With the least risk of contaminating marine environment
- More info please on lifespan of each option if there is any difference
- Option #1 goes through a swath of area that is on well water. My understanding is that projects must not put potable water at risk. A sewer line going through an area where residents rely on well water puts their water source at risk. How can this proposal be justified?
- 3 A, B, C – Spend the money now
- Why is Area B not represented on Sewage Commission? Why is Croteau Beach still in the crosshairs of a system we can't access?
- Why is Regional District not on the sewage board? We need system that keeps the s*** out of the bay (Comox).

PHOTOS



CONCLUSION

These events were another positive step to engage the public in the LWMP process, with clear feedback from many that the outreach process has been reliable and consistent. Attendees now have an understanding of the options being considered, and while there was interest and discussion, no large “gaps” were identified in the list.

The feedback collected at these events, in combination with input collected through the online consultation tool ConnectCVRD, will serve as valuable insight for committees as they consider options for the short list.

APPENDIX 2 – CONNECTCVRD ANALYTICS: JAN. 28-FEB. 5, LONG LIST OPTIONS

Survey Report

28 January 2019 - 06 February 2019

Reviewing the Long List: Are we on track?

PROJECT: Help shape the future of our Sewer System
in Courtenay and Comox

Connect CVRD



VISITORS

111

CONTRIBUTORS

19

CONTRIBUTIONS

19

19

Registered

0

Unverified

0

Anonymous

Q1 | Are there any other treatment plant options you would like considered? Please share.

RPearson

1/30/2019 10:59 AM

No other considerations

Edi Johnston

1/30/2019 12:24 PM

Is tertiary the same as "Disinfection" if not, please consider tertiary as well.

gu3

1/30/2019 07:19 PM

Our preferred option is #4 - the community and the CVRD have Stewardship Responsibilities that extend well into the future. Option #4 sets the stage to deliver on those responsibilities. This is the option we can be proud of for years to come as we will have made the effort and investment to do our best for the long-term health and sustainability of the environment, and related resources such as shellfish.

fmayhood

1/31/2019 09:31 AM

Separate storm water and waste water systems. Reuse grey water locally, rather than dump it in the ocean.

dbroten

1/31/2019 01:10 PM

Capture and use of methane

jrsmith1

1/31/2019 08:07 PM

No

Michele.jones

2/02/2019 10:59 AM

No

johnrushforth

2/02/2019 11:18 PM

I don't know if it is economically viable but basically I think we should be studying/considering biomethane production from sewage and not dumping our poop in the ocean.

Linda-Claire Steager

2/04/2019 09:48 AM

Does biological treatment mean filtering through a wetland area with rushes similar to what has been used in apartment complexes in France and China?

edonalds

2/04/2019 10:21 AM

I support Option #3. We might as well pay now for the highest possible contamination-free system. it begins aging the minute it is in operation. Consider it a long -term investment. Hope it lasts longer than a new car!!

bcmills

2/04/2019 06:07 PM

This feedback is coming from Association for Denman Island Marine Stewards. We support advanced treatment of all flows (#4). This would prepare the region most effectively for the impact of climate change on the region. The idea of protecting shellfish removal of contaminants, reclaiming water for other uses and optimal filtration will make a difference as climate change and population increase effects us.

Optional question (11 responses, 8 skipped)

Q2 | Is there any other information on treatment you'd like the committee to consider? Please share.

Jennysteel

1/30/2019 10:50 AM

Elimination of odours in the surrounding community is mandatory. Even today there are still strong odours in the Curtis Rd community on a frequent basis. If this is not fixed and taken into consideration in any plans CVRD WILL face a nuisance law suit..

Edi Johnston

1/30/2019 12:24 PM

As our oceans are in crisis, what can be done to remove excreted pharmaceuticals, micro-plastics etc.?

fmayhood

1/31/2019 09:31 AM

Ballpark costs and benefits for each option? Why do storms double (or more) inflow to the treatment plant?

vincevt

1/31/2019 11:29 AM

Some discussion on source control to raise public awareness of their role in keeping emerging contaminants out of the wastewater system

jrsmith1

1/31/2019 08:07 PM

No

Michele.jones

2/02/2019 10:59 AM

Not at this time

Tim

2/02/2019 08:40 PM

The 4 options presented are a good template for a series of long term plans. Option 1 is current practice. Option 2 should be considered the goal of a 5 (?) year plan to reduce the # of days >2xADWF to zero (if possible) through the reduction of I & I. This would reduce or eliminate the need for additional capacity. Option 3/4 should be considered the goal for a 20(?) year plan to move to tertiary treatment which I imagine is the ultimate long term goal for any waste treatment system. Included in this goal would be the future inclusion of any new technologies to deal with emerging contaminants. The above mentioned method if not being considered.

Linda-Claire Steager

2/04/2019 09:48 AM

edonalds

2/04/2019 10:21 AM

My main concern is the 1. The Estuary is not negatively affected – for any species that uses the waterways 2. The smelly station at the end of 20 ST becomes redundant or is updated 3. The ocean is not negatively impacted. 4. Tax increases are related and reasonable.

bcmills

2/04/2019 06:07 PM

WE wonder about the taking of solid wastes to the landfill, as the pharmaceuticals and microplastics that are inevitably in the solid waste will just be returning to the water table and thus ultimately into the ocean.

salty

2/06/2019 08:20 AM

Seems like option number 4 is the obvious choice. Will be interesting to see the difference in capital and operating costs between options 3 and 4.

Optional question (11 responses, 8 skipped)

Q3 | **Are there any other conveyance options you'd like considered? Please share.**

RPearson

1/30/2019 10:59 AM

Efficiencies and costs should be the consideration and not local interests in what might be the best approach for a route. Let the engineers decide what is best for the community.

gu3

1/30/2019 07:19 PM

The deep sea conveyance option sounds very expensive. It also hints at potential problems related to spills, leakages, challenging maintenance, and so forth. I don't have a clear understanding of the benefits and drawbacks of each option, but like the idea of upgrading the Courtenay station.

Decentralized sounds reasonable, but would there be unnecessary duplications of infrastructure?

Above ground/elevated pipe?

fmayhood

1/31/2019 09:31 AM

Jill

1/31/2019 04:47 PM

I like the overland option 4. No pipes in the water, please

edonalds

2/04/2019 10:21 AM

I was the best possible long-term option for ALL Species that share this habitat. If it means front end loading, then so be it.

bcmills

2/04/2019 06:07 PM

Conveyance systems #3 or #4 seem appropriate to us. We support no system that requires tunneling through archeological sites, estuaries, or marine areas. These methods would impact vital spawning and nursery grounds, would disrupt marine habitat and vegetation, and would result in the release of persistent organic pollutants, microplastics, and stored CO2 into the atmosphere or water column.

Optional question (6 responses, 13 skipped)

**Q4 | Is there any other information on conveyance that you'd like the committee to consider?
Please share.**

Edi Johnston
1/30/2019 12:24 PM

With sea level rise, increased tide height and storm damage, please stay away from the shoreline or any marine involvement.

gu3
1/30/2019 07:19 PM

What are the implications for each option in the event of an earthquake?

fmayhood
1/31/2019 09:31 AM

Earthquake survival properties of each option?

vincevt
1/31/2019 11:29 AM

Unless costs are significantly lower for options that include Comox #2 pump station, it seems that proceeding with any of those options would be a tough sell given the prior public backlash. Tunnelling seems like the least disruptive option for construction, but it will be interesting to see how costs compare. I believe that any new conveyance system must be overland in order to avoid any undue threat to our estuary, the health of our marine environment, and the shellfish industry among others. It is also my understanding that designing a conveyance system where these types of pump stations are built in series is considered "not best practice" and results in high risk of disaster. These considerations seem to eliminate 5 of the 11 options right off the bat. (1A,B& C. 2A. and 6) Option 4 seems to require very high head (79m?) and seems a bit fanciful. Option 5 seems to involve very high costs for very little benefit. The tunnelling options seem to allow us to avoid major pump station construction and long term maintenance of same. Option 3C seems to be optimal.

Tim
2/02/2019 08:40 PM

Linda-Claire Steager
2/04/2019 09:48 AM

How safe is each location, ie pipes bursting or leaking with resulting contamination of the land and water?

edonalds
2/04/2019 10:21 AM

I think that one-way streets should be attempted for 5 years as a minimum. Traffic flows lights on 17th St bridge. No one knows whether traffic will increase given electronic vehicles, improved public transportation, again populations possible train service etc. I do think that large trucks and other such vehicles should use By pass roads and not go through the urban environment.

salty
2/06/2019 08:20 AM

Would an upgrade to the KFN pump station help alleviate pressure on the Courtenay Pump station (help to get waste up and over the hill) in any of the overland/tunnelling options?

Optional question (8 responses, 11 skipped)

Q5 | **Are there any other resource recovery options you'd like considered? Please share.**

RPearson

1/30/2019 10:59 AM

I am in favor of any of the recovery solutions if they have a sound ROI on the community over the long run.

Edi Johnston

1/30/2019 12:24 PM

Please explore all options, the less we pump into the ocean, the better.

gu3

1/30/2019 07:19 PM

Please take a look at Abbotsford's system. We toured it years ago and were very impressed. Abbotsford uses treated solids and reclaims water. Very impressive system and approach, but have to assume that things have advanced even further.

dbroten

1/31/2019 01:10 PM

METHANE - biodigester

Linda-Claire Steager

2/04/2019 09:48 AM

Has methane capture from sewage been considered?. We could generate power. The library has a small book- the Pooh Book, I think. It tells of a city in Sweden that captures the methane from excrement and powers the city. Toronto is now using zoo pooh to capture methane.

edonalds

2/04/2019 10:21 AM

solar solar, solar find out what other other nordic countries are doing. Possibly also China. They are far ahead of us regarding green alternatives.

bcmills

2/04/2019 06:07 PM

We support both the recovery of reclaimed water and heat recovery. We support innovating for future health of the planet and its resources. Thank you

Optional question (7 responses, 12 skipped)

Q6 | Is there any other information on resource recovery you'd like the committee to consider? Please share.

gu3

1/30/2019 07:19 PM

Please tour Abbotsford's system and consider their approach . . . with perhaps some advances that have evolved as a result of their system.

vincevt

1/31/2019 11:29 AM

The ability to use reclaimed water for irrigation seems compelling, considering long-term climatic trends towards drier summers, and the impacts that will have on local agriculture

Linda-Claire Steager

2/04/2019 09:48 AM

Use of excrement to capture methane. Plus, the then clean poop can be used as fertilizer.

edonalds

2/04/2019 10:21 AM

Are there no recycling of poop options? In China and Latin America human waste have been used for centuries.

Optional question (4 responses, 15 skipped)

IDEAS TOOL SUMMARY

IDEAS SUMMARY		TOP 3 IDEAS BASED ON CONTRIBUTORS		
3	Ideas	4	2	1
5	Contributors	Contributed to	Contributed to	Contributed to
7	Contributions	Treatment Solutions	Conveyance Solutions	Resource Recovery Solutions

IDEAS

Treatment Solutions

VISITORS 5	CONTRIBUTORS 4	CONTRIBUTIONS 4
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01 February 19 Sharon P.	<div> <div>VOTES</div> <div>0</div> </div> <div> <div>UNVOTES</div> <div>0</div> </div>	<p>Mini Treat sewage at each pump station. By the time it gets to the sewage plant the process wouldn't have to be so intense.</p>
05 February 19 greendog	<div> <div>VOTES</div> <div>0</div> </div> <div> <div>UNVOTES</div> <div>0</div> </div>	<p>Get the system away from the water--off the foreshore, out of the estuary and off the ocean floor. Has the CVRD learned nothing in 40-years</p>
04 February 19 Kal	<div> <div>VOTES</div> <div>0</div> </div> <div> <div>UNVOTES</div> <div>0</div> </div>	<p>Biofuel production from the renewable sewage sludge is becoming a feasible reality all over the world . Why not here too?</p> <p>Biofuel</p>
04 February 19 Jim Elgie	<div> <div>VOTES</div> <div>0</div> </div> <div> <div>UNVOTES</div> <div>0</div> </div>	<p>Boydell Wastewater Technologies Inc. is a Vancouver Island company located in Chemainus. Very environmental and cost effective system.</p> <p>Boydell.ca</p>

IDEAS

Conveyance Solutions

VISITORS 7	CONTRIBUTORS 2	CONTRIBUTIONS 2
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05 February 19		Get the system away from the water--off the foreshore, out of the estuary, forget the ocean floor. Has the CVRD learned nothing in 40-years
greendog		
VOTES 0	UNVOTES 0	

23 January 19		Satellite sewer truck dumping station
Sid Lodewyk		
VOTES 0	UNVOTES 0	
		To limit truck traffic through residential areas, trucking distances and odours associated with sewer truck dumping, the long term plan should include a dumping station in an industrial area.

IDEAS

Resource Recovery Solutions

VISITORS 1	CONTRIBUTORS 1	CONTRIBUTIONS 1
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05 February 19		<p>What do you intend to do by way of reclamation of the pipeline that should be taken off the foreshore and removed from the inland portion</p> <p>carrying sewage up to the plant. There are cost savings to be had!</p>
greendog		
VOTES 0	UNVOTES 0	

APPENDIX 3 – SAMPLE ADVERTISEMENTS

Posters + “Save the Date” Cards: Distributed at recreational facilities throughout Courtenay/Comox



LET'S TALK

POOP

Review Our Long List of Options

Our committees have identified a long list of options for the future of the Comox Valley sewer system, and we want to share them with you. Your feedback will help us ensure that all appropriate options are considered before we narrow down the list.

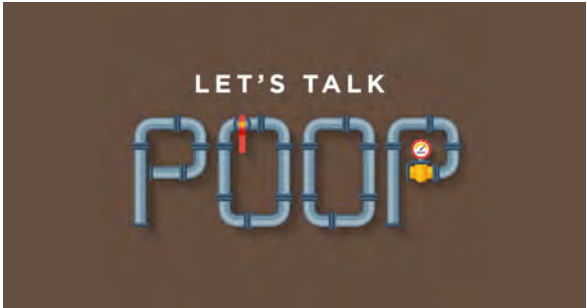
Drop in to an information session:

Wednesday, January 30 5:00 pm to 7:00 pm K'ómoks First Nation Hall 3330 Comox Rd, Comox	Thursday, January 31 5:00 pm to 7:00 pm Rotary Hall @ Florence Filberg Centre 411 Anderton Ave, Courtenay
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For more information:
Call: 250-334-6000
Visit: comoxvalleyrd.ca/lwmp

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REGIONAL DISTRICT
comoxvalleyrd.ca

Print Ad: Comox Valley Record



LET'S TALK

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---	---

For more information:
Call: 250-334-6000
Visit: connectcvrd.ca/lwmp

 **Comox Valley**
REGIONAL DISTRICT
comoxvalleyrd.ca

Digital Display Ad: Displayed on screens at recreational facilities throughout Courtenay/Comox



LET'S TALK

POOP

Help us review long-term options for our sewer system

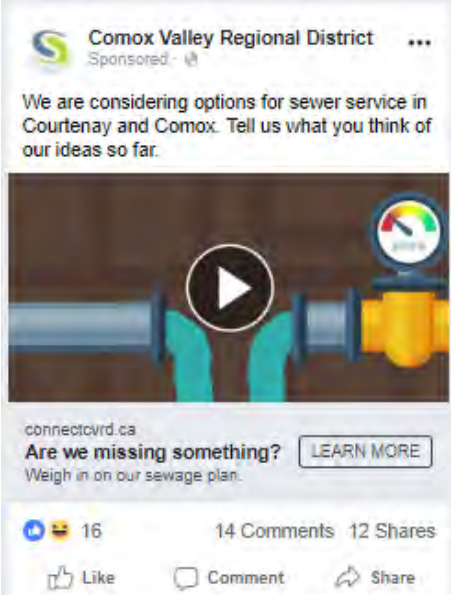
Drop in to an info session and tell us if we are on track:

Wednesday, January 30 K'ómoks First Nation Hall 5:00 pm to 7:00 pm	Thursday, January 31 Rotary Hall @ Florence Filberg Centre 5:00 pm to 7:00 pm
---	--

For more information visit:
comoxvalleyrd.ca/lwmp


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Social Media Ad: Facebook & Instagram



Comox Valley Regional District Sponsored

We are considering options for sewer service in Courtenay and Comox. Tell us what you think of our ideas so far.



connectcvrd.ca

Are we missing something? [LEARN MORE](#)

Weigh in on our sewage plan.

16 14 Comments 12 Shares

Like Comment Share

Radio Ad Script

PROJECT: CV Sewer Service LWMP
MEDIA: 30 second ads
CAMPAIGN: Facilitated Session 3 Invite
RUN DATES: Jan. 14-28, 2019
FREQUENCY: TBD

SCRIPT

Want your say on the future of sewer service in Courtenay and Comox?

Planning for the service is now underway and a long list of options has been developed. Now - it's your turn to learn more about the options and let us know if we've missed anything before the list is narrowed down.

Information sessions will be held Wednesday January 30th at the K'omoks First Nation Hall and Thursday January 31st at Rotary Hall in Courtenay's Filberg Centre. Both run from 5 to 7 p.m. – drop in when it suits you.

Learn more at comoxvalleyrd.ca/lwmp.

APPENDIX 4 – INFORMATIONAL MATERIALS (EXAMPLES)

Long List Backgrounder

Long List Option No.1 – Conveyance (Estuary Alignments)

This alignment would involve installation of a new forcemain within or along the Comox harbour foreshore. The forcemain would transition to an overland pipe between Comox and the Lazo Road height of land. To convey the sewage over the Lazo Road height of land the following options are suitable:

1A. The forcemain from Courtenay Pump Station (PS) would continue directly to the treatment plant through a new tunnel at the Lazo Road height of land. The tunnel would reduce the required pressures in the system. Pending the tunnel elevation, a new pump station may be required in the general vicinity of the existing Jane Pl. Pump Station (PS). In which case, the existing Jane Pl. PS would be repurposed as a small subdivision pump station.

Advantages

- Potentially limited hydraulic changes to existing pump stations hydraulics subject to tunnel elevation.
- Minimizes construction of a forcemain through Comox.
- Involves only two large pump stations

Disadvantages

- Involves work along and potentially in the estuary, including environmentally and archaeologically sensitive areas
- Elevated maintenance and risk management needs due to proximity to marine environment
- Elevated construction and operational risk associated with a tunnel



1B. The forcemain from Courtenay Pump Station (PS) would continue directly to the treatment plant such that there is no in-line pump station. In order to overcome the Lazo Road height of land, Courtenay PS would be upgraded to ensure the forcemain pressure is sufficiently high. As a result, the existing Jane Pl. Pump Station (PS) would not be able to cope with this higher hydraulic requirement and a new pump station would be required to convey raw sewage into the forcemain between Courtenay PS and the treatment plant. The existing Jane Pl. PS would be repurposed as a small subdivision pump station.

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Phone: 250-334-6000



Advantages

- Minimizes construction of a forcemain through Comox
- Involves only two large pump stations (Jane Pl. PS repurposed as local facility only)

Disadvantages

- Involves work along and potentially in the estuary, including environmentally and archaeologically sensitive areas.
- Elevated maintenance and risk management needs due to proximity to marine environment

Option 1B: Addition of New Comox Pump Station



1C. A new pump station facility located somewhere between Comox and Lazo Road height of land. This would be an inline facility which receives raw sewage from Courtenay Pump Station (PS) discharge and pumps it over Lazo Road height of land to the treatment plant. The Jane Pl. Pump Station (PS) would tie-in to the Courtenay PS discharge forcemain at a location upstream of the new pump station. The elevation of the new pump station would have to be low enough to permit the Jane Pl. PS to hydraulically connect.

Advantages

- Minimize hydraulic changes to existing Courtenay and Jane Pl. Pump Stations
- Maximize useful life of existing foreshore forcemain
- Minimizes construction of a forcemain through Comox

Disadvantages

- Single point of failure of sewage conveyance system
- Involves operation and maintenance of three large pump stations, one highly critical
- Involves work along and potentially in the estuary, including sensitive areas
- Elevated maintenance and risk management needs due to proximity to marine environment

Option 1C: Addition of Comox No. 2



Long List Option No.2 – Conveyance (Overland Alignments)

This alignment would involve installation of a new forcemain overland from Courtenay Pump Station (PS) towards the treatment plant. This forcemain would pass over the Comox Rd. hill. Due to the change in discharge pressure a significant upgrade or rebuild would be required at the Courtenay PS. Several routing options are available, including:

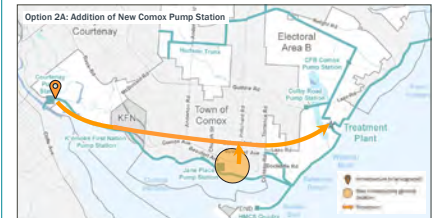
2A. The Courtenay PS would be upgraded to allow sewage from Courtenay to be pumped directly to the treatment plant. As a result, the existing Jane Pl. Pump Station (PS) would not be able to cope with this higher hydraulic requirement and a new high pressure head pump station would be required in the general vicinity of the existing Jane Pl. PS. This new facility would convey raw sewage into the forcemain between Courtenay PS and the treatment plant. The existing Jane Pl. PS would be repurposed as a small subdivision pump station.

Advantages

- No pipe in the estuary, mitigating environmental and archaeological risks
- All pipe and structures on-land to maximize maintenance accessibility
- Involves only two large pump stations (with Jane Pl. repurposed as local PS)

Disadvantages

- Significant hydraulic changes to the Courtenay PS and Jane Pl. PS
- Construction of new conveyance system through an area with significant existing infrastructure



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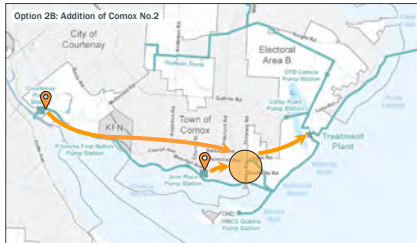
2B. The forcemain from the Courtenay Pump Station (PS) would convey raw sewage over the Comox Rd. hill and down into a new pump station located between Glacier View Drive and Comox Rd. The elevation of the new pump station must allow enough pressure to convey the sewage over Lazo Road to the treatment plant without exceeding the pressure capacity at Jane Pl. Pump Station (PS).

Advantages

- No pipe in the estuary mitigating environmental and archaeological risks
- All pipe and structures on-land to maximize maintenance accessibility
- Minimize hydraulic changes to existing Jane Pl. PS

Disadvantages

- Pump in series and single point of complete failure of sewage conveyance system
- Involves operation and maintenance of three large pump stations, one of high criticality
- Significant hydraulic changes to the Courtenay PS
- Construction of new conveyance system through an area with significant existing infrastructure



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Long List Option No.3 – Conveyance (Tunnelling Alignments)

This alignment would involve installing a combination of new forcemains and gravity sewer mains overland from the Courtenay Pump Station (PS) towards the treatment plant. The tunnel alignments would be selected to either minimize pumping requirements or, where possible, utilize gravity sewer mains. The primary areas where tunnelling would be appropriate are under the Comox Rd. and Lazo Rd heights of land. Several combinations of forcemain/gravity sewer mains are described below:

3A. Sewage would be pumped from the Courtenay PS to a tunnel constructed through Comox Rd. hill. The forcemain would transition to an open cut installation through Comox and back to a tunnel to pass under the Lazo Road height of land and down to the treatment plant. The Jane Pl. Pump Station (PS) could connect to the forcemain without modifications if the elevation of the tunnel does not require additional pumping capacity.

Advantages

- No pipe in the estuary mitigating environmental and archaeological risks
- Reduces pressures at the existing pump stations
- Significantly alleviates the high pressure head requirements for the Courtenay PS and Jane Pl. PS as compared to other overland options

Disadvantages

- Elevated costs and risks due to tunnelling
- Construction of new conveyance system through an area with significant existing infrastructure

Option 3A: From Comox Road Hill



3B. A new forcemain would be installed from the Courtenay Pump Station (PS) directly to the treatment plant with a tunnel installed for the forcemain to pass through the Lazo Rd height of land. The existing Jane Pl. Pump Station (PS) would likely not be able to cope with this higher hydraulic requirement and therefore a new high pressure head pump station would be required near the existing Jane Pl. PS. This new facility would convey raw sewage into the forcemain between Courtenay PS and the treatment plant. The existing Jane Pl. PS would be repurposed as a small subdivision pump station. If the tunnel elevation is sufficiently low, the existing Jane Pl. PS would be suitable.

Advantages

- No pipe in the estuary mitigating environmental and archaeological risks
- All pipe and structures on-land to maximize maintenance accessibility
- Alleviates some of the high pressure head requirements as compared to other overland options

Disadvantages

- Construction of new conveyance system through an area with significant existing infrastructure
- Higher upgrade requirements at the Jane Pl. PS as compared to the other tunnel options

Option 3B: From Lazo Road Hill Addition of New Comox Pump Station



3C. A new forcemain from Courtenay Pump Station (PS) would continue directly to the treatment plant. A gravity sewer main tunnel would pass through the Lazo Rd height of land at the required slope. The Jane Pl. Pump Station (PS) would connect to the gravity sewer main through a new forcemain and the tie-in location would depend on the gravity sewer main alignment. The elevation of the new tunnel would determine whether Jane Pl. PS would need to be replaced to accommodate a high pressure head pump.

Advantages

- No pipe in the estuary mitigating environmental and archaeological risks
- All pipe and structures on-land to maximize maintenance accessibility
- Alleviates some of the high pressure head requirements for the Courtenay PS and most of the high head requirements for the Jane Pl. PS as compared to other overland options

Disadvantages

- Construction of new conveyance system through an area with significant existing infrastructure
- Gravity sewer main alignment must follow a specific slope which is dependent on the topography.
- Gravity sewer mains are significantly larger diameter as compared to forcemains for the same flow



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Long List Option No.1 – Wastewater Treatment (Meet Regulatory Discharge Standards)

Option 1 would meet federal and provincial regulatory requirements for secondary treatment with discharge to open marine waters (the treatment plant outfall extends 2,825 m from shore at Cape Lazo into the Strait of Georgia and the discharge diffuser is 60 m below water at low tide). As with the other options, an updated Environmental Impact Study (EIS) would be required to identify any additional treatment requirements needed to protect the environment according to provincial regulations. If no additional requirements are identified, the B.C. Municipal Wastewater Regulation (MWR) and the Canada Wastewater Systems Effluent Regulations (WSEER) would apply to Option 1. These include:

Municipal Wastewater Requirements

Secondary treatment for up to two times average dry weather flow (2xADWF):

- 5-day Biochemical Oxygen Demand (BOD₅): max. day 45 mg/L
- Total suspended solids (TSS): max. day 45 mg/L
- pH 6 to 9
- Ammonia concentration does not cause chronic toxicity at the edge of the initial dilution zone (IDZ)

Primary treatment for flows in excess of 2xADWF (interim):

- 5-day Biochemical Oxygen Demand (BOD₅): max. day 130 mg/L
- Total suspended solids (TSS): max. day 130 mg/L
- Note: If flows are > 2xADWF during storm or snowmelt event with a less than 5-year return period, a discharge meter would have a liquid waste management plan or specific study and implement the plan or study's measures.


WSEER

- 5-day Biochemical Oxygen Demand (BOD₅): monthly avg. not to exceed 25 mg/L
- Total suspended solids (TSS): monthly avg. not to exceed 25 mg/L
- Total residual chlorine < 0.02 mg/L
- Un-ionized ammonia < 1.25 mg N/L at 15°C
- Note: The WSEER standards apply to the combined discharge – this may require chemical addition to enhance primary treatment or other measures to ensure that the secondary treatment bypass does not cause combined effluent to exceed the WSEER discharge standards for BOD₅ and TSS

An EIS was completed for the treatment plant discharge in 2010; this showed that disinfection of the effluent to achieve a final coliform count of less than 8000/100 mL in the discharge would be required to protect local shellfish resources outside the initial dilution zone (IDZ). Disinfection to this standard was assessed for Option 1.

Note: Plant data from 2013 to 2017 show that the number of days when flows exceeded 2xADWF ranged from 0 days (2013) to 31 days (2015) – over the 5 years of records, flow exceeded 2xADWF on an total of 58 days (the total volume of flow greater than 2xADWF represented only about 1% of the total plant flow over that period)

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 **Comox Valley**
WATER MANAGEMENT
2019-2020

Advantages

- Meets regulatory requirements for discharge to open marine waters
- Avoids the cost of subjecting relatively infrequent high wet weather flows to secondary treatment
- Coagulating/thickening chemicals can be added to enhance primary treatment if needed when flows exceed average dry weather flows
- Includes disinfection to protect shellfish resources outside the initial dilution zone

Disadvantages

- Flows in excess of average dry weather flows would bypass secondary treatment and so would not receive biological treatment

```

graph TD
    EDGULGANT[EDGULGANT  
Pre-treatment:  
High flow, storm  
water, high flow,  
variable flow, in  
excess of water  
resources] --> PRELIMINARY[PRELIMINARY  
TREATMENT  
Screening & grit  
removal]
    PRELIMINARY --> PRIMARY[PRIMARY  
TREATMENT  
Solids settling]
    PRIMARY --> SECONDARY[SECONDARY  
TREATMENT  
Biological  
treatment]
    SECONDARY --> DISINFECTION[DISINFECTION  
Chlorine  
UV, ozone]
    DISINFECTION --> LANDFILL[TO LANDFILL]
    PRIMARY --> WASTE[WASTE SOLIDS  
In water  
management]
    WASTE --> LANDFILL
  
```

Legend:

- Processed new components
- Existing treatment
- Proposed new

Long List Option No.2 – Wastewater Treatment (Provide Secondary Treatment for all Flows)

Option 2 is similar to Option 1, except that there would be no wet weather bypass of secondary treatment for increased flows. For Option 2, the entire plant influent flow would pass through secondary treatment (this is the current configuration of the treatment plant). As with the other options, an updated Environmental Impact Study (EIS) would be required to identify any additional treatment requirements that might be needed to address the needs of the receiving environment. For Option 2, it was assumed that the disinfection process would be designed to achieve recommended standards in the undiluted effluent. The following treatment and discharge standards would apply to Option 2:

Secondary treatment for the entire plant flow:

- 5-day Biochemical Oxygen Demand (BOD₅): max. day 45 mg/L, monthly avg. not to exceed 25 mg/L
- Total suspended solids (TSS): max. day 45 mg/L, monthly avg. not to exceed 25 mg/L
- pH 6 to 9
- Ammonia concentration would not cause chronic toxicity at the edge of the initial dilution zone (IDZ)
- Total residual chlorine < 0.02 mg/L
- Un-ionized ammonia = 1.25 mg/L at 15°C
- Disinfection – fecal coliforms not to exceed 200 FC/190 mL.

Advantages

- Exceeds regulatory requirements for discharge to open marine waters
- Criterie plant flow is subjected to secondary (biological) treatment
- Includes enhanced disinfection to protect shellfish resources
- Effluent meets standards for reclaimed water use for lower likelihood for direct human contact

Disadvantages

- Secondary treatment must be sized to accommodate all wet weather flows, increasing capital and operating costs compared to Option 1

```
graph LR
    A[PRELIMINARY TREATMENT<br/>screening & grit removal] --> B[PRIMARY TREATMENT<br/>primary settling]
    B --> C[SECONDARY TREATMENT<br/>aeration]
    B --> D[WASTE SOLIDS<br/>primary sludge]
    D --> E[LANDFILL]
    C --> F[TERTIARY TREATMENT<br/>chlorination]
    C --> G[WASTE SOLIDS<br/>secondary sludge]
    G --> E
    F --> H[EFFLUENT<br/>disinfection]
```

Legend:
[Light Blue Box] Proposed new components
[Dark Blue Box] Existing treatment
[Purple Box] Proposed date

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Phone: 250-334-6000


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Long List Option No.3 – Wastewater Treatment (Advanced Treatment for Increased Flows)

Option 3 would incorporate the same preliminary, primary and secondary treatment processes as Option 2. In addition, Option 3 would include advanced (tertiary) filtration of the secondary treated effluent for increased flows during wet weather events to enhance removal of suspended solids. As with the other options, an updated Environmental Impact Study (EIS) would be required to identify any additional treatment requirements that might be needed to address protection of the receiving environment. For Option 3, the disinfection process would be designed to achieve a higher standard than Option 2 but would still only be treated to a standard of "lower likelihood for direct human contact". The following treatment and discharge standards would apply to Option 3:

Advanced treatment (tertiary filtration) for flows up to 2xADWF:

- 5-day Biochemical Oxygen Demand (BOD₅): max. day 10 mg/L, avg. 5 mg/L
- Total suspended solids (TSS): max. day 10 mg/L, avg. 5 mg/L
- pH 6 to 9
- Ammonia concentration does not cause chronic toxicity at the edge of the initial dilution zone (IDZ)
- Total residual chlorine < 0.02 mg/L
- Un-ionized ammonia < 1.25 mg/L at 15°C
- Future addition of processes that are proven for removal of emerging contaminants at municipal wastewater plants


Primary treatment for flows in excess of 2xADWF (interim):

- 5-day Biochemical Oxygen Demand (BOD₅): max. day 130 mg/L
- Total suspended solids (TSS): max. day 130 mg/L
- Note: If flows are > 2xADWF during a storm or equivalent snowmelt event with a less than 5-year return period, a discharge must have a liquid waste management plan or specific study and implement the plan's or study's measures.
- Disinfection of combined effluent - fecal coliforms not to exceed 200 FC/200 mL

Note: Plant data from 2013 to 2017 show that the number of days when flows exceeded 2xADWF ranged from 0 to 20 days (31 to 31 days) (195) – over the 5 years of record, flow exceeded 2xADWF on a total of 58 days (the total volume of flow greater than 2xADWF represented only about 3% of the total plant flow over that period).

SEE OVER FOR FURTHER DETAILS

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Phone: 250.334.6000



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```

graph TD
    Cong[CONGULGANT  
if needed, starting from the influent flow] --> Prelim[PRELIMINARY TREATMENT  
Screening & grit removal]
    Prelim --> Primary[PRIMARY TREATMENT  
Solids settling]
    Primary --> Secondary[SECONDARY TREATMENT  
Biological treatment]
    Secondary --> Waste[WASTE SOLIDS  
to sludge management]
    Secondary --> Advanced[ADVANCED TREATMENT  
Polishing]
    Advanced --> Disin[DISINFECTION  
By chlorination, UV, or other]
    Disin --> Landfill[TO LANDFILL]
    Disin --> Cong[CONGULGANT  
if needed, based on treated water characteristics]
    Cong --> Prelim
    
```

Flows > 2x average dry weather flow

Legend:

- Proposed new components
- Existing treatment
- Disposal sites
- For future consideration

Long List Option No. 4 – Wastewater Treatment (Provide Secondary Treatment for all Flows)

Option 4 would incorporate the same preliminary, primary, secondary, and advanced (tertiary) treatment processes as Option 3. However, for Option 4, the entire plant influent flow would pass through advanced (tertiary) filtration to enhance removal of suspended solids. As with the other options, an updated Environmental Impact Study (EIS) would be required to identify any additional treatment requirements that might be needed to address protection of the receiving environment. For Option 4, the disinfection process would be designed to achieve shellfish standards in the undiluted effluent, and disinfection could be increased to meet the reclaimed water standards for greater direct human contact if desired. This is the highest standard proposed. The following treatment and discharge standards would apply to Option 4:

Advanced (Tertiary) treatment for the entire plant flow:

- 5 day Biochemical Oxygen Demand (BOD₅): max, day 10 mg/L; avg 5 mg/L
- Total suspended solids (TSS): max, day 10 mg/L; avg 5 mg/L
- pH 6 to 9
- Ammonia concentration does not cause chronic toxicity at the edge of the initial dilution zone (IDZ)
- Total residual chlorine < 0.02 mg/L
- Un-ionized ammonia < 1.25 mg/L at 15°C
- Disinfection - fecal coliforms not to exceed 14 CFU/100 mL
- Future addition of processes that are proven for removal of emerging contaminants at municipal wastewater plants

Advantages

- Exceeds regulatory requirements for discharge to open marine waters
- Entire plant flow is subjected to advanced (tertiary) treatment
- Includes enhanced disinfection to protect shellfish resources
- Effluent meets standards for reclaimed water use for greater likelihood for direct human contact

Disadvantages

- Higher capital and operating costs than Options 1, 2 and 3
- Higher operational costs if treating reclaimed water to greater likelihood for direct human contact

The diagram illustrates the wastewater treatment process. It begins with 'Influent' entering a 'Preliminary Treatment' stage, which includes 'Grit Removal' and 'Screening'. The output goes to 'Primary Treatment' (consisting of 'Sedimentation' and 'Sludge Thickening'). From there, it moves to 'Secondary Treatment' (including 'Aeration' and 'Solids Separation'), followed by 'Advanced Treatment' (comprising 'Filtration' and 'Disinfection'). The final outputs are 'Reclaimed Water' and 'Effluent'. A legend identifies various components like 'Flow', 'Structure', 'Equipment', 'Sludge', and 'Air'.

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Treatment Planning Considerations

The Comox Valley Sewer Service treats its wastewater at a treatment plant located on Brent Road, Comox. That facility opened in 1984 and will require upgrades in order to accommodate our communities' continued growth and meet increasing environmental regulations.

To plan for the future of treatment for the service's wastewater, technical consultants and advisory committees have considered:



AREA GROWTH AND TREATMENT STANDARDS

- **FUTURE GROWTH:** Capacity of the treatment plant needs to increase to accommodate growth of the service area.
- **EFFLUENT QUALITY:** Federal and provincial regulations for effluent quality have changed. As a community should we be aiming to achieve or do better than regulatory limits?
- **ENVIRONMENTAL PROTECTION:** Cape Lazo and neighbouring Baynes Sound are environmentally sensitive areas that support many activities, including the shellfish aquaculture sector. Achieving a standard that best protects these resources is considered in options for the treatment plant.



COSTS OF WASTEWATER TREATMENT

- **COST:** Generally speaking, the higher the degree of treatment, the higher the construction and operating costs.
- **HOW TO PAY:** Future planning has to balance treatment goals with the financial resources available to the community. While capital costs can be eligible for grant funding, ongoing operations and maintenance costs are not.
- **SETTING GOALS:** One option presented on the long list meets the provincial standards while three offer a voluntary improvement to what is required.



EMERGING CONTAMINANTS

- **INCREASED FOCUS:** The impacts of emerging contaminants has drawn increasing attention in the public and was flagged as a concern in earlier stages of this planning process.
- **PREVENTION:** There is still a lot to learn about many contaminants (ie: antibiotics or personal care products), and limiting their entry into the system is likely the best approach to managing them.
- **LOOKING AT OPTIONS:** Including the necessary components to address metals or microplastics is being considered.

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Recovering Resources

In recent years, there has been increasing interest in recovering resources created through the collection and treatment of wastewater – such as reusable water, or heat. Resource recovery can have environmental benefits and generate revenue streams, but these must be weighed against increased capital and operations costs. As part of this planning process, options for resource recovery are being considered.



RECLAIMED WATER

- Some of the treatment plant options on the long list are designed to produce effluent that meets requirements for reclaimed water.
- Since this adds to cost of treatment, it's key to find a market for the resulting product.
- Onsite, this could include expanded use of reclaimed water, or offsite applications could use larger amounts (ie: irrigation or industrial use) – but this would require installation of pipes to get the water to where it is needed.



HEAT RECOVERY

- The use of heat extracted from the treatment process for space heating of buildings is becoming more common.
- Along with water reclamation, heat recovery for use onsite at wastewater treatment facilities is more cost effective than heat recovery at pump stations.
- Need to consider whether there's a nearby user who could use exported heat.



BENEFICIAL USE OF TREATED SOLIDS

- The CVRD already has a system in place to recover nutrients from the solids collected through the wastewater treatment process using a composting system.
- The final product – SkyRocket – is a Class A compost and is allowed for sale to individuals and commercial use.

Technical consultants also looked at other resource recovery options but suggest they are not feasible at this point:

- Production of Biogas: The current plant production is not large enough to make this economical.
- Extraction of Nitrogen and Phosphorus for Fertilizer Pellets: Due to the treatment processes currently in place, and cost, this is not feasible.
- Hydroelectric Turbine at Outfall: There is insufficient pressure head at the treatment plant's outfall for this.

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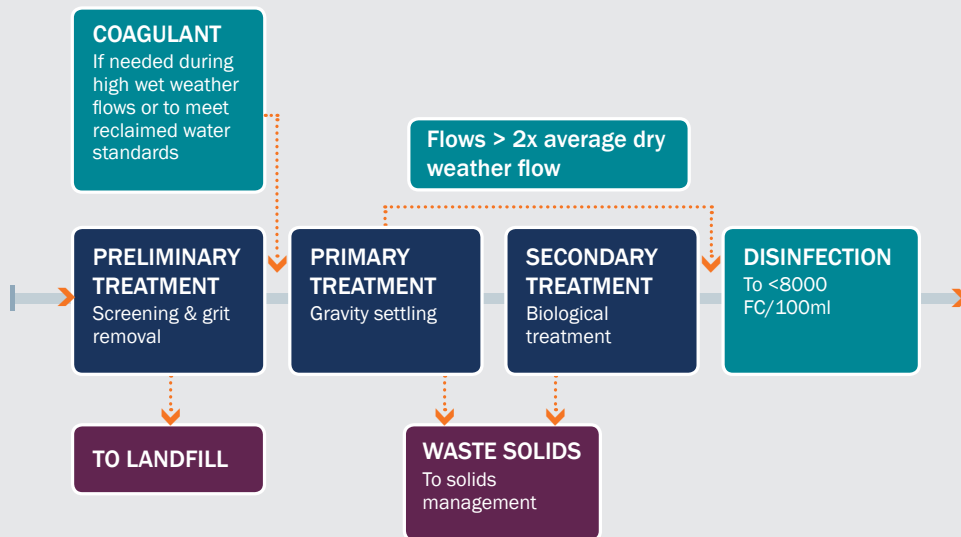
Phone: 250-334-6000

Treatment Planning: Options 1 and 2

Four options have been developed for consideration. Below is a summary of Options 1 and 2 – please refer to your background package for thorough details about treatment standards for each.

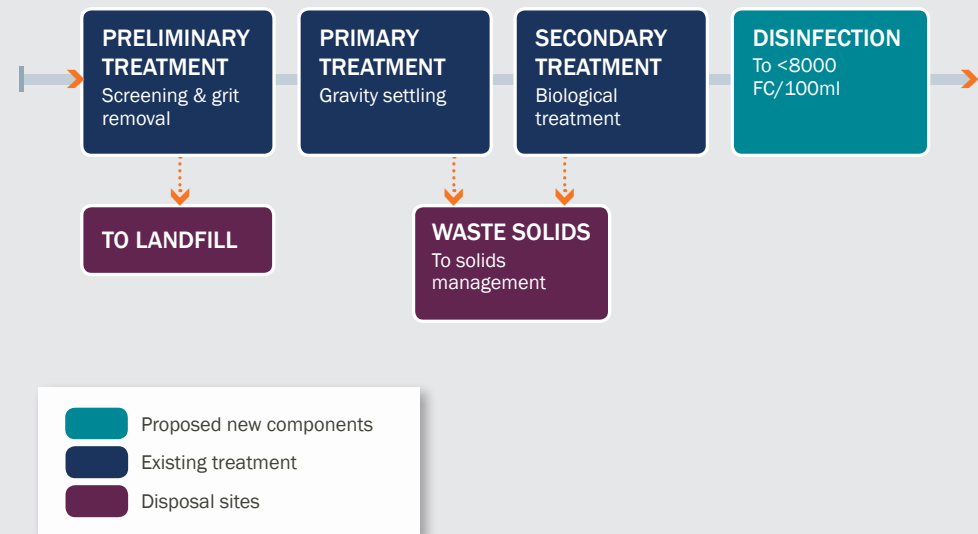
OPTION 1: Meets regulatory discharge standards

- Three-stage treatment (primary, secondary and disinfection)
- Bypass of secondary treatment for days of heavy inflows due to storms to avoid high infrastructure costs
- Addition of a coagulating (thickening) agent to enhance primary treatment in cases of high inflows
- Addition of disinfection to protect shellfish



OPTION 2: Secondary treatment for all flows (current system)

- Similar to Option 1, but with no bypass for heavy inflows, meaning all wastewater will move through secondary (biological) treatment
- Infrastructure must be sized to process max inflow - although majority of the time it is unused - resulting in increased capital and operating costs
- This is the current process at the treatment plant with the addition of disinfection for shellfish protection outside the initial dilution zone



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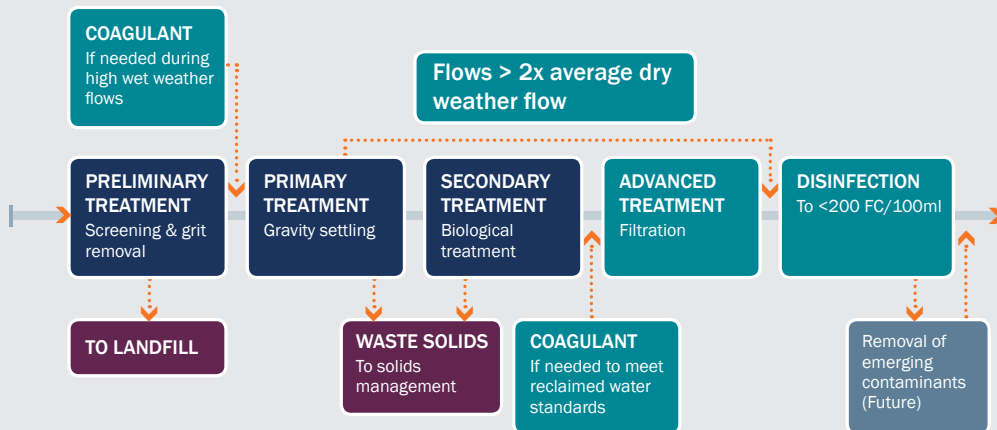
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Treatment Planning: Options 3 and 4

Four options have been developed for consideration. Below is a summary of Options 3 and 4 – please refer to your background package for thorough details about treatment standards for each.

OPTION 3: Advanced treatment for up to 2x the average dry weather flow

- Similar to Option 2, with the addition of filtration for flows up to two times the average daily water flow
- Further protect shellfish and provide the best opportunity for reclaimed water by combining with installation of disinfection
- Increased capital/operating costs to Options 1 and 2



OPTION 4: Advanced treatment for all flows

- Similar to Option 3, but with all flows – regardless of amount – moving through filtration
- Further protect shellfish and provide the best opportunity for reclaimed water by treating and disinfecting all wastewater
- Increased capital/operating costs to Options 1, 2 and 3



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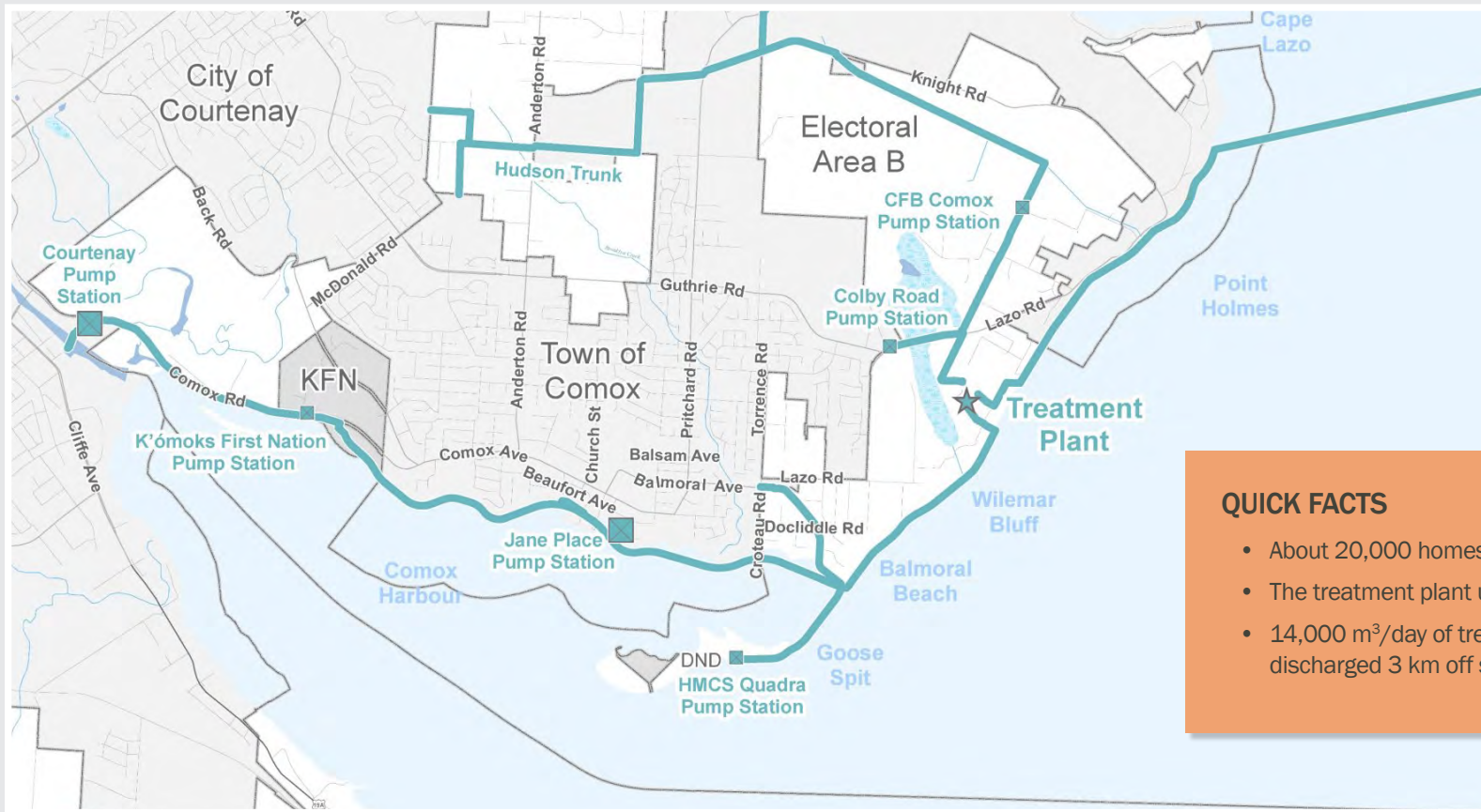
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Sewer System Map

To understand the options proposed for a new conveyance system to serve Comox and Courtenay residents in the long term, it's important to understand the current system.



QUICK FACTS

- About 20,000 homes are connected to the service
- The treatment plant uses secondary treatment
- 14,000 m³/day of treated effluent on average is discharged 3 km off shore

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Your Ideas: Treatment and Resource Recovery

Share your thoughts on the options presented for wastewater treatment and resource recovery here.
Have we missed anything? Are there any that should be removed?

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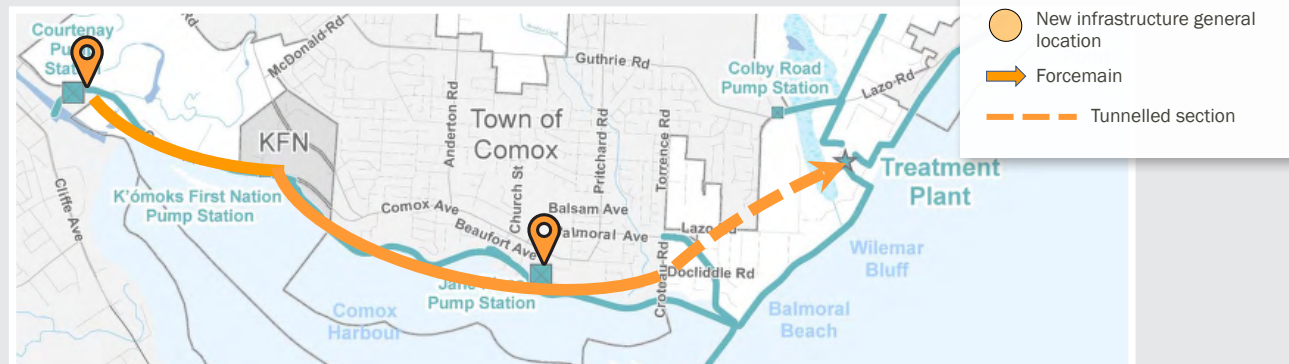


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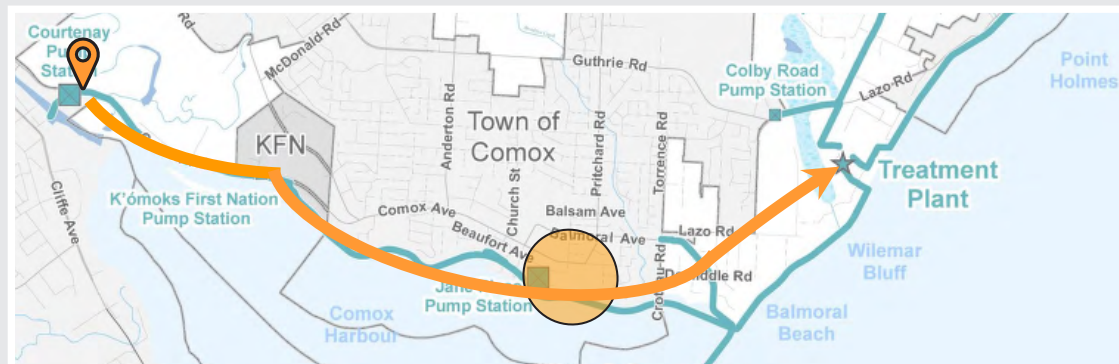
Moving Wastewater: Estuary Routes

Eleven options for conveyance are included on the long list. Below is a summary of the three options that use an estuary route for the conveyance system (moving wastewater from major pump stations to the treatment plant). Please refer to your background package for thorough details about each option.

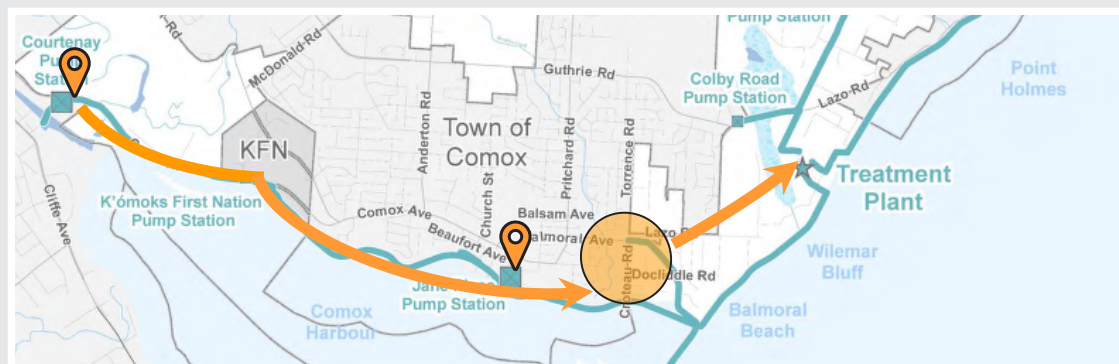
1a. Estuary Alignment – Tunnelling: Foreshore forcemain with tunneled route through Lazo Road height of land and (possibly) new pump station at low elevation in Comox.



1b. Estuary Alignment – Addition of New Comox Pump Station: Foreshore forcemain route with upgrades to Courtenay pump station and new high-head station at low elevation in Comox.



1c. Estuary Alignment – Addition of Comox No.2: Foreshore forcemain route with addition of new in-line pump station between Comox and Lazo Road height of land.



Moving Wastewater: Overland Routes

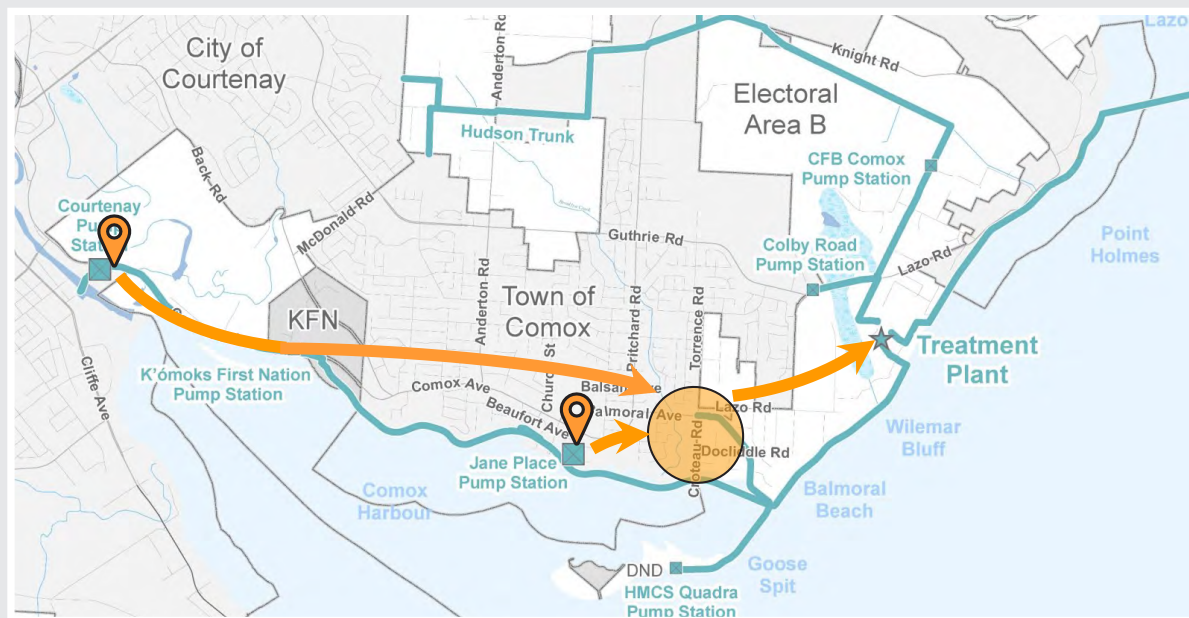
Eleven options for conveyance are included on the long list. Below is a summary of two options that include an alignment overland for the conveyance system (moving wastewater from major pump stations to the treatment plant). Please refer to your background package for thorough details about each option.

2a. Overland Alignment – Addition of New Comox Pump Station:

New forcemain along Comox Road from upgraded Courtenay pump station and new pump station at low elevation in Comox.



2b. Overland Alignment – Addition of Comox No.2: New forcemain from Courtenay pump station along Comox Road, with new in-line pump station.



Moving Wastewater: Tunnelling

Eleven options for conveyance are included on the long list. Below are three options that include tunnelling for the conveyance system (moving wastewater from major pump stations to the treatment plant). Please refer to your background package for details about each option.

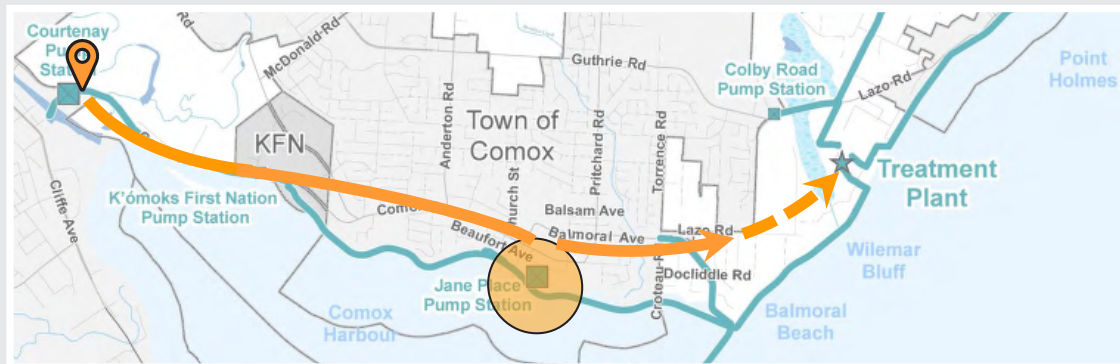
3a. Forcemain Tunnel Alignment – From Comox Road Hill:

Tunnel through Comox Road and Lazo Road hills and forcemain installed through Comox, with Jane Place connecting in.

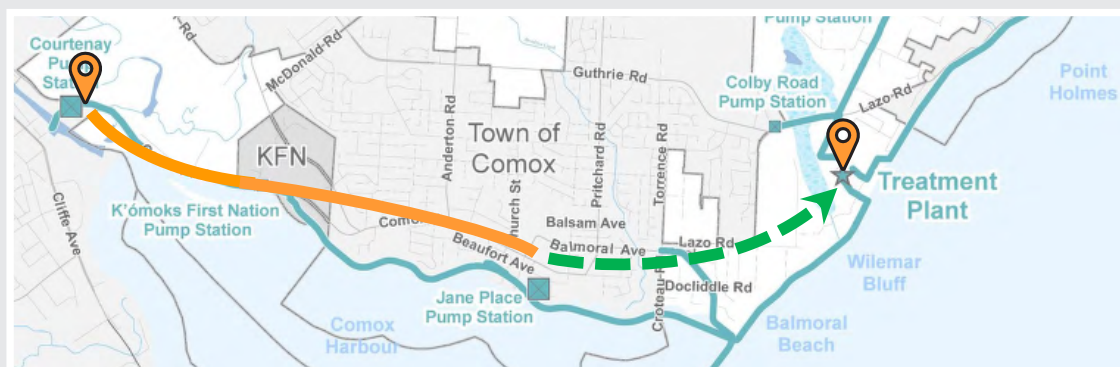


3b. Forcemain Tunnel Alignment – From Lazo Road Hill Addition of New Comox

Pump Station: Open cut forcemain with tunnel through Lazo Road hill and new pump station at low lying area in Comox (or modify existing pump station if possible).



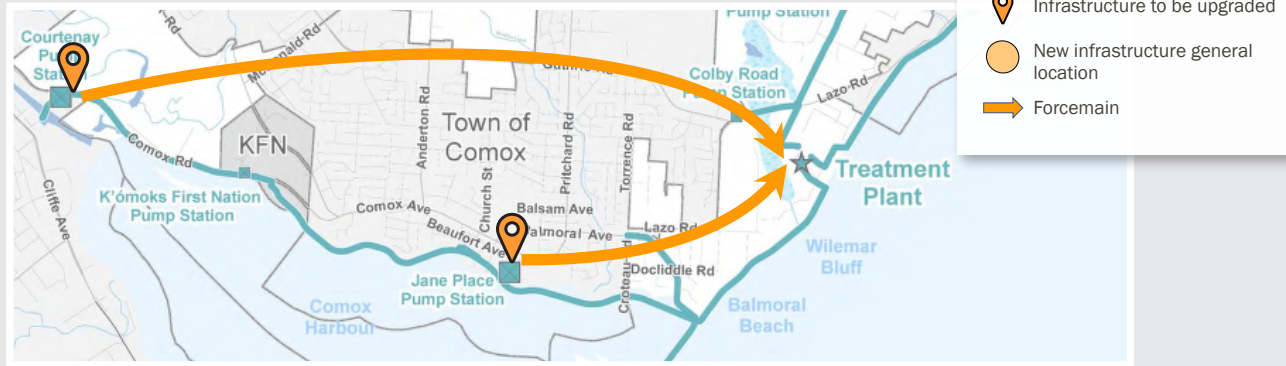
3c. Gravity Tunnel Alignment – From Lazo Road Hill: Open cut forcemain to gravity main at Lazo Road with route determined by required slope.



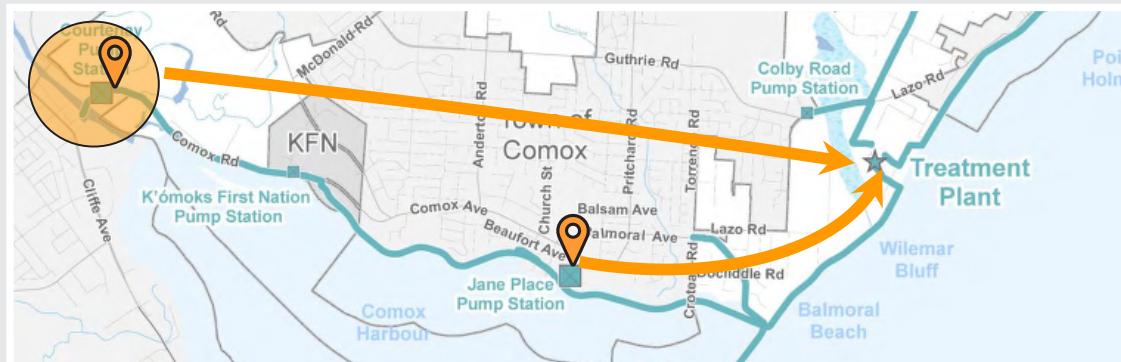
Moving Wastewater: Alternatives

Eleven options for conveyance are included on the long list. Below are three alternative options for the conveyance system (moving wastewater from major pump stations to the treatment plant). Please refer to your background package for thorough details about each option.

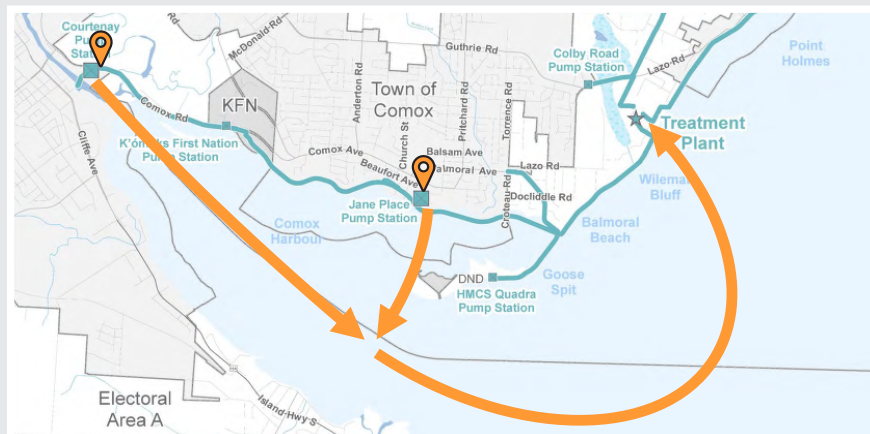
4. North Side Concept: Routing new forcemain to the north side of the service, maintaining separate one from Jane Place.



5. Decentralized Treatment: Addition of a new treatment plant near Courtenay pump station, treated effluent piped to existing outfall.



6. Deep Marine Concept: Siting forcemain in deep water, connecting existing pump stations to existing treatment and discharge points.



Your Ideas: Conveyance

Share your thoughts on the options presented for conveyance (moving wastewater) here.
Have we missed anything? Are there any that should be removed?

COMOX VALLEY SEWER SERVICE LIQUID WASTE MANAGEMENT PLANNING

Phase 4 Consultation – Summary Report

SEPTEMBER/OCTOBER 2020



Table of Contents

Executive Summary	2
Introduction	3
1.1 Project Background	3
1.2 LWMP Consultation Overview	3
Phase 4 (Conveyance Shortlist) Consultation Overview	6
1.3 Approach	6
1.4 Engagement Tools	6
1.5 By the Numbers	7
Phase 4 (Conveyance Shortlist) Consultation Results	8
1.6 Benefits Ranking	8
1.7 Challenges Ranking	9
1.8 Themes of Comments	10
Conclusion	11
Next Steps	12
Appendices	12

Executive Summary

In March 2020, after a year of technical assessment and consultation with community partners, the Comox Valley Regional District (CVRD) launched Phase 4 of a five-phase public engagement program for the Comox Valley Sewer Service Liquid Waste Management Plan (LWMP). However, a state of emergency was issued for the province soon after and the consultation was put on hold to comply with COVID-19 public health guidelines.

On September 14, the Phase 4 consultation was again launched and continued through October 12, with follow up community consultation in the Lazo area happening in November.

The public health concerns during this period resulted in taking a slightly revised approach, which included using the following key outreach tools:

- **Online Survey and Information Hub:** [ConnectCVRD](#) was designated as the core consultation hub, with all feedback encouraged to be submitted through the online survey and feedback functions.
- **Information Sessions:** Three public open-house style events were created that allowed for reduced attendance to meet public safety protocols. Two were held in Comox and one was held in Courtenay.
- **Online Webinar:** To meet the needs of those who wanted additional information about the options and guided learning as well – but who did not feel comfortable attending an in-person event – an online webinar was created and delivered by CVRD staff with the support of technical and communications consultants.

The results of this outreach phase included a survey completed by 320 people, and approximately 250 comments and questions submitted. Digital ads resulted in 1,018 clicks and reached over 44,000 people, primarily through mobile devices.

The survey results reveal that lower risks and lower costs were seen as the top benefits for Options 1 (Overland Forcemain) and 2 (Tunnel Forcemain). The need to address the urgent environmental risk at Willemar Bluffs was considered a top benefit of Option 3 (Phased Tunnel Forcemain). Groundwater protection was ranked as the top concern or challenge for all three options.

Themes from the feedback included concerns about the potential for increased construction costs in the coming years, as well as community-specific comments from residents who had some personal apprehension about the project, including how it might impact their property or local traffic patterns. Other comments supported removing the forcemain pipe in the foreshore of the Comox estuary as quickly as possible.

While residents were not asked to ‘vote’ on a preferred option, they succeeded in providing valuable feedback that can be considered hand-in-hand with technical evaluations to inform the decisions about next steps.

Introduction

1.1 Project Background

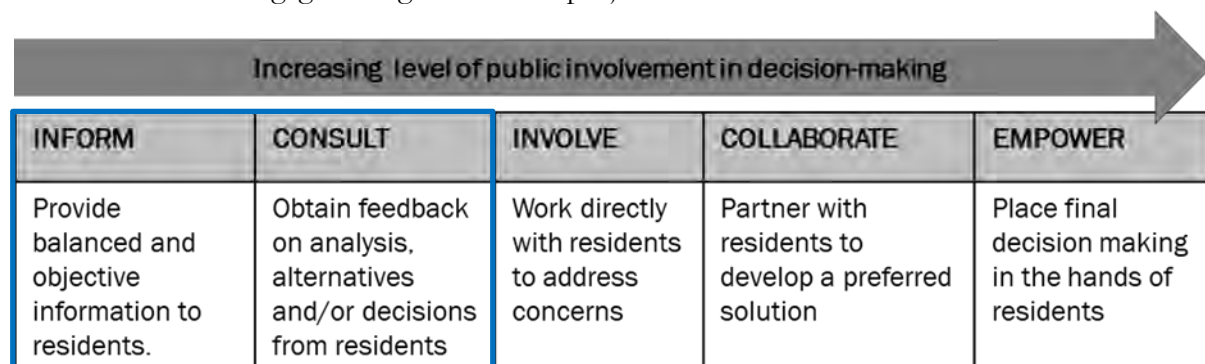
The Comox Valley Sewer Service treats raw sewage (wastewater) from homes and businesses in Courtenay, Comox and K'ómoks First Nation. More than 14,000 cubic metres of wastewater from these communities flows daily through a pipe located along the Willemar Bluffs. This is an exposed section of beach that is vulnerable to damage by waves, rocks and logs and poses an environmental risk to beaches and waters throughout the Comox Estuary, Point Holmes and Goose Spit coastline, as well as Baynes Sound.

To find a solution, the Comox Valley Sewer Service decided to undertake a liquid waste management plan (LWMP) process that considers conveyance (pipes and pump stations), treatment and resource recovery. LWMPs are used by local governments in BC to develop strategies for managing sewer services. It includes the collection/review of existing information, development of options for future services, identification of a preferred option, completion of required studies and assessments and development of financial and implementation plans. The plan is ultimately submitted to the provincial government for review and consideration for approval.

1.2 LWMP Consultation Overview

The Comox Valley Sewer System LWMP process was kicked off in June 2018. The LWMP is critical to the long-term operational health of the sewer system and protection of the environment. The decisions made as part of the LWMP process will impact residents in Courtenay and Comox through increases to sewer fees and construction disruption. This impact requires continuous and dedicated engagement to allow community input about the options under consideration.

The International Association of Public Participation (IAP2) spectrum of public participation was used to define the engagement goals for this project.





Engagement for the LWMP is currently in Phase 4 and includes the following objectives:

1. Provide information about the LWMP process.
2. Offer opportunities for active public involvement.

3. Clearly explain how feedback will be received and considered.
4. Create a record of engagement at the end of the process.
5. Demonstrate how engagement was considered and how input influenced final decisions.

The chart on the next page provides an outline of the consultation process, including engagement goals and tools for each of the five phases.

PHASE 1 EDUCATE/KICK-OFF (MAY-AUG. 2018) ✓COMPLETE	<div> <div> OBJECTIVES </div> <div> INFORM: provide info about the sewer system and LWMP start INVOLVE: connect with public to collect feedback on goals/values in sewer planning </div> </div> <div> TOOLS  <ul style="list-style-type: none"> • Project Webpage: create dedicated pages on regional district + ConnectCVRD websites • Advertisements: Promote online tool and sessions • Public Session #1 • Online Consultation Survey </div>
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Phase 4 (Conveyance Shortlist) Consultation Overview

1.3 Approach

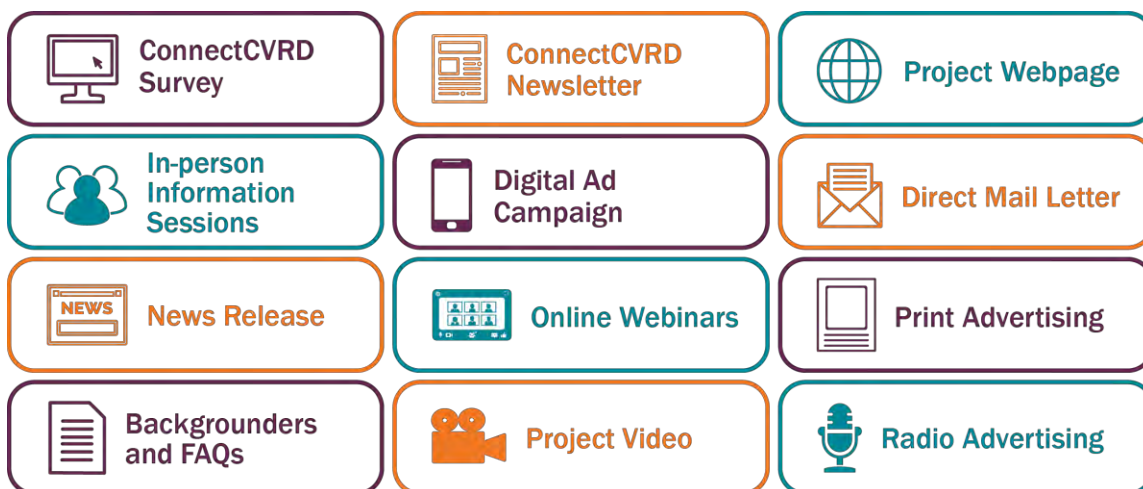
The current fourth stage of public engagement – review/assessment of the short-list conveyance options – was initially kicked off in early March 2020. It was postponed, however because of the COVID-19 public health emergency. Given the re-opening of business in British Columbia and the increasingly urgent environmental risk, the decision was made to relaunch the consultation in September 2020.

This pause allowed the consultation to incorporate subsequent assessment work by project engineers, resulting in more detailed information about traffic impacts and routing for each option, as well as revised cost estimates.

The primary objective of this consultation phase was to gauge community priorities when it came to assessing the three shortlisted options. Because of the technical nature of this assessment and the many-layered assessment that will be required to select a preferred option, participants were not asked to rank their preferred option. Instead, they were asked to provide feedback about the top benefits and risks to each option in order to inform directors, staff, the project team and public and technical advisory committees about what residents feel are the most important considerations in choosing a preferred conveyance option.

1.4 Engagement Tools

The overall success of the Phase 4 engagement was a result of the blend of tools used to promote, inform and encourage participation.



To prevent the spread of COVID-19, the consultation events were adapted to implement health and safety measures, including pre-registration for in-person events to ensure safe occupancy levels. A

Zoom webinar was offered for those uncomfortable with attending an open house in person. Both events were intended to provide more information on the options under consideration and encourage residents to submit their feedback via online surveys.

1.5 By the Numbers

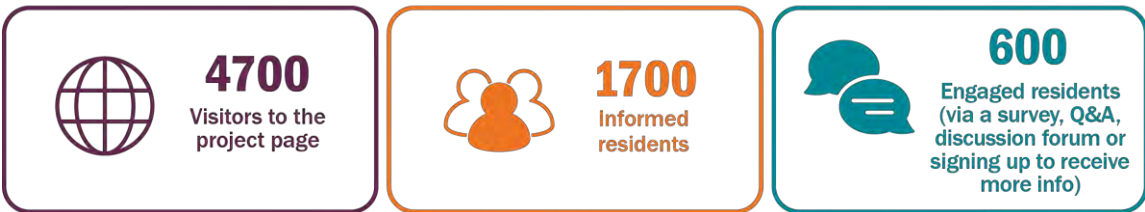
The numbers below highlight key data collected at the end of the consultation.



The graph below shows a further breakdown of survey respondents by area. Participants were invited to fill out the survey without requiring a registration to the site – reducing potential barriers to participation. It should be noted that a review of the survey submissions and user data was completed to ensure there was no evidence of abuse around multiple submissions.



While this phase of the LWMP consultation had the strongest engagement, interest in the project has been building over the life of the project with more than 4,700 visitors to the project page from project launch in May 2018 through October 2020.



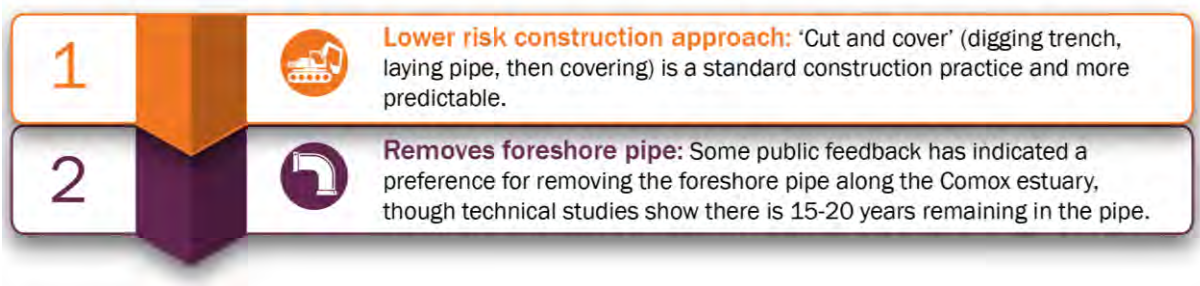
Phase 4 (Conveyance Shortlist) Consultation Results

1.6 Benefits Ranking

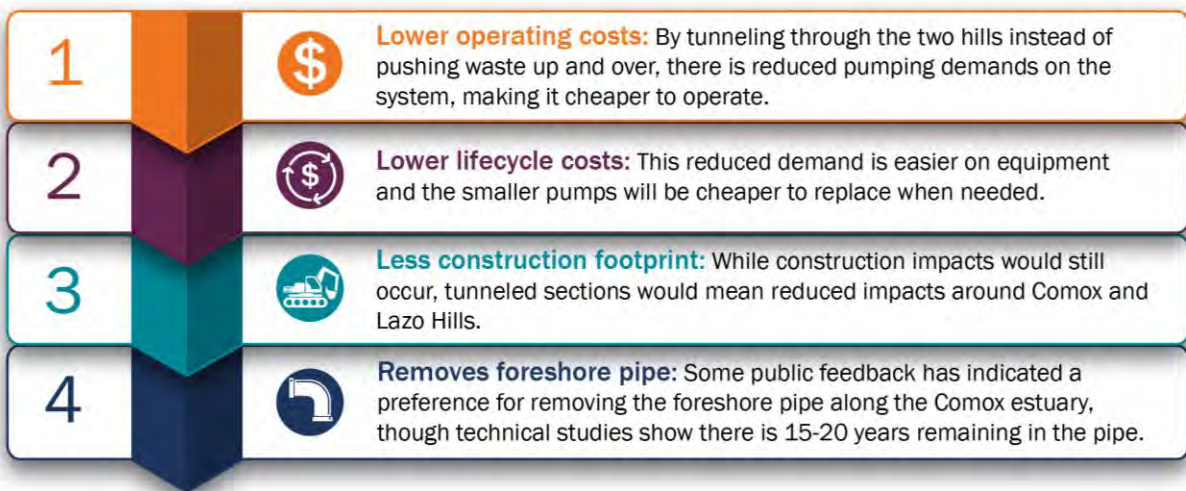
Participants in the survey were asked to rank the presented benefits for each option.

Between 264 - 272 people completed this exercise, resulting in the following rankings. Results were largely similar, regardless of the filtering applied based on where the respondent lives. Exceptions are identified below.

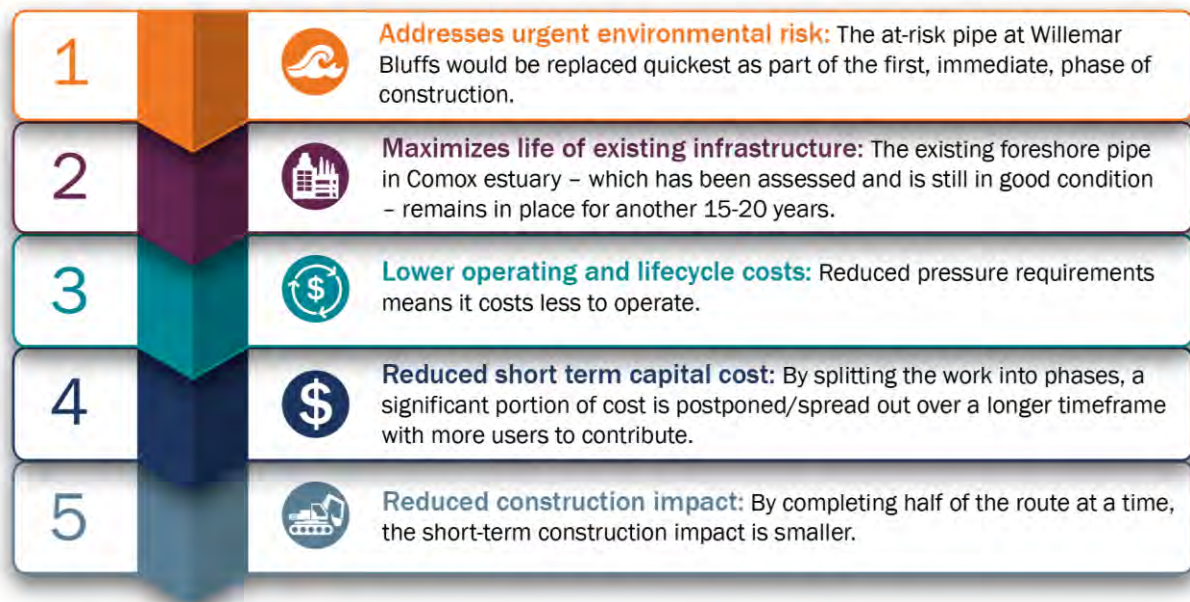
Option 1 – Benefits as Ranked by Survey Respondents



Option 2 – Benefits as Ranked by Survey Respondents



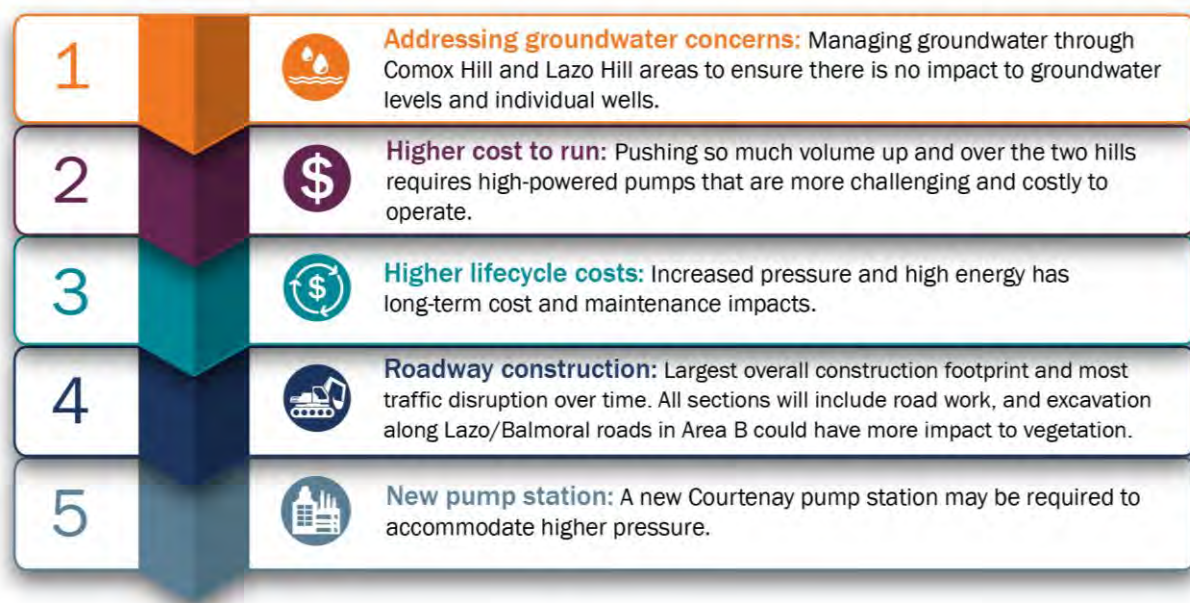
Option 3 – Benefits as Ranked by Survey Respondents



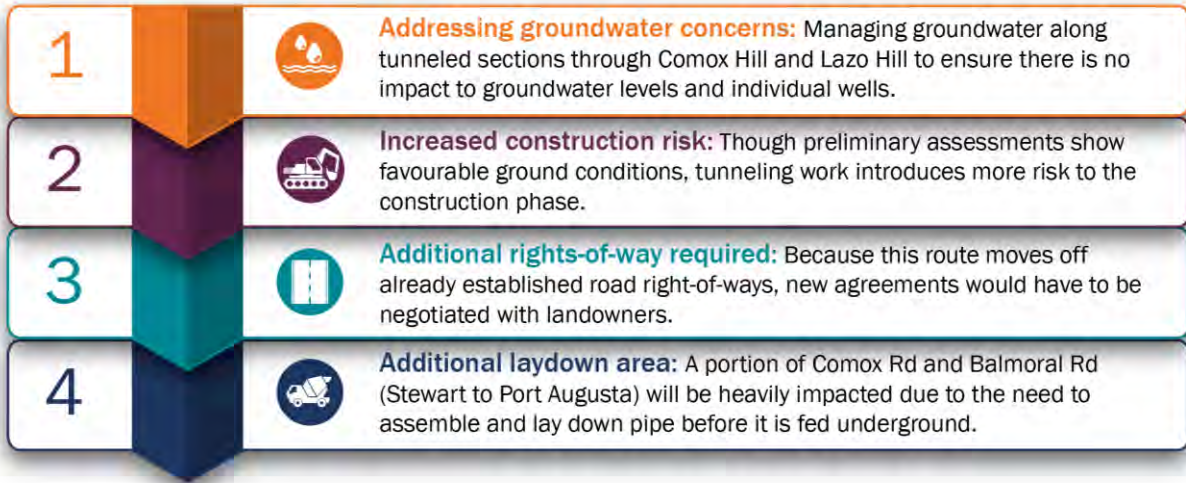
1.7 Challenges Ranking

Challenges and concerns for each option were also presented for ranking, resulting in the following prioritized list. For each of these, 272-273 people completed the ranking, and like the benefits, results were largely similar regardless of where the respondent lives. Exceptions are identified below.

Option 1 – Challenges as Ranked by Survey Respondents



Option 2 – Challenges as Ranked by Survey Respondents



Option 3 – Challenges as Ranked by Survey Respondents



1.8 Themes of Comments

Along with the ranking, participants were asked to list further benefits, challenges or feedback that they would like the project team and sewage commission to consider as the options are assessed. On average, 44 comments were posted in each section, with 65, the most, in the first comment section. This equals about 16 per cent of those who completed the ranking questions.

These comments were wide-ranging, encompassing opinions, questions, and concerns about specific issues. The collection is valuable input for planners and decision-makers. While there were limited groupings of topics, a few clusters of comments did emerge:



Priority of foreshore pipe removal: The importance of removing both the environmental risk at the Willemar Bluffs, as well as proceeding with the removal of the estuary pipe, generated a cluster of supportive comments.



Concern about rising construction costs or unforeseen circumstances: Respondents felt the cost estimate for Option 3's Phase 2 would likely be higher and there was concern that there could be changes to regulations or priorities that prevent that phase from proceeding on time. There were some balancing comments about the value of having additional ratepayers in 20 years, and potential for new technologies then, but the concern outweighed the support when reviewing written comments.



Groundwater: The project team heard at open houses and via emails/letters that groundwater for residents in the Lazo area was a concern. This is especially important for those who rely on wells. To provide additional information, a webinar specifically on groundwater and tunneling was hosted on Nov. 5. Questions were focused on safeguards against possible breaks/leaks and methods of detection and repair. People living in the area had concerns about the impacts of right-of-ways through property in the long-term and sought additional information about alternatives that had been considered. Any questions that could not be addressed in the webinar were responded to online, with a notice going to attendees about the update.



Area-specific concerns and issues: Residents had a wide range of comments that were personal and specific to their circumstances, including the protection of important trees, protecting groundwater, preferring traffic on main roads rather than Balmoral, and Jane Place pump station construction concerns. Each of these clusters of comments were much smaller – between four and eight each – but represent good information and highlight the importance of follow up communication, particularly as the project approaches the construction phase.

Conclusion

Assessing the shortlist of options requires both critical technical evaluation as well as consideration of public input. The engagement plan was successful in drawing out the key concerns and benefits for each option so that they can be considered in relation to the technical analysis.

Environmental concerns, particularly around the protection of water (foreshore/ocean and groundwater) emerged as a top priority. Residents remain concerned about how the work will impact their specific areas – the water, trees, traffic etc. near them. Their varied comments will provide valuable considerations for the project team to consider as a preferred option is determined.

Participation in this stage was higher than any other phase of public consultation during the LWMP process, despite the COVID-19 pandemic. The direct community outreach in Comox drew a new audience and the online webinar offered a new and valuable tool that can support future engagement by the CVRD, across a wide range of regional projects and initiatives.

Next Steps

A commitment was made by the CVRD to follow up with the outcome of the consultation and decision regarding the preferred option.

- **Announce preferred option, share the consultation report and communicate next steps:** Direct outreach to residents who participated in open houses, webinars or signed up for more information about the project. The decision and the report will be posted online and a press release will be distributed to media and shared via social media for the general public.
- **Prepare for next phase of engagement:** Additional engagement is planned during the public assent period to obtain borrowing approval for the conveyance portion of the LWMP.
- **Present the plan to the public:** Open houses will be held later in 2021 to present the draft LWMP, including the proposed solution for conveyance, treatment and resource recovery to the public before it is submitted to the Ministry of Environment.

Appendices

Appendix 1 – Event Display Boards

Appendix 2 – Advertisement Samples

Appendix 3 – Digital Ad Campaign Report

Appendix 4 – Direct Mail

Appendix 5 – Groundwater Webinar – Letter, Map and Info Sheet

Appendix 6 – Online Survey

Appendix 7 – Online Survey Responses

COMOX VALLEY SEWER SERVICE LIQUID WASTE MANAGEMENT PLANNING

Phase 4 Consultation – Summary Report

SEPTEMBER/OCTOBER 2020



Table of Contents

Executive Summary	2
Introduction	3
1.1 Project Background	3
1.2 LWMP Consultation Overview	3
Phase 4 (Conveyance Shortlist) Consultation Overview	6
1.3 Approach	6
1.4 Engagement Tools	6
1.5 By the Numbers	7
Phase 4 (Conveyance Shortlist) Consultation Results	8
1.6 Benefits Ranking	8
1.7 Challenges Ranking	9
1.8 Themes of Comments	10
Conclusion	11
Next Steps	12
Appendices	12

Executive Summary

In March 2020, after a year of technical assessment and consultation with community partners, the Comox Valley Regional District (CVRD) launched Phase 4 of a five-phase public engagement program for the Comox Valley Sewer Service Liquid Waste Management Plan (LWMP). However, a state of emergency was issued for the province soon after and the consultation was put on hold to comply with COVID-19 public health guidelines.

On September 14, the Phase 4 consultation was again launched and continued through October 12, with follow up community consultation in the Lazo area happening in November.

The public health concerns during this period resulted in taking a slightly revised approach, which included using the following key outreach tools:

- **Online Survey and Information Hub:** [ConnectCVRD](#) was designated as the core consultation hub, with all feedback encouraged to be submitted through the online survey and feedback functions.
- **Information Sessions:** Three public open-house style events were created that allowed for reduced attendance to meet public safety protocols. Two were held in Comox and one was held in Courtenay.
- **Online Webinar:** To meet the needs of those who wanted additional information about the options and guided learning as well – but who did not feel comfortable attending an in-person event – an online webinar was created and delivered by CVRD staff with the support of technical and communications consultants.

The results of this outreach phase included a survey completed by 320 people, and approximately 250 comments and questions submitted. Digital ads resulted in 1,018 clicks and reached over 44,000 people, primarily through mobile devices.

The survey results reveal that lower risks and lower costs were seen as the top benefits for Options 1 (Overland Forcemain) and 2 (Tunnel Forcemain). The need to address the urgent environmental risk at Willemar Bluffs was considered a top benefit of Option 3 (Phased Tunnel Forcemain). Groundwater protection was ranked as the top concern or challenge for all three options.

Themes from the feedback included concerns about the potential for increased construction costs in the coming years, as well as community-specific comments from residents who had some personal apprehension about the project, including how it might impact their property or local traffic patterns. Other comments supported removing the forcemain pipe in the foreshore of the Comox estuary as quickly as possible.

While residents were not asked to ‘vote’ on a preferred option, they succeeded in providing valuable feedback that can be considered hand-in-hand with technical evaluations to inform the decisions about next steps.

Introduction

1.1 Project Background

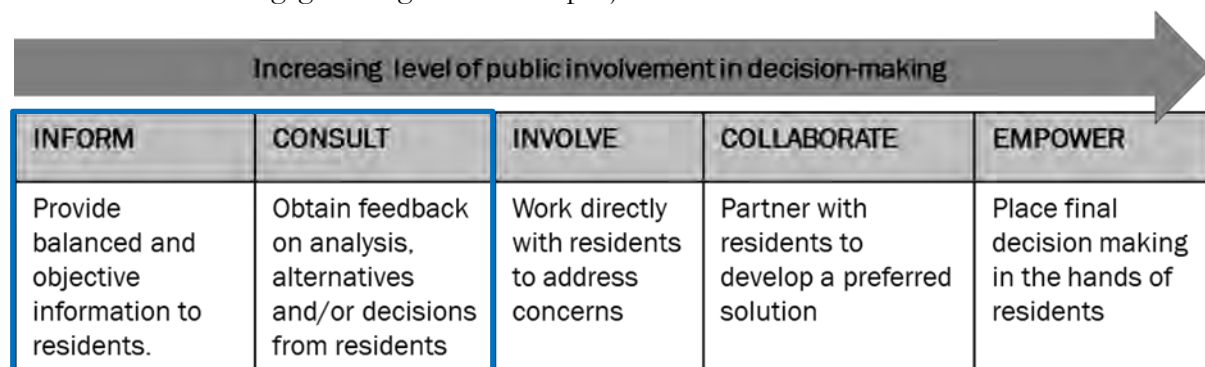
The Comox Valley Sewer Service treats raw sewage (wastewater) from homes and businesses in Courtenay, Comox and K'ómoks First Nation. More than 14,000 cubic metres of wastewater from these communities flows daily through a pipe located along the Willemar Bluffs. This is an exposed section of beach that is vulnerable to damage by waves, rocks and logs and poses an environmental risk to beaches and waters throughout the Comox Estuary, Point Holmes and Goose Spit coastline, as well as Baynes Sound.

To find a solution, the Comox Valley Sewer Service decided to undertake a liquid waste management plan (LWMP) process that considers conveyance (pipes and pump stations), treatment and resource recovery. LWMPs are used by local governments in BC to develop strategies for managing sewer services. It includes the collection/review of existing information, development of options for future services, identification of a preferred option, completion of required studies and assessments and development of financial and implementation plans. The plan is ultimately submitted to the provincial government for review and consideration for approval.

1.2 LWMP Consultation Overview

The Comox Valley Sewer System LWMP process was kicked off in June 2018. The LWMP is critical to the long-term operational health of the sewer system and protection of the environment. The decisions made as part of the LWMP process will impact residents in Courtenay and Comox through increases to sewer fees and construction disruption. This impact requires continuous and dedicated engagement to allow community input about the options under consideration.

The International Association of Public Participation (IAP2) spectrum of public participation was used to define the engagement goals for this project.





Engagement for the LWMP is currently in Phase 4 and includes the following objectives:

1. Provide information about the LWMP process.
2. Offer opportunities for active public involvement.

3. Clearly explain how feedback will be received and considered.
4. Create a record of engagement at the end of the process.
5. Demonstrate how engagement was considered and how input influenced final decisions.

The chart on the next page provides an outline of the consultation process, including engagement goals and tools for each of the five phases.

PHASE 1 EDUCATE/KICK-OFF (MAY-AUG. 2018) ✓COMPLETE	<div> <div> OBJECTIVES </div> <div> INFORM: provide info about the sewer system and LWMP start INVOLVE: connect with public to collect feedback on goals/values in sewer planning </div> </div> <div> TOOLS  <ul style="list-style-type: none"> • Project Webpage: create dedicated pages on regional district + ConnectCVRD websites • Advertisements: Promote online tool and sessions • Public Session #1 • Online Consultation Survey </div>
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Phase 4 (Conveyance Shortlist) Consultation Overview

1.3 Approach

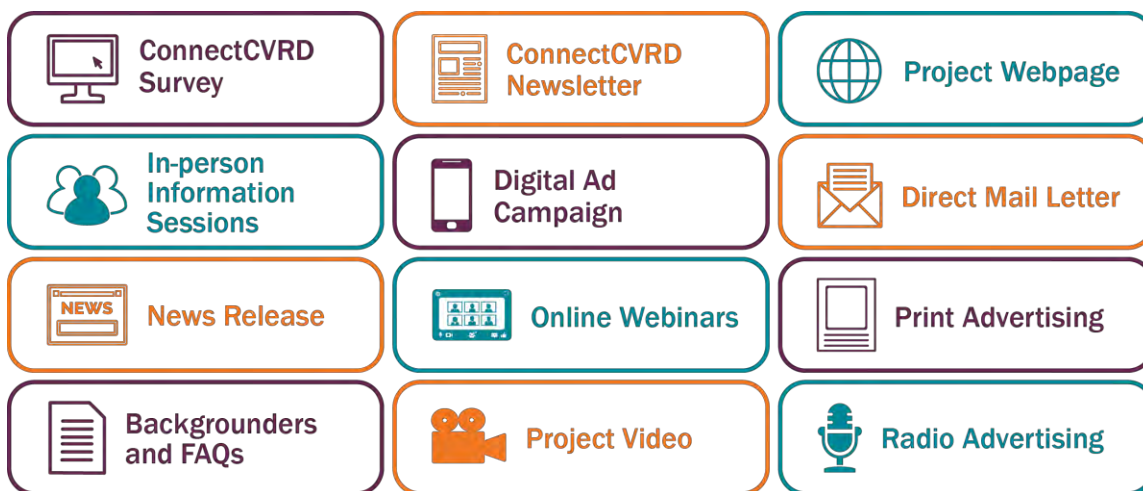
The current fourth stage of public engagement – review/assessment of the short-list conveyance options – was initially kicked off in early March 2020. It was postponed, however because of the COVID-19 public health emergency. Given the re-opening of business in British Columbia and the increasingly urgent environmental risk, the decision was made to relaunch the consultation in September 2020.

This pause allowed the consultation to incorporate subsequent assessment work by project engineers, resulting in more detailed information about traffic impacts and routing for each option, as well as revised cost estimates.

The primary objective of this consultation phase was to gauge community priorities when it came to assessing the three shortlisted options. Because of the technical nature of this assessment and the many-layered assessment that will be required to select a preferred option, participants were not asked to rank their preferred option. Instead, they were asked to provide feedback about the top benefits and risks to each option in order to inform directors, staff, the project team and public and technical advisory committees about what residents feel are the most important considerations in choosing a preferred conveyance option.

1.4 Engagement Tools

The overall success of the Phase 4 engagement was a result of the blend of tools used to promote, inform and encourage participation.



To prevent the spread of COVID-19, the consultation events were adapted to implement health and safety measures, including pre-registration for in-person events to ensure safe occupancy levels. A

Zoom webinar was offered for those uncomfortable with attending an open house in person. Both events were intended to provide more information on the options under consideration and encourage residents to submit their feedback via online surveys.

1.5 By the Numbers

The numbers below highlight key data collected at the end of the consultation.



The graph below shows a further breakdown of survey respondents by area. Participants were invited to fill out the survey without requiring a registration to the site – reducing potential barriers to participation. It should be noted that a review of the survey submissions and user data was completed to ensure there was no evidence of abuse around multiple submissions.

Survey Respondents by Area



While this phase of the LWMP consultation had the strongest engagement, interest in the project has been building over the life of the project with more than 4,700 visitors to the project page from project launch in May 2018 through October 2020.



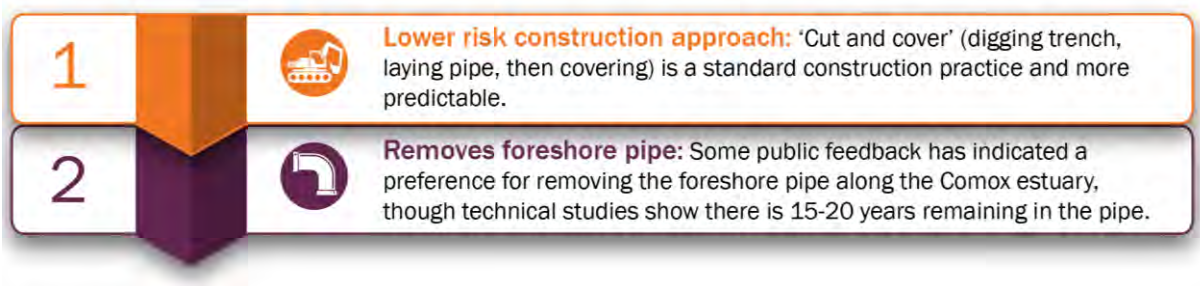
Phase 4 (Conveyance Shortlist) Consultation Results

1.6 Benefits Ranking

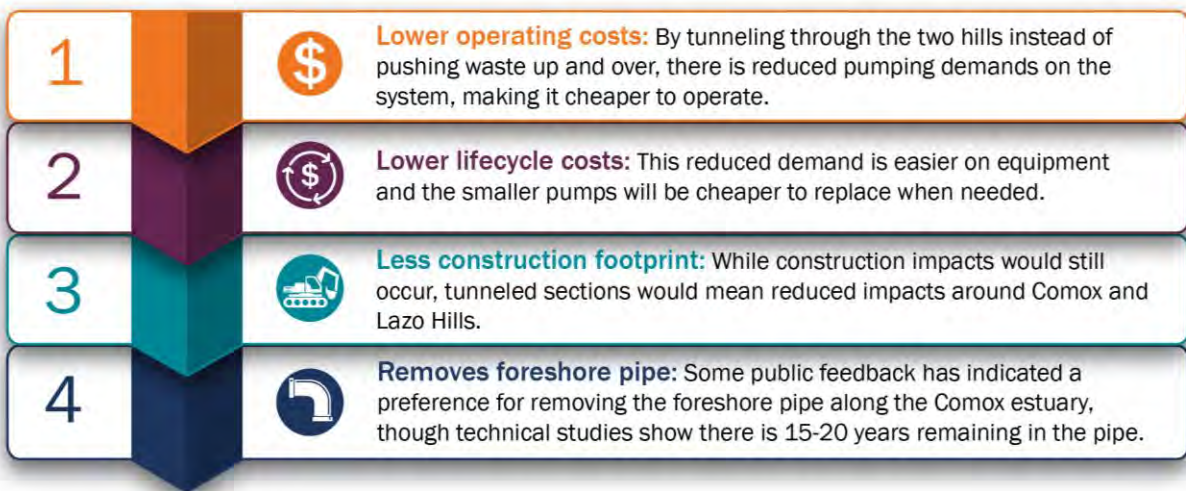
Participants in the survey were asked to rank the presented benefits for each option.

Between 264 - 272 people completed this exercise, resulting in the following rankings. Results were largely similar, regardless of the filtering applied based on where the respondent lives. Exceptions are identified below.

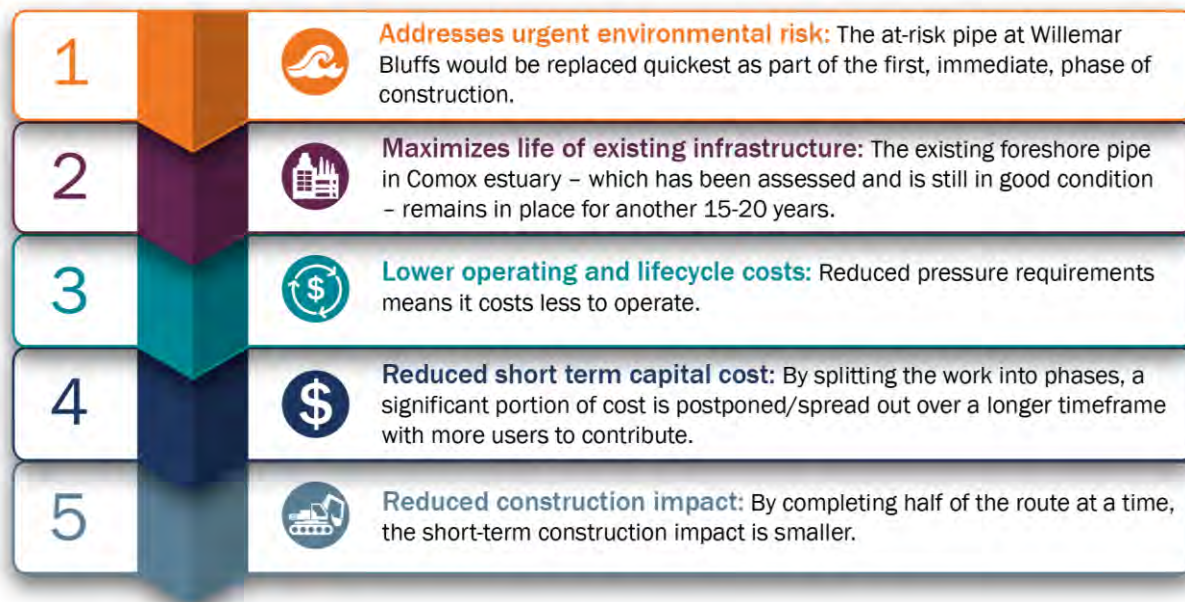
Option 1 – Benefits as Ranked by Survey Respondents



Option 2 – Benefits as Ranked by Survey Respondents



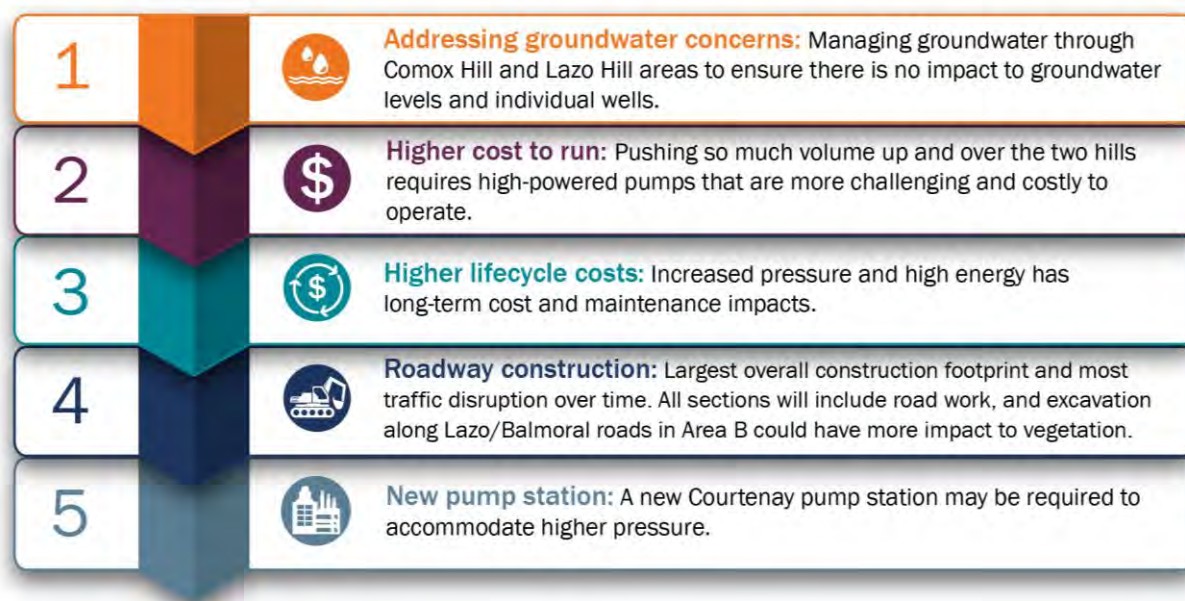
Option 3 – Benefits as Ranked by Survey Respondents



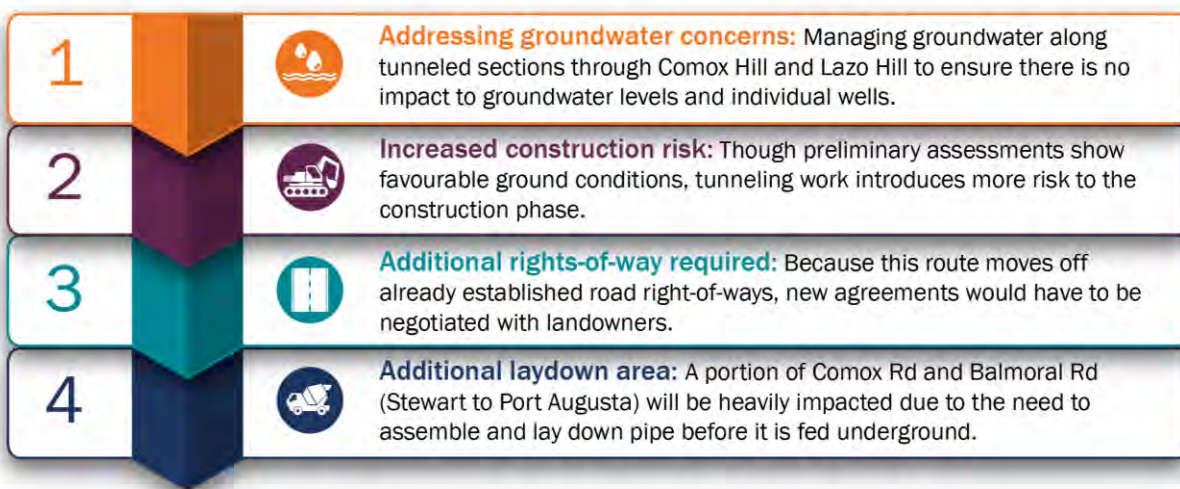
1.7 Challenges Ranking

Challenges and concerns for each option were also presented for ranking, resulting in the following prioritized list. For each of these, 272-273 people completed the ranking, and like the benefits, results were largely similar regardless of where the respondent lives. Exceptions are identified below.

Option 1 – Challenges as Ranked by Survey Respondents



Option 2 – Challenges as Ranked by Survey Respondents



Option 3 – Challenges as Ranked by Survey Respondents



1.8 Themes of Comments

Along with the ranking, participants were asked to list further benefits, challenges or feedback that they would like the project team and sewage commission to consider as the options are assessed. On average, 44 comments were posted in each section, with 65, the most, in the first comment section. This equals about 16 per cent of those who completed the ranking questions.

These comments were wide-ranging, encompassing opinions, questions, and concerns about specific issues. The collection is valuable input for planners and decision-makers. While there were limited groupings of topics, a few clusters of comments did emerge:



Priority of foreshore pipe removal: The importance of removing both the environmental risk at the Willemar Bluffs, as well as proceeding with the removal of the estuary pipe, generated a cluster of supportive comments.



Concern about rising construction costs or unforeseen circumstances: Respondents felt the cost estimate for Option 3's Phase 2 would likely be higher and there was concern that there could be changes to regulations or priorities that prevent that phase from proceeding on time. There were some balancing comments about the value of having additional ratepayers in 20 years, and potential for new technologies then, but the concern outweighed the support when reviewing written comments.



Groundwater: The project team heard at open houses and via emails/letters that groundwater for residents in the Lazo area was a concern. This is especially important for those who rely on wells. To provide additional information, a webinar specifically on groundwater and tunneling was hosted on Nov. 5. Questions were focused on safeguards against possible breaks/leaks and methods of detection and repair. People living in the area had concerns about the impacts of right-of-ways through property in the long-term and sought additional information about alternatives that had been considered. Any questions that could not be addressed in the webinar were responded to online, with a notice going to attendees about the update.



Area-specific concerns and issues: Residents had a wide range of comments that were personal and specific to their circumstances, including the protection of important trees, protecting groundwater, preferring traffic on main roads rather than Balmoral, and Jane Place pump station construction concerns. Each of these clusters of comments were much smaller – between four and eight each – but represent good information and highlight the importance of follow up communication, particularly as the project approaches the construction phase.

Conclusion

Assessing the shortlist of options requires both critical technical evaluation as well as consideration of public input. The engagement plan was successful in drawing out the key concerns and benefits for each option so that they can be considered in relation to the technical analysis.

Environmental concerns, particularly around the protection of water (foreshore/ocean and groundwater) emerged as a top priority. Residents remain concerned about how the work will impact their specific areas – the water, trees, traffic etc. near them. Their varied comments will provide valuable considerations for the project team to consider as a preferred option is determined.

Participation in this stage was higher than any other phase of public consultation during the LWMP process, despite the COVID-19 pandemic. The direct community outreach in Comox drew a new audience and the online webinar offered a new and valuable tool that can support future engagement by the CVRD, across a wide range of regional projects and initiatives.

Next Steps

A commitment was made by the CVRD to follow up with the outcome of the consultation and decision regarding the preferred option.

- **Announce preferred option, share the consultation report and communicate next steps:** Direct outreach to residents who participated in open houses, webinars or signed up for more information about the project. The decision and the report will be posted online and a press release will be distributed to media and shared via social media for the general public.
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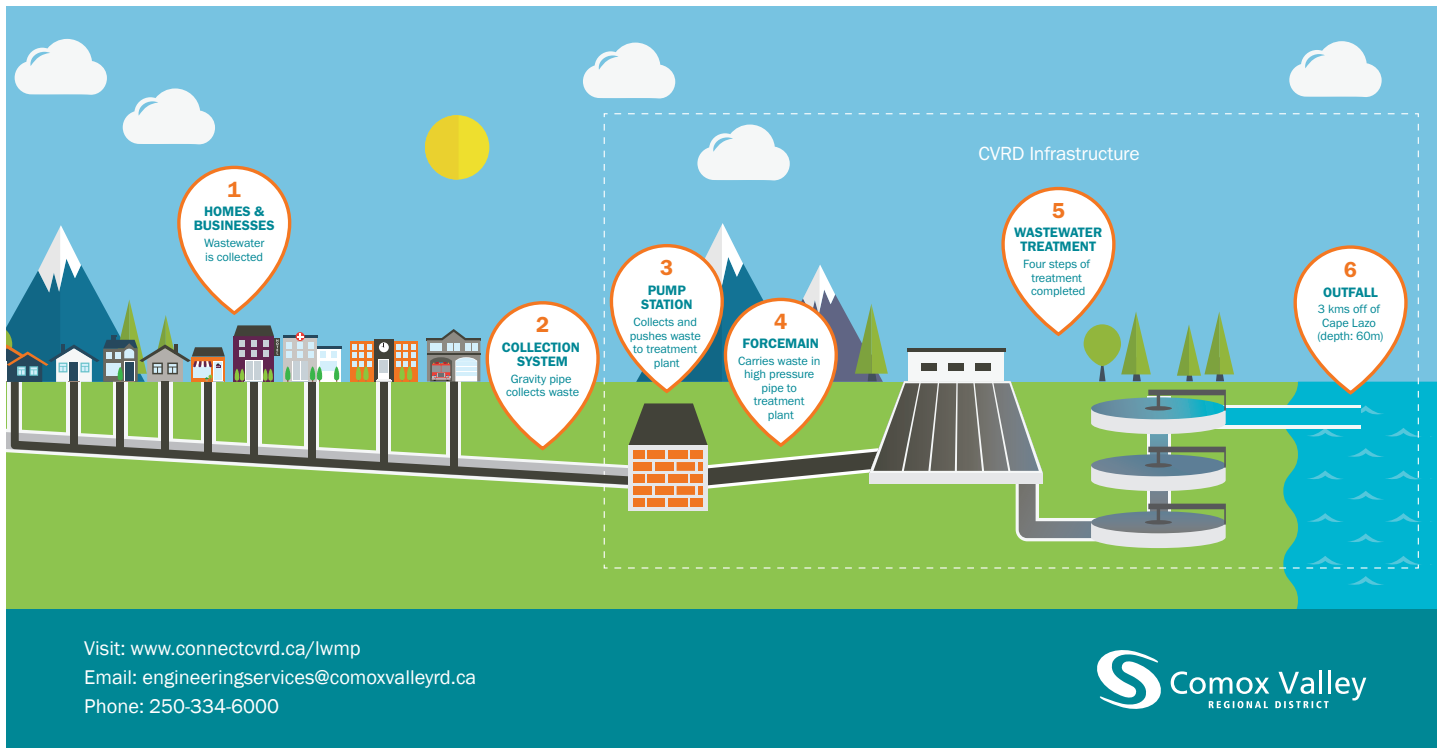
Appendix 7 – Online Survey Responses

APPENDICES

APPENDIX 1 – Event Display Boards

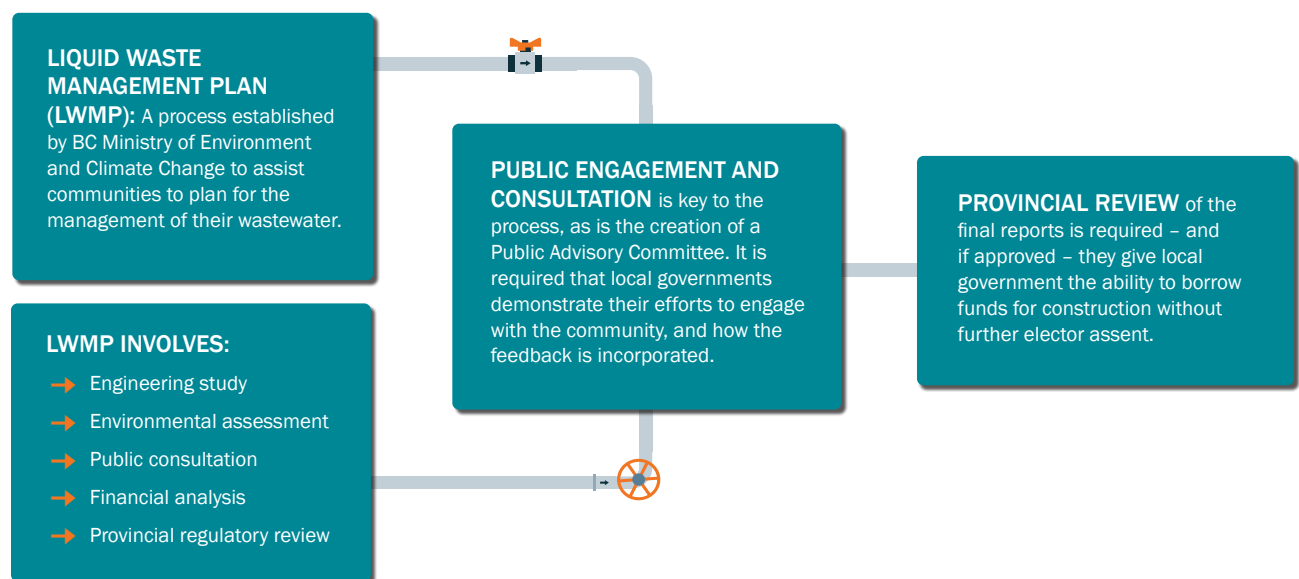
WHAT HAPPENS AFTER YOU FLUSH?

Wastewater Management in the CVRD



PLANNING A FUTURE FOR OUR LIQUID WASTE

Long-term planning for liquid waste management can be a complicated process. To help streamline these big projects and give local governments the ability to deliver agreed-on plans, liquid waste management plans are often used.



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PLANNING AND PUBLIC ENGAGEMENT: TIMELINE

The Liquid Waste Management Plan process includes distinct stages that require public input.



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REVIEWING THE LONG LIST: WHAT WE HEARD

In January 2019, a long-list of six options for conveyance were presented to the community via an online survey and through two facilitated sessions.



GOAL OF FEEDBACK

The CVRD was looking for feedback on:

- Whether there were other options that should be considered/reviewed
- Any other information about proposed options that should be considered

CONSIDERING WHAT WE HEARD

Community members provided a range of comments re: conveyance options, which generally aligned with three themes:



Protection of the Environment: High priority was placed on stewardship and conservation with concerns raised about the estuary, shellfish industry, groundwater and more. An interest in moving sewage pipes inland was clear.



Consider the Cost: Finding efficiencies in cost was highlighted, including an interest in seeing larger upfront investment to minimize costs over the long term.



Opposition to Comox No. 2 Pump Station: Those opposed to an option that could see a pump station around the Croteau Beach neighbourhood were well represented.

WHAT WE DID NEXT

Following that engagement, and considering what we heard, the project team:



Consulted with K'ómoks First Nation: Meaningful dialogue with KFN was undertaken regarding this key infrastructure which crosses their land.



Public/Technical Advisory Review: The committees reviewed the longlist, considering feedback and recommended a short list.



Further Assessment of Options: Options were reviewed further by technical experts to identify further challenges or limitations.



Sewage Commission Selection: On March 10, the sewage commission approved the short list of options, which are now presented to the community for review/feedback.

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OPTION 1: OVERLAND FORCEMAIN

This option would see a trench dug along existing roadways, with a new pipe installed between the Courtenay Pump Station and the sewage treatment plant. This means installing pipe up and over the Comox Road and Lazo Road hills. It also includes:

- Replacement of the Courtenay Pump Station to accommodate the high-pressure pumps needed to push wastewater up over the two hills
- Upgrades to the K'ómoks First Nation and Jane Place pump stations
- Tunneling beneath the Lazo Marsh

*Our engineering consultants are currently reviewing whether this option could be delivered in phases.

COSTS

COST TO BUILD: \$65M

COST TO RUN AND MAINTAIN (30 YEAR): \$17M

COST PER HOUSEHOLD: \$240/household for 20 years

TRAFFIC IMPACTS

MEDIUM: Comox Road, Comox Ave, Beaufort, Stewart, Balmoral, Lazo and Morland (single-lane alternating)

LOW: Lazo/Brent Road

ARCHEOLOGICAL MITIGATION: Full alignment, especially through IR1 (Comox Rd)

BENEFITS

LOWER RISK CONSTRUCTION APPROACH: 'Cut and cover' (digging trench, laying pipe, then covering) is a standard construction practice and more predictable.

REMOVES FORESHORE PIPE: Public feedback has indicated a preference for removing the foreshore pipe along the Comox estuary, though technical studies show there is 15-20 years remaining in the pipe.

CHALLENGES

NEW COURTENAY PUMP STATION: Required to accommodate higher pressure.

HIGHER COST TO RUN: Pushing so much volume up and over the two hills requires high-powered pumps that cost more to operate.

HIGHER LIFECYCLE COSTS: Increased pressure and high energy has long-term cost and maintenance impacts.

ADDRESSING GROUNDWATER CONCERNS: Managing groundwater to ensure there is no impact to groundwater and individual wells.

ROADWAY CONSTRUCTION: Largest overall construction footprint and most traffic disruption over time, because all sections will include road work and excavation along Lazo and Balmoral roads in Area B could have more impact to vegetation in that area.

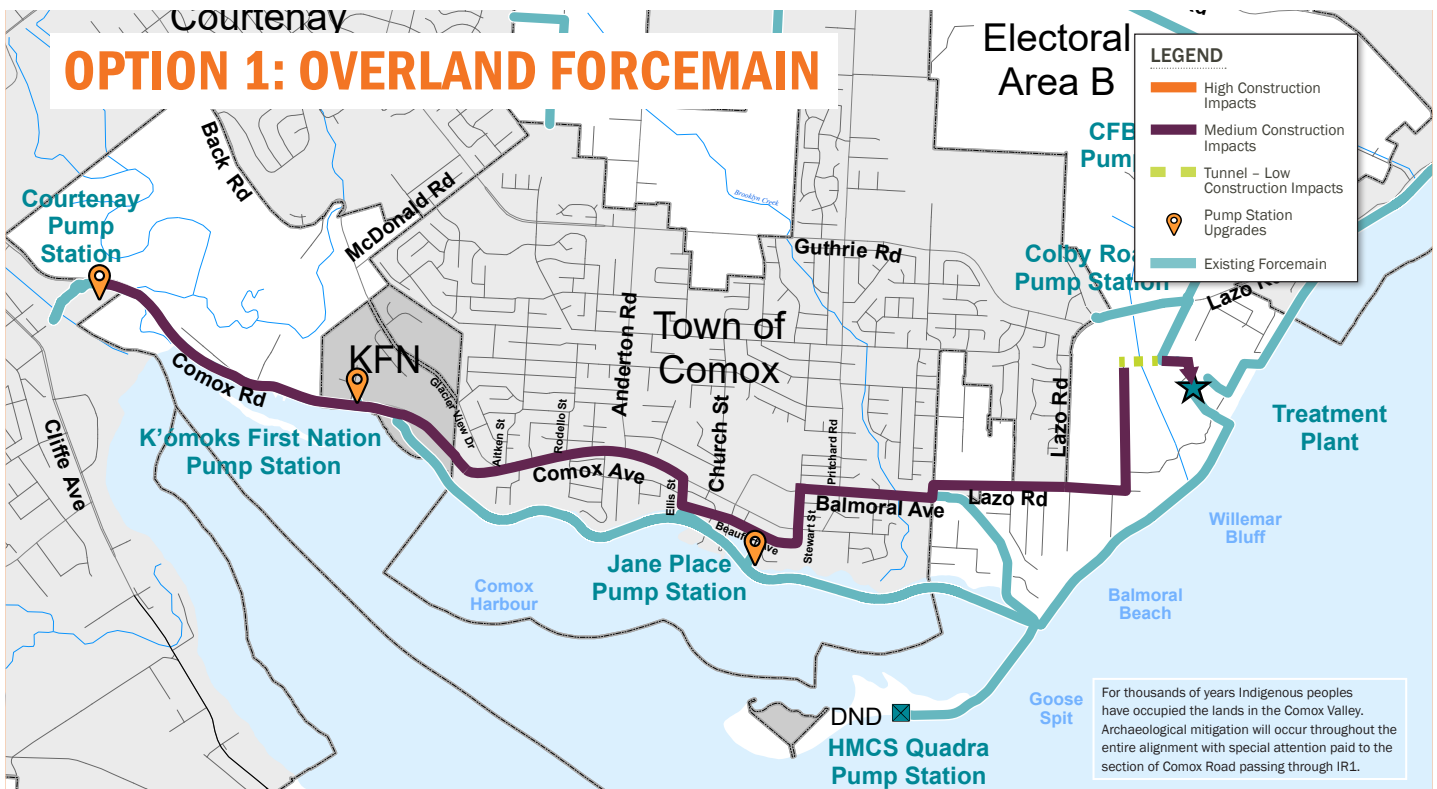
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OPTION 1: OVERLAND FORCEMAIN



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OPTION 2: TUNNEL FORCEMAIN

This option combines 'cut and cover' construction (trenching) with directional drilling (a type of tunneling). The trench would be dug, with pipe installed, along existing roadways for much of the route, but tunneling would be used to go through rather than over the Comox and Lazo Road hills. It also includes:

- Upgrades to all three pump stations on the route: Courtenay, K'ómoks First Nation and Jane Place
- Tunneling beneath the Lazo Marsh

COSTS

COST TO BUILD: \$58M

COST TO RUN AND MAINTAIN (30 YEAR): \$13M

COST PER HOUSEHOLD: \$210/household for 20 years

TRAFFIC IMPACTS

HIGH: Comox Road (KFN pump station to Comox Hill), Balmoral (Port Augusta/Pritchard) – local traffic only

MEDIUM: Comox Road (Courtenay pump station to KFN pump station) Comox Ave, Ellis, Beaufort, Stewart, Morland and Brent Road (single-lane alternating)

LOW: Tunnel areas at Comox and Lazo Hill

ARCHAEOLOGICAL MITIGATION: Full alignment, especially through IR1 (Comox Rd)

BENEFITS

LOWER OPERATING COSTS: By tunneling through the two hills instead of pushing waste up and over, there is reduced pumping demands on the system, making it cheaper to operate.

LOWER LIFECYCLE COSTS: This reduced demand is easier on equipment, and the smaller pumps will be cheaper to replace when needed.

LESS CONSTRUCTION FOOTPRINT: While construction impacts would still occur, tunneled sections would mean reduced impacts around Comox and Lazo Hills.

REMOVES FORESHORE PIPE: Some public feedback has indicated a preference for removing the foreshore pipe along the Comox estuary, though technical studies show there is 15-20 years remaining in the pipe.

CHALLENGES

INCREASED CONSTRUCTION RISK: Though preliminary assessments show favourable ground conditions, tunneling work introduces more risk to the construction phase.

ADDRESSING GROUNDWATER CONCERNS: Managing groundwater to ensure there is no impact to groundwater or individual wells.

ADDITIONAL RIGHT-OF-WAYS REQUIRED: Because this route moves off already established right-of-ways, new agreements would have to be negotiated with landowners.

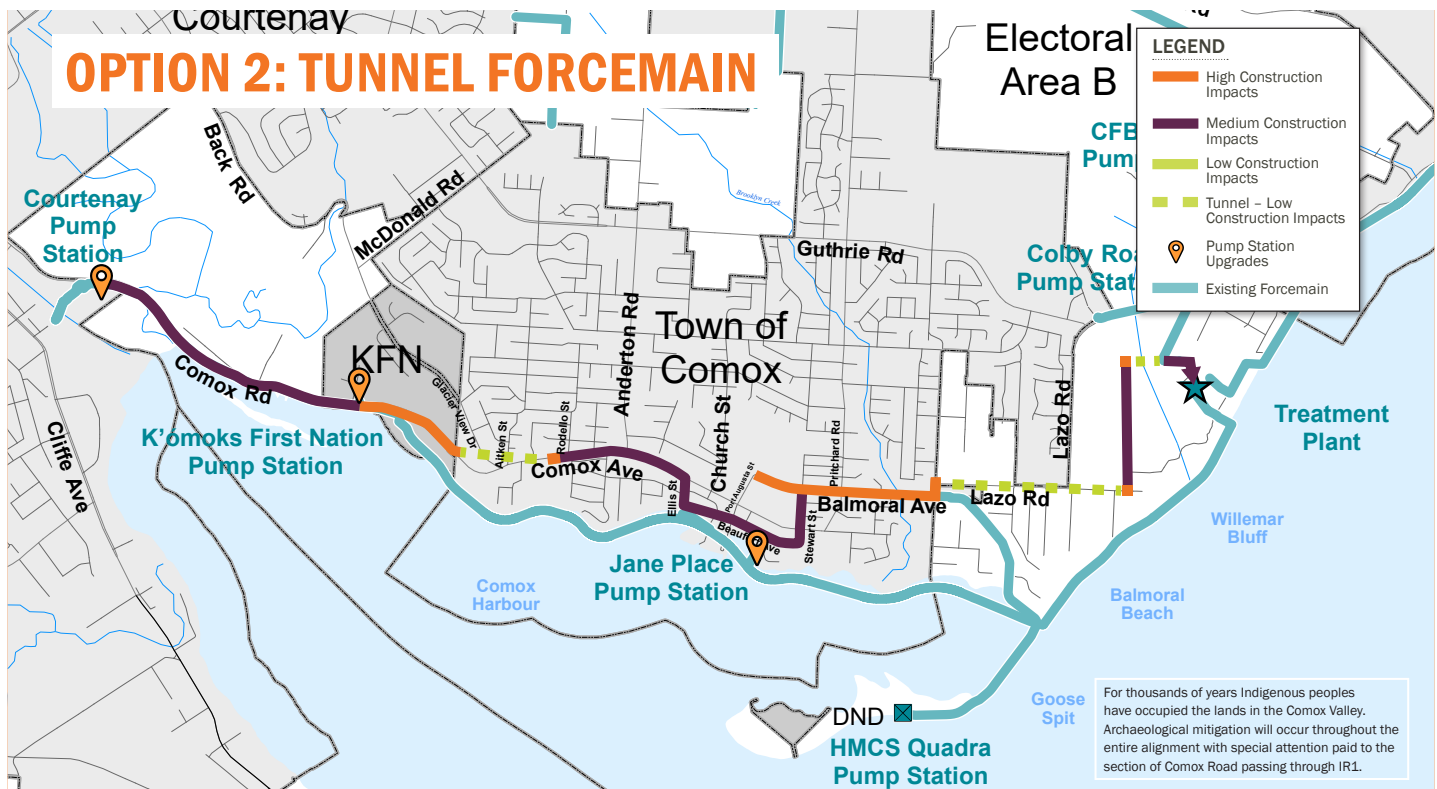
ADDITIONAL LAYDOWN AREA: A portion of Comox Rd and Balmoral Rd (Stewart to Port Augusta) will be heavily impacted due to the need to assemble and lay down pipe before it is fed underground.

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OPTION 3: PHASED TUNNEL

This option uses the combined trench-and-tunneling route of Option 2 but breaks the project into two phases. Phase 1 would include the stretch between Marina Park and the treatment plant. Phase 2 would replace the pipe between Courtenay Pump Station and Marina Park in 15-20 years. It also includes:

- Upgrades to all three pump stations on the route
- A temporary line from a tie-in at Marina Park to the new forcemain on Beaufort Ave for 15-20 years until Phase 2 of the project is introduced
- A new line from Jane Place to new forcemain
- Lowest immediate cost to build
- Tunneling beneath the Lazo Marsh

COSTS

COST TO BUILD: \$43M

COST TO RUN AND MAINTAIN (30 YEAR): \$13M

COST PER HOUSEHOLD: \$160/household Until Phase 2

PHASE 2 CAPITAL COST (TO BE IMPLEMENTED IN 15-20 YEARS): \$18M

TRAFFIC IMPACTS (PH.1)

HIGH: Balmoral (from Stewart) and Lazo/Morland (local traffic), Marina Park

MEDIUM: Jane Place/Wilcox and Morland (single-lane alternating)

LOW: Lazo/Curtis Road

ARCHAEOLOGICAL MITIGATION: Full alignment, especially through IR1 (Comox Rd)

BENEFITS

ADDRESSES URGENT ENVIRONMENTAL RISK: The at-risk pipe at Willemar Bluffs would be replaced as part of the first phase of construction.

REDUCED SHORT TERM CAPITAL COST: By splitting the work into phases, a significant portion of cost is postponed/spread out over a longer timeframe with more users to contribute.

LOWER OPERATING AND LIFECYCLE COSTS: Reduced pressure requirements means it costs less to operate.

MAXIMIZES LIFE OF EXISTING INFRASTRUCTURE: The existing foreshore pipe in Comox estuary – which has been assessed and is still in good condition – remains in place for another 15-20 years.

REDUCED CONSTRUCTION IMPACT: By completing half of the route at a time, the short-term construction impact is smaller.

CHALLENGES

FORESHORE PIPE REMAINS: While assessment shows this pipe in good condition, some community members want it removed.

CHALLENGING CONNECTION AT MARINA PARK: High construction impacts at Marina Park, limited impact to boat ramp access, as new system is connected to existing.

INCREASED CONSTRUCTION RISK: Though preliminary assessments show favourable ground conditions, tunneling work introduces more risk to the construction phase.

ADDRESSING GROUNDWATER CONCERNS: Managing groundwater along tunneled sections to ensure there is no impact to groundwater levels and individual wells.

ADDITIONAL LAYDOWN AREA REQUIRED: Long stretches of roadway will need to be used as for the pipe to be assembled- including a portion of Balmoral (Stewart to Port Augusta).

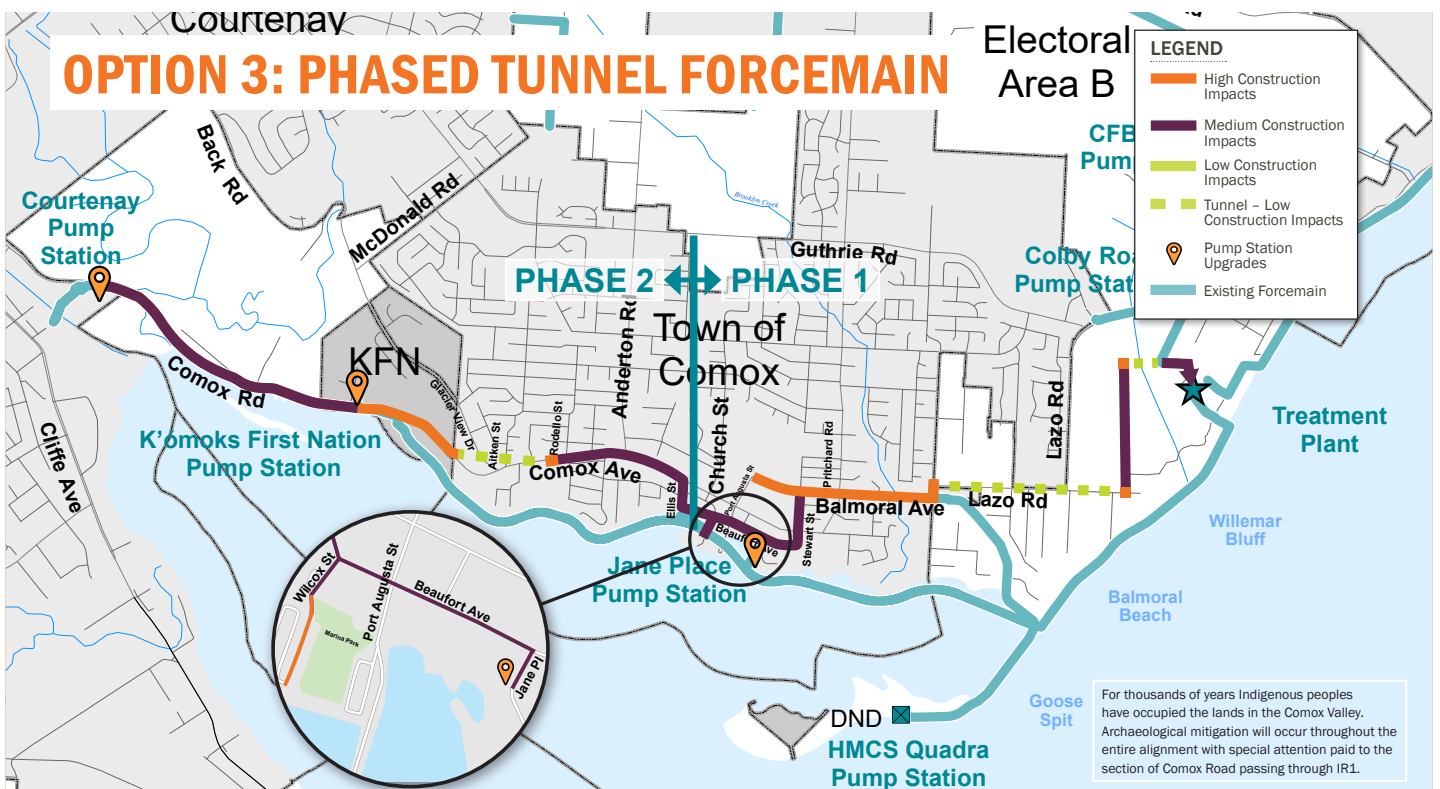
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OPTION 3: PHASED TUNNEL FORCEMAIN



For thousands of years Indigenous peoples have occupied the lands in the Comox Valley. Archaeological mitigation will occur throughout the entire alignment with special attention paid to the section of Comox Road passing through IR1.

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PROTECTING GROUNDWATER AND WELLS

As part of a technical assessment for regional sewer system improvements in the Comox Valley, the Comox Valley Regional District (CVRD) is undertaking geotechnical investigatory work and hydrogeological data assessment in the Lazo Road and Comox Hill areas. The results of this work will provide information about ground conditions and groundwater levels to help assess the viability of options. Once data from this work is analyzed, reports will be made available to the public.

Protecting groundwater as we consider sewer options involves a number of different approaches, including:



Recognizing the importance of protection:

The CVRD understands that for those who rely on wells – and for widespread environmental protection, groundwater must be protected. Protection has been identified as a priority.



Working with experts:

The project team is working closely with local contractor GW Solutions who is well-informed on the area, to understand the aquifer and highlight possible challenges. Long term protection of groundwater will be through robust engineering design and construction practices.



On-the-ground investigations:

More than desktop assessments, the projects engineers are also monitoring groundwater on location, using equipment called piezometers, placed in the exploratory bore holes completed in the summer.



Drilling equipment like this has been used to assess geotechnical conditions and groundwater in the area.



LOCAL KNOWLEDGE

We understand that residents in the area hold a lot of personal information with their experiences on their property. If you have details that you feel we should know, please connect with a member of the project team, or send us a message at engineering@comoxvalleyrd.ca.

Visit: www.connectcprd.ca/lwmp

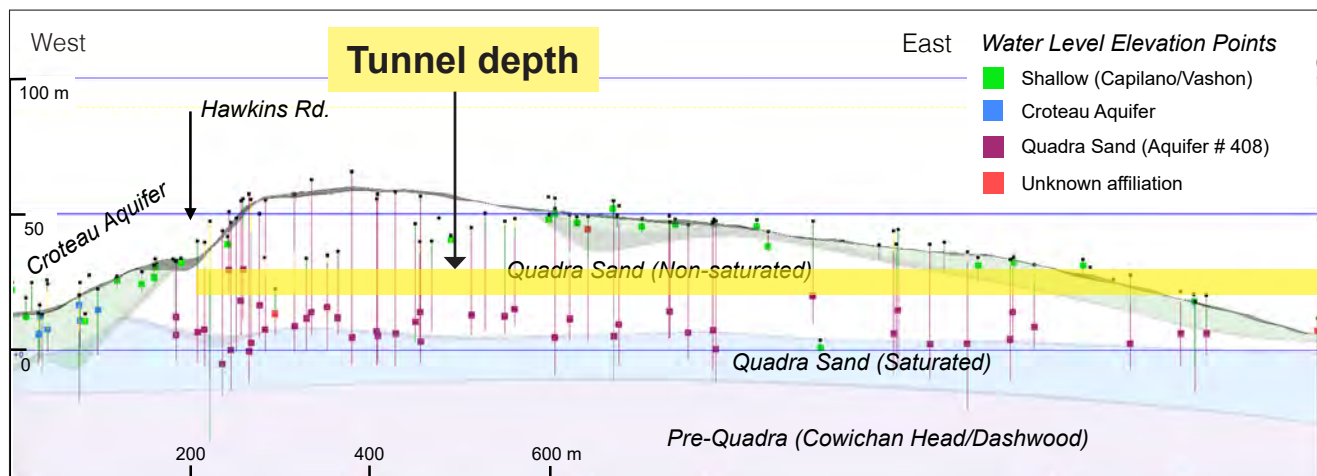
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AQUIFER ASSESSMENT

As part of the technical assessment underway for these options, groundwater has been an important focus. Surveys have shown so far that the tunnel location will not interfere with groundwater significantly, as it is located outside of aquifers or saturated sands. Below is an image to demonstrate.



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YOUR CONCERNS: CULTURALLY SENSITIVE AREAS

For thousands of years Indigenous peoples have occupied the Comox Valley including lands along the proposed conveyance route. We understand there is risk of encountering archaeological remains in this area. Making plans to manage this risk will be a key part of our construction planning.

WHAT WE KNOW:

The designated archeological site labelled DkSF-19 – a shell midden and habitation site – conflicts with the western half of the proposed sanitary sewer line. Reviewing records for six other building projects have shown that within the conflicting area previous findings have ranged from nothing (at the western edge) to intact midden deposits and human burials.



WE ARE COMMITTED TO:

- **Using the information we have:**
 - » A preliminary route can be selected that avoids areas where intact archaeological findings have been made to date.
 - » Staying within the existing roadway – a previously disturbed area – can reduce the potential impact. The most intact remains reported are off of the roadway.
- **Following direction from experts:**
 - » Our plans will be approved by KFN Chief and Council and our work will be supervised by a Guardian Watchman or other representatives appointed by KFN.
 - » We will receive permitting from the BC Archaeology Branch.
 - » We will conduct geotechnical testing to gather information about any archaeological remains below the road – including depths/size and in some cases, condition.
- **Planning ahead for unexpected finds:**
 - » If archaeological deposits are found to be in conflict, we can pre-dig the trench ahead of the pipe laying crew, allowing for the proper treatment of anything that is found.



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NEXT STEPS FOR SEWER PLANNING

This stage of consultation on the Comox Valley Sewer Service Liquid Waste Management Plan is critical to informing the next steps for the Comox Valley Regional District's Sewage Commission and project team.

Here's what's happening next:



Ready to Provide Feedback?

Visit www.connectcvrd.ca/lwmp to fill out the survey





Visit: www.connectcvrd.ca/lwmp

Email: engineering@comoxvalleyrd.ca

Phone: 250-334-6000



comoxvalleyrd.ca   

APPENDIX 2 – Advertisement Samples

Print Ad



We Need to Make Some Tough Decisions

Protecting our beaches and waters means relocating the sewer pipe along the Willemar Bluffs and making some difficult decisions about the future of our sewer system. Now's the time to weigh in on cost, construction impacts and environmental protection measures.

Three ways to have your say:

- 1 Fill out the Survey (before Oct. 14):**
www.connectcvrd.ca/lwmp
- 2 Join a Zoom Webinar:**
Wednesday, Sept. 30
12:00 pm to 1:00 pm
- 3 Sign up to Attend an Open House:**
Thursday, Oct. 1 or Wednesday, Oct. 7
12:00 pm to 2:00 pm
Comox Rec Centre, 1855 Noel Ave, Comox OR
Thursday, Oct. 8
4:00 pm to 6:00 pm
CVRD Civic Room, 770 Harmston Ave, Courtenay
*Registration is strongly encouraged due to limited capacity. Face masks are required.

To register for the webinar or open house:

Visit: www.connectcvrd.ca/lwmp and follow links.
Having trouble registering? Phone: **250-871-6271**

For more information:

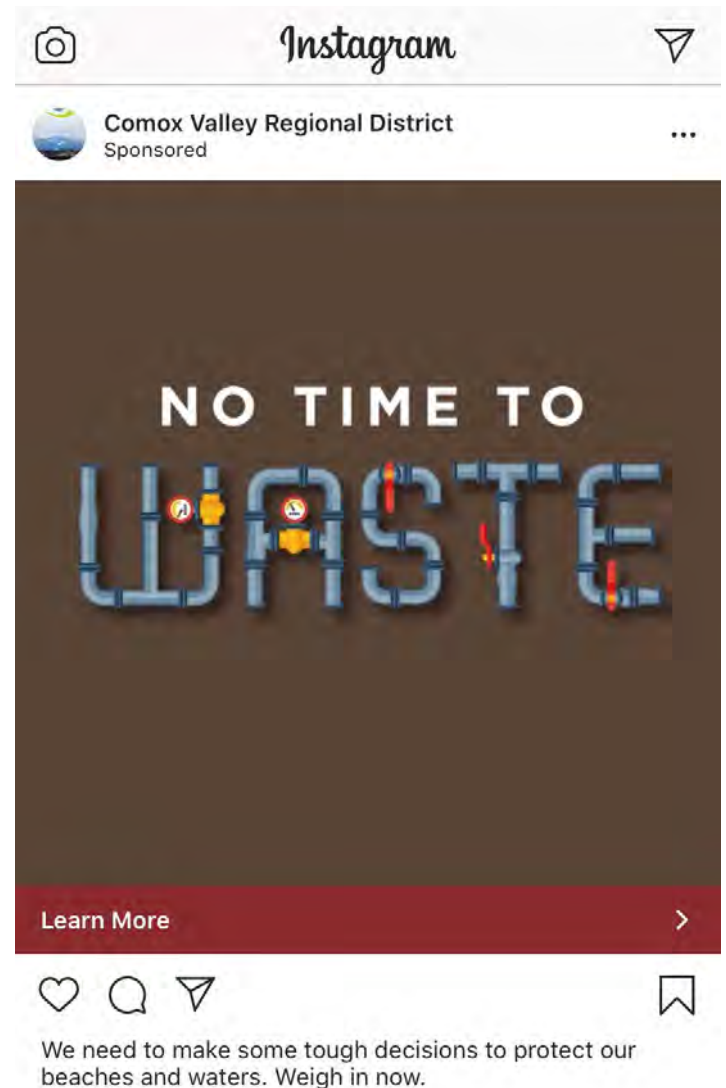
Call: **250-334-6000**

Visit: connectcvrd.ca/lwmp



comoxvalleyrd.ca   

Social Media Ad



APPENDIX 3 – Digital Ad Campaign Report

CVRD LWMP CAMPAIGN

FACEBOOK/INSTAGRAM CAMPAIGN SUMMARY

COST

\$1,015.50

LINK CLICKS

1,018

REACH

44,686

IMPRESSIONS

267,935













PERFORMANCE BY PLATFORM	Reach	Impressions	Link Clicks
facebook	33,172	203,829	673
instagram	16,114	56,851	322
audience_network	1,240	7,254	23
messenger	0	1	0

REACH	Reach	Impressions	Link Clicks
mobile_app	41,958	245,083	968
desktop	2,704	15,018	42
mobile_web	1,376	7,834	8

PERFORMANCE BY AGE	Reach	Impressions	Link Clicks
18-24	4,841	30,182	30
25-34	9,225	49,262	76
35-44	8,113	53,921	130
45-54	7,305	41,262	156
55-64	7,857	49,898	272
65+	7,345	43,408	354
Unknown	0	2	0

PERFORMANCE BY GENDER	Reach	Impressions	Link Clicks
female	23,131	144,004	594
male	20,339	115,992	392
unknown	1,216	7,939	32

FACEBOOK/INSTAGRAM AD BREAKDOWN

ENGAGEMENT BY AD (WITH IMAGE)		Reach	Impressions	Link Clicks	Post Reactions
	C001-Pipe-1 (id : 6158218978902)	270	381	5	1
	C001-Pipe-1 (id : 6163876272102)	175	256	3	0
	C001-Pipe-1 (id : 6165680939502)	1,121	2,933	2	0
	C001-Pipe-1 (id : 6165680939702)	1,824	4,363	4	0
	C001-Pipe-1 (id : 6168407517102)	29	32	0	0
	C001-Pipe-1 (id : 6168407519102)	55	56	0	0
	C001-Pipe-1 (id : 6207226381102)	38	40	0	0
	C001-Pipe-1 (id : 6207226381502)	1,296	2,735	2	1
	C001-Pipe-1 (id : 6207226384702)	1,808	3,322	2	0
	C001-Pipe-1 (id : 6207226385502)	93	97	0	0
	C001-Pipe-1 (id : 6207226386302)	387	565	2	1
	C001-Pipe-1 (id : 6207226386702)	625	980	6	0

ANALYSIS

After pausing the Liquid Waste Management Plan ad campaign for several months during COVID-19, the campaign picked up where it left off fairly instantly. Over the course of just under one month, the second phase of the campaign was able to reach over 44,000 Comox Valley residents. In total, the LWMP ads were seen over 250,000 times. The result of these reach and impression numbers were over 1,000 link clicks through to the CVRD web properties.

With a focus on ensuring that the ads weren't seen too many times by each person reached, we employed a strategy to ensure that the 'Reach' metric remained reasonable. The results were positive, and the highest frequency number experienced during the campaign was 5. This means that, at most, one user saw the LWMP ads 5 times over the course of a month.

The engagement came from a predominantly older demographic; over half of the clicks registered were from an audience over the age of 55. With that said, we did see a fairly even distribution of clicks among the remaining younger demographics. Across all age ranges, engagement was skewed towards a female audience, which is quite common and aligns with previous CVRD social media campaigns.

Unsurprisingly the majority of the engagement came via mobile device, with desktop engagement only accounting for a very small percentage of reach, impressions and clicks. With a mobile-friendly animation as well as succinct messaging and calls-to-action, we were able to capitalize on the mobile heavy trend that we are seeing.

In total, the CVRD LWMP campaigns reached a substantial number of local users and drew a high amount of engagement - prompting them to click through with high intent to the LWMP specific materials online.



APPENDIX 4 – Direct Mail

File: 5330-20/CVSS LWMP

September 11, 2020

Dianne Hawkins, CEO
Comox Valley Chamber of Commerce
2040 Cliffe Ave
Courtenay, BC V9N 2L3

Dear: Ms. Hawkins,

Re: Public Consultation re: Comox Valley Sewer Service Planning

The Comox Valley Regional District (CVRD) is set to re-launch public consultations related to the long-term planning for the Comox Valley Sewer Service.

The Comox Valley Sewer Service provides the regional collection and treatment for raw sewage (wastewater) from Comox as well as Courtenay and K'ómoks First Nation. This system currently includes a sewer pipe located along Balmoral Beach (Willemar Bluffs) that is vulnerable to damage by waves, rocks and logs – and poses an environmental risk to the beaches and waters throughout Baynes Sound.

A long-term plan that will accommodate the community's growth and enable this at-risk pipe to be relocated is required. We are reaching out because we know this topic will be of interest to members of the Comox Valley business community, and we want to invite your members' participation.

Project Background

The long-term sewer service plan the CVRD is working on is called a Liquid Waste Management Plan (LWMP) and public input is key to its successful delivery. This stage of the process is looking at conveyance options – the pipes and pump stations that collect and move wastewater to the treatment plant.

A short list of these options has been approved by the CVRD's Sewage Commission and is now under consideration. The CVRD launched public consultation on the shortlist in March 2020 but that was postponed due to COVID-19. The consultation plan has been revised to implement health and safety measures for public consultation during the pandemic.

How to Participate

On September 14, we will relaunch consultation on the three shortlisted conveyance options for the location of new and upgraded pipes and pump stations. There are three ways to participate and we are hopeful you will reach out to your community contacts and encourage participation.

- **Complete the Online Survey:** Visit connectcvr.ca/lwmp to learn about the three options and complete the survey. The survey will be live from **September 14 – October 12**. Results from this survey will be summarized for the Sewage Commission as they consider which of the three options is preferred.

- **Join a Lunch Hour Webinar:** The project team will host an online info session on Zoom to explain the options and answer your questions before filling out the online survey. This session takes place on **September 30 from 12 pm – 1 pm** and registration is required. Please visit www.connectcvrld.ca/lwmp for more info and to register.
- **Attend an In-Person Info Session:** We will be hosting limited-size, in-person info sessions following COVID-19 safety protocols. Pre-registration is encouraged, please visit www.connectcvrld.ca/lwmp to reserve your spot or call 250-871-6271 for assistance.

October 1 - Comox

12 pm – 2 pm

Comox Rec Centre, 1855 Noel Ave

October 7 - Comox

12 pm – 2 pm

Comox Rec Centre, 1855 Noel Ave

October 8 - Courtenay

4 pm – 6 pm

CVRD Civic Room, 770 Harmston Ave

Questions?

Thank you for your interest in this important topic. If you have any questions about the options, or about how to participate, please contact us at engineering@comoxvalleyrd.ca or 250-334-6056.

We would also be pleased to set up an online meeting with the Chamber of Commerce. If this is something that you would like to coordinate with us, please have your staff contact Christianne Wile, Manager of External Relations at cwile@comoxvalleyrd.ca or 250-334-6066.

Sincerely,

K. La Rose

Kris La Rose, P.Eng.
Manager of Water and Wastewater Services
250-334-6083
klarose@comoxvalleyrd.ca

File: 5330-20/CVSS LWMP

September 11, 2020

Haeley Dewhirst, Executive Director
Comox Business in Action
305 Glacier View Drive
Comox BC V9M 1G6

Dear: Ms. Dewhirst,

Re: Public Consultation re: Comox Valley Sewer Service Planning

The Comox Valley Regional District (CVRD) is set to re-launch public consultations related to the long-term planning for the Comox Valley Sewer Service.

The Comox Valley Sewer Service provides the regional collection and treatment for raw sewage (wastewater) from Comox as well as Courtenay and K'ómoks First Nation. This system currently includes a forcemain located along Balmoral Beach (Willemar Bluffs) that is vulnerable to damage by waves, rocks and logs – and poses an environmental risk to the beaches and waters throughout Baynes Sound.

A long-term plan that will accommodate the community's growth and enable this at-risk pipe to be relocated is required. We are reaching out because we know this topic will be of interest to members of the Comox Business in Action Association, and we want to invite your members' participation.

Project Background

The long-term sewer service plan the CVRD is working on is called a Liquid Waste Management Plan (LWMP) and public input is key to its successful delivery. The planning process has already identified preferred paths forward for the treatment plant and resource recovery and is currently looking at conveyance options – the pipes and pump stations that collect and move wastewater to the treatment plant.

A short list of conveyance options has been approved by the CVRD's Sewage Commission and is now under consideration. The CVRD launched public consultation on the shortlist in March 2020 but that was postponed due to COVID-19. The consultation plan has now been adapted, and it's time to restart the process.

How to Participate

Comox residents have additional reasons to pay attention to these options. As service members, Comox taxpayers will contribute to the cost of any upgrades. However, all potential routes will pass through downtown Comox which means an added burden of construction impacts for those moving through, living and doing business in this area.

On September 14, we will relaunch consultation on the three shortlisted conveyance options for the location of new and upgraded pipes and pump stations. There are three ways to participate and we are hopeful you will reach out to your community contacts and encourage participation.

- **Complete the Online Survey:** Visit www.connectcvrld.ca/lwmp to learn about the three options and complete the survey. The survey will be live from **September 14 – October 12**. Results from this survey will be summarized for the Sewage Commission as they consider which of the three options is preferred.
- **Join a Lunch Hour Webinar:** The project team will host an online info session on Zoom to explain the options and answer your questions before filling out the online survey. This session takes place on **September 30 from 12 pm – 1 pm** and registration is required. Please visit www.connectcvrld.ca/lwmp for more info and to register.
- **Attend an In-Person Info Session:** We will be hosting limited-size, in-person info sessions following COVID-19 safety protocols. Pre-registration is encouraged, please visit www.connectcvrld.ca/lwmp to reserve your spot or call 250-871-6271 for assistance.

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12 pm – 2 pm

Comox Rec Centre, 1855 Noel Ave

October 8 - Courtenay

4 pm – 6 pm

CVRD Civic Room, 770 Harmston Ave

Questions?

Thank you for your interest in this important topic. If you have any questions about the options, or about how to participate, please contact us at engineering@comoxvalleyrd.ca or 250-334-6056.

We would also be pleased to set up an online meeting with Comox Business in Action. If this is something that you would like to coordinate with us, please have your staff contact Christianne Wile, Manager of External Relations at cwile@comoxvalleyrd.ca or 250-334-6066.

Sincerely,

K. La Rose

Kris La Rose, P.Eng.
Manager of Water and Wastewater Services
250-334-6083
klarose@comoxvalleyrd.ca

File: 5330-20/CVSS LWMP

September 11, 2020

LETTER FOR COMOX RESIDENTS

Dear:

Re: Public Consultation re: Comox Valley Sewer Service Planning

The Comox Valley Regional District (CVRD) is set to re-launch public consultations related to the long-term planning for the Comox Valley Sewer Service.

The Comox Valley Sewer Service provides the regional collection and treatment for raw sewage (wastewater) from Comox, Courtenay and K'ómoks First Nation. This system currently includes a sewer pipe located along Balmoral Beach (Willemar Bluffs) that is vulnerable to damage by waves, rocks and logs – and poses an environmental risk to the beaches and waters throughout Baynes Sound.

A long-term plan that will accommodate the community's growth and enable this at-risk pipe to be relocated is required. You're invited to weigh in on the options being considered and the significant tax/cost implications and risks inherent to each.

Project Background

The long-term sewer service plan the CVRD is working on is called a Liquid Waste Management Plan (LWMP) and public input is key to its successful delivery. This stage of the process is looking at conveyance options – the pipes and pump stations that collect and move wastewater to the treatment plant.

A short list of these options has been approved by the CVRD's Sewage Commission and is now under consideration. The CVRD launched public consultation on the shortlist in March 2020 but that was postponed due to COVID-19. The consultation plan has been revised to implement health and safety measures for public consultation during the pandemic.

How to Participate

Comox residents have additional reasons to pay attention to these options. Along with the other service members, Comox taxpayers will contribute to the cost of any upgrades. However, all potential routes will pass through downtown Comox which means an added burden of construction impacts for those moving through and living in this area

On September 14, we will relaunch consultation on the three shortlisted conveyance options for the location of new and upgraded pipes and pump stations. There are three ways to participate:

- **Complete the Online Survey:** Visit www.connectcvrld.ca/lwmp to learn about the three options and complete the survey. The survey will be live **from Sept. 14 - Oct. 12**. Results from this survey will be summarized for the Sewage Commission as they consider which option to pursue.

- Join a Lunch Hour Webinar: The project team will host an online info session on Zoom to explain the options and answer your questions before filling out the online survey. This session takes place on **September 30 from 12 pm – 1 pm** and registration is required. Please visit www.connectcvrld.ca/lwmp for more info and to register.
- **Attend an In-Person Info Session:** We will be hosting limited-size, in-person info sessions following COVID-19 safety protocols. Pre-registration is encouraged, please visit www.connectcvrld.ca/lwmp to reserve your spot or call 250-871-6271 for assistance.

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Comox Rec Centre, 1855 Noel Ave

October 7 - Comox

12 pm – 2 pm

Comox Rec Centre, 1855 Noel Ave

October 8 - Courtenay

4 pm – 6 pm

CVRD Civic Room, 770 Harmston Ave

Questions?

Thank you for your interest in this important topic. If you have any questions about the options, or about how to participate, please contact us at engineering@comoxvalleyrd.ca or 250-334-6056.

Sincerely,

Kris La Rose, CVRD
Manager of Water and Wastewater Services
250-334-6083
klarose@comoxvalleyrd.ca

File:5330-20/CVSS LWMP

September 11, 2020

Sent via email only: Email

LETTER FOR STAKEHOLDERS

Dear: Contact Name,

Re: Public Consultation re: Comox Valley Sewer Service Planning

The Comox Valley Regional District (CVRD) is set to re-launch public consultations related to the long-term planning for the Comox Valley Sewer Service.

The Comox Valley Sewer Service provides the regional collection and treatment for raw sewage (wastewater) from Comox as well as Courtenay and K'ómoks First Nation. This system currently includes a sewer forcemain located along Balmoral Beach (Willemar Bluffs) that is vulnerable to damage by waves, rocks and logs – and poses an environmental risk to the beaches and waters throughout the Comox Estuary, Point Holmes and Goose Spit coastline, as well as Baynes Sound. Other sections of the sewer forcemain run along the Comox Harbour foreshore – and while their condition is sound, it is the long-term goal to remove them from this sensitive area.

A long-term plan that will accommodate the community's growth and improve protection of the environment is required. We are reaching out to your organization because of the urgent need to take action on a solution that will allow us to safely and effectively manage sewage, reducing risks to the environment.

Project Background

The CVRD is working on a Liquid Waste Management Plan (LWMP) and public input is key to its successful delivery. This stage of the process is looking at conveyance options – the pipes and pump stations that collect and move wastewater to the treatment plant.

A short list of these options has been approved by the CVRD's Sewage Commission and is now under consideration. The CVRD launched public consultation on the shortlist in March 2020 but that was postponed due to COVID-19. The consultation plan has now been adapted, and it's time to restart. The urgency around the Balmoral Beach sewer forcemain only increases as time passes and we are hopeful you will reach out to your community contacts and encourage participation.

How to Participate

On September 14, we will relaunch consultation on the three shortlisted conveyance options for the location of new and upgraded pipes and pump stations. There are three ways to participate and we hope you will share this information among your networks:

- **Complete the Online Survey:** Visit www.connectcvr.ca/lwmp to learn about the three options and complete the survey. The survey will be live **from September 14 - October 12**. Results from this survey will be summarized for the Sewage Commission as they consider which option to pursue.

- **Join a Lunch Hour Webinar:** The project team will host an online info session on Zoom to explain the options and answer your questions before filling out the online survey. This session takes place on **September 30 from 12 pm – 1 pm** and registration is required. Please visit www.connectcvrld.ca/lwmp for more info and to register.
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4 pm – 6 pm

CVRD Civic Room, 770 Harmston Ave

Questions?

Thank you for your interest in this important topic. If you have any questions about the options, or about how to participate, please contact us at engineering@comoxvalleyrd.ca or 250-334-6056.

Sincerely,

K. La Rose

Kris La Rose, P.Eng.

Manager of Water and Wastewater Services

250-334-6083

klarose@comoxvalleyrd.ca

File: 5330-20/CVSS LWMP

September 11, 2020

LETTER FOR AREA B RESIDENTS

Dear: «Owner_1»«Owner_2»,

Re: Public Consultation re: Comox Valley Sewer Service Planning

The Comox Valley Regional District (CVRD) is set to re-launch public consultations related to the long-term planning for the Comox Valley Sewer Service.

The Comox Valley Sewer Service provides the regional collection and treatment for raw sewage (wastewater) from Comox as well as Courtenay and K'ómoks First Nation. This system currently includes a sewer pipe located along Balmoral Beach (Willemar Bluffs) that is vulnerable to damage by waves, rocks and logs – and poses an environmental risk to the beaches and waters throughout Baynes Sound.

A long-term plan that will accommodate the community's growth and enable this at-risk pipe to be relocated is required. You're invited to weigh in on the options being considered.

Project Background

The long-term sewer service plan the CVRD is working on is called a Liquid Waste Management Plan (LWMP) and public input is key to its successful delivery. This stage of the process is looking at conveyance options – the pipes and pump stations that collect and move wastewater to the treatment plant.

A short list of these options has been approved by the CVRD's Sewage Commission and is now under consideration. The CVRD launched public consultation on the shortlist in March 2020 but that was postponed due to COVID-19. The consultation plan has been revised to implement health and safety measures for public consultation during the pandemic.

What does this mean for my property?

While you may not live within the boundaries of these communities, or pay into the sewer service, we are inviting you to participate in the public consultation process because all three options under consideration include a proposed sewer pipe to be constructed in the Lazo Road area. We expect residents will have questions about traffic, noise and other construction impacts. We also know the protection of groundwater is of critical importance, in particular for residents around Lazo Road who rely on wells for their drinking water supply.

The CVRD conducted geotechnical investigatory work over the summer that has helped us to better understand ground conditions in the area. Before moving forward with any option it is important we confirm that the project won't impact these resources. The CVRD will continue to communicate with

homeowners about the outcomes of this investigatory work. Once data from this work is analyzed, all reports about ground conditions and groundwater will be made available to the public.

How to Participate

On September 14, we will relaunch consultation on the three shortlisted conveyance options for the location of new and upgraded pipes and pump stations. There are three ways to participate:

- **Complete the Online Survey:** Visit www.connectcvrld.ca/lwmp to learn about the three options and complete the survey. The survey will be live **from September 14 - October 12**. Results from this survey will be summarized for the Sewage Commission as they consider which option to pursue.
- **Join a Lunch Hour Webinar:** The project team will host an online info session on Zoom to explain the options and answer your questions before filling out the online survey. This session takes place on **September 30 from 12 pm – 1 pm** and registration is required. Please visit www.connectcvrld.ca/lwmp for more info and to register.
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4 pm – 6 pm

CVRD Civic Room, 770 Harmston Ave

Questions?

Thank you for your interest in this important topic. If you have any questions about the options, or about how to participate, please contact us at engineering@comoxvalleyrd.ca or 250-334-6056.

Sincerely,

K. La Rose

Kris La Rose, P. Eng.
Manager of Water and Wastewater Services
250-334-6083
klarose@comoxvalleyrd.ca

APPENDIX 5 – Groundwater Webinar – Letter, Map and Infosheet

File: 5330-20/CVSS LWMP

October 20, 2020

[REDACTED]

Dear: [REDACTED],

Re: Webinar Invitation: Lazo-Area Groundwater and Sewer Planning

The Comox Valley Regional District (CVRD) is completing public consultation on a shortlist of conveyance options for the future of the Comox Valley Sewer Service. These options – for the pumps and pipes that move liquid waste to the sewage treatment plant on Brent Road – all propose new infrastructure through the Lazo Hill area.

During consultation events earlier this month, we heard specifically about potential impacts and/or mitigation measures regarding groundwater in the Lazo Area. We agree with comments we've received that protection of groundwater must be a top priority and we would like to take the time to provide more information and collect further comment on this issue.

To provide more opportunity for this discussion, we will be hosting an online webinar, using Zoom, to share information about groundwater investigations in the area and how this work is informing planning and design. We will also be able to answer questions from attendees. If you have questions or would like to learn more about this topic, you're invited to join us:

Groundwater & Sewer Planning Webinar

November 5, 4:30-5:30 pm

To register, email communications@comoxvalleyrd.ca and provide your name and email address.

A few more important details:

- Pre-registration is required (use email above)
- Questions can be emailed in advance, or posted using the chat function during the webinar
- The recorded webinar will be posted to the CVRD webpage after the event is complete

The comments we receive at this meeting will be included in the public consultation results that will help to inform the CVRD's Sewage Commission about a preferred option. Staff will bring forward a recommendation in late 2020/ early 2021 and an Alternative Approval Process will likely be held in 2021 to approve borrowing so that work can begin as soon as possible on a new conveyance system.

Project Background

The CVRD is undertaking a Liquid Waste Management Plan process (LWMP) for the Comox Valley Sewer Service – and public input is key to creating a successful long-term plan. A high-priority concern for the CVRD is the need to relocate the ageing sewer pipe on Balmoral Beach that is vulnerable to damage by waves, rocks, and logs and creates an environmental risk for our beaches and waters. As part of the LWMP process, a short list of new conveyance options (pipes and pump stations) has been approved by the CVRD's Sewage Commission and is now under consideration.

Questions?

Thank you for your interest in this important topic. If you have any questions, please contact us at engineeringservices@comoxvalleyrd.ca or 250-334-6083.

Sincerely,

K La Rose

Kris La Rose, P.Eng.
Senior Manager of
Water/Wastewater Services

Lazo tunnel – approximate alignment



Sewer Planning and Groundwater

Assessment for Tunneling InfoSheet

Protecting groundwater and wells

As part of a technical assessment for regional sewer system improvements in the Comox Valley, the Comox Valley Regional District (CVRD) is undertaking geotechnical investigatory work and hydrogeological data assessment in the Lazo Road and Comox Hill areas. The results of this work will provide information about ground conditions and groundwater levels to help determine viable options for relocating the ageing sewer pipe at Balmoral Beach (Willemar Bluffs), which is at a high risk of failure.

The planning process

The CVRD is in the process of developing a Liquid Waste Management Plan (LWMP) for the Comox Valley Sewer Service, which currently services Courtenay, Comox and K'ómoks First Nation. A high-priority concern is the need to relocate the ageing sewer pipe on Balmoral Beach that is vulnerable to damage by waves, rocks, and logs and creates an environmental risk for our beaches and waters.

Three options for conveyance (pipes and pump stations that move wastewater to the treatment plant on Brent Road) have been shortlisted. Two of those options include tunneling through Comox Hill and Lazo Road hill. All three options are undergoing further technical assessment.

Protecting groundwater

The CVRD recognizes that the protection of groundwater is of critical importance, in particular for residents around Lazo Road who rely on wells for their drinking water supply. Before moving forward with any option it is important we confirm that the project won't impact these sources.

- **External Experts:** The project team is working closely with local contractor GW Solutions to understand the aquifer in the area and highlight any possible challenges, and with WSP engineering to develop a design that will protect groundwater.
- **Investigations:** WSP is also undertaking geotechnical investigations with a first phase of exploratory boreholes drilled in June 2020 and a second phase in August 2020. As part of these phases, piezometers have been installed to monitor groundwater levels.

The information collected from onsite assessment and external experts will inform the project team of ground conditions and water locations, allowing for a plan to be developed that protects existing resources.

Questions? Please get in touch:

Phone: 250-334-6000

Email: engineeringervices@comoxvalleyrd.ca



Drilling equipment like this will be used to assess geotechnical conditions and groundwater in the area

COMING UP NEXT

A public engagement period will be open in September to collect feedback on the conveyance options that are currently being considered. All CVRD residents are invited to provide their feedback and comments at www.connectcvr.ca/lwmp

The CVRD will also continue to communicate with homeowners about the outcomes of this investigatory work. Once data from this work is analyzed, any reports regarding ground conditions and groundwater will be made available to the public.



comoxvalleyrd.ca   

APPENDIX 6 – Online Survey

Help shape the future of our Sewer Service

Connect CVRD

Plunging in: Reviewing Options

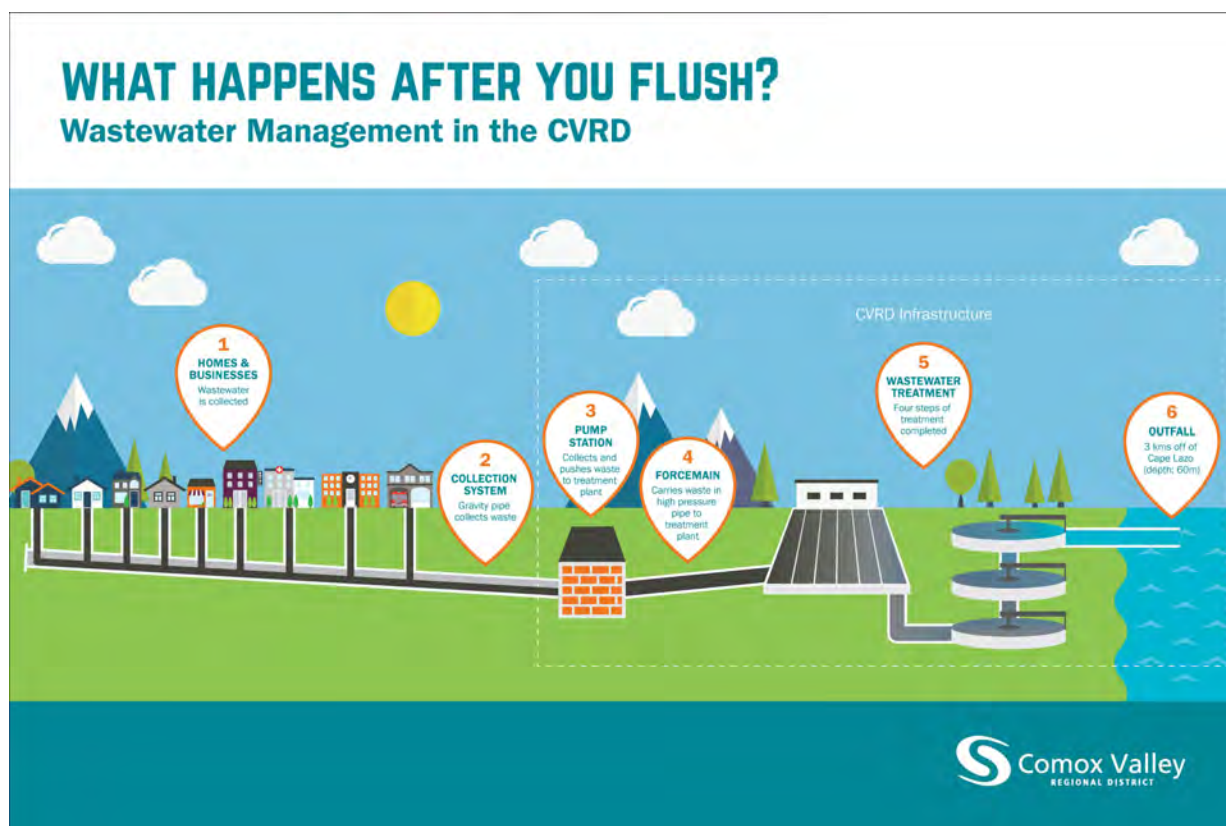
A critical part of the Comox Valley's sewer service is the 'conveyance system' – the series of pipes and pump stations that moves raw sewage (wastewater) to the treatment plant for processing.

Making a long-term plan for this system is critical to reducing environmental risks that currently exist along Willemar Bluffs (Balmoral Beach). It's also important that we design and build infrastructure that will serve the community for the long term. Any plan has an effect on the community—like costs to the taxpayer, as well as traffic, noise and other construction impacts – and while we understand there will be impacts, addressing the environmental risk and building for future growth is required. Leaving it 'as is' is not an option.

The cost estimates included in this survey are at a class C level, which means the project is at a preliminary design phase. Cost estimates at this stage are based on current market conditions. When a preferred option is chosen, the project will enter the next stage, the detailed design phase, at which point costs will be further refined.

A shortlist of options has been identified based on stakeholder and public feedback collected in January 2019. Each of these options presents its own challenges and opportunities and we want to know how you feel about the potential impacts.

Note: All survey responses remain anonymous.



Help shape the future of our Sewer Service

Connect CVRD

About You

Answers to this survey are anonymous. The below questions help us understand communities of interest.

Are you a?

(Choose all that apply)

- ☐ Resident
- ☐ Business Owner
- ☐ Visitor

Which community do you live in?

(Choose any 1 options) (Required)

- ☐ Courtenay
- ☐ Comox
- ☐ Cumberland
- ☐ Area A
- ☐ Area B
- ☐ Area C
- ☐ Other

Please proceed to questions/overview of three shortlisted options. We'll ask about the benefits and risks to each to determine what is most important to you.

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Connect CVRD

Option 1: Overland Forcemain

Overview:

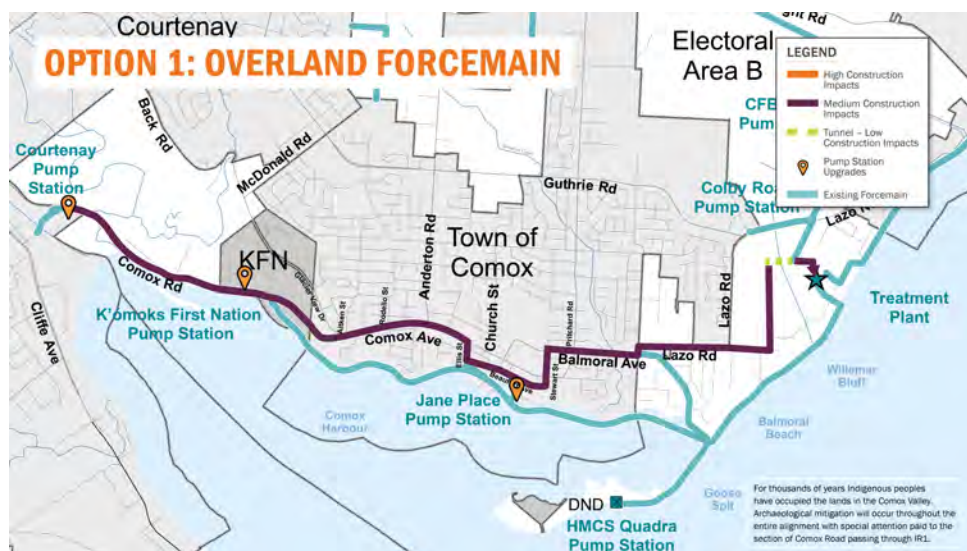
This option would see a trench dug along existing roadways, with a new pipe installed between the Courtenay Pump Station and the sewage treatment plant (see image below for route). This means installing pipe up and over the Comox Road and Lazo Road hills. It also includes:

- Replacement of the Courtenay Pump Station to accommodate the high-pressure pumps needed to push wastewater up over the two hills
- Upgrades to the K'ómoks First Nation and Jane Place pump stations
- Tunneling beneath the Lazo Marsh

*Our engineering consultants are currently reviewing whether this option could be delivered in phases.

Costs (Class C Estimate):

- Cost to Build: \$65M
- Cost to Run and Maintain (30-Year): \$17M
- Cost Per Household: \$240/household for 20 years



[VIEW LARGER IMAGE](#)

Route Impacts

The proposed route for Option 1 would follow Comox Road through K'ómoks First Nation IR1 land and into the Town of Comox, where it would continue along Comox Ave, turning south on Ellis, then east on Beaufort Avenue, north on Stewart St, and then east on Balmoral and Lazo Road, and up Moreland Road to connect to the treatment plant on Brent Road.

Anticipated construction impacts include:

- **Medium impact:** The entire construction route would see single lane alternating traffic at multiple locations through route.
- **Archaeological Mitigation:** Along the entire alignment but especially on Comox Road through IR1.
- **Low impacts:** Tunnelling in Lazo Marsh has the potential for increased traffic, noise in surrounding areas.

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Benefits for Option 1: Overland Forcemain

The project team has identified these benefits to Option 1: Overland Forcemain:

Rank the BENEFITS below from most important to you (1) to least important (2)

(Rank each option)

_____ Lower risk construction approach: 'Cut and cover' (digging trench, laying pipe, then covering) is a standard construction practice and more predictable.

_____ Removes foreshore pipe: Some public feedback has indicated a preference for removing the foreshore pipe along the Comox estuary, though technical studies show there is 15-20 years remaining in the pipe.

Are there other benefits – or positives – that should be considered for this option? What do you like about it?

Challenges for Option 1: Overland Forcemain

These are some of the challenges and risks for Option 1: Overland Forcemain:

Rank the CHALLENGES/RISKS below from most concerning to you (1) to least concerning (5)

(Rank each option)

_____ New pump station: A new Courtenay pump station may be required to accommodate higher pressure.

_____ Higher cost to run: Pushing so much volume up and over the two hills requires high-powered pumps that are more challenging and costly to operate.

_____ Higher lifecycle costs: Increased pressure and high energy has long-term cost and maintenance impacts.

_____ Addressing groundwater concerns: Managing groundwater through Comox Hill and Lazo Hill areas to ensure there is no impact to groundwater levels and individual wells.

_____ Roadway construction: Largest overall construction footprint and most traffic disruption over time, because all sections will include road work and excavation along Lazo and Balmoral roads in Area B could have more impact to vegetation in that area

Are there other challenges or risks that we should be considering for this option?

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Option 2: Tunnel Forcemain

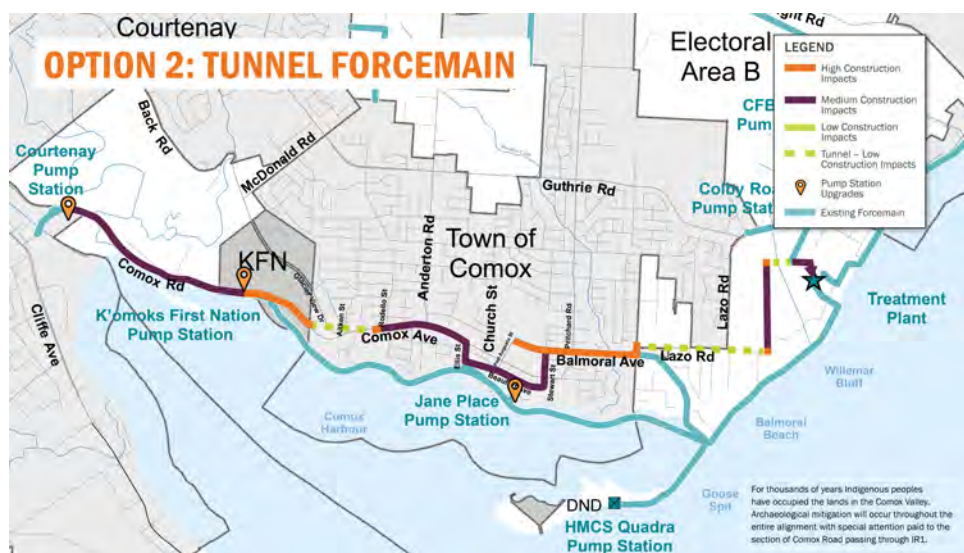
Overview:

This option combines 'cut and cover' construction (trenching) with directional drilling (a type of tunneling). The trench would be dug, with pipe installed, along existing roadways for much of the route, but tunneling would be used to go through rather than over the Comox and Lazo Road hills. It also includes:

- Upgrades to all three pump stations on the route: Courtenay, K'ómoks First Nation and Jane Place.
- Tunneling beneath the Lazo Marsh.

Cost (Class C Estimate):

- Cost to Build: \$58M
- Cost to Run and Maintain (30-Year): \$13M
- Cost Per Household: \$210/household for 20 years



[VIEW LARGER IMAGE](#)

Route Impacts:

The proposed route for Option 2 would follow a similar route as Option 1 – however the work at Comox Hill and Lazo Hill would include tunneling, rather than trenches. This would mean reduced roadway work in those areas, but additional impacts in areas around the tunnel entry/exit locations.

Anticipated construction impacts include:

- **High impact:** Comox Road (Dyke Road) from K'ómoks First Nation pump station to the bottom of Comox Hill due to single lane alternating traffic for an extended period. Balmoral (from Port Augusta to Pritchard) and small sections at the top of Comox Hill and the end of Lazo and Moreland would see periods of local traffic only.
- **Medium impact:** Comox Road (Dyke Road) from Courtenay Pump Station to K'ómoks First Nation pump station and on Comox Ave, Ellis, Beaufort, Stewart, Moreland and Brent Road – single lane alternating as work progresses.
- **Archaeological Mitigation:** Along the entire alignment but especially along Comox Road through IR1.
- **Low impact:** Tunnel areas at Comox Hill, Lazo Hill and Lazo Marsh with Increased traffic, noise in surrounding areas.

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Benefits for Option 2: Tunnel Forcemain

The project team has identified these benefits for Option 2: Tunnel Forcemain:

Rank the BENEFITS below from most important to you (1) to least important (4)

(Rank each option)

_____ Lower operating costs: By tunneling through the two hills instead of pushing waste up and over, there is reduced pumping demands on the system, making it cheaper to operate.

_____ Lower lifecycle costs: This reduced demand is easier on equipment and the smaller pumps will be cheaper to replace when needed.

_____ Less construction footprint: While construction impacts would still occur, tunneled sections would mean reduced impacts around Comox and Lazo Hills.

_____ Removes foreshore pipe: Some public feedback has indicated a preference for removing the foreshore pipe along the Comox estuary, though technical studies show there is 15-20 years remaining in the pipe.

Are there other benefits – or positives – that we should be considering for this option?

Challenges for Option 2: Tunnel Forcemain

These are some of the challenges identified for Option 2: Tunnel Forcemain:

Rank the CHALLENGES/RISKS below from most concerning to you (1) to least concerning (4)

(Rank each option)

_____ Increased construction risk: Though preliminary assessments show favourable ground conditions, tunneling work introduces more risk to the construction phase.

_____ Addressing groundwater concerns: Managing groundwater along tunneled sections through Comox Hill and Lazo Hill to ensure there is no impact to groundwater levels and individual wells.

_____ Additional rights-of-way required: Because this route moves off already established road right-of-ways, new agreements would have to be negotiated with landowners.

_____ Additional laydown area: A portion of Comox Rd and Balmoral Rd (Stewart to Port Augusta) will be heavily impacted due to the need to assemble and lay down pipe before it is fed underground.

Are there other challenges or risks that we should be considering for this option?

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Option 3: Phased Tunnel Forcemain

Overview:

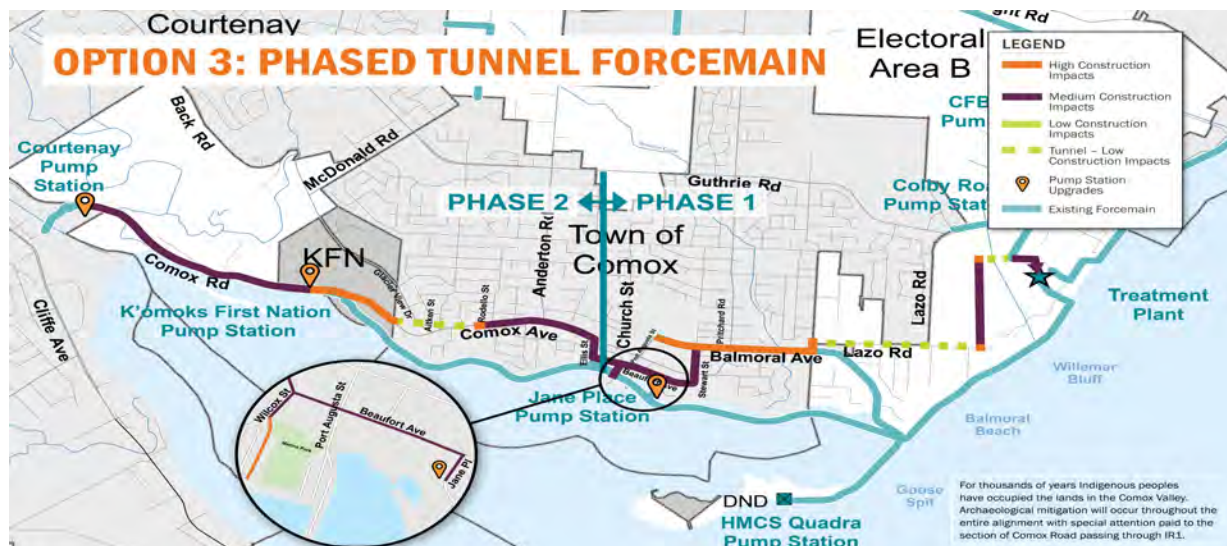
This option uses the combined trench-and-tunneling route of Option 2 but breaks the project into two phases. Phase 1 would include the stretch between Marina Park and the treatment plant. Phase 2 would replace the pipe between Courtenay Pump Station and Marina Park in 15-20 years. It also includes:

- Upgrades to all three pump stations on the route: Courtenay, K'ómoks First Nation and Jane Place
- A temporary line from a tie-in at Marina Park to the new forcemain on Beaufort Ave for 15-20 years until Phase 2 of the project is introduced
- A new line from Jane Place to new forcemain
- Lowest immediate cost to build
- Tunneling beneath the Lazo Marsh

Phase 1 Cost (Class C Estimate):

- Cost to Build: \$43M
- Cost to Run and Maintain: \$13M
- Cost Per Household: \$160/household (until Phase 2)

Phase 2 Capital Cost (to be implemented in 15-20 years): \$18M



[VIEW LARGER IMAGE](#)

Route Impacts:

The proposed route for Option 3 is the same as Option 2 – however only the work between Marina Park and the Sewage Treatment Plant would be undertaken at this time, with construction on the remainder of the route to occur in 15-20 years. Construction in the first phase would be focused between Marina Park, Jane Place/Beaufort Ave, Balmoral Ave and Lazo/Brent Roads. Construction impacts for Phase 1 include:

- **High impact:** Balmoral (from Stewart to Pritchard) and small sections at the end of Lazo and Moreland would see periods of local traffic only. Marina Park parking lot would see high impact with limited disruption to boat ramp access.
- **Medium impact:** Wilcox, Beaufort, Jane Place and Moreland Ave would see single lane alternating traffic.
- **Low impacts:** Lazo/Brent Road areas: Increased traffic, visible and active equipment, noise in surrounding areas.

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Benefits for Option 3: Phased Tunnel Forcemain

The project team has identified these benefits to Option 3: Phased Tunnel Forcemain:

Rank the BENEFITS below from most important to you (1) to least important (5)

(Rank each option)

_____ Addresses urgent environmental risk: The at-risk pipe at Willemar Bluffs would be replaced quickest as part of the first, immediate, phase of construction.

_____ Reduced short term capital cost: By splitting the work into phases, a significant portion of cost is postponed/spread out over a longer timeframe with more users to contribute.

_____ Lower operating and lifecycle costs: Reduced pressure requirements means it costs less to operate.

_____ Maximizes life of existing infrastructure: The existing foreshore pipe in Comox estuary – which has been assessed and is still in good condition – remains in place for another 15-20 years.

_____ Reduced construction impact: By completing half of the route at a time, the short-term construction impact is smaller.

Are there other benefits for this option that we should be considering?

Challenges for Option 3: Phased Tunnel Forcemain

These are some of the challenges and risks for Option 3: Phased Tunnel Forcemain:

Rank the below CHALLENGES/RISKS from most concerning to you (1) to least concerning (5)

(Rank each option)

_____ Foreshore pipe remains along the Comox Estuary: While condition assessment shows this pipe in good condition, some community members want to see it removed.

_____ Challenging connection at Marina Park: To complete a challenging connection between the new system and existing, there will be high construction impacts at Marina Park, limited impact to boat ramp access, and medium impacts along Wilcox Street

_____ Increased construction risk: Though preliminary assessments show favourable ground conditions, tunneling work introduces more risk to the construction phase.

_____ Addressing groundwater concerns: Managing groundwater along tunneled sections through Comox Hill and Lazo Hill to ensure there is no impact to groundwater levels and individual wells.

_____ Additional laydown area required: Because the pipe needs to be assembled before feeding underground, long stretches of roadway will need to be used as 'laydown' areas – including a portion of Balmoral between Stewart and Port Augusta.

Are there other challenges or risks that we should be considering for this option?

APPENDIX 7 – Online Survey Responses

Plunging in: Reviewing Options

SURVEY RESPONSE REPORT

11 September 2020 - 13 October 2020

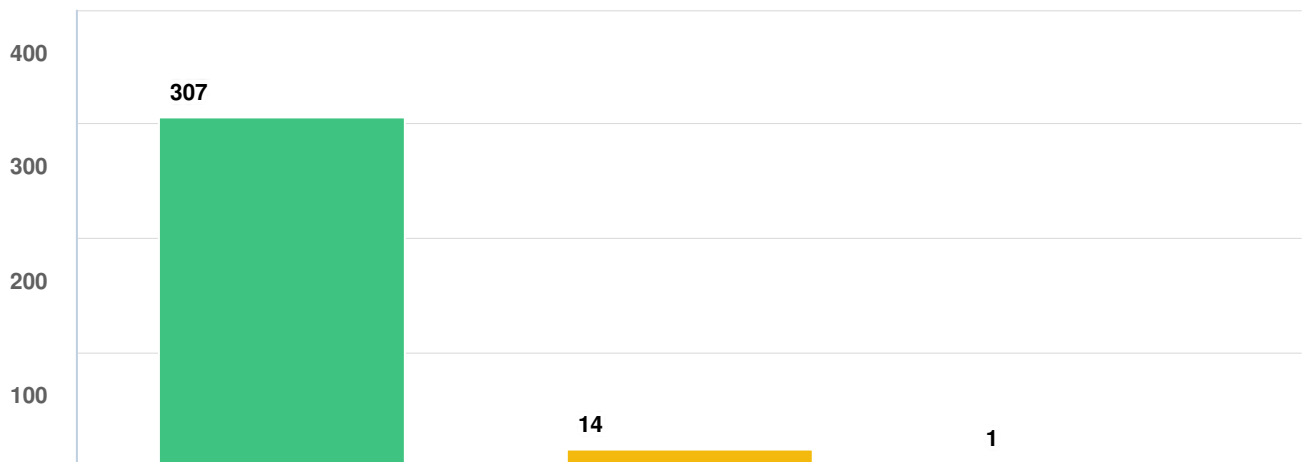
PROJECT NAME:

Help shape the future of our Sewer Service



SURVEY QUESTIONS

Q1 Are you a?



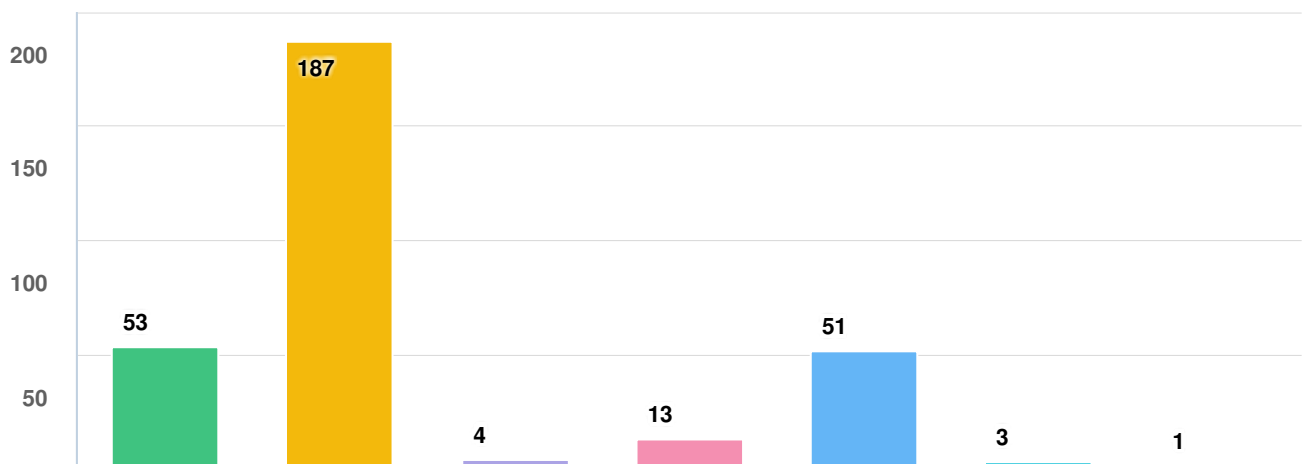
Question options

● Resident ● Business Owner ● Visitor

Optional question (312 response(s), 0 skipped)

Question type: Checkbox Question

Q2 Which community do you live in?



Question options

● Courtenay ● Comox ● Cumberland ● Area A ● Area B ● Area C ● Other

Mandatory Question (312 response(s))

Question type: Checkbox Question




Q3 Rank the BENEFITS below from most important to you (1) to least important (2)

OPTIONS	AVG. RANK
Lower risk construction approach: 'Cut and cover' (digging trench, laying pipe, then covering) is a standard construction practice and more predictable.	1.40
Removes foreshore pipe: Some public feedback has indicated a preference for removing the foreshore pipe along the Comox estuary, though technical studies show there is 15-20 years remaining in the pipe.	1.58

Optional question (264 response(s), 48 skipped)
Question type: Ranking Question

Q4 Are there other benefits – or positives – that should be considered for this option? What do you like about it?

Anonymous 9/14/2020 11:28 AM	More cost effective
Anonymous 9/14/2020 12:03 PM	Ability to upgrade roads to accommodate multi-use path; decommissioning of pipe within foreshore.
Anonymous 9/14/2020 05:17 PM	Keep the pipe for at least 10 yrs, with annual assessments.
Anonymous 9/14/2020 08:31 PM	Since we live in Area C and already have had the expense of setting up and maintaining our own household sewage treatment, I do not believe this will effect us in costs or inconvenience,! Hoping I am correct! Therefore my opinion on this project is probably moot ! Thank you
Anonymous 9/14/2020 10:09 PM	You have a bias questionnaire. Indicating "low risk" in the options creates bias. " though studies show there is 15-20 years remaining" also creates bias. This survey is null and void.
Anonymous 9/15/2020 10:01 AM	Predictable
Anonymous 9/15/2020 04:18 PM	proven new technology would make these options unnecessary and lower the price by 80% and could be completed by the 2022 start date, totally

	environmentally safe!
Anonymous 9/16/2020 12:21 AM	Phases
 9/16/2020 11:32 AM	Traffic concerns during construction.
Anonymous 9/16/2020 11:44 AM	Overland more manageable in case of problems.
Anonymous 9/16/2020 01:12 PM	Pipe is buried and not exposed to elements. Hopefully new pipe will be large enough to accommodate population growth for next 50 years.
Anonymous 9/16/2020 02:33 PM	Eventually we are going to need to move the line from the foot of the foreshore. We should do that to reduce risk, but also not to spend more money on the foreshore line, as that is eventually going to be money wasted.
Anonymous 9/16/2020 02:45 PM	Don't go cheap. Put in an upgrade that will last for at least 40 years to accommodate the influx of people into the valley. As we can see, our new hospital will soon be too small. Plan well.
 9/16/2020 04:14 PM	Having been involved in the construction of the sewer main from the Goose Spit to the Treatment plant, I think removal of the foreshore pipe is a bad idea. It. Once the pipe is not in use it should be filled and left in place.
Anonymous 9/16/2020 05:55 PM	The construction impact on residents who aren't serviced by the project is minimal
 9/17/2020 10:17 AM	Lowers construction impact along Balmoral which is critical access for locals to Goose spit and Point Holmes
Anonymous 9/17/2020 12:42 PM	I like using right of ways for services ... more stability!
Anonymous 9/17/2020 12:44 PM	I fail to see why we would put a forced main on land period. Have we considered a trenched marine pipe line. I worked a little in the offshore oil and gas area and today there are amazing modern systems of laying continuous large diameter pipe from reel barges. These pipes can withstand high pressure and are of composite construction. Trenching the pipe below the surface where required is also common and has lots of history. Disturbance to sea bed and fish habitat is small and recovery is fast. I really think that the eternal desire to dig trenches, while no doubts provides lots of jobs, is old school. !
Anonymous 9/17/2020 01:28 PM	Removing all pipes and not constructing any further pipes on the foreshore or below the high water mark should be a priority for the future.

Anonymous

9/17/2020 07:44 PM

Gets the pipe off the beach.

Anonymous

9/18/2020 01:44 PM

nothing, really. but do something to solve the problem.

Anonymous

9/18/2020 02:45 PM

no new pump house beyond jane place pmp house. upgrade both pump houses to make sure air quality remains as is or better than recommended by authorities

Anonymous

9/18/2020 03:18 PM

Upgrades Courtenay pump station and seems fairly standard construction

Anonymous

9/18/2020 06:03 PM

Protection of the environment BEFORE the foreshore pipe fails is the highest priority.

Anonymous

9/18/2020 07:02 PM

Since the community is now upgrading sewer systems, this would be a good time to bring in outlying areas that are not connected.

Anonymous

9/19/2020 08:33 AM

Lazo Rd to Brent Rd . To sewer plant ?? Where is that option ? Twin foreshore pipe but do it right this time not as cheap as possible !!

Anonymous

9/19/2020 08:58 AM

I am concerned about construction in sensitive habitat including werlands and sand dunes.

 9/20/2020 10:37 AM

Presuming that the new pipe will be in the center of Comox (Dike) Road (where I think that it should be), the 'dike' could be enhanced for climate change mitigation. it is indeed unfortunate that if this is the case, that the recent resurfacing of Dike Road will have been an a waste of Provincial money.

Anonymous

9/20/2020 04:51 PM

avoids using natural habitat areas for infrastructure and ties it in with more "industrial" / developed areas of the town.

Anonymous

9/20/2020 06:39 PM

This will directly affect us, since it runs along the road that we live on, However, we do like the low-risk construction approach. NOTE: the way this survey is constructed, we haven't yet had a chance to see the alternatives !!!!!!!!!!!

Anonymous

9/22/2020 02:52 PM

It would be assumed that commenting on Jane Place Station to the treatment plant there is the advantage of retaining the foreshore pipe as a viable backup to the main sewage line

Anonymous

9/23/2020 10:33 AM

I worry about any impact on Lazo marsh

Anonymous

9/23/2020 12:34 PM

No

Anonymous

9/24/2020 09:23 AM

Minimize environment impacts of future pipe breaks/failures; pipe is easily accessible for repairs and mitigation.

Anonymous

9/24/2020 01:26 PM

It will allow the utilization of local contractors (i.e., benefits local economy). Option 2 would require bringing in a HDD contractor from the mainland at considerable expense. Option 1 has the lowest engineering risk (i.e., less chance of major cost overruns). Option 1 gets the job done the fastest allowing the community to take advantage of historically low interest rates over the next several years.

Anonymous

9/24/2020 02:21 PM

If as a community we are concerned about the risk of sewage spillage and pollution of the estuary then we should be minimizing risk of any spill by removing pipe running by the estuary. However if this is done at a later date we may be able to better identify other environmental risks and development considerations.

Anonymous

9/25/2020 09:35 AM

more harm would be done by removing the old pipe. Empty it and leave it alone.

Anonymous

9/25/2020 05:12 PM

I don't like this option at all. It is number 3 on my list of options. Too much money.

Anonymous

9/26/2020 12:41 PM

Not much

Anonymous

9/27/2020 03:47 PM

Least impact for KFN neighbours. Projected cost for 15-20 years in the future as per option 3 can not be known. A dangerous gamble for the future of the estuary.

Anonymous

9/28/2020 09:12 AM

Takes pipe away from the ocean. Seems like straightforward process.

Anonymous

9/28/2020 07:50 PM

Having sewage line moved inland to avoid any risk of a spill into the estuary finally.

Anonymous

9/29/2020 11:03 AM

Minimal impact to residential areas, ie, Jane Place Pumping Station. Removing the JP Pumping Station entirely would be preferable. It really shouldn't be at this location and should never have been installed there in the first place.

Anonymous

9/29/2020 08:10 PM

Essentially an upgrade so predictable cost and outcome.

Anonymous

10/01/2020 01:17 PM

I would prefer protection of the foreshore pipe and including a walkway.

Anonymous

Bury telephone and power lines. Remove telephone and power poles. Retain

10/01/2020 01:54 PM

4 way traffic stops. Control pedestrian traffic across streets. Current practice of free pedestrian flows at intersection encourages 'stroller' pedestrian flow. Further, current practice has pedestrian flow in spurts rather than group especially slowing automobiles making right or left turns.

Anonymous

10/02/2020 07:15 AM

Nothing. Why not take everything South. Instead of spending all of this money to transfer sewage to a sewer treatment plant that may not have a longer life span - why not take invest the money in going South. It is mostly downhill and will all of the development that way - would that not make more sense? You will need something other than the current treatment plant to handle the volume will you not?

Anonymous

10/03/2020 09:07 AM

What pipeline control measures are being considered to capture potential leaks, process to ensure long term integrity of the pipe, what happens if there is a break?

Anonymous

10/05/2020 08:44 AM

If there is a leak, it will be far easier to detect. I would call it completely irresponsible to consider any below-ground option due to potential to sicken a nearby well user.

Anonymous

10/05/2020 10:26 AM

A two level ranking system seems a strange way to gauge support. What about other costs?

Anonymous

10/05/2020 01:53 PM

I like the removal of the foreshore pipe,

Anonymous

10/06/2020 04:55 PM

Please look at changing the route. Take the pipe from Comox Ave, Tunnel "North" on Anderton Rd, "East" on Guthrie Road to Lazo Rd straight to the Plant. Reduce going into green areas, such as Brooklyn Creek Park, or MacDonald Wood Park. Or the swamp east of Morland Road.


10/07/2020 07:15 AM

I have a question.. what happens to the spetic tanks that we have in our backyards? Who pays for removing it and filling in the hole? My spctic tank is working great for me. I pay every 3 years to have it emptied.

Anonymous

10/07/2020 12:58 PM

This option is the best of the three for the long-term sewage problems.

Anonymous

10/08/2020 03:09 PM

Single lane alternating traffic, without totally closing off the streets where the pipe will be laid.

Anonymous

10/08/2020 03:39 PM

Low impact because it can be staged along the route and no tunneling beyond the marsh would be faster and easier to do.

Anonymous

10/09/2020 07:43 AM

Why are we not building on the route to Croteau Beach and then moving inland

Anonymous

10/09/2020 01:03 PM

Benefit of completing project all at once

Anonymous

10/09/2020 02:23 PM

Leave the pipe in place

Anonymous

10/10/2020 12:19 AM

A break In the forcemain, (caused by poor pipe joints, defective materials or seismic activity) Would be more easily detected and repaired....thus providing better protection for local wells And the Quadra Sands aquifer.. Would potentially provide an opportunity to install a much needed bike path running on top of the forcemain on Lazo road...

Anonymous

10/10/2020 11:45 AM

That all urban properties not currently connected to the system, get connected.

[REDACTED]

10/11/2020 01:53 PM

If there truly is another 15 years of trustworthy pipe, then it seems inefficient to remove the pipe--which MUST be removed when it is no longer viable in the estuary.

Anonymous

10/11/2020 03:07 PM

If it is decided not to remove the foreshore pipe, there should be a plan to discontinue its use, despite the remaining life in the pipe.

Anonymous

10/12/2020 10:15 AM

removing danger of effluent spill in open ocean affecting all wildlife and shellfish industry

[REDACTED]

10/12/2020 09:15 PM

Getting the sewage infrastructure on a 100% overland route (we live on that route suggested in option 1!!), will mitigate any long term problems, if we encounter THAT somewhat overdue quake! If the system was in the Bay, fixing it could be very troublesome and exceedingly expensive. Looking long term, this option 1 HAS to be the solution.

Optional question (65 response(s), 247 skipped)

Question type: Essay Question

Q5 Rank the CHALLENGES/RISKS below from most concerning to you (1) to least concerning (5)

OPTIONS	AVG. RANK
Addressing groundwater concerns: Managing groundwater through Comox Hill and Lazo Hill areas to ensure there is no impact to groundwater levels and individual wells.	2.34
Higher cost to run: Pushing so much volume up and over the two hills requires high-powered pumps that are more challenging and costly to operate.	2.61
Higher lifecycle costs: Increased pressure and high energy has long-term cost and maintenance impacts.	2.65
Roadway construction: Largest overall construction footprint and most traffic disruption over time, because all sections will include road work and excavation along Lazo and Balmoral roads in Area B could have more impact to vegetation in that area	3.31
New pump station: A new Courtenay pump station may be required to accommodate higher pressure.	4.01

Optional question (273 response(s), 39 skipped)
Question type: Ranking Question

Q6 Are there other challenges or risks that we should be considering for this option?

Anonymous 9/14/2020 11:28 AM	Good for how many years?
Anonymous 9/14/2020 12:03 PM	commuter traffic
Anonymous 9/14/2020 09:52 PM	Habitat destruction in Lazo Marsh.
Anonymous 9/14/2020 10:09 PM	Oh probably.

Anonymous

9/15/2020 06:22 AM

Potential flooding and damage to the forcemain along Comox road due to sea level rise. Is relocating the Courtenay Pump Station further up river and running the forcemain under Lerwick/Guthrie an option?

Anonymous

9/15/2020 08:51 AM

Can you include a wildlife tunnel under Comox hill road?

Anonymous

9/15/2020 04:18 PM

investigating alternative solutions



9/16/2020 11:32 AM

Safety for ambulance and fire responses with construction.

Anonymous

9/16/2020 11:44 AM

Interference with kus kus sum project?

Anonymous

9/16/2020 01:12 PM

Pumping up over 2 hills will require high pressure , high volume pumps which will need a redundant system in case of Pump failure. The noise of these pumps and the noise of the back flow valves slamming shut has to be considered for near by residents. Larger pump stations have a larger foot print and the design of the station has to be considered to so it has minimal impact on the surrounding neighborhood. One of those impacts is the maintenance required so the pump stations can operate. The Courtenay pump station is constantly having work done and it is common to see several service vehicles outside it. It also had an electric chain hoist fastened to the beam on the outside which is used to remove the sewage pumps. This is in full public view and is not what a resident should be forced to look at.

Anonymous

9/16/2020 02:33 PM

not aware of any.



9/16/2020 04:14 PM

The prohibitive cost of construction on Comox Ave and Balmoral Ave, because of the existing infrastructure, traffic, ground conditions and disruption to residents. Having estimated and supervised some of the largest water and sewer projects in the valley in the 1980's including the Sewer you are replacing, I can see massive cost overruns.

Anonymous

9/17/2020 12:42 PM

My major concern is potential well water issues ...

Anonymous

9/17/2020 01:28 PM

Keeping the pipe and any future piping out of the ocean should be a priority.

Anonymous

9/17/2020 01:59 PM

Single lane traffic on Comox hill will result in increased traffic on Anderton Road

Anonymous

Poor air quality along Curtis Road.

9/17/2020 05:38 PM

Anonymous

overall and ongoing costs are a challenge

9/18/2020 09:08 AM

Anonymous

prospect of line breakage or seepage along Beaufort Ave, effect on residences below Beaufort, hill slippage, disturbance of stability during and after construction, effect on residences below Beaufort, effect on existing water line access, causing future breakage, leaks, to residences below Beaufort.

9/18/2020 01:44 PM

Anonymous

i would like to see your thorough risk management chart and mitigation action plans. Then maybe I can add to yours

9/18/2020 02:45 PM

Anonymous

Stay very close to the surface so leaks can be easily detected early and repaired before damage is too far advanced !

9/19/2020 08:33 AM

[REDACTED]

With a larger Courtenay pump station, why not eliminate the KFN & Jane Place pump stations for one closer to Lazo Hill? or Leave the Courtenay pump station as is (with replacement as necessary) and retro-fit the KFN pump station to accommodate the Comox Hill, replace the Jane Place pump station with a new one to accommodate the Lazo Hill. Replacing the Jane place pump station will move the line further from the shoreline.

9/20/2020 10:37 AM

Anonymous

The environment should be a top focus.

9/23/2020 03:37 AM

Anonymous

Climate change. There is no doubt that there will be major flooding of Dyke road and at some point in the future, there will be significant costs to raise the road. It would be insane not to fully consider the impact of future sea level rise.

9/24/2020 01:26 PM

Anonymous

With increasing population growth and discussion concerning the need for a potential additional bridge crossing of the estuary would this affect routing options for the pipe? Also if there is an additional bridge crossing in the future this may either contribute to traffic flow disruption or alternatively help accommodate re routing of traffic while the estuary construction phase is under way. This may be an argument for deferral of the replacement of pipe along the estuary.

9/24/2020 02:21 PM

Anonymous

too expensive in the long run

9/25/2020 05:12 PM

Anonymous

No

9/26/2020 12:41 PM

Anonymous

Unforeseen complications that could extend construction time and/or increase costs. Environmental implications of removing shoreline pipe.

9/28/2020 09:12 AM

Anonymous

9/28/2020 07:50 PM

The location of the treatment plant is far from optimal for the whole valley.

Anonymous

9/29/2020 11:03 AM

Minimal impact to residential areas, ie, Jane Place Pumping Station.
Removing the JP Pumping Station entirely would be preferable. It really shouldn't be at this location and should never have been installed there in the first place.

Anonymous

9/30/2020 09:16 PM

The archaeological impact is huge to both the cost & time if any middens are found along Comox Ave.

Anonymous

10/01/2020 04:42 PM

Power outages: generator reliability at lift station(s), enhance municipal vector truck capacities and number of them available for emergency call-outs.
Sewage dumping sites for vectors accessible / available 24/7 and as close as possible. Definitely an easily accessible (drive in and out) gravity manhole / main for vectors (to dump) to wastewater treatment plant would be ideal for emergencies.

Anonymous

10/05/2020 08:44 AM

Inconceivably - NONE of the options presented give much consideration to resident health. The potential affect on human-consumed groundwater is an incredibly serious problem that is discussed very little in available literature.

Anonymous

10/05/2020 10:26 AM

Risk to existing urban forest is of great concern to me. Construction impacts are not just in Area B.

Anonymous

10/05/2020 01:53 PM

going under Lazo Marsh could affect groundwater and wells if there is a rupture

Anonymous

10/06/2020 11:22 AM

We live near the treatment plant. We are on well water and are very concerned about potential leaks and problems with our well water.

Anonymous

10/06/2020 04:55 PM

Please look at changing the route, too many 90 degrees. Option: From Comox Ave, Tunnel "North" on Anderton Rd, "East" on Guthrie Road to Lazo Rd, straight to the Plant! Avoid 'through' Brooklyn Creek Park or MacDonald Wood Park.



10/07/2020 07:15 AM

I live across the Estuary and over the 13 years that I have been here, I see less and less water birds. Eagles want to built their nests but the noise and car run offs into the Estuary is taking away nature. Question.. which side of the road are the plans for digging and how does the growing traffic and run offs affect wildlife? I know its not relating to the pipeline but is there any studies done on car run offs into the Estuary?

Anonymous

10/07/2020 12:58 PM

If the Jane Place Pump Station must still remain, it should not be enlarged in height or in footprint and should be beautified in keeping with the residential area.

Anonymous

Why would the corridor on Lazo road not be used rather than disrupting

10/10/2020 12:19 AM

Morland ...there are some huge trees at the corner of Balmoral and Morland that this option would disrupt.

Anonymous

10/10/2020 11:45 AM

Urban properties not currently directly connected to the system should be connected due to the environmental risks of the current private systems in place.

Anonymous

10/11/2020 03:07 PM

How will this impact Marina Park and residential buildings along Beaufort? And all residences along the proposed overland route?

Anonymous

10/12/2020 10:15 AM

Damage to Lazo Marsh and impacts on all wildlife that depend on the Marsh.

Anonymous

10/12/2020 02:48 PM

Construction risks to vegetation, particularly old trees along the entire route.

10/12/2020 09:15 PM

If WE, the current occupants of the Comox Valley, are not the ones to deal with OUR shit, then who is?

Optional question (44 response(s), 268 skipped)

Question type: Essay Question

Q7 Rank the BENEFITS below from most important to you (1) to least important (4)

OPTIONS

AVG. RANK

Lower operating costs: By tunneling through the two hills instead of pushing waste up and over, there is reduced pumping demands on the system, making it cheaper to operate.	2.03
Lower lifecycle costs: This reduced demand is easier on equipment and the smaller pumps will be cheaper to replace when needed.	2.36
Less construction footprint: While construction impacts would still occur, tunneled sections would mean reduced impacts around Comox and Lazo Hills.	2.68
Removes foreshore pipe: Some public feedback has indicated a preference for removing the foreshore pipe along the Comox estuary, though technical studies show there is 15-20 years remaining in the pipe.	2.87

Optional question (272 response(s), 40 skipped)

Question type: Ranking Question

Q8 | **Are there other benefits – or positives – that we should be considering for this option?**

Anonymous

9/14/2020 04:47 PM

Lower pressure pumping is also less risk of pipe failure or leakage. Less pressure required for other pumping stations to tie in

Anonymous

9/14/2020 09:52 PM

Possibly less disruption to Lazo Marsh.

Anonymous

9/14/2020 10:09 PM

How about asking about the negatives instead of assuming option 2 only has positives vs option 1 only having negatives. This survey is awful.

Anonymous

9/15/2020 08:51 AM

Add a wildlife tunnel under roads

Anonymous

9/15/2020 04:18 PM

new technology



9/16/2020 11:32 AM

Future growth of the areas.

Anonymous

9/16/2020 01:12 PM

Cheaper than option 1. Less impact on residents during construction.

Anonymous

9/16/2020 02:33 PM

not aware of any.



9/17/2020 10:17 AM

Addition of biking trails where possible

Anonymous

9/17/2020 01:28 PM

Removing foreshore pipe is most important.

Anonymous

9/17/2020 05:38 PM

Poor air quality along Curtis Road.

Anonymous

9/18/2020 01:44 PM

none.

Anonymous


9/19/2020 07:54 AM

This appears to be the best solution, long term.

Anonymous

9/19/2020 08:33 AM

This survey is bullshit ! I am forced to make decisions by limiting my options !
After I make a choice I shouldn't be forced to choose a lesser degree of

	importance for an issue that is in my opinion of equal importance ! It makes it look like I agree with something I don't !
Anonymous 9/19/2020 08:58 AM	Less environmental disturbance means fewer potential problems.
 9/20/2020 10:37 AM	lower cost
Anonymous 9/22/2020 02:52 PM	Since tunneling will be deeper , this method will potentially have far greater negative impact on the water systems that feed the wells of people living between Lazo Road and the Bay.
Anonymous 9/24/2020 01:26 PM	The lower operating pressure and cost is a big plus!
Anonymous 9/24/2020 02:21 PM	Lower construction and life cycle costs are always good but while I would support removal of the foreshore pipe, if the existing infrastructure can be safely left in place, there may be advantage to defer this work so as to coordinate or take account of future development such as a third bridge crossing of the estuary which may be a reality within the existing lifespan of the pipe.
Anonymous 9/25/2020 05:12 PM	I like the cheaper cost. Smaller pumps I would think means less noise.
Anonymous 9/26/2020 12:41 PM	No
Anonymous 9/27/2020 03:47 PM	Though this plan protects the estuary, we have a concern for the higher impact on KFN community.
Anonymous 10/02/2020 07:15 AM	How does the drilling effect vibrations on homes ie: drywall cracking etc. A neighbour used a compactor once when finishing their driveway and it cracked a bunch of drywall and loosened tiles in the kitchen and bathroom. How many trees would be effected along Lazo Road?
Anonymous 10/02/2020 03:50 PM	Would like an option to comment NEGATIVELY re: diverting traffic to a quiet residential street (Donovan Drive) which already is a shortcut for Town of Comox Vehicles heading back and forth the works yard, as well as many non-local traffic.
Anonymous 10/05/2020 08:44 AM	Installing piping below ground will make leak detection much harder. Given the critical effect of a leak, why are tunneled options even being considered?
Anonymous 10/05/2020 10:26 AM	Can other areas where extensive tree roots are encountered be candidates for tunneling?

Anonymous

10/06/2020 04:55 PM

Please look at changing the route, too many 90 degrees. Option: From Comox Ave, Tunnel "North" on Anderton Rd, "East" on Guthrie Road to Lazo Rd, straight to the Plant! Avoid 'through' Brooklyn Creek Park or MacDonald Wood Park.

Anonymous

10/10/2020 12:19 AM

The route shown here is incorrect as the tunnels through Lazo do not follow established roadways but rather would go underneath private property...this should have been made clear to the public.

[REDACTED]

10/10/2020 11:33 AM

1)wells must NOT be impacted...2)you keep talking "ground water", this is different than aquifer that nobody has addressed, 3)why wasn't your hydrologist available at the meetings to ask direct questions to people attending info questions...IF in the future people in the well/septic field residences were forced to join this built sewage system can it more easily be done by this tunnelled method???

Anonymous

10/10/2020 11:45 AM

Other urban properties not currently directly connected can be joined.

[REDACTED]

10/11/2020 01:53 PM

The foreshore pipe MUST come out, but if there is truly 15-years of trustworthy life in the estuary pipe, it seems inefficient to remove it while it is still viable.

Anonymous

10/12/2020 02:48 PM

Reduced pumping pressure is very important to me.

[REDACTED]

10/12/2020 09:15 PM

All 2nd in my view.

Optional question (33 response(s), 279 skipped)


Question type: Essay Question

Q9 Rank the CHALLENGES/RISKS below from most concerning to you (1) to least concerning (4)

OPTIONS	AVG. RANK
Addressing groundwater concerns: Managing groundwater along tunneled sections through Comox Hill and Lazo Hill to ensure there is no impact to groundwater levels and individual wells.	1.93
Increased construction risk: Though preliminary assessments show favourable ground conditions, tunneling work introduces more risk to the construction phase.	2.46
Additional rights-of-way required: Because this route moves off already established road right-of-ways, new agreements would have to be negotiated with landowners.	2.54
Additional laydown area: A portion of Comox Rd and Balmoral Rd (Stewart to Port Augusta) will be heavily impacted due to the need to assemble and lay down pipe before it is fed underground.	3.01

Optional question (272 response(s), 40 skipped)
Question type: Ranking Question

Q10 Are there other challenges or risks that we should be considering for this option?

Anonymous 9/15/2020 06:22 AM	Could the tunnels just go under the existing right of way under Lazo road and Comox road/avenue Rather than cutting underneath the residential neighborhoods?
Anonymous 9/15/2020 04:18 PM	new technology
 9/16/2020 11:32 AM	CVRD should put municipal water into those areas without it.
Anonymous 9/16/2020 01:12 PM	Don't go with a low bid tunnelling contractor .
Anonymous 9/16/2020 02:33 PM	not aware of any

Anonymous

9/17/2020 08:44 AM

What do you mean by "Additional laydown area along Balmoral" in front of 4 condos, shopping centre entrance and golf course? Will traffic [i.e. cars from these sites] be completely shut down? How will emergency services [i.e. ambulance, fire, hydro, etc] be delivered to these sites?

[REDACTED]

9/17/2020 10:17 AM

Anderton park access needs to be maintained as it is heavily used by children, tennis players, and Berwick residents. It is also the footpath access to Comox mall. Access to Comox golf course must also be considered as they have already had access limited by condo construction for over 12 months. Consider a temporary left turn signal or lane eastbound into Comox mall from Comox Ave. Blocking the Balmoral entrance will create havoc at Comox mall.

Anonymous

9/17/2020 01:59 PM

increased traffic on Anderton Road is to be expected

Anonymous

9/18/2020 09:08 AM

overall and ongoing cost is a challenge

Anonymous

9/18/2020 01:44 PM

using a number of different construction techniques rather than just one process, make the project more complicated, less efficient, and subject to more potential variances in costs as things move along on various phases and sections. likely hood of extra construction costs increases. This will end up costing more than option 1.

Anonymous

9/18/2020 02:45 PM

the least impact to landowners the better.

Anonymous

9/19/2020 08:33 AM

I say again lazo Rd to Brent Rd to plant . Close to surface for easy leak detection clean up and repair !

Anonymous

9/19/2020 08:58 AM

I am concerned about the potential impacts to the sensitive wetland and sand dune ecosystems during and post construction.

Anonymous

9/20/2020 01:33 PM

too much ground water flowing to golf creek

Anonymous

9/20/2020 04:51 PM

Could have major impacts on businesses in the downtown area due to the construction. Also could impact Filberg Festival and tourism due to the tunnel construction in the area

Anonymous


9/20/2020 06:39 PM

I am VERY concerned that this option runs the HIGH risk of major cost increases and delays if/when undocumented underground infrastructure and/or archeological remains and/or unexpected geological features are encountered during the tunneling

Anonymous

9/24/2020 01:26 PM

Major risk of cost overruns. It looks cheaper than Option 1 now, but because of the additional risk it could end up costing a lot more. If a local HDD

	contractor is used, they may not have sufficient experience. If a more experienced HDD contractor from the mainland is brought in, it may be more expensive.
Anonymous 9/25/2020 05:12 PM	no
Anonymous 9/26/2020 12:41 PM	No
Anonymous 9/27/2020 03:47 PM	As mentioned above, this option increases impact for KFN community. Their concerns should be well considered.
Anonymous 9/28/2020 07:50 PM	The unknowns of tunnelling and potential delays that might result. The route through the middle of Comox is problematic enough without increasing the disruption time.
Anonymous 10/01/2020 06:33 AM	That people will not choose this option because they are fixated on saving money for themselves rather than thinking about the savings for future generations.
Anonymous 10/02/2020 07:15 AM	What right of ways would be involved? This should be shown so people who may be impacted are advised.
Anonymous 10/02/2020 03:50 PM	impact of traffic on quiet residential street (Donovan Drive) which is already used as a "shortcut" by many Town of Comox vehicles and other "non-local" traffic.
Anonymous 10/02/2020 09:44 PM	They are all the same option, just doing it in a different way. How about offering real options? If the HMCS Quadra pump station is going to be left as is, wouldn't there still be a risk of a leak into the Comox Bay?
Anonymous 10/05/2020 01:53 PM	going under Lazo Marsh could put groundwater and individual wells at risk as will as if there is a rupture.
Anonymous 10/06/2020 04:55 PM	Please look at changing the route, too many 90 degrees. Option: From Comox Ave, Tunnel "North" on Anderton Rd, "East" on Guthrie Road to Lazo Rd, straight to the Plant! Avoid 'through' Brooklyn Creek Park or MacDonald Wood Park.
Anonymous 10/09/2020 01:03 PM	Stability of banks on comox hill. Drilling impacts on surrounding area and residents.
Anonymous 10/10/2020 12:19 AM	The Quadra Aquifer serves over 1500 wells. Any pollution of that aquifer is a major
 10/10/2020 11:33 AM	1)the impact of the aquifer vs. "ground water"...i think there is a big difference

Anonymous

10/10/2020 11:45 AM

Having urban properties not currently directly connected do so.

Anonymous

10/12/2020 02:48 PM

Preservation of vegetation, particularly trees, especially old ones that cannot possibly be replaced is important to me.

[REDACTED]

10/12/2020 09:15 PM

Not our preferred option.

Optional question (33 response(s), 279 skipped)

Question type: Essay Question

Q11 Rank the BENEFITS below from most important to you (1) to least important (5)

OPTIONS	AVG. RANK
Addresses urgent environmental risk: The at-risk pipe at Willemar Bluffs would be replaced quickest as part of the first, immediate, phase of construction.	2.06
Maximizes life of existing infrastructure: The existing foreshore pipe in Comox estuary – which has been assessed and is still in good condition – remains in place for another 15-20 years.	2.97
Lower operating and lifecycle costs: Reduced pressure requirements means it costs less to operate.	3.00
Reduced short term capital cost: By splitting the work into phases, a significant portion of cost is postponed/spread out over a longer timeframe with more users to contribute.	3.08
Reduced construction impact: By completing half of the route at a time, the short-term construction impact is smaller.	3.82

Optional question (272 response(s), 40 skipped)

Question type: Ranking Question

Q12 Are there other benefits for this option that we should be considering?

Anonymous

9/14/2020 10:55 AM

New technology might be discovered between now and 15-20 years...which may benefit us when we are ready to replace the phase 2 pipes.

Anonymous

9/14/2020 11:28 AM

Not interested in option 3.

Anonymous

9/14/2020 11:36 AM

This seems like the best option of the three. However, if there's good grant funding opportunities from potential COVID-19 stimulus, it would be better to take advantage and get the whole project done and maximize senior level funding.

Anonymous

9/15/2020 04:18 PM

new technology as the total cost is still over 60 million when it could be done for 9 million a super saving for the taxpayer and the environment

Anonymous

9/16/2020 02:33 PM

not aware of any other benefits.

Anonymous

9/17/2020 08:44 AM

Same concerns as option 2.

[REDACTED]

9/17/2020 10:17 AM

Less aggravation for local business and community in short term. Allows more time to assess and integrate future community development plans to align with future phases while dealing with immediate concerns.

Anonymous

9/17/2020 12:44 PM

Still believe a offshore pipeline should be investigated as all this is a massive upheaval and prone to cost overruns and endless delays.

Anonymous

9/17/2020 01:28 PM

Best to deal with eliminating foreshore pipe as soon as possible. Thus, do not like this option. Do it right the first time. Anyone in private practice would not choose this option as the cost later will be significantly higher than what it is do either of the other two options now.

Anonymous

9/17/2020 07:44 PM

Better to build the whole thing asap. Postponing the second phase means there is more likelihood of running into difficulties later. Expanded future growth means it would have higher long term impacts and costs would most likely be much more than anticipated. Get it over with now, and then it's done.

Anonymous

9/18/2020 01:44 PM

Best option with least immediate impact, deals with most pressing shoreline problem.

Anonymous

9/18/2020 02:45 PM

let us take the brunt of the cost now. do the entire line. delete this option entirely. when we are ready to do phase 2 it will cost more than phase one by then

Anonymous

9/19/2020 08:33 AM

I say again lazo Rd to Brent Rd to plant ! Still think I should be able to give equal importance to certain issues . This survey forced me to put more importance on certain issues because of limiting choice .

[REDACTED]

9/20/2020 10:37 AM

None that I can think of.

Anonymous 9/20/2020 01:33 PM	work with bc hydro to remove any possible poles
Anonymous 9/20/2020 04:51 PM	Capital costs will likely be higher at the time of phase 2 work beginning. Perhaps if Option 1 or 2 were chosen the capital costs could be spread over a longer period to mitigate the impacts of inflation while ensuring an equitable cost for current residents vs future residents.
Anonymous 9/22/2020 10:14 AM	In 15 to 20 years from now, there will be more population to fund Phase 2 as well as the likelihood of better and more efficient construction technology.
Anonymous 9/23/2020 03:37 AM	The way this question is worded makes it seem like this is the preferred option for the survey writer. There should be more discussion about the risks of this option.
Anonymous 9/24/2020 09:23 AM	Not committing funds/capital until needed. Future solutions may include; local sewage treatment plants, tertiary treatment plants, increased use of gray water at the source (e.g. homes and businesses) reducing sewage volumes.
Anonymous 9/24/2020 02:21 PM	Phased development provides opportunity to better assess impact of future infrastructure plans (additional bridge crossing estuary?) or traffic pattern changes within the community as well as any additional or new environmental challenges to the project.
Anonymous 9/24/2020 02:51 PM	impossible to know the cost of phase 2 in 15 yrs time it may be too costly to complete then ,also the impact on Marina Park is unacceptable do not think this option should be considered
Anonymous 9/25/2020 05:12 PM	no
Anonymous 9/26/2020 08:17 AM	Too long of a time period - not recommended
Anonymous 9/26/2020 12:41 PM	No
Anonymous 9/27/2020 03:47 PM	We don't like this option at all.
Anonymous 9/28/2020 07:50 PM	I don't like this option and would prefer it to be removed.
Anonymous 9/29/2020 11:03 AM	Minimal impact to residential areas, ie, Jane Place Pumping Station. Removing the JP Pumping Station entirely would be preferable. It really shouldn't be at this location and should never have been installed there in the first place.
Anonymous	due to a large elderly population, I feel any project that has less cost to the

10/03/2020 10:50 AM

homeowner is what would be best.

Anonymous

10/04/2020 12:17 AM

Are the 20 year lifespan accurate? is there risk phase 2 areas could need replacement sooner? What can happen in 20 years that may change perspective on plan?

Anonymous

10/04/2020 12:33 PM

Thank you for this opportunity to contribute opinion. I support options 2 and 3 for the tunnelling, and I'll vote from Option 3 because of the more immediate replacement of the Willemar Bluffs pipe.

Anonymous

10/05/2020 10:26 AM

The survey should compare the environmental risk and benefits of the three options. Which of the three would do the best job of preserving existing urban forest, for example? Comment: High impact zones along Balmoral Avenue do not agree on map compared with verbal description. Which is correct?

Anonymous

10/06/2020 04:55 PM

Please look at changing the route, too many 90 degrees. Option: From Comox Ave, Tunnel "North" on Anderton Rd, "East" on Guthrie Road to Lazo Rd, straight to the Plant! Avoid 'through' Brooklyn Creek Park or MacDonald Wood Park.


10/07/2020 07:15 AM

no

Anonymous

10/09/2020 07:43 AM

Make "doing it right" the first priority. Stand up to a few selfish landowners and get a long term sustainable system!!

Anonymous

10/09/2020 01:03 PM

Addresses primary concerns at Willemar bluffs as priority.


10/10/2020 11:33 AM

capital costs are only going to go UP as projects are delayed, we all know that...

Anonymous

10/10/2020 11:45 AM

I do not like this option because costs will only be significantly greater for phase 2; and for a project of this magnitude the entire community needs to be receiving value.


10/11/2020 01:53 PM

Assuming the viability of the pipe within the estuary is truly 15-years, then a cost deferred is a cost not incurred.

Anonymous

10/12/2020 10:15 AM

This is my preferred option. Most efficient and least impactful and utilizes existing infrastructure to its fullest life span.


10/12/2020 09:15 PM

Still not the RIGHT solution.

Optional question (40 response(s), 272 skipped)

Question type: Essay Question


Q13 Rank the below CHALLENGES/RISKS from most concerning to you (1) to least concerning (5)

OPTIONS	AVG. RANK
Addressing groundwater concerns: Managing groundwater along tunneled sections through Comox Hill and Lazo Hill to ensure there is no impact to groundwater levels and individual wells.	2.27
Increased construction risk: Though preliminary assessments show favourable ground conditions, tunneling work introduces more risk to the construction phase.	2.65
Challenging connection at Marina Park: To complete a challenging connection between the new system and existing, there will be high construction impacts at Marina Park, limited impact to boat ramp access, and medium impacts along Wilcox Street	2.82
Foreshore pipe remains along the Comox Estuary: While condition assessment shows this pipe in good condition, some community members want to see it removed.	3.45
Additional laydown area required: Because the pipe needs to be assembled before feeding underground, long stretches of roadway will need to be used as 'laydown' areas – including a portion of Balmoral between Stewart and Port Augusta.	3.74

Optional question (275 response(s), 37 skipped)
Question type: Ranking Question

Q14 Are there other challenges or risks that we should be considering for this option?

Anonymous 9/14/2020 10:55 AM	I am concerned that the phase 2 18M will be a much higher bill in 15-20 years due to inflation, etc...
Anonymous 9/14/2020 11:28 AM	Scrap option 3
Anonymous 9/14/2020 11:36 AM	Best to maximize the use of the foreshore pipe if possible, unless grant funding opportunities dictates a reduced burden on tax payers today for replacement.

Anonymous 9/14/2020 03:53 PM	Future costs of the portion that would be replace 15-20 years later. Rising sea levels could make it more challenging than it is currently to replace that portion
Anonymous 9/14/2020 09:01 PM	will cost much more to do phase 2 in 15 - 20 years than it will now, so just passing the decision making and cost to future residents and decision makers
Anonymous 9/14/2020 10:09 PM	Why are we moving everything so far?
Anonymous 9/15/2020 04:18 PM	none of this is required if proven new technology would be used
Anonymous 9/16/2020 07:03 AM	This is my favored option. Why replace what still has 15 years life? Keep that till needing to be replaced.
Anonymous 9/16/2020 01:12 PM	How long can the existing system be shut down so the connection can be made? Do residents have to be aware that this work will be taking place so they will not flush etc?
Anonymous 9/16/2020 01:40 PM	I think the cost of this construction should be assumed by real estate developers in both Comox and Courtenay who are responsible for this construction. The new development areas such as Crown Isle need to bear the brunt of the costs of this construction.
Anonymous 9/16/2020 02:33 PM	not aware of any
 9/17/2020 10:17 AM	Same concerns as option #2. Additionally complexities at marina park sound like cost overruns would be more likely.
Anonymous 9/17/2020 01:28 PM	Remove the pipe from the foreshore. Having been here when it was installed along Willemar Bluffs, it has been an ongoing problem.
Anonymous 9/17/2020 01:59 PM	delaying part of the project could result in increased costs down the line. We don't know what the economic climate will be in 15 to 20 years. If we do the whole job now, there is some certainty to that.
Anonymous 9/18/2020 09:08 AM	overall and ongoing cost is a challenge
Anonymous 9/18/2020 01:44 PM	none of these are as important as the benefits of this option
Anonymous 9/18/2020 02:45 PM	what diameter is this new pipe? Phase 2 - after the entire line in from option 1 or 2 , remove the estuary line.

Anonymous

9/19/2020 08:33 AM

I say again lazo Rd to Brent Rd to plant ! Close to surface for easy leak detection cleanup and repair !

Anonymous

9/19/2020 08:58 AM

Prices change. It is already more costly than the other options. By the time we commence phase 2, the costs will likely be higher. But I do like using existing infrastructure while it's still in good shape.



9/20/2020 10:37 AM

Let's get it done.

Anonymous

9/20/2020 04:51 PM

Future financial situation may be different and make infrastructure projects in 15-20 years difficult to follow up on. Could be criticized for leaving the mess for the future and so on.

Anonymous

9/23/2020 03:37 AM

The fact we are deferring work.

Anonymous

9/23/2020 10:19 PM

Why can't the route continue to be where it's at, with repairs completed. There has to be away to resolve the issues without changing the whole route.

Anonymous

9/24/2020 01:26 PM

I am not in favour of dragging the project out in phases. In my opinion, it would be best to "bite the bullet" and get the job done while interest rates are historically low. There are going to be other very demanding and expensive infrastructure projects associated with climate change coming in the next two decades. We should take care of our LWM problem now!

Anonymous

9/24/2020 02:51 PM

Marina Park should not be a part of the project

Anonymous

9/25/2020 10:34 AM

ya the #1 risk is increasing/unknown construction costs in phase #2. Construction costs increase each year and 15-20 years presents potential cost increases that have not been addressed. As someone who finances phased construction projects I am very surprised more analysis regarding the potential increased costs of phase #2 has not been shared. If we have money for a curling rink a small % of the population uses than surely we have money to complete the project now rather than phasing.

Anonymous

9/25/2020 05:12 PM

The extra cost of Labour in the second phase. As wages will have gone up and there will be new environmental rules probably which could increase cost.

Anonymous

9/26/2020 08:17 AM

Too long of a time period The never never project

Anonymous

9/26/2020 12:41 PM

No. I favour this option

Anonymous

Spreading the cost and construction over a long period of time will increase

9/28/2020 09:12 AM

costs overall and likely introduce new challenges as settlement in the area changes over time.

Anonymous

9/28/2020 07:50 PM

Losing the momentum to get the job done!

Anonymous

9/29/2020 11:03 AM

This survey is biased to Option 3. Furthermore, the survey is flawed where the the choice, once chosen, drops off the list giving only remaining options. IE, perhaps we would like to have chosen, for example #3, for more than one of the questions but it is not available. once already chosen.

Anonymous

9/30/2020 09:16 PM

Is it safe to say that the population base for the Comox Valley and/or the affordability of the project will be the same as it is now in 15-20yrs? Baby boomers will be passing away with no where close to the amount of people to replace them & help pay for the project. Construction costs rarely go down & could skyrocket by then, leaving much bigger tax implications to the remaining residents.

Anonymous

10/01/2020 06:33 AM

The risk of people choosing this option as the cheapest without considering the costs for future generations.

[REDACTED]

10/03/2020 09:32 AM

Increased future costs for Phase 2. I prefer to get the whole project done at once.

Anonymous

10/04/2020 12:17 AM

Is the plan to remove the foreshore pipe in phase 2, in 20 years?

Anonymous

10/04/2020 12:33 PM

I submit my preference for Option 3

Anonymous

10/05/2020 01:53 PM

Tunneling under Lazo Marsh is a concern as it could affect groundwater and wells in my area and if there is a rupture that could also affect the groundwater and wells.

Anonymous

10/06/2020 11:22 AM

The ground water on and around Curtis Road is a huge issue. Going under Lazo Marsh is potentially a huge problem. We do not want anything that might destroy our aquifer. Please protect our water.

Anonymous

10/06/2020 04:55 PM

Please look at changing the route, too many 90 degrees. Option: From Comox Ave, Tunnel "North" on Anderton Rd, "East" on Guthrie Road to Lazo Rd, straight to the Plant! Avoid 'through' Brooklyn Creek Park or MacDonald Wood Park.

[REDACTED]

10/07/2020 07:15 AM

no

Anonymous

10/09/2020 11:30 AM

the best option for us

Anonymous

10/10/2020 12:19 AM

These challenges apply also to option 2

Anonymous

10/10/2020 11:45 AM

Potion 3 is far too short sighted.

Anonymous

10/11/2020 12:10 PM

Inflation risk not mentioned. Inflation of construction costs can exceed general inflation. Risk that cost of second phase of construction could be significantly higher for our kids and grandkids. They won't thank us.

Anonymous

10/11/2020 03:07 PM

How can I remain in my residence while this is going on? 137 Port Augusta Street.

Anonymous

10/12/2020 02:48 PM

Preservation of vegetation, particularly trees, especially old ones along the route is very important to me.

 10/12/2020 09:15 PM

We need to fix the sewage problems for generations to come, let's do the right thing, option 1!!

Optional question (48 response(s), 264 skipped)

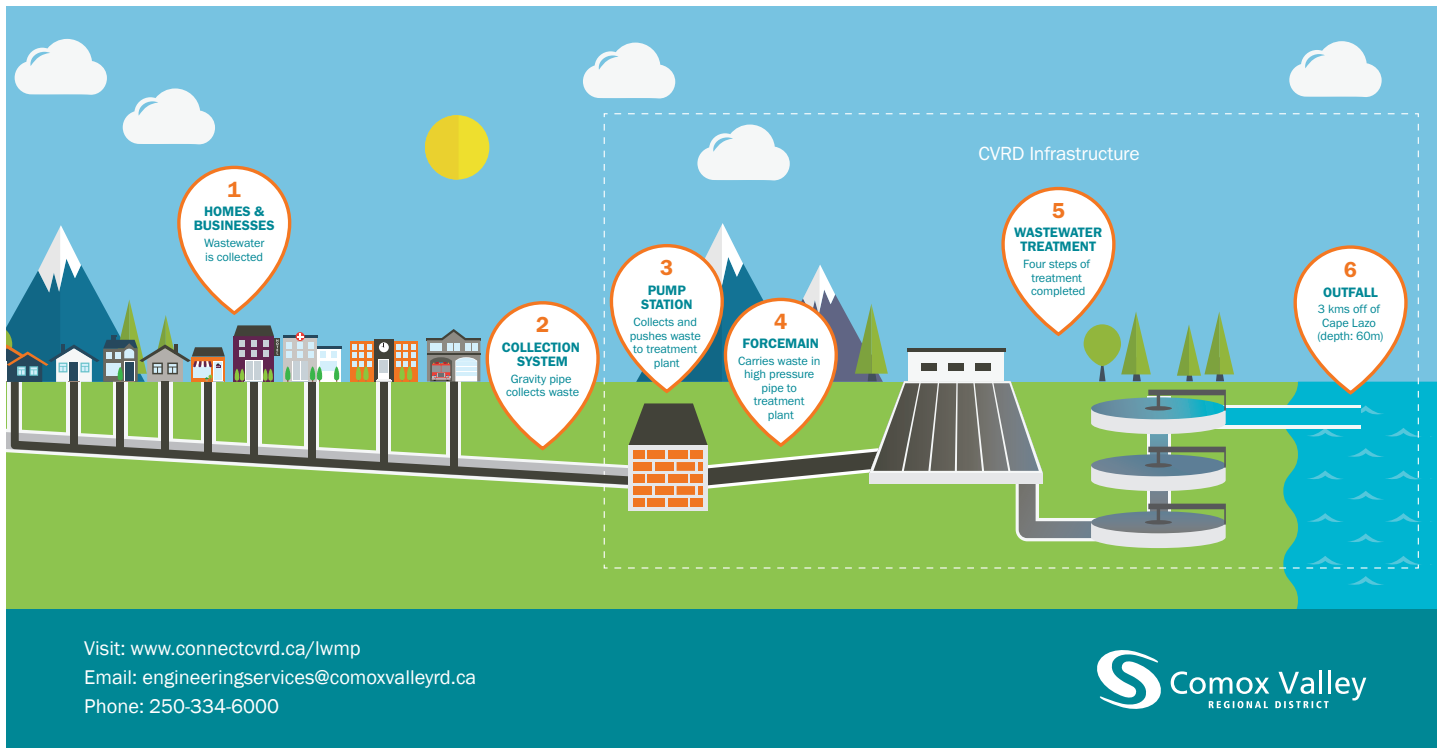
Question type: Essay Question

APPENDICES

APPENDIX 1 – Event Display Boards

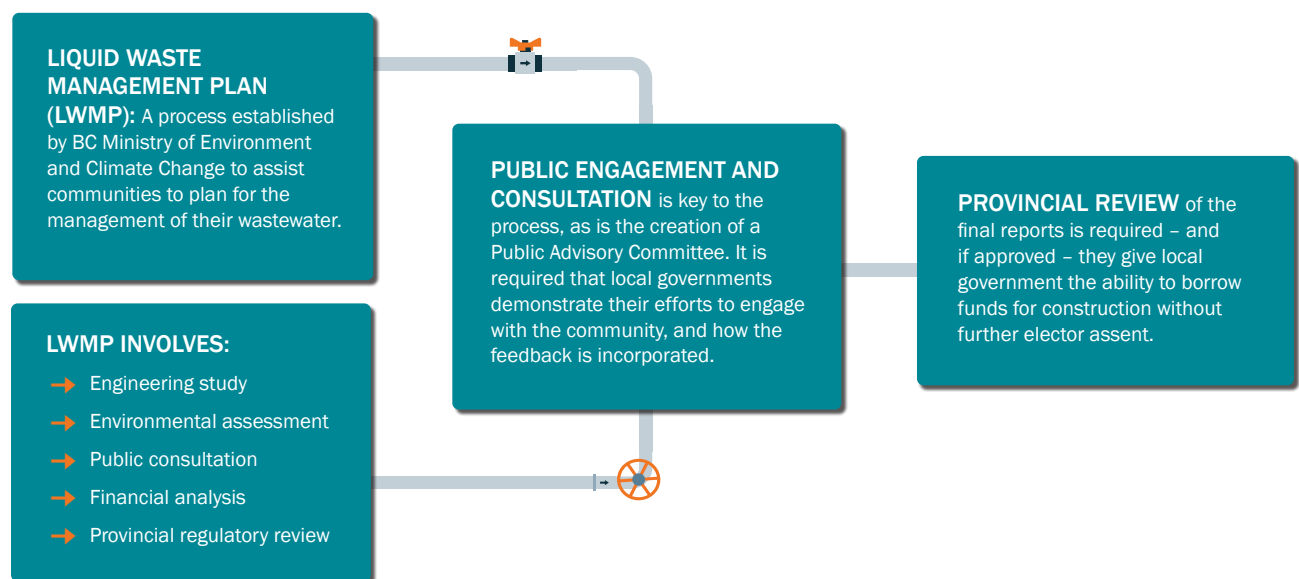
WHAT HAPPENS AFTER YOU FLUSH?

Wastewater Management in the CVRD



PLANNING A FUTURE FOR OUR LIQUID WASTE

Long-term planning for liquid waste management can be a complicated process. To help streamline these big projects and give local governments the ability to deliver agreed-on plans, liquid waste management plans are often used.



Visit: www.connectcprd.ca/lwmp
Email: engineering@comoxvalleyrd.ca
Phone: 250-334-6000

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REGIONAL DISTRICT
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PLANNING AND PUBLIC ENGAGEMENT: TIMELINE

The Liquid Waste Management Plan process includes distinct stages that require public input.



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REVIEWING THE LONG LIST: WHAT WE HEARD

In January 2019, a long-list of six options for conveyance were presented to the community via an online survey and through two facilitated sessions.



GOAL OF FEEDBACK

The CVRD was looking for feedback on:

- Whether there were other options that should be considered/reviewed
- Any other information about proposed options that should be considered

CONSIDERING WHAT WE HEARD

Community members provided a range of comments re: conveyance options, which generally aligned with three themes:



Protection of the Environment: High priority was placed on stewardship and conservation with concerns raised about the estuary, shellfish industry, groundwater and more. An interest in moving sewage pipes inland was clear.



Consider the Cost: Finding efficiencies in cost was highlighted, including an interest in seeing larger upfront investment to minimize costs over the long term.



Opposition to Comox No. 2 Pump Station: Those opposed to an option that could see a pump station around the Croteau Beach neighbourhood were well represented.

WHAT WE DID NEXT

Following that engagement, and considering what we heard, the project team:



Consulted with K'ómoks First Nation: Meaningful dialogue with KFN was undertaken regarding this key infrastructure which crosses their land.



Public/Technical Advisory Review: The committees reviewed the longlist, considering feedback and recommended a short list.



Further Assessment of Options: Options were reviewed further by technical experts to identify further challenges or limitations.



Sewage Commission Selection: On March 10, the sewage commission approved the short list of options, which are now presented to the community for review/feedback.

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OPTION 1: OVERLAND FORCEMAIN

This option would see a trench dug along existing roadways, with a new pipe installed between the Courtenay Pump Station and the sewage treatment plant. This means installing pipe up and over the Comox Road and Lazo Road hills. It also includes:

- Replacement of the Courtenay Pump Station to accommodate the high-pressure pumps needed to push wastewater up over the two hills
- Upgrades to the K'ómoks First Nation and Jane Place pump stations
- Tunneling beneath the Lazo Marsh

*Our engineering consultants are currently reviewing whether this option could be delivered in phases.

COSTS

COST TO BUILD: \$65M

COST TO RUN AND MAINTAIN (30 YEAR): \$17M

COST PER HOUSEHOLD: \$240/household for 20 years

TRAFFIC IMPACTS

MEDIUM: Comox Road, Comox Ave, Beaufort, Stewart, Balmoral, Lazo and Morland (single-lane alternating)

LOW: Lazo/Brent Road

ARCHEOLOGICAL MITIGATION: Full alignment, especially through IR1 (Comox Rd)

BENEFITS

LOWER RISK CONSTRUCTION APPROACH: 'Cut and cover' (digging trench, laying pipe, then covering) is a standard construction practice and more predictable.

REMOVES FORESHORE PIPE: Public feedback has indicated a preference for removing the foreshore pipe along the Comox estuary, though technical studies show there is 15-20 years remaining in the pipe.

CHALLENGES

NEW COURTENAY PUMP STATION: Required to accommodate higher pressure.

HIGHER COST TO RUN: Pushing so much volume up and over the two hills requires high-powered pumps that cost more to operate.

HIGHER LIFECYCLE COSTS: Increased pressure and high energy has long-term cost and maintenance impacts.

ADDRESSING GROUNDWATER CONCERNS: Managing groundwater to ensure there is no impact to groundwater and individual wells.

ROADWAY CONSTRUCTION: Largest overall construction footprint and most traffic disruption over time, because all sections will include road work and excavation along Lazo and Balmoral roads in Area B could have more impact to vegetation in that area.

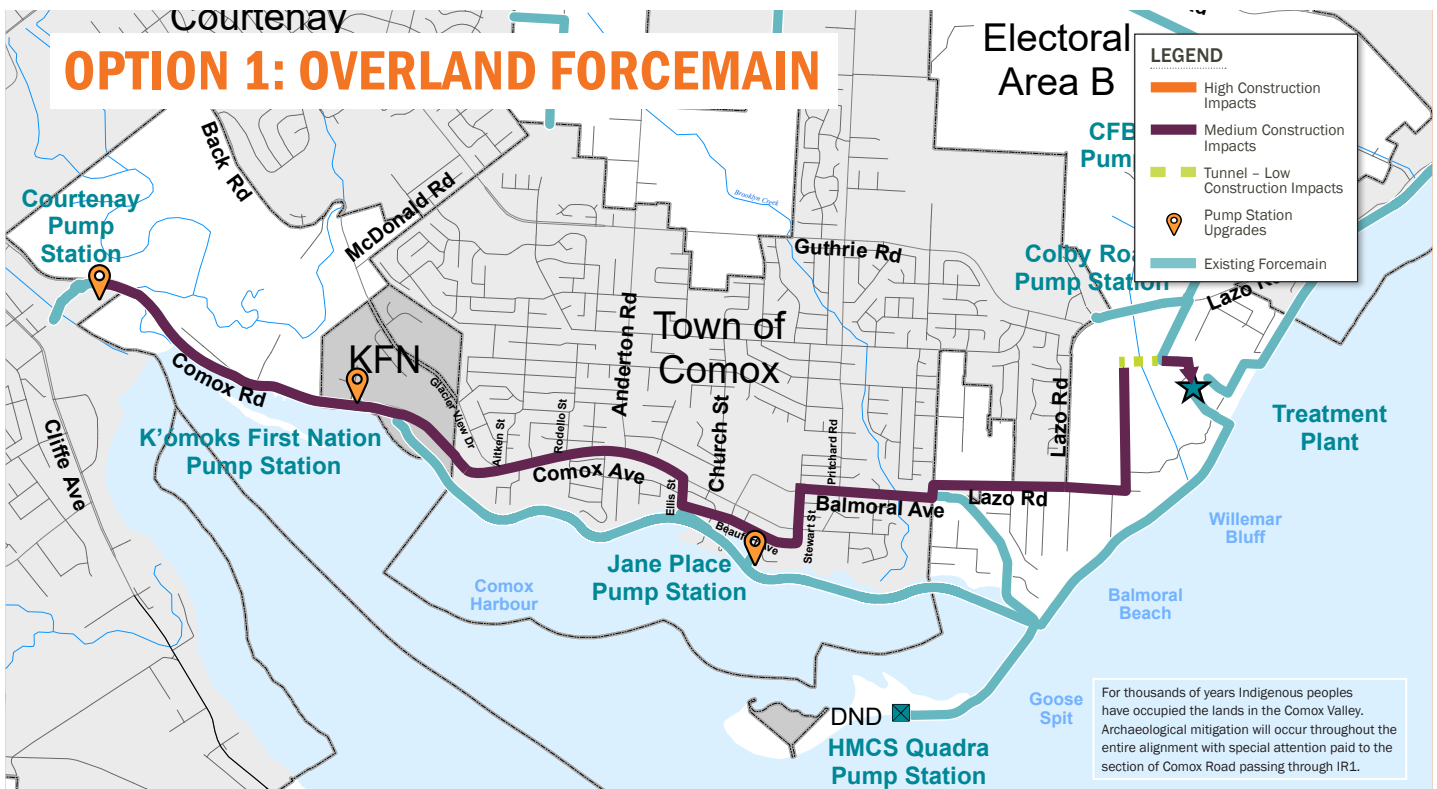
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OPTION 1: OVERLAND FORCEMAIN



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OPTION 2: TUNNEL FORCEMAIN

This option combines 'cut and cover' construction (trenching) with directional drilling (a type of tunneling). The trench would be dug, with pipe installed, along existing roadways for much of the route, but tunneling would be used to go through rather than over the Comox and Lazo Road hills. It also includes:

- Upgrades to all three pump stations on the route: Courtenay, K'ómoks First Nation and Jane Place
- Tunneling beneath the Lazo Marsh

COSTS

COST TO BUILD: \$58M

COST TO RUN AND MAINTAIN (30 YEAR): \$13M

COST PER HOUSEHOLD: \$210/household for 20 years

TRAFFIC IMPACTS

HIGH: Comox Road (KFN pump station to Comox Hill), Balmoral (Port Augusta/Pritchard) – local traffic only

MEDIUM: Comox Road (Courtenay pump station to KFN pump station) Comox Ave, Ellis, Beaufort, Stewart, Morland and Brent Road (single-lane alternating)

LOW: Tunnel areas at Comox and Lazo Hill

ARCHAEOLOGICAL MITIGATION: Full alignment, especially through IR1 (Comox Rd)

BENEFITS

LOWER OPERATING COSTS: By tunneling through the two hills instead of pushing waste up and over, there is reduced pumping demands on the system, making it cheaper to operate.

LOWER LIFECYCLE COSTS: This reduced demand is easier on equipment, and the smaller pumps will be cheaper to replace when needed.

LESS CONSTRUCTION FOOTPRINT: While construction impacts would still occur, tunneled sections would mean reduced impacts around Comox and Lazo Hills.

REMOVES FORESHORE PIPE: Some public feedback has indicated a preference for removing the foreshore pipe along the Comox estuary, though technical studies show there is 15-20 years remaining in the pipe.

CHALLENGES

INCREASED CONSTRUCTION RISK: Though preliminary assessments show favourable ground conditions, tunneling work introduces more risk to the construction phase.

ADDRESSING GROUNDWATER CONCERNS: Managing groundwater to ensure there is no impact to groundwater or individual wells.

ADDITIONAL RIGHT-OF-WAYS REQUIRED: Because this route moves off already established right-of-ways, new agreements would have to be negotiated with landowners.

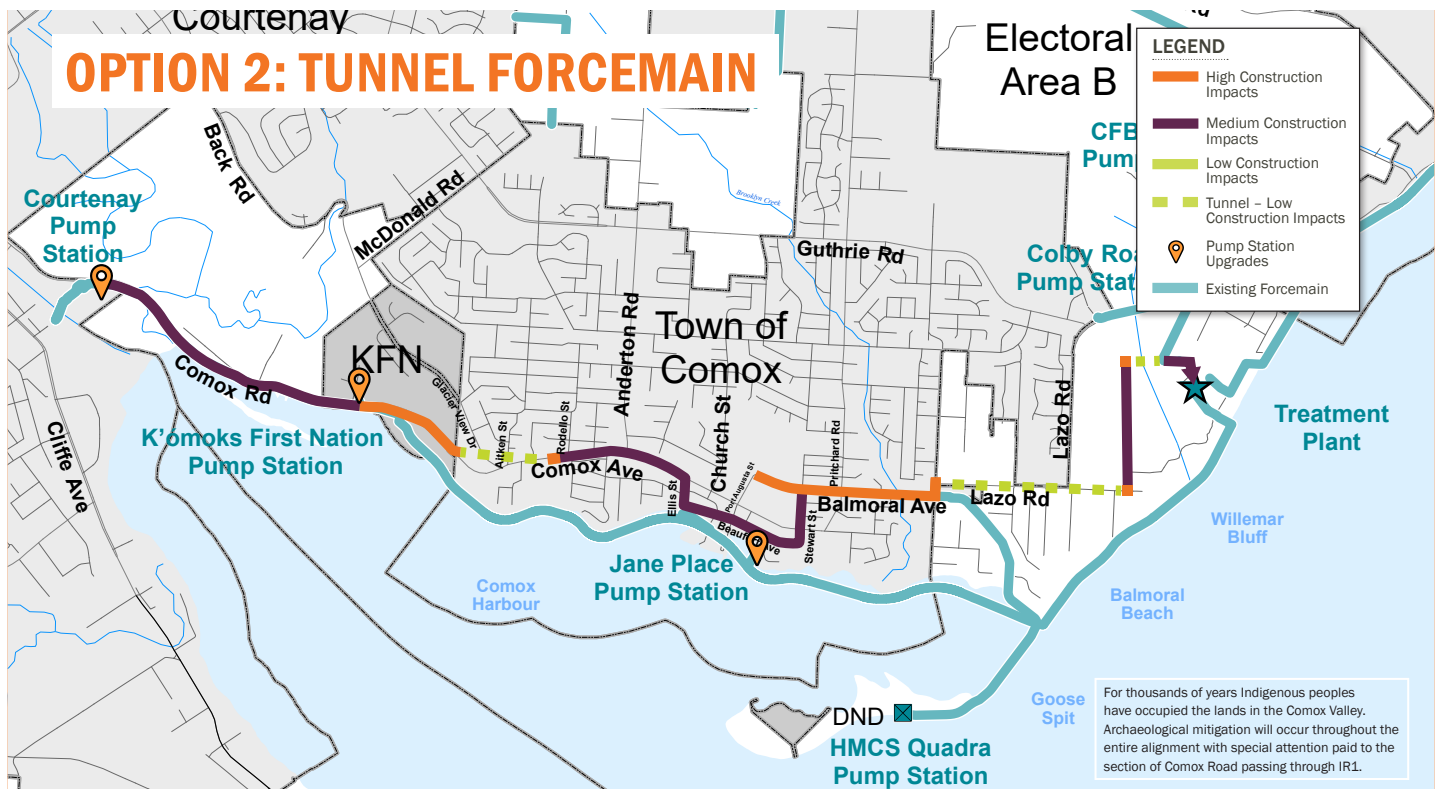
ADDITIONAL LAYDOWN AREA: A portion of Comox Rd and Balmoral Rd (Stewart to Port Augusta) will be heavily impacted due to the need to assemble and lay down pipe before it is fed underground.

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OPTION 3: PHASED TUNNEL

This option uses the combined trench-and-tunneling route of Option 2 but breaks the project into two phases. Phase 1 would include the stretch between Marina Park and the treatment plant. Phase 2 would replace the pipe between Courtenay Pump Station and Marina Park in 15-20 years. It also includes:

- Upgrades to all three pump stations on the route
- A temporary line from a tie-in at Marina Park to the new forcemain on Beaufort Ave for 15-20 years until Phase 2 of the project is introduced
- A new line from Jane Place to new forcemain
- Lowest immediate cost to build
- Tunneling beneath the Lazo Marsh

COSTS

COST TO BUILD: \$43M

COST TO RUN AND MAINTAIN (30 YEAR): \$13M

COST PER HOUSEHOLD: \$160/household Until Phase 2

PHASE 2 CAPITAL COST (TO BE IMPLEMENTED IN 15-20 YEARS): \$18M

TRAFFIC IMPACTS (PH.1)

HIGH: Balmoral (from Stewart) and Lazo/Morland (local traffic), Marina Park

MEDIUM: Jane Place/Wilcox and Morland (single-lane alternating)

LOW: Lazo/Curtis Road

ARCHAEOLOGICAL MITIGATION: Full alignment, especially through IR1 (Comox Rd)

BENEFITS

ADDRESSES URGENT ENVIRONMENTAL RISK: The at-risk pipe at Willemar Bluffs would be replaced as part of the first phase of construction.

REDUCED SHORT TERM CAPITAL COST: By splitting the work into phases, a significant portion of cost is postponed/spread out over a longer timeframe with more users to contribute.

LOWER OPERATING AND LIFECYCLE COSTS: Reduced pressure requirements means it costs less to operate.

MAXIMIZES LIFE OF EXISTING INFRASTRUCTURE: The existing foreshore pipe in Comox estuary - which has been assessed and is still in good condition - remains in place for another 15-20 years.

REDUCED CONSTRUCTION IMPACT: By completing half of the route at a time, the short-term construction impact is smaller.

CHALLENGES

FORESHORE PIPE REMAINS: While assessment shows this pipe in good condition, some community members want it removed.

CHALLENGING CONNECTION AT MARINA PARK: High construction impacts at Marina Park, limited impact to boat ramp access, as new system is connected to existing.

INCREASED CONSTRUCTION RISK: Though preliminary assessments show favourable ground conditions, tunneling work introduces more risk to the construction phase.

ADDRESSING GROUNDWATER CONCERNS: Managing groundwater along tunneled sections to ensure there is no impact to groundwater levels and individual wells.

ADDITIONAL LAYDOWN AREA REQUIRED: Long stretches of roadway will need to be used as for the pipe to be assembled- including a portion of Balmoral (Stewart to Port Augusta).

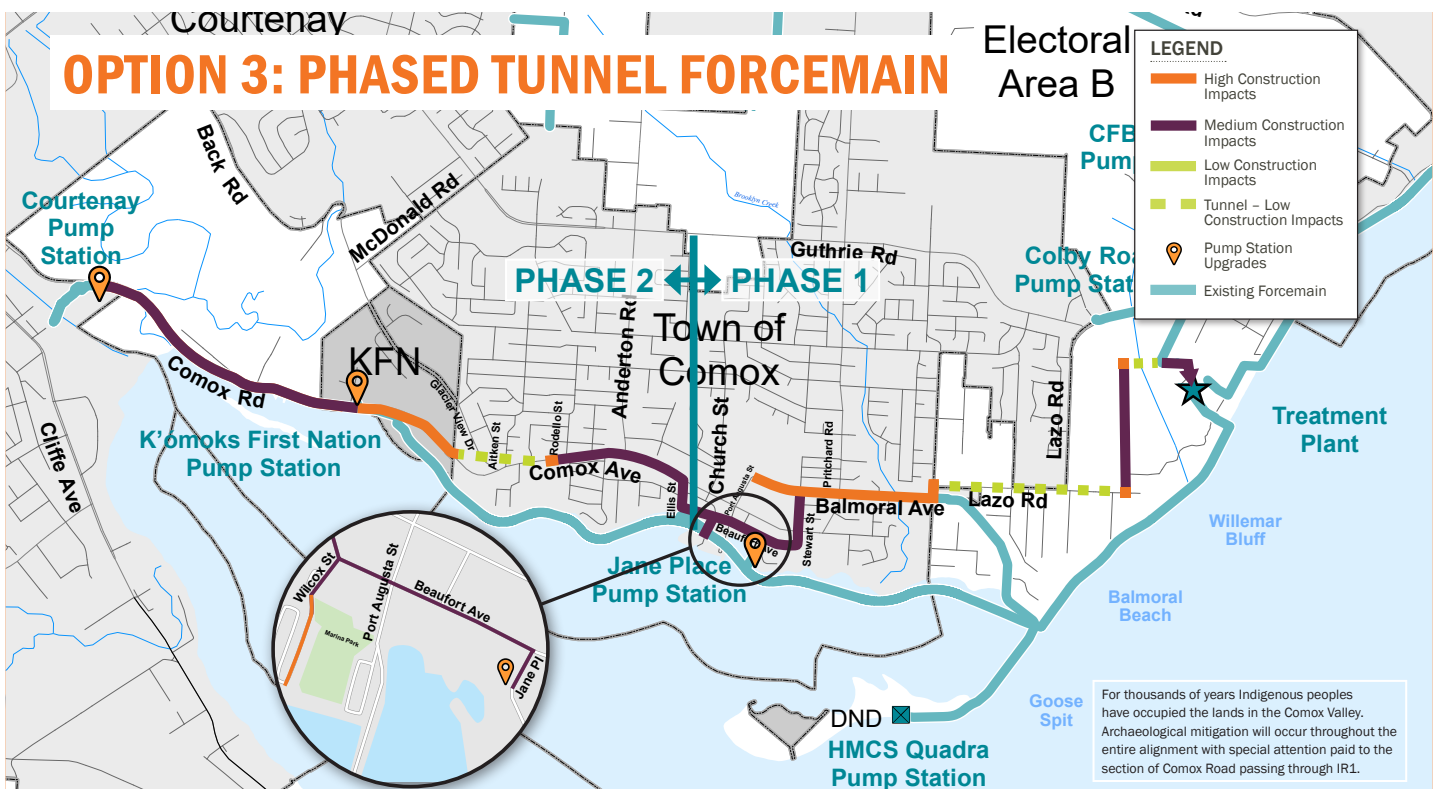
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OPTION 3: PHASED TUNNEL FORCEMAIN



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PROTECTING GROUNDWATER AND WELLS

As part of a technical assessment for regional sewer system improvements in the Comox Valley, the Comox Valley Regional District (CVRD) is undertaking geotechnical investigatory work and hydrogeological data assessment in the Lazo Road and Comox Hill areas. The results of this work will provide information about ground conditions and groundwater levels to help assess the viability of options. Once data from this work is analyzed, reports will be made available to the public.

Protecting groundwater as we consider sewer options involves a number of different approaches, including:



Recognizing the importance of protection:

The CVRD understands that for those who rely on wells – and for widespread environmental protection, groundwater must be protected. Protection has been identified as a priority.



Working with experts:

The project team is working closely with local contractor GW Solutions who is well-informed on the area, to understand the aquifer and highlight possible challenges. Long term protection of groundwater will be through robust engineering design and construction practices.



On-the-ground investigations:

More than desktop assessments, the projects engineers are also monitoring groundwater on location, using equipment called piezometers, placed in the exploratory bore holes completed in the summer.



Drilling equipment like this has been used to assess geotechnical conditions and groundwater in the area.



LOCAL KNOWLEDGE

We understand that residents in the area hold a lot of personal information with their experiences on their property. If you have details that you feel we should know, please connect with a member of the project team, or send us a message at engineering@comoxvalleyrd.ca.

Visit: www.connectcprd.ca/lwmp

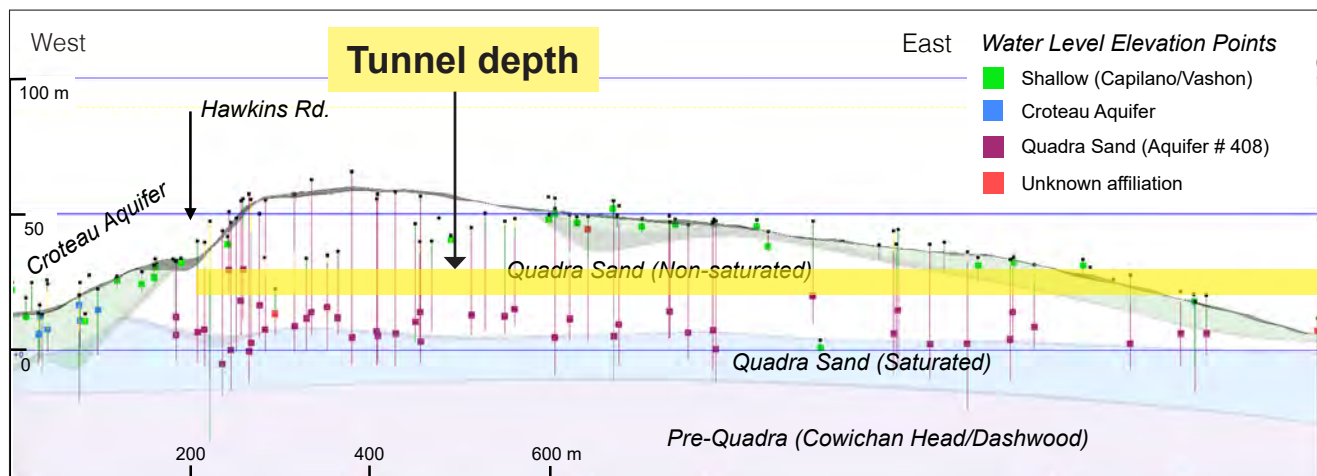
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AQUIFER ASSESSMENT

As part of the technical assessment underway for these options, groundwater has been an important focus. Surveys have shown so far that the tunnel location will not interfere with groundwater significantly, as it is located outside of aquifers or saturated sands. Below is an image to demonstrate.



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YOUR CONCERNS: CULTURALLY SENSITIVE AREAS

For thousands of years Indigenous peoples have occupied the Comox Valley including lands along the proposed conveyance route. We understand there is risk of encountering archaeological remains in this area. Making plans to manage this risk will be a key part of our construction planning.

WHAT WE KNOW:

The designated archeological site labelled DkSF-19 – a shell midden and habitation site – conflicts with the western half of the proposed sanitary sewer line. Reviewing records for six other building projects have shown that within the conflicting area previous findings have ranged from nothing (at the western edge) to intact midden deposits and human burials.



WE ARE COMMITTED TO:

- **Using the information we have:**
 - » A preliminary route can be selected that avoids areas where intact archaeological findings have been made to date.
 - » Staying within the existing roadway – a previously disturbed area – can reduce the potential impact. The most intact remains reported are off of the roadway.
- **Following direction from experts:**
 - » Our plans will be approved by KFN Chief and Council and our work will be supervised by a Guardian Watchman or other representatives appointed by KFN.
 - » We will receive permitting from the BC Archaeology Branch.
 - » We will conduct geotechnical testing to gather information about any archaeological remains below the road – including depths/size and in some cases, condition.
- **Planning ahead for unexpected finds:**
 - » If archaeological deposits are found to be in conflict, we can pre-dig the trench ahead of the pipe laying crew, allowing for the proper treatment of anything that is found.



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NEXT STEPS FOR SEWER PLANNING

This stage of consultation on the Comox Valley Sewer Service Liquid Waste Management Plan is critical to informing the next steps for the Comox Valley Regional District's Sewage Commission and project team.

Here's what's happening next:



Ready to Provide Feedback?

Visit www.connectcvrd.ca/lwmp to fill out the survey




Visit: www.connectcvrd.ca/lwmp

Email: engineering@comoxvalleyrd.ca

Phone: 250-334-6000



comoxvalleyrd.ca   

APPENDIX 2 – Advertisement Samples

Print Ad



We Need to Make Some Tough Decisions

Protecting our beaches and waters means relocating the sewer pipe along the Willemar Bluffs and making some difficult decisions about the future of our sewer system. Now's the time to weigh in on cost, construction impacts and environmental protection measures.

Three ways to have your say:

- 1 Fill out the Survey (before Oct. 14):**
www.connectcvrd.ca/lwmp
- 2 Join a Zoom Webinar:**
Wednesday, Sept. 30
12:00 pm to 1:00 pm
- 3 Sign up to Attend an Open House:**
Thursday, Oct. 1 or Wednesday, Oct. 7
12:00 pm to 2:00 pm
Comox Rec Centre, 1855 Noel Ave, Comox OR
Thursday, Oct. 8
4:00 pm to 6:00 pm
CVRD Civic Room, 770 Harmston Ave, Courtenay
*Registration is strongly encouraged due to limited capacity. Face masks are required.

To register for the webinar or open house:

Visit: www.connectcvrd.ca/lwmp and follow links.
Having trouble registering? Phone: **250-871-6271**

For more information:

Call: **250-334-6000**

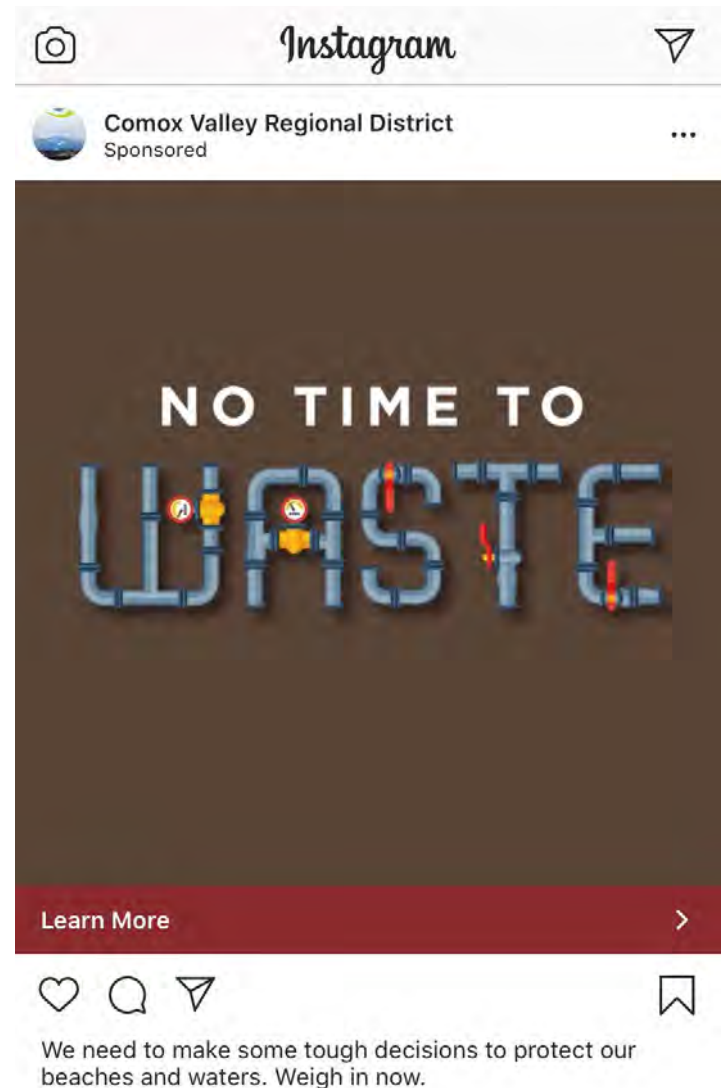
Visit: connectcvrd.ca/lwmp



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Social Media Ad



APPENDIX 3 – Digital Ad Campaign Report

CVRD LWMP CAMPAIGN

FACEBOOK/INSTAGRAM CAMPAIGN SUMMARY

COST

\$1,015.50

LINK CLICKS

1,018

REACH

44,686

IMPRESSIONS

267,935













PERFORMANCE BY PLATFORM	Reach	Impressions	Link Clicks
facebook	33,172	203,829	673
instagram	16,114	56,851	322
audience_network	1,240	7,254	23
messenger	0	1	0

REACH	Reach	Impressions	Link Clicks
mobile_app	41,958	245,083	968
desktop	2,704	15,018	42
mobile_web	1,376	7,834	8

PERFORMANCE BY AGE	Reach	Impressions	Link Clicks
18-24	4,841	30,182	30
25-34	9,225	49,262	76
35-44	8,113	53,921	130
45-54	7,305	41,262	156
55-64	7,857	49,898	272
65+	7,345	43,408	354
Unknown	0	2	0

PERFORMANCE BY GENDER	Reach	Impressions	Link Clicks
female	23,131	144,004	594
male	20,339	115,992	392
unknown	1,216	7,939	32

FACEBOOK/INSTAGRAM AD BREAKDOWN

ENGAGEMENT BY AD (WITH IMAGE)		Reach	Impressions	Link Clicks	Post Reactions
	C001-Pipe-1 (id : 6158218978902)	270	381	5	1
	C001-Pipe-1 (id : 6163876272102)	175	256	3	0
	C001-Pipe-1 (id : 6165680939502)	1,121	2,933	2	0
	C001-Pipe-1 (id : 6165680939702)	1,824	4,363	4	0
	C001-Pipe-1 (id : 6168407517102)	29	32	0	0
	C001-Pipe-1 (id : 6168407519102)	55	56	0	0
	C001-Pipe-1 (id : 6207226381102)	38	40	0	0
	C001-Pipe-1 (id : 6207226381502)	1,296	2,735	2	1
	C001-Pipe-1 (id : 6207226384702)	1,808	3,322	2	0
	C001-Pipe-1 (id : 6207226385502)	93	97	0	0
	C001-Pipe-1 (id : 6207226386302)	387	565	2	1
	C001-Pipe-1 (id : 6207226386702)	625	980	6	0

ANALYSIS

After pausing the Liquid Waste Management Plan ad campaign for several months during COVID-19, the campaign picked up where it left off fairly instantly. Over the course of just under one month, the second phase of the campaign was able to reach over 44,000 Comox Valley residents. In total, the LWMP ads were seen over 250,000 times. The result of these reach and impression numbers were over 1,000 link clicks through to the CVRD web properties.

With a focus on ensuring that the ads weren't seen too many times by each person reached, we employed a strategy to ensure that the 'Reach' metric remained reasonable. The results were positive, and the highest frequency number experienced during the campaign was 5. This means that, at most, one user saw the LWMP ads 5 times over the course of a month.

The engagement came from a predominantly older demographic; over half of the clicks registered were from an audience over the age of 55. With that said, we did see a fairly even distribution of clicks among the remaining younger demographics. Across all age ranges, engagement was skewed towards a female audience, which is quite common and aligns with previous CVRD social media campaigns.

Unsurprisingly the majority of the engagement came via mobile device, with desktop engagement only accounting for a very small percentage of reach, impressions and clicks. With a mobile-friendly animation as well as succinct messaging and calls-to-action, we were able to capitalize on the mobile heavy trend that we are seeing.

In total, the CVRD LWMP campaigns reached a substantial number of local users and drew a high amount of engagement - prompting them to click through with high intent to the LWMP specific materials online.



APPENDIX 4 – Direct Mail

File: 5330-20/CVSS LWMP

September 11, 2020

Dianne Hawkins, CEO
Comox Valley Chamber of Commerce
2040 Cliffe Ave
Courtenay, BC V9N 2L3

Dear: Ms. Hawkins,

Re: Public Consultation re: Comox Valley Sewer Service Planning

The Comox Valley Regional District (CVRD) is set to re-launch public consultations related to the long-term planning for the Comox Valley Sewer Service.

The Comox Valley Sewer Service provides the regional collection and treatment for raw sewage (wastewater) from Comox as well as Courtenay and K'ómoks First Nation. This system currently includes a sewer pipe located along Balmoral Beach (Willemar Bluffs) that is vulnerable to damage by waves, rocks and logs – and poses an environmental risk to the beaches and waters throughout Baynes Sound.

A long-term plan that will accommodate the community's growth and enable this at-risk pipe to be relocated is required. We are reaching out because we know this topic will be of interest to members of the Comox Valley business community, and we want to invite your members' participation.

Project Background

The long-term sewer service plan the CVRD is working on is called a Liquid Waste Management Plan (LWMP) and public input is key to its successful delivery. This stage of the process is looking at conveyance options – the pipes and pump stations that collect and move wastewater to the treatment plant.

A short list of these options has been approved by the CVRD's Sewage Commission and is now under consideration. The CVRD launched public consultation on the shortlist in March 2020 but that was postponed due to COVID-19. The consultation plan has been revised to implement health and safety measures for public consultation during the pandemic.

How to Participate

On September 14, we will relaunch consultation on the three shortlisted conveyance options for the location of new and upgraded pipes and pump stations. There are three ways to participate and we are hopeful you will reach out to your community contacts and encourage participation.

- **Complete the Online Survey:** Visit connectcvr.ca/lwmp to learn about the three options and complete the survey. The survey will be live from **September 14 – October 12**. Results from this survey will be summarized for the Sewage Commission as they consider which of the three options is preferred.

- **Join a Lunch Hour Webinar:** The project team will host an online info session on Zoom to explain the options and answer your questions before filling out the online survey. This session takes place on **September 30 from 12 pm – 1 pm** and registration is required. Please visit www.connectcvrld.ca/lwmp for more info and to register.
- **Attend an In-Person Info Session:** We will be hosting limited-size, in-person info sessions following COVID-19 safety protocols. Pre-registration is encouraged, please visit www.connectcvrld.ca/lwmp to reserve your spot or call 250-871-6271 for assistance.

October 1 - Comox

12 pm – 2 pm

Comox Rec Centre, 1855 Noel Ave

October 7 - Comox

12 pm – 2 pm

Comox Rec Centre, 1855 Noel Ave

October 8 - Courtenay

4 pm – 6 pm

CVRD Civic Room, 770 Harmston Ave

Questions?

Thank you for your interest in this important topic. If you have any questions about the options, or about how to participate, please contact us at engineering@comoxvalleyrd.ca or 250-334-6056.

We would also be pleased to set up an online meeting with the Chamber of Commerce. If this is something that you would like to coordinate with us, please have your staff contact Christianne Wile, Manager of External Relations at cwile@comoxvalleyrd.ca or 250-334-6066.

Sincerely,

K. La Rose

Kris La Rose, P.Eng.
Manager of Water and Wastewater Services
250-334-6083
klarose@comoxvalleyrd.ca

File: 5330-20/CVSS LWMP

September 11, 2020

Haeley Dewhirst, Executive Director
Comox Business in Action
305 Glacier View Drive
Comox BC V9M 1G6

Dear: Ms. Dewhirst,

Re: Public Consultation re: Comox Valley Sewer Service Planning

The Comox Valley Regional District (CVRD) is set to re-launch public consultations related to the long-term planning for the Comox Valley Sewer Service.

The Comox Valley Sewer Service provides the regional collection and treatment for raw sewage (wastewater) from Comox as well as Courtenay and K'ómoks First Nation. This system currently includes a forcemain located along Balmoral Beach (Willemar Bluffs) that is vulnerable to damage by waves, rocks and logs – and poses an environmental risk to the beaches and waters throughout Baynes Sound.

A long-term plan that will accommodate the community's growth and enable this at-risk pipe to be relocated is required. We are reaching out because we know this topic will be of interest to members of the Comox Business in Action Association, and we want to invite your members' participation.

Project Background

The long-term sewer service plan the CVRD is working on is called a Liquid Waste Management Plan (LWMP) and public input is key to its successful delivery. The planning process has already identified preferred paths forward for the treatment plant and resource recovery and is currently looking at conveyance options – the pipes and pump stations that collect and move wastewater to the treatment plant.

A short list of conveyance options has been approved by the CVRD's Sewage Commission and is now under consideration. The CVRD launched public consultation on the shortlist in March 2020 but that was postponed due to COVID-19. The consultation plan has now been adapted, and it's time to restart the process.

How to Participate

Comox residents have additional reasons to pay attention to these options. As service members, Comox taxpayers will contribute to the cost of any upgrades. However, all potential routes will pass through downtown Comox which means an added burden of construction impacts for those moving through, living and doing business in this area.

On September 14, we will relaunch consultation on the three shortlisted conveyance options for the location of new and upgraded pipes and pump stations. There are three ways to participate and we are hopeful you will reach out to your community contacts and encourage participation.

- **Complete the Online Survey:** Visit www.connectcvrld.ca/lwmp to learn about the three options and complete the survey. The survey will be live from **September 14 – October 12**. Results from this survey will be summarized for the Sewage Commission as they consider which of the three options is preferred.
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October 1 - Comox

12 pm – 2 pm

Comox Rec Centre, 1855 Noel Ave

October 7 - Comox

12 pm – 2 pm

Comox Rec Centre, 1855 Noel Ave

October 8 - Courtenay

4 pm – 6 pm

CVRD Civic Room, 770 Harmston Ave

Questions?

Thank you for your interest in this important topic. If you have any questions about the options, or about how to participate, please contact us at engineering@comoxvalleyrd.ca or 250-334-6056.

We would also be pleased to set up an online meeting with Comox Business in Action. If this is something that you would like to coordinate with us, please have your staff contact Christianne Wile, Manager of External Relations at cwile@comoxvalleyrd.ca or 250-334-6066.

Sincerely,

K. La Rose

Kris La Rose, P.Eng.
Manager of Water and Wastewater Services
250-334-6083
klarose@comoxvalleyrd.ca

File: 5330-20/CVSS LWMP

September 11, 2020

LETTER FOR COMOX RESIDENTS

Dear:

Re: Public Consultation re: Comox Valley Sewer Service Planning

The Comox Valley Regional District (CVRD) is set to re-launch public consultations related to the long-term planning for the Comox Valley Sewer Service.

The Comox Valley Sewer Service provides the regional collection and treatment for raw sewage (wastewater) from Comox, Courtenay and K'ómoks First Nation. This system currently includes a sewer pipe located along Balmoral Beach (Willemar Bluffs) that is vulnerable to damage by waves, rocks and logs – and poses an environmental risk to the beaches and waters throughout Baynes Sound.

A long-term plan that will accommodate the community's growth and enable this at-risk pipe to be relocated is required. You're invited to weigh in on the options being considered and the significant tax/cost implications and risks inherent to each.

Project Background

The long-term sewer service plan the CVRD is working on is called a Liquid Waste Management Plan (LWMP) and public input is key to its successful delivery. This stage of the process is looking at conveyance options – the pipes and pump stations that collect and move wastewater to the treatment plant.

A short list of these options has been approved by the CVRD's Sewage Commission and is now under consideration. The CVRD launched public consultation on the shortlist in March 2020 but that was postponed due to COVID-19. The consultation plan has been revised to implement health and safety measures for public consultation during the pandemic.

How to Participate

Comox residents have additional reasons to pay attention to these options. Along with the other service members, Comox taxpayers will contribute to the cost of any upgrades. However, all potential routes will pass through downtown Comox which means an added burden of construction impacts for those moving through and living in this area

On September 14, we will relaunch consultation on the three shortlisted conveyance options for the location of new and upgraded pipes and pump stations. There are three ways to participate:

- **Complete the Online Survey:** Visit www.connectcvr.ca/lwmp to learn about the three options and complete the survey. The survey will be live **from Sept. 14 - Oct. 12**. Results from this survey will be summarized for the Sewage Commission as they consider which option to pursue.

- Join a Lunch Hour Webinar: The project team will host an online info session on Zoom to explain the options and answer your questions before filling out the online survey. This session takes place on **September 30 from 12 pm – 1 pm** and registration is required. Please visit www.connectcvrld.ca/lwmp for more info and to register.
- **Attend an In-Person Info Session:** We will be hosting limited-size, in-person info sessions following COVID-19 safety protocols. Pre-registration is encouraged, please visit www.connectcvrld.ca/lwmp to reserve your spot or call 250-871-6271 for assistance.

October 1 - Comox

12 pm – 2 pm

Comox Rec Centre, 1855 Noel Ave

October 7 - Comox

12 pm – 2 pm

Comox Rec Centre, 1855 Noel Ave

October 8 - Courtenay

4 pm – 6 pm

CVRD Civic Room, 770 Harmston Ave

Questions?

Thank you for your interest in this important topic. If you have any questions about the options, or about how to participate, please contact us at engineering@comoxvalleyrd.ca or 250-334-6056.

Sincerely,

Kris La Rose, CVRD
Manager of Water and Wastewater Services
250-334-6083
klarose@comoxvalleyrd.ca

File:5330-20/CVSS LWMP

September 11, 2020

Sent via email only: Email

LETTER FOR STAKEHOLDERS

Dear: Contact Name,

Re: Public Consultation re: Comox Valley Sewer Service Planning

The Comox Valley Regional District (CVRD) is set to re-launch public consultations related to the long-term planning for the Comox Valley Sewer Service.

The Comox Valley Sewer Service provides the regional collection and treatment for raw sewage (wastewater) from Comox as well as Courtenay and K'ómoks First Nation. This system currently includes a sewer forcemain located along Balmoral Beach (Willemar Bluffs) that is vulnerable to damage by waves, rocks and logs – and poses an environmental risk to the beaches and waters throughout the Comox Estuary, Point Holmes and Goose Spit coastline, as well as Baynes Sound. Other sections of the sewer forcemain run along the Comox Harbour foreshore – and while their condition is sound, it is the long-term goal to remove them from this sensitive area.

A long-term plan that will accommodate the community's growth and improve protection of the environment is required. We are reaching out to your organization because of the urgent need to take action on a solution that will allow us to safely and effectively manage sewage, reducing risks to the environment.

Project Background

The CVRD is working on a Liquid Waste Management Plan (LWMP) and public input is key to its successful delivery. This stage of the process is looking at conveyance options – the pipes and pump stations that collect and move wastewater to the treatment plant.

A short list of these options has been approved by the CVRD's Sewage Commission and is now under consideration. The CVRD launched public consultation on the shortlist in March 2020 but that was postponed due to COVID-19. The consultation plan has now been adapted, and it's time to restart. The urgency around the Balmoral Beach sewer forcemain only increases as time passes and we are hopeful you will reach out to your community contacts and encourage participation.

How to Participate

On September 14, we will relaunch consultation on the three shortlisted conveyance options for the location of new and upgraded pipes and pump stations. There are three ways to participate and we hope you will share this information among your networks:

- **Complete the Online Survey:** Visit www.connectcvr.ca/lwmp to learn about the three options and complete the survey. The survey will be live **from September 14 - October 12**. Results from this survey will be summarized for the Sewage Commission as they consider which option to pursue.

- **Join a Lunch Hour Webinar:** The project team will host an online info session on Zoom to explain the options and answer your questions before filling out the online survey. This session takes place on **September 30 from 12 pm – 1 pm** and registration is required. Please visit www.connectcvrld.ca/lwmp for more info and to register.
- **Attend an In-Person Info Session:** We will be hosting limited-size, in-person info sessions following COVID-19 safety protocols. Pre-registration is encouraged, please visit www.connectcvrld.ca/lwmp to reserve your spot or call 250-871-6271 for assistance.

October 1 - Comox

12 pm – 2 pm

Comox Rec Centre, 1855 Noel Ave

October 7 - Comox

12 pm – 2 pm

Comox Rec Centre, 1855 Noel Ave

October 8 - Courtenay

4 pm – 6 pm

CVRD Civic Room, 770 Harmston Ave

Questions?

Thank you for your interest in this important topic. If you have any questions about the options, or about how to participate, please contact us at engineering@comoxvalleyrd.ca or 250-334-6056.

Sincerely,

K. La Rose

Kris La Rose, P.Eng.

Manager of Water and Wastewater Services

250-334-6083

klarose@comoxvalleyrd.ca

File: 5330-20/CVSS LWMP

September 11, 2020

LETTER FOR AREA B RESIDENTS

Dear: «Owner_1»«Owner_2»,

Re: Public Consultation re: Comox Valley Sewer Service Planning

The Comox Valley Regional District (CVRD) is set to re-launch public consultations related to the long-term planning for the Comox Valley Sewer Service.

The Comox Valley Sewer Service provides the regional collection and treatment for raw sewage (wastewater) from Comox as well as Courtenay and K'ómoks First Nation. This system currently includes a sewer pipe located along Balmoral Beach (Willemar Bluffs) that is vulnerable to damage by waves, rocks and logs – and poses an environmental risk to the beaches and waters throughout Baynes Sound.

A long-term plan that will accommodate the community's growth and enable this at-risk pipe to be relocated is required. You're invited to weigh in on the options being considered.

Project Background

The long-term sewer service plan the CVRD is working on is called a Liquid Waste Management Plan (LWMP) and public input is key to its successful delivery. This stage of the process is looking at conveyance options – the pipes and pump stations that collect and move wastewater to the treatment plant.

A short list of these options has been approved by the CVRD's Sewage Commission and is now under consideration. The CVRD launched public consultation on the shortlist in March 2020 but that was postponed due to COVID-19. The consultation plan has been revised to implement health and safety measures for public consultation during the pandemic.

What does this mean for my property?

While you may not live within the boundaries of these communities, or pay into the sewer service, we are inviting you to participate in the public consultation process because all three options under consideration include a proposed sewer pipe to be constructed in the Lazo Road area. We expect residents will have questions about traffic, noise and other construction impacts. We also know the protection of groundwater is of critical importance, in particular for residents around Lazo Road who rely on wells for their drinking water supply.

The CVRD conducted geotechnical investigatory work over the summer that has helped us to better understand ground conditions in the area. Before moving forward with any option it is important we confirm that the project won't impact these resources. The CVRD will continue to communicate with

homeowners about the outcomes of this investigatory work. Once data from this work is analyzed, all reports about ground conditions and groundwater will be made available to the public.

How to Participate

On September 14, we will relaunch consultation on the three shortlisted conveyance options for the location of new and upgraded pipes and pump stations. There are three ways to participate:

- **Complete the Online Survey:** Visit www.connectcvrld.ca/lwmp to learn about the three options and complete the survey. The survey will be live **from September 14 - October 12**. Results from this survey will be summarized for the Sewage Commission as they consider which option to pursue.
- **Join a Lunch Hour Webinar:** The project team will host an online info session on Zoom to explain the options and answer your questions before filling out the online survey. This session takes place on **September 30 from 12 pm – 1 pm** and registration is required. Please visit www.connectcvrld.ca/lwmp for more info and to register.
- **Attend an In-Person Info Session:** We will be hosting limited-size, in-person info sessions following COVID-19 safety protocols. Pre-registration is encouraged, please visit www.connectcvrld.ca/lwmp to reserve your spot or call 250-871-6271 for assistance.

October 1 - Comox

12 pm – 2 pm

Comox Rec Centre, 1855 Noel Ave

October 7 - Comox

12 pm – 2 pm

Comox Rec Centre, 1855 Noel Ave

October 8 - Courtenay

4 pm – 6 pm

CVRD Civic Room, 770 Harmston Ave

Questions?

Thank you for your interest in this important topic. If you have any questions about the options, or about how to participate, please contact us at engineering@comoxvalleyrd.ca or 250-334-6056.

Sincerely,

K. La Rose

Kris La Rose, P. Eng.
Manager of Water and Wastewater Services
250-334-6083
klarose@comoxvalleyrd.ca

APPENDIX 5 – Groundwater Webinar – Letter, Map and Infosheet

File: 5330-20/CVSS LWMP

October 20, 2020

[REDACTED]

Dear: [REDACTED],

Re: Webinar Invitation: Lazo-Area Groundwater and Sewer Planning

The Comox Valley Regional District (CVRD) is completing public consultation on a shortlist of conveyance options for the future of the Comox Valley Sewer Service. These options – for the pumps and pipes that move liquid waste to the sewage treatment plant on Brent Road – all propose new infrastructure through the Lazo Hill area.

During consultation events earlier this month, we heard specifically about potential impacts and/or mitigation measures regarding groundwater in the Lazo Area. We agree with comments we've received that protection of groundwater must be a top priority and we would like to take the time to provide more information and collect further comment on this issue.

To provide more opportunity for this discussion, we will be hosting an online webinar, using Zoom, to share information about groundwater investigations in the area and how this work is informing planning and design. We will also be able to answer questions from attendees. If you have questions or would like to learn more about this topic, you're invited to join us:

Groundwater & Sewer Planning Webinar

November 5, 4:30-5:30 pm

To register, email communications@comoxvalleyrd.ca and provide your name and email address.

A few more important details:

- Pre-registration is required (use email above)
- Questions can be emailed in advance, or posted using the chat function during the webinar
- The recorded webinar will be posted to the CVRD webpage after the event is complete

The comments we receive at this meeting will be included in the public consultation results that will help to inform the CVRD's Sewage Commission about a preferred option. Staff will bring forward a recommendation in late 2020/ early 2021 and an Alternative Approval Process will likely be held in 2021 to approve borrowing so that work can begin as soon as possible on a new conveyance system.

Project Background

The CVRD is undertaking a Liquid Waste Management Plan process (LWMP) for the Comox Valley Sewer Service – and public input is key to creating a successful long-term plan. A high-priority concern for the CVRD is the need to relocate the ageing sewer pipe on Balmoral Beach that is vulnerable to damage by waves, rocks, and logs and creates an environmental risk for our beaches and waters. As part of the LWMP process, a short list of new conveyance options (pipes and pump stations) has been approved by the CVRD's Sewage Commission and is now under consideration.

Questions?

Thank you for your interest in this important topic. If you have any questions, please contact us at engineeringservices@comoxvalleyrd.ca or 250-334-6083.

Sincerely,

K La Rose

Kris La Rose, P.Eng.
Senior Manager of
Water/Wastewater Services

Lazo tunnel – approximate alignment



Sewer Planning and Groundwater

Assessment for Tunneling InfoSheet

Protecting groundwater and wells

As part of a technical assessment for regional sewer system improvements in the Comox Valley, the Comox Valley Regional District (CVRD) is undertaking geotechnical investigatory work and hydrogeological data assessment in the Lazo Road and Comox Hill areas. The results of this work will provide information about ground conditions and groundwater levels to help determine viable options for relocating the ageing sewer pipe at Balmoral Beach (Willemar Bluffs), which is at a high risk of failure.

The planning process

The CVRD is in the process of developing a Liquid Waste Management Plan (LWMP) for the Comox Valley Sewer Service, which currently services Courtenay, Comox and K'ómoks First Nation. A high-priority concern is the need to relocate the ageing sewer pipe on Balmoral Beach that is vulnerable to damage by waves, rocks, and logs and creates an environmental risk for our beaches and waters.

Three options for conveyance (pipes and pump stations that move wastewater to the treatment plant on Brent Road) have been shortlisted. Two of those options include tunneling through Comox Hill and Lazo Road hill. All three options are undergoing further technical assessment.

Protecting groundwater

The CVRD recognizes that the protection of groundwater is of critical importance, in particular for residents around Lazo Road who rely on wells for their drinking water supply. Before moving forward with any option it is important we confirm that the project won't impact these sources.

- **External Experts:** The project team is working closely with local contractor GW Solutions to understand the aquifer in the area and highlight any possible challenges, and with WSP engineering to develop a design that will protect groundwater.
- **Investigations:** WSP is also undertaking geotechnical investigations with a first phase of exploratory boreholes drilled in June 2020 and a second phase in August 2020. As part of these phases, piezometers have been installed to monitor groundwater levels.

The information collected from onsite assessment and external experts will inform the project team of ground conditions and water locations, allowing for a plan to be developed that protects existing resources.

Questions? Please get in touch:

Phone: 250-334-6000

Email: engineeringervices@comoxvalleyrd.ca



Drilling equipment like this will be used to assess geotechnical conditions and groundwater in the area

COMING UP NEXT

A public engagement period will be open in September to collect feedback on the conveyance options that are currently being considered. All CVRD residents are invited to provide their feedback and comments at www.connectcvr.ca/lwmp

The CVRD will also continue to communicate with homeowners about the outcomes of this investigatory work. Once data from this work is analyzed, any reports regarding ground conditions and groundwater will be made available to the public.



comoxvalleyrd.ca   

APPENDIX 6 – Online Survey

Help shape the future of our Sewer Service

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Plunging in: Reviewing Options

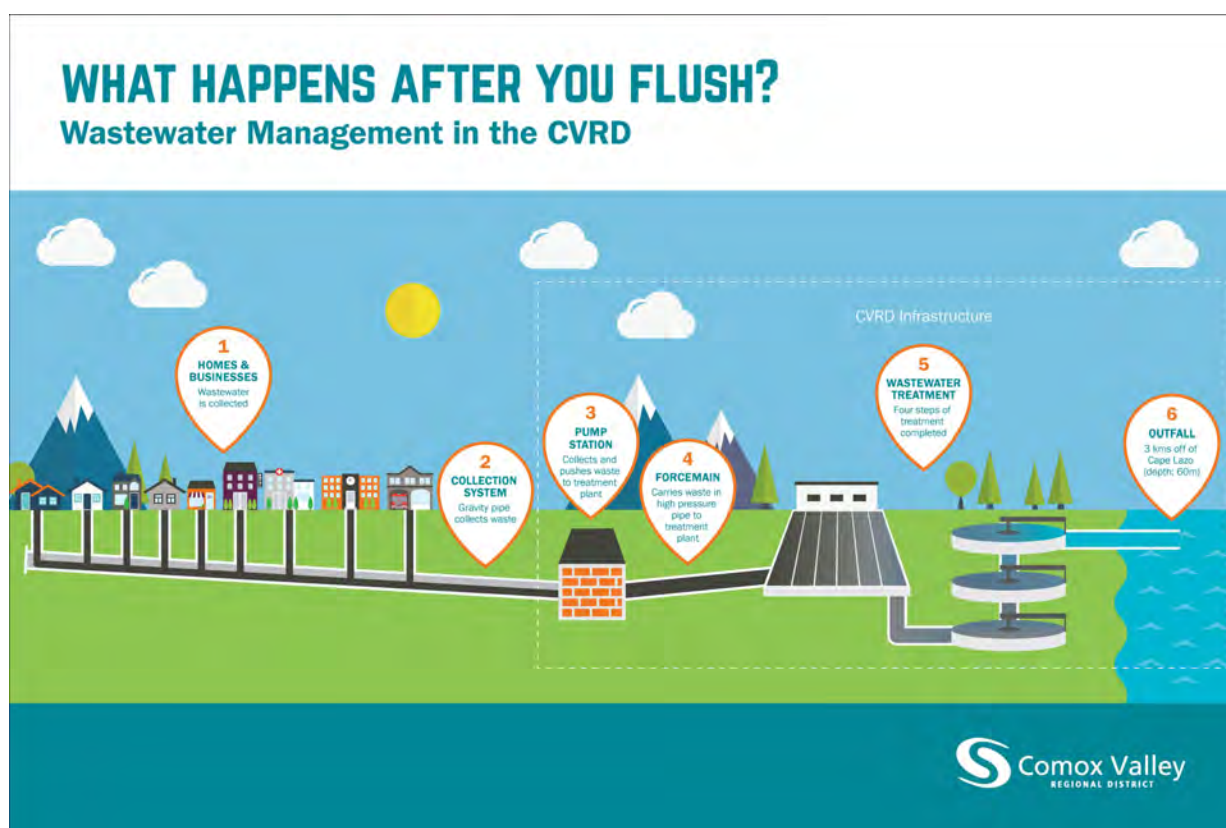
A critical part of the Comox Valley's sewer service is the 'conveyance system' – the series of pipes and pump stations that moves raw sewage (wastewater) to the treatment plant for processing.

Making a long-term plan for this system is critical to reducing environmental risks that currently exist along Willemar Bluffs (Balmoral Beach). It's also important that we design and build infrastructure that will serve the community for the long term. Any plan has an effect on the community—like costs to the taxpayer, as well as traffic, noise and other construction impacts – and while we understand there will be impacts, addressing the environmental risk and building for future growth is required. Leaving it 'as is' is not an option.

The cost estimates included in this survey are at a class C level, which means the project is at a preliminary design phase. Cost estimates at this stage are based on current market conditions. When a preferred option is chosen, the project will enter the next stage, the detailed design phase, at which point costs will be further refined.

A shortlist of options has been identified based on stakeholder and public feedback collected in January 2019. Each of these options presents its own challenges and opportunities and we want to know how you feel about the potential impacts.

Note: All survey responses remain anonymous.



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About You

Answers to this survey are anonymous. The below questions help us understand communities of interest.

Are you a?

(Choose all that apply)

- ☐ Resident
- ☐ Business Owner
- ☐ Visitor

Which community do you live in?

(Choose any 1 options) (Required)

- ☐ Courtenay
- ☐ Comox
- ☐ Cumberland
- ☐ Area A
- ☐ Area B
- ☐ Area C
- ☐ Other

Please proceed to questions/overview of three shortlisted options. We'll ask about the benefits and risks to each to determine what is most important to you.

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Option 1: Overland Forcemain

Overview:

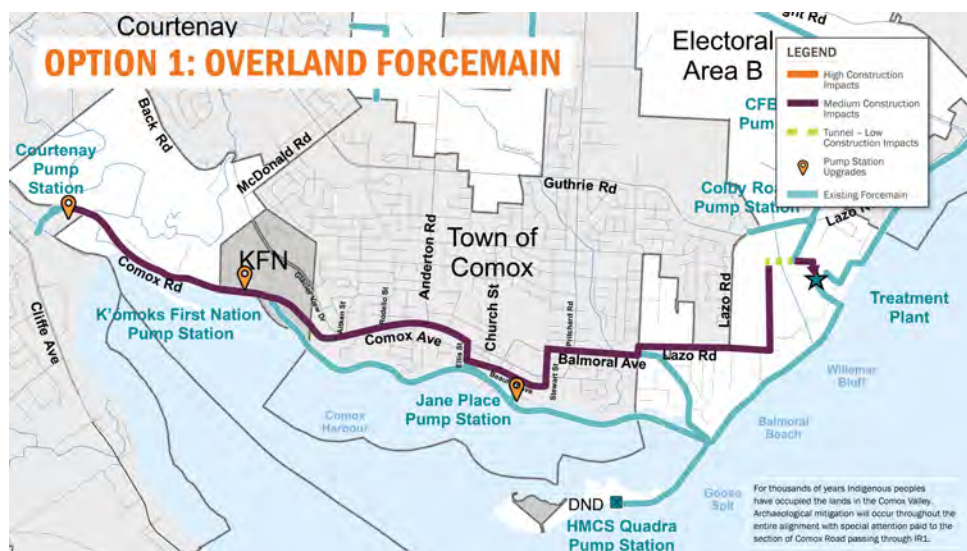
This option would see a trench dug along existing roadways, with a new pipe installed between the Courtenay Pump Station and the sewage treatment plant (see image below for route). This means installing pipe up and over the Comox Road and Lazo Road hills. It also includes:

- Replacement of the Courtenay Pump Station to accommodate the high-pressure pumps needed to push wastewater up over the two hills
- Upgrades to the K'ómoks First Nation and Jane Place pump stations
- Tunneling beneath the Lazo Marsh

*Our engineering consultants are currently reviewing whether this option could be delivered in phases.

Costs (Class C Estimate):

- Cost to Build: \$65M
- Cost to Run and Maintain (30-Year): \$17M
- Cost Per Household: \$240/household for 20 years



[VIEW LARGER IMAGE](#)

Route Impacts

The proposed route for Option 1 would follow Comox Road through K'ómoks First Nation IR1 land and into the Town of Comox, where it would continue along Comox Ave, turning south on Ellis, then east on Beaufort Avenue, north on Stewart St, and then east on Balmoral and Lazo Road, and up Moreland Road to connect to the treatment plant on Brent Road.

Anticipated construction impacts include:

- **Medium impact:** The entire construction route would see single lane alternating traffic at multiple locations through route.
- **Archaeological Mitigation:** Along the entire alignment but especially on Comox Road through IR1.
- **Low impacts:** Tunnelling in Lazo Marsh has the potential for increased traffic, noise in surrounding areas.

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Benefits for Option 1: Overland Forcemain

The project team has identified these benefits to Option 1: Overland Forcemain:

Rank the BENEFITS below from most important to you (1) to least important (2)

(Rank each option)

_____ Lower risk construction approach: 'Cut and cover' (digging trench, laying pipe, then covering) is a standard construction practice and more predictable.

_____ Removes foreshore pipe: Some public feedback has indicated a preference for removing the foreshore pipe along the Comox estuary, though technical studies show there is 15-20 years remaining in the pipe.

Are there other benefits – or positives – that should be considered for this option? What do you like about it?

Challenges for Option 1: Overland Forcemain

These are some of the challenges and risks for Option 1: Overland Forcemain:

Rank the CHALLENGES/RISKS below from most concerning to you (1) to least concerning (5)

(Rank each option)

_____ New pump station: A new Courtenay pump station may be required to accommodate higher pressure.

_____ Higher cost to run: Pushing so much volume up and over the two hills requires high-powered pumps that are more challenging and costly to operate.

_____ Higher lifecycle costs: Increased pressure and high energy has long-term cost and maintenance impacts.

_____ Addressing groundwater concerns: Managing groundwater through Comox Hill and Lazo Hill areas to ensure there is no impact to groundwater levels and individual wells.

_____ Roadway construction: Largest overall construction footprint and most traffic disruption over time, because all sections will include road work and excavation along Lazo and Balmoral roads in Area B could have more impact to vegetation in that area

Are there other challenges or risks that we should be considering for this option?

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Option 2: Tunnel Forcemain

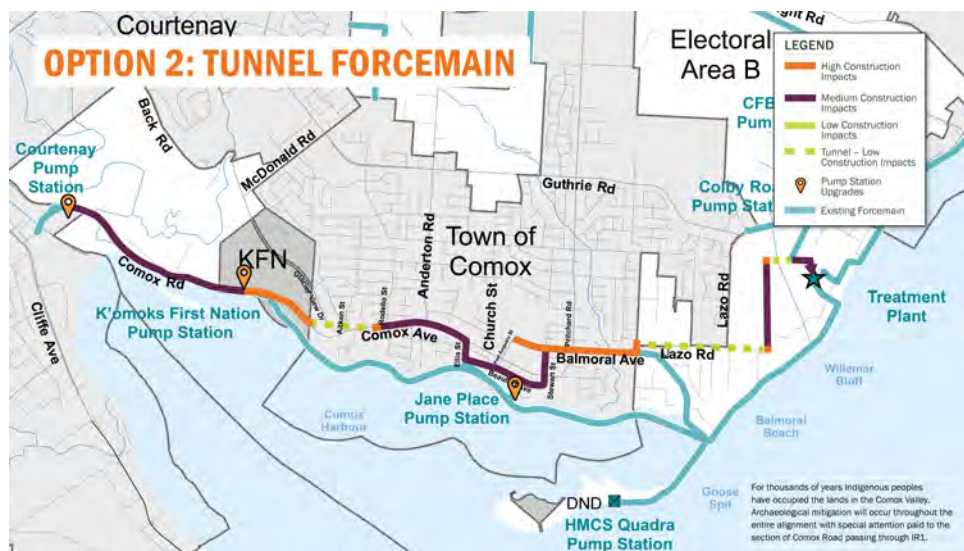
Overview:

This option combines 'cut and cover' construction (trenching) with directional drilling (a type of tunneling). The trench would be dug, with pipe installed, along existing roadways for much of the route, but tunneling would be used to go through rather than over the Comox and Lazo Road hills. It also includes:

- Upgrades to all three pump stations on the route: Courtenay, K'ómoks First Nation and Jane Place.
- Tunneling beneath the Lazo Marsh.

Cost (Class C Estimate):

- Cost to Build: \$58M
- Cost to Run and Maintain (30-Year): \$13M
- Cost Per Household: \$210/household for 20 years



[VIEW LARGER IMAGE](#)

Route Impacts:

The proposed route for Option 2 would follow a similar route as Option 1 – however the work at Comox Hill and Lazo Hill would include tunneling, rather than trenches. This would mean reduced roadway work in those areas, but additional impacts in areas around the tunnel entry/exit locations.

Anticipated construction impacts include:

- **High impact:** Comox Road (Dyke Road) from K'ómoks First Nation pump station to the bottom of Comox Hill due to single lane alternating traffic for an extended period. Balmoral (from Port Augusta to Pritchard) and small sections at the top of Comox Hill and the end of Lazo and Moreland would see periods of local traffic only.
- **Medium impact:** Comox Road (Dyke Road) from Courtenay Pump Station to K'ómoks First Nation pump station and on Comox Ave, Ellis, Beaufort, Stewart, Moreland and Brent Road – single lane alternating as work progresses.
- **Archaeological Mitigation:** Along the entire alignment but especially along Comox Road through IR1.
- **Low impact:** Tunnel areas at Comox Hill, Lazo Hill and Lazo Marsh with Increased traffic, noise in surrounding areas.

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Benefits for Option 2: Tunnel Forcemain

The project team has identified these benefits for Option 2: Tunnel Forcemain:

Rank the BENEFITS below from most important to you (1) to least important (4)

(Rank each option)

_____ Lower operating costs: By tunneling through the two hills instead of pushing waste up and over, there is reduced pumping demands on the system, making it cheaper to operate.

_____ Lower lifecycle costs: This reduced demand is easier on equipment and the smaller pumps will be cheaper to replace when needed.

_____ Less construction footprint: While construction impacts would still occur, tunneled sections would mean reduced impacts around Comox and Lazo Hills.

_____ Removes foreshore pipe: Some public feedback has indicated a preference for removing the foreshore pipe along the Comox estuary, though technical studies show there is 15-20 years remaining in the pipe.

Are there other benefits – or positives – that we should be considering for this option?

Challenges for Option 2: Tunnel Forcemain

These are some of the challenges identified for Option 2: Tunnel Forcemain:

Rank the CHALLENGES/RISKS below from most concerning to you (1) to least concerning (4)

(Rank each option)

_____ Increased construction risk: Though preliminary assessments show favourable ground conditions, tunneling work introduces more risk to the construction phase.

_____ Addressing groundwater concerns: Managing groundwater along tunneled sections through Comox Hill and Lazo Hill to ensure there is no impact to groundwater levels and individual wells.

_____ Additional rights-of-way required: Because this route moves off already established road right-of-ways, new agreements would have to be negotiated with landowners.

_____ Additional laydown area: A portion of Comox Rd and Balmoral Rd (Stewart to Port Augusta) will be heavily impacted due to the need to assemble and lay down pipe before it is fed underground.

Are there other challenges or risks that we should be considering for this option?

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Connect CVRD

Option 3: Phased Tunnel Forcemain

Overview:

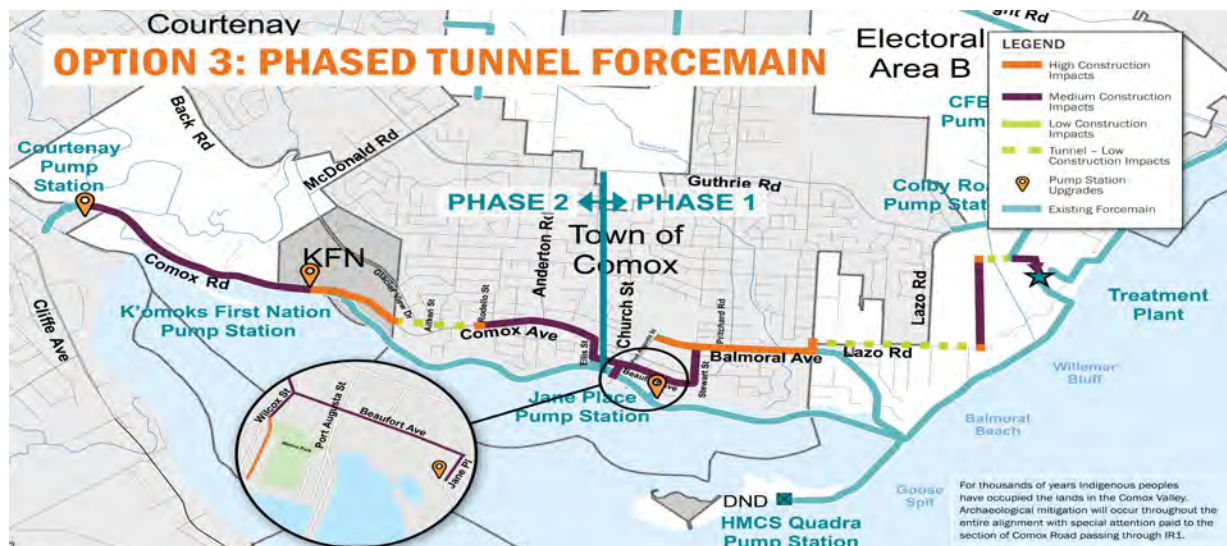
This option uses the combined trench-and-tunneling route of Option 2 but breaks the project into two phases. Phase 1 would include the stretch between Marina Park and the treatment plant. Phase 2 would replace the pipe between Courtenay Pump Station and Marina Park in 15-20 years. It also includes:

- Upgrades to all three pump stations on the route: Courtenay, K'ómoks First Nation and Jane Place
- A temporary line from a tie-in at Marina Park to the new forcemain on Beaufort Ave for 15-20 years until Phase 2 of the project is introduced
- A new line from Jane Place to new forcemain
- Lowest immediate cost to build
- Tunneling beneath the Lazo Marsh

Phase 1 Cost (Class C Estimate):

- Cost to Build: \$43M
- Cost to Run and Maintain: \$13M
- Cost Per Household: \$160/household (until Phase 2)

Phase 2 Capital Cost (to be implemented in 15-20 years): \$18M



[VIEW LARGER IMAGE](#)

Route Impacts:

The proposed route for Option 3 is the same as Option 2 – however only the work between Marina Park and the Sewage Treatment Plant would be undertaken at this time, with construction on the remainder of the route to occur in 15-20 years. Construction in the first phase would be focused between Marina Park, Jane Place/Beaufort Ave, Balmoral Ave and Lazo/Brent Roads. Construction impacts for Phase 1 include:

- **High impact:** Balmoral (from Stewart to Pritchard) and small sections at the end of Lazo and Moreland would see periods of local traffic only. Marina Park parking lot would see high impact with limited disruption to boat ramp access.
- **Medium impact:** Wilcox, Beaufort, Jane Place and Moreland Ave would see single lane alternating traffic.
- **Low impacts:** Lazo/Brent Road areas: Increased traffic, visible and active equipment, noise in surrounding areas.

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Benefits for Option 3: Phased Tunnel Forcemain

The project team has identified these benefits to Option 3: Phased Tunnel Forcemain:

Rank the BENEFITS below from most important to you (1) to least important (5)

(Rank each option)

_____ Addresses urgent environmental risk: The at-risk pipe at Willemar Bluffs would be replaced quickest as part of the first, immediate, phase of construction.

_____ Reduced short term capital cost: By splitting the work into phases, a significant portion of cost is postponed/spread out over a longer timeframe with more users to contribute.

_____ Lower operating and lifecycle costs: Reduced pressure requirements means it costs less to operate.

_____ Maximizes life of existing infrastructure: The existing foreshore pipe in Comox estuary – which has been assessed and is still in good condition – remains in place for another 15-20 years.

_____ Reduced construction impact: By completing half of the route at a time, the short-term construction impact is smaller.

Are there other benefits for this option that we should be considering?

Challenges for Option 3: Phased Tunnel Forcemain

These are some of the challenges and risks for Option 3: Phased Tunnel Forcemain:

Rank the below CHALLENGES/RISKS from most concerning to you (1) to least concerning (5)

(Rank each option)

_____ Foreshore pipe remains along the Comox Estuary: While condition assessment shows this pipe in good condition, some community members want to see it removed.

_____ Challenging connection at Marina Park: To complete a challenging connection between the new system and existing, there will be high construction impacts at Marina Park, limited impact to boat ramp access, and medium impacts along Wilcox Street

_____ Increased construction risk: Though preliminary assessments show favourable ground conditions, tunneling work introduces more risk to the construction phase.

_____ Addressing groundwater concerns: Managing groundwater along tunneled sections through Comox Hill and Lazo Hill to ensure there is no impact to groundwater levels and individual wells.

_____ Additional laydown area required: Because the pipe needs to be assembled before feeding underground, long stretches of roadway will need to be used as 'laydown' areas – including a portion of Balmoral between Stewart and Port Augusta.

Are there other challenges or risks that we should be considering for this option?

APPENDIX 7 – Online Survey Responses

Plunging in: Reviewing Options

SURVEY RESPONSE REPORT

11 September 2020 - 13 October 2020

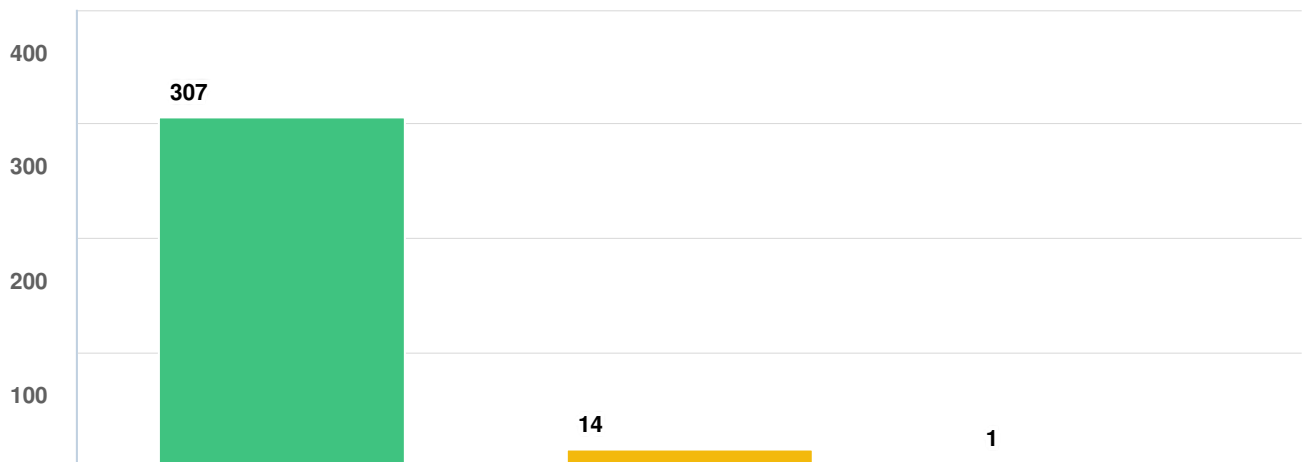
PROJECT NAME:

Help shape the future of our Sewer Service



SURVEY QUESTIONS

Q1 Are you a?



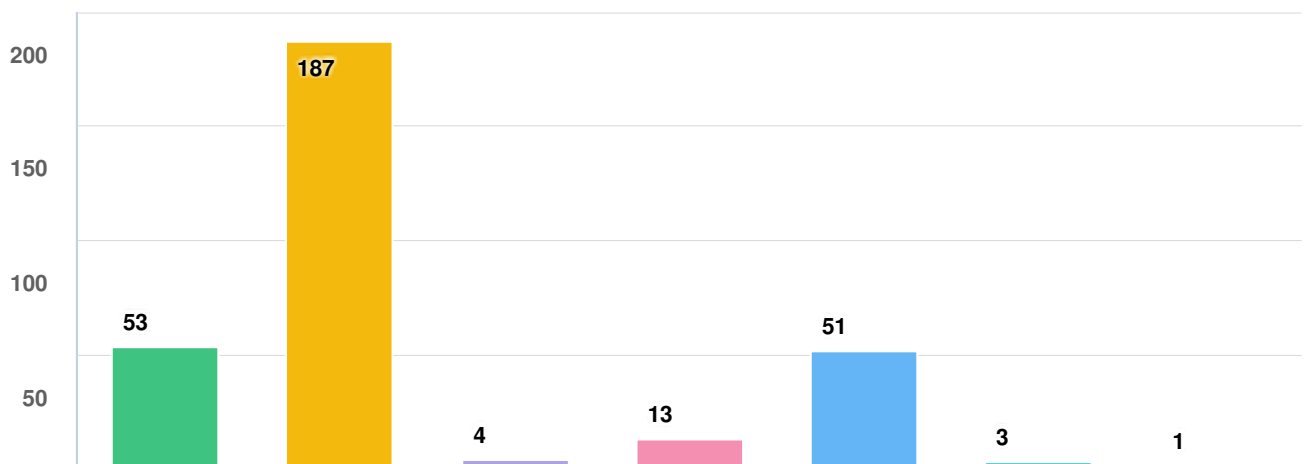
Question options

● Resident ● Business Owner ● Visitor

Optional question (312 response(s), 0 skipped)

Question type: Checkbox Question

Q2 Which community do you live in?



Question options

● Courtenay ● Comox ● Cumberland ● Area A ● Area B ● Area C ● Other

Mandatory Question (312 response(s))

Question type: Checkbox Question




Q3 Rank the BENEFITS below from most important to you (1) to least important (2)

OPTIONS	AVG. RANK
Lower risk construction approach: 'Cut and cover' (digging trench, laying pipe, then covering) is a standard construction practice and more predictable.	1.40
Removes foreshore pipe: Some public feedback has indicated a preference for removing the foreshore pipe along the Comox estuary, though technical studies show there is 15-20 years remaining in the pipe.	1.58

Optional question (264 response(s), 48 skipped)
Question type: Ranking Question

Q4 Are there other benefits – or positives – that should be considered for this option? What do you like about it?

Anonymous 9/14/2020 11:28 AM	More cost effective
Anonymous 9/14/2020 12:03 PM	Ability to upgrade roads to accommodate multi-use path; decommissioning of pipe within foreshore.
Anonymous 9/14/2020 05:17 PM	Keep the pipe for at least 10 yrs, with annual assessments.
Anonymous 9/14/2020 08:31 PM	Since we live in Area C and already have had the expense of setting up and maintaining our own household sewage treatment, I do not believe this will effect us in costs or inconvenience,! Hoping I am correct! Therefore my opinion on this project is probably moot ! Thank you
Anonymous 9/14/2020 10:09 PM	You have a bias questionnaire. Indicating "low risk" in the options creates bias. " though studies show there is 15-20 years remaining" also creates bias. This survey is null and void.
Anonymous 9/15/2020 10:01 AM	Predictable
Anonymous 9/15/2020 04:18 PM	proven new technology would make these options unnecessary and lower the price by 80% and could be completed by the 2022 start date, totally

	environmentally safe!
Anonymous 9/16/2020 12:21 AM	Phases
 9/16/2020 11:32 AM	Traffic concerns during construction.
Anonymous 9/16/2020 11:44 AM	Overland more manageable in case of problems.
Anonymous 9/16/2020 01:12 PM	Pipe is buried and not exposed to elements. Hopefully new pipe will be large enough to accommodate population growth for next 50 years.
Anonymous 9/16/2020 02:33 PM	Eventually we are going to need to move the line from the foot of the foreshore. We should do that to reduce risk, but also not to spend more money on the foreshore line, as that is eventually going to be money wasted.
Anonymous 9/16/2020 02:45 PM	Don't go cheap. Put in an upgrade that will last for at least 40 years to accommodate the influx of people into the valley. As we can see, our new hospital will soon be too small. Plan well.
 9/16/2020 04:14 PM	Having been involved in the construction of the sewer main from the Goose Spit to the Treatment plant, I think removal of the foreshore pipe is a bad idea. It. Once the pipe is not in use it should be filled and left in place.
Anonymous 9/16/2020 05:55 PM	The construction impact on residents who aren't serviced by the project is minimal
 9/17/2020 10:17 AM	Lowers construction impact along Balmoral which is critical access for locals to Goose spit and Point Holmes
Anonymous 9/17/2020 12:42 PM	I like using right of ways for services ... more stability!
Anonymous 9/17/2020 12:44 PM	I fail to see why we would put a forced main on land period. Have we considered a trenched marine pipe line. I worked a little in the offshore oil and gas area and today there are amazing modern systems of laying continuous large diameter pipe from reel barges. These pipes can withstand high pressure and are of composite construction. Trenching the pipe below the surface where required is also common and has lots of history. Disturbance to sea bed and fish habitat is small and recovery is fast. I really think that the eternal desire to dig trenches, while no doubts provides lots of jobs, is old school. !
Anonymous 9/17/2020 01:28 PM	Removing all pipes and not constructing any further pipes on the foreshore or below the high water mark should be a priority for the future.

Anonymous

9/17/2020 07:44 PM

Gets the pipe off the beach.

Anonymous

9/18/2020 01:44 PM

nothing, really. but do something to solve the problem.

Anonymous

9/18/2020 02:45 PM

no new pump house beyond jane place pmp house. upgrade both pump houses to make sure air quality remains as is or better than recommended by authorities

Anonymous

9/18/2020 03:18 PM

Upgrades Courtenay pump station and seems fairly standard construction

Anonymous

9/18/2020 06:03 PM

Protection of the environment BEFORE the foreshore pipe fails is the highest priority.

Anonymous

9/18/2020 07:02 PM

Since the community is now upgrading sewer systems, this would be a good time to bring in outlying areas that are not connected.

Anonymous

9/19/2020 08:33 AM

Lazo Rd to Brent Rd . To sewer plant ?? Where is that option ? Twin foreshore pipe but do it right this time not as cheap as possible !!

Anonymous

9/19/2020 08:58 AM

I am concerned about construction in sensitive habitat including werlands and sand dunes.

 9/20/2020 10:37 AM

Presuming that the new pipe will be in the center of Comox (Dike) Road (where I think that it should be), the 'dike' could be enhanced for climate change mitigation. it is indeed unfortunate that if this is the case, that the recent resurfacing of Dike Road will have been an a waste of Provincial money.

Anonymous

9/20/2020 04:51 PM

avoids using natural habitat areas for infrastructure and ties it in with more "industrial" / developed areas of the town.

Anonymous

9/20/2020 06:39 PM

This will directly affect us, since it runs along the road that we live on, However, we do like the low-risk construction approach. NOTE: the way this survey is constructed, we haven't yet had a chance to see the alternatives !!!!!!!!!!!

Anonymous

9/22/2020 02:52 PM

It would be assumed that commenting on Jane Place Station to the treatment plant there is the advantage of retaining the foreshore pipe as a viable backup to the main sewage line

Anonymous

9/23/2020 10:33 AM

I worry about any impact on Lazo marsh

Anonymous

9/23/2020 12:34 PM

No

Anonymous

9/24/2020 09:23 AM

Minimize environment impacts of future pipe breaks/failures; pipe is easily accessible for repairs and mitigation.

Anonymous

9/24/2020 01:26 PM

It will allow the utilization of local contractors (i.e., benefits local economy). Option 2 would require bringing in a HDD contractor from the mainland at considerable expense. Option 1 has the lowest engineering risk (i.e., less chance of major cost overruns). Option 1 gets the job done the fastest allowing the community to take advantage of historically low interest rates over the next several years.

Anonymous

9/24/2020 02:21 PM

If as a community we are concerned about the risk of sewage spillage and pollution of the estuary then we should be minimizing risk of any spill by removing pipe running by the estuary. However if this is done at a later date we may be able to better identify other environmental risks and development considerations.

Anonymous

9/25/2020 09:35 AM

more harm would be done by removing the old pipe. Empty it and leave it alone.

Anonymous

9/25/2020 05:12 PM

I don't like this option at all. It is number 3 on my list of options. Too much money.

Anonymous

9/26/2020 12:41 PM

Not much

Anonymous

9/27/2020 03:47 PM

Least impact for KFN neighbours. Projected cost for 15-20 years in the future as per option 3 can not be known. A dangerous gamble for the future of the estuary.

Anonymous

9/28/2020 09:12 AM

Takes pipe away from the ocean. Seems like straightforward process.

Anonymous

9/28/2020 07:50 PM

Having sewage line moved inland to avoid any risk of a spill into the estuary finally.

Anonymous

9/29/2020 11:03 AM

Minimal impact to residential areas, ie, Jane Place Pumping Station. Removing the JP Pumping Station entirely would be preferable. It really shouldn't be at this location and should never have been installed there in the first place.

Anonymous

9/29/2020 08:10 PM

Essentially an upgrade so predictable cost and outcome.

Anonymous

10/01/2020 01:17 PM

I would prefer protection of the foreshore pipe and including a walkway.

Anonymous

Bury telephone and power lines. Remove telephone and power poles. Retain

10/01/2020 01:54 PM

4 way traffic stops. Control pedestrian traffic across streets. Current practice of free pedestrian flows at intersection encourages 'stroller' pedestrian flow. Further, current practice has pedestrian flow in spurts rather than group especially slowing automobiles making right or left turns.

Anonymous

10/02/2020 07:15 AM

Nothing. Why not take everything South. Instead of spending all of this money to transfer sewage to a sewer treatment plant that may not have a longer life span - why not take invest the money in going South. It is mostly downhill and will all of the development that way - would that not make more sense? You will need something other than the current treatment plant to handle the volume will you not?

Anonymous

10/03/2020 09:07 AM

What pipeline control measures are being considered to capture potential leaks, process to ensure long term integrity of the pipe, what happens if there is a break?

Anonymous

10/05/2020 08:44 AM

If there is a leak, it will be far easier to detect. I would call it completely irresponsible to consider any below-ground option due to potential to sicken a nearby well user.

Anonymous

10/05/2020 10:26 AM

A two level ranking system seems a strange way to gauge support. What about other costs?

Anonymous

10/05/2020 01:53 PM

I like the removal of the foreshore pipe,

Anonymous

10/06/2020 04:55 PM

Please look at changing the route. Take the pipe from Comox Ave, Tunnel "North" on Anderton Rd, "East" on Guthrie Road to Lazo Rd straight to the Plant. Reduce going into green areas, such as Brooklyn Creek Park, or MacDonald Wood Park. Or the swamp east of Morland Road.


10/07/2020 07:15 AM

I have a question.. what happens to the spetic tanks that we have in our backyards? Who pays for removing it and filling in the hole? My spctic tank is working great for me. I pay every 3 years to have it emptied.

Anonymous

10/07/2020 12:58 PM

This option is the best of the three for the long-term sewage problems.

Anonymous

10/08/2020 03:09 PM

Single lane alternating traffic, without totally closing off the streets where the pipe will be laid.

Anonymous

10/08/2020 03:39 PM

Low impact because it can be staged along the route and no tunneling beyond the marsh would be faster and easier to do.

Anonymous

10/09/2020 07:43 AM

Why are we not building on the route to Croteau Beach and then moving inland

Anonymous

10/09/2020 01:03 PM

Benefit of completing project all at once

Anonymous

10/09/2020 02:23 PM

Leave the pipe in place

Anonymous

10/10/2020 12:19 AM

A break In the forcemain, (caused by poor pipe joints, defective materials or seismic activity) Would be more easily detected and repaired....thus providing better protection for local wells And the Quadra Sands aquifer.. Would potentially provide an opportunity to install a much needed bike path running on top of the forcemain on Lazo road...

Anonymous

10/10/2020 11:45 AM

That all urban properties not currently connected to the system, get connected.

[REDACTED]

10/11/2020 01:53 PM

If there truly is another 15 years of trustworthy pipe, then it seems inefficient to remove the pipe--which MUST be removed when it is no longer viable in the estuary.

Anonymous

10/11/2020 03:07 PM

If it is decided not to remove the foreshore pipe, there should be a plan to discontinue its use, despite the remaining life in the pipe.

Anonymous

10/12/2020 10:15 AM

removing danger of effluent spill in open ocean affecting all wildlife and shellfish industry

[REDACTED]

10/12/2020 09:15 PM

Getting the sewage infrastructure on a 100% overland route (we live on that route suggested in option 1!!), will mitigate any long term problems, if we encounter THAT somewhat overdue quake! If the system was in the Bay, fixing it could be very troublesome and exceedingly expensive. Looking long term, this option 1 HAS to be the solution.

Optional question (65 response(s), 247 skipped)

Question type: Essay Question

Q5 | Rank the CHALLENGES/RISKS below from most concerning to you (1) to least concerning (5)

OPTIONS	AVG. RANK
Addressing groundwater concerns: Managing groundwater through Comox Hill and Lazo Hill areas to ensure there is no impact to groundwater levels and individual wells.	2.34
Higher cost to run: Pushing so much volume up and over the two hills requires high-powered pumps that are more challenging and costly to operate.	2.61
Higher lifecycle costs: Increased pressure and high energy has long-term cost and maintenance impacts.	2.65
Roadway construction: Largest overall construction footprint and most traffic disruption over time, because all sections will include road work and excavation along Lazo and Balmoral roads in Area B could have more impact to vegetation in that area	3.31
New pump station: A new Courtenay pump station may be required to accommodate higher pressure.	4.01

Optional question (273 response(s), 39 skipped)
Question type: Ranking Question

Q6 | Are there other challenges or risks that we should be considering for this option?

Anonymous 9/14/2020 11:28 AM	Good for how many years?
Anonymous 9/14/2020 12:03 PM	commuter traffic
Anonymous 9/14/2020 09:52 PM	Habitat destruction in Lazo Marsh.
Anonymous 9/14/2020 10:09 PM	Oh probably.

Anonymous

9/15/2020 06:22 AM

Potential flooding and damage to the forcemain along Comox road due to sea level rise. Is relocating the Courtenay Pump Station further up river and running the forcemain under Lerwick/Guthrie an option?

Anonymous

9/15/2020 08:51 AM

Can you include a wildlife tunnel under Comox hill road?

Anonymous

9/15/2020 04:18 PM

investigating alternative solutions



9/16/2020 11:32 AM

Safety for ambulance and fire responses with construction.

Anonymous

9/16/2020 11:44 AM

Interference with kus kus sum project?

Anonymous

9/16/2020 01:12 PM

Pumping up over 2 hills will require high pressure , high volume pumps which will need a redundant system in case of Pump failure. The noise of these pumps and the noise of the back flow valves slamming shut has to be considered for near by residents. Larger pump stations have a larger foot print and the design of the station has to be considered to so it has minimal impact on the surrounding neighborhood. One of those impacts is the maintenance required so the pump stations can operate. The Courtenay pump station is constantly having work done and it is common to see several service vehicles outside it. It also had an electric chain hoist fastened to the beam on the outside which is used to remove the sewage pumps. This is in full public view and is not what a resident should be forced to look at.

Anonymous

9/16/2020 02:33 PM

not aware of any.



9/16/2020 04:14 PM

The prohibitive cost of construction on Comox Ave and Balmoral Ave, because of the existing infrastructure, traffic, ground conditions and disruption to residents. Having estimated and supervised some of the largest water and sewer projects in the valley in the 1980's including the Sewer you are replacing, I can see massive cost overruns.

Anonymous

9/17/2020 12:42 PM

My major concern is potential well water issues ...

Anonymous

9/17/2020 01:28 PM

Keeping the pipe and any future piping out of the ocean should be a priority.

Anonymous

9/17/2020 01:59 PM

Single lane traffic on Comox hill will result in increased traffic on Anderton Road

Anonymous

Poor air quality along Curtis Road.

9/17/2020 05:38 PM

Anonymous

overall and ongoing costs are a challenge

9/18/2020 09:08 AM

Anonymous

prospect of line breakage or seepage along Beaufort Ave, effect on residences below Beaufort, hill slippage, disturbance of stability during and after construction, effect on residences below Beaufort, effect on existing water line access, causing future breakage, leaks, to residences below Beaufort.

9/18/2020 01:44 PM

Anonymous

i would like to see your thorough risk management chart and mitigation action plans. Then maybe I can add to yours

9/18/2020 02:45 PM

Anonymous

Stay very close to the surface so leaks can be easily detected early and repaired before damage is too far advanced !

9/19/2020 08:33 AM

[REDACTED]

With a larger Courtenay pump station, why not eliminate the KFN & Jane Place pump stations for one closer to Lazo Hill? or Leave the Courtenay pump station as is (with replacement as necessary) and retro-fit the KFN pump station to accommodate the Comox Hill, replace the Jane Place pump station with a new one to accommodate the Lazo Hill. Replacing the Jane place pump station will move the line further from the shoreline.

9/20/2020 10:37 AM

Anonymous

The environment should be a top focus.

9/23/2020 03:37 AM

Anonymous

Climate change. There is no doubt that there will be major flooding of Dyke road and at some point in the future, there will be significant costs to raise the road. It would be insane not to fully consider the impact of future sea level rise.

9/24/2020 01:26 PM

Anonymous

With increasing population growth and discussion concerning the need for a potential additional bridge crossing of the estuary would this affect routing options for the pipe? Also if there is an additional bridge crossing in the future this may either contribute to traffic flow disruption or alternatively help accommodate re routing of traffic while the estuary construction phase is under way. This may be an argument for deferral of the replacement of pipe along the estuary.

9/24/2020 02:21 PM

Anonymous

too expensive in the long run

9/25/2020 05:12 PM

Anonymous

No

9/26/2020 12:41 PM

Anonymous

Unforeseen complications that could extend construction time and/or increase costs. Environmental implications of removing shoreline pipe.

9/28/2020 09:12 AM

Anonymous

9/28/2020 07:50 PM

The location of the treatment plant is far from optimal for the whole valley.

Anonymous

9/29/2020 11:03 AM

Minimal impact to residential areas, ie, Jane Place Pumping Station.
Removing the JP Pumping Station entirely would be preferable. It really shouldn't be at this location and should never have been installed there in the first place.

Anonymous

9/30/2020 09:16 PM

The archaeological impact is huge to both the cost & time if any middens are found along Comox Ave.

Anonymous

10/01/2020 04:42 PM

Power outages: generator reliability at lift station(s), enhance municipal vector truck capacities and number of them available for emergency call-outs.
Sewage dumping sites for vectors accessible / available 24/7 and as close as possible. Definitely an easily accessible (drive in and out) gravity manhole / main for vectors (to dump) to wastewater treatment plant would be ideal for emergencies.

Anonymous

10/05/2020 08:44 AM

Inconceivably - NONE of the options presented give much consideration to resident health. The potential affect on human-consumed groundwater is an incredibly serious problem that is discussed very little in available literature.

Anonymous

10/05/2020 10:26 AM

Risk to existing urban forest is of great concern to me. Construction impacts are not just in Area B.

Anonymous

10/05/2020 01:53 PM

going under Lazo Marsh could affect groundwater and wells if there is a rupture

Anonymous

10/06/2020 11:22 AM

We live near the treatment plant. We are on well water and are very concerned about potential leaks and problems with our well water.

Anonymous

10/06/2020 04:55 PM

Please look at changing the route, too many 90 degrees. Option: From Comox Ave, Tunnel "North" on Anderton Rd, "East" on Guthrie Road to Lazo Rd, straight to the Plant! Avoid 'through' Brooklyn Creek Park or MacDonald Wood Park.



10/07/2020 07:15 AM

I live across the Estuary and over the 13 years that I have been here, I see less and less water birds. Eagles want to built their nests but the noise and car run offs into the Estuary is taking away nature. Question.. which side of the road are the plans for digging and how does the growing traffic and run offs affect wildlife? I know its not relating to the pipeline but is there any studies done on car run offs into the Estuary?

Anonymous

10/07/2020 12:58 PM

If the Jane Place Pump Station must still remain, it should not be enlarged in height or in footprint and should be beautified in keeping with the residential area.

Anonymous

Why would the corridor on Lazo road not be used rather than disrupting

10/10/2020 12:19 AM

Morland ...there are some huge trees at the corner of Balmoral and Morland that this option would disrupt.

Anonymous

10/10/2020 11:45 AM

Urban properties not currently directly connected to the system should be connected due to the environmental risks of the current private systems in place.

Anonymous

10/11/2020 03:07 PM

How will this impact Marina Park and residential buildings along Beaufort? And all residences along the proposed overland route?

Anonymous

10/12/2020 10:15 AM

Damage to Lazo Marsh and impacts on all wildlife that depend on the Marsh.

Anonymous

10/12/2020 02:48 PM

Construction risks to vegetation, particularly old trees along the entire route.

10/12/2020 09:15 PM

If WE, the current occupants of the Comox Valley, are not the ones to deal with OUR shit, then who is?

Optional question (44 response(s), 268 skipped)

Question type: Essay Question

Q7 Rank the BENEFITS below from most important to you (1) to least important (4)

OPTIONS

AVG. RANK

Lower operating costs: By tunneling through the two hills instead of pushing waste up and over, there is reduced pumping demands on the system, making it cheaper to operate.	2.03
Lower lifecycle costs: This reduced demand is easier on equipment and the smaller pumps will be cheaper to replace when needed.	2.36
Less construction footprint: While construction impacts would still occur, tunneled sections would mean reduced impacts around Comox and Lazo Hills.	2.68
Removes foreshore pipe: Some public feedback has indicated a preference for removing the foreshore pipe along the Comox estuary, though technical studies show there is 15-20 years remaining in the pipe.	2.87

Optional question (272 response(s), 40 skipped)

Question type: Ranking Question

Q8 | Are there other benefits – or positives – that we should be considering for this option?

Anonymous

9/14/2020 04:47 PM

Lower pressure pumping is also less risk of pipe failure or leakage. Less pressure required for other pumping stations to tie in

Anonymous

9/14/2020 09:52 PM

Possibly less disruption to Lazo Marsh.

Anonymous

9/14/2020 10:09 PM

How about asking about the negatives instead of assuming option 2 only has positives vs option 1 only having negatives. This survey is awful.

Anonymous

9/15/2020 08:51 AM

Add a wildlife tunnel under roads

Anonymous

9/15/2020 04:18 PM

new technology



9/16/2020 11:32 AM

Future growth of the areas.

Anonymous

9/16/2020 01:12 PM

Cheaper than option 1. Less impact on residents during construction.

Anonymous

9/16/2020 02:33 PM

not aware of any.



9/17/2020 10:17 AM

Addition of biking trails where possible

Anonymous

9/17/2020 01:28 PM

Removing foreshore pipe is most important.

Anonymous

9/17/2020 05:38 PM

Poor air quality along Curtis Road.

Anonymous

9/18/2020 01:44 PM

none.

Anonymous


9/19/2020 07:54 AM

This appears to be the best solution, long term.

Anonymous

9/19/2020 08:33 AM

This survey is bullshit ! I am forced to make decisions by limiting my options !
After I make a choice I shouldn't be forced to choose a lesser degree of

	importance for an issue that is in my opinion of equal importance ! It makes it look like I agree with something I don't !
Anonymous 9/19/2020 08:58 AM	Less environmental disturbance means fewer potential problems.
 9/20/2020 10:37 AM	lower cost
Anonymous 9/22/2020 02:52 PM	Since tunneling will be deeper , this method will potentially have far greater negative impact on the water systems that feed the wells of people living between Lazo Road and the Bay.
Anonymous 9/24/2020 01:26 PM	The lower operating pressure and cost is a big plus!
Anonymous 9/24/2020 02:21 PM	Lower construction and life cycle costs are always good but while I would support removal of the foreshore pipe, if the existing infrastructure can be safely left in place, there may be advantage to defer this work so as to coordinate or take account of future development such as a third bridge crossing of the estuary which may be a reality within the existing lifespan of the pipe.
Anonymous 9/25/2020 05:12 PM	I like the cheaper cost. Smaller pumps I would think means less noise.
Anonymous 9/26/2020 12:41 PM	No
Anonymous 9/27/2020 03:47 PM	Though this plan protects the estuary, we have a concern for the higher impact on KFN community.
Anonymous 10/02/2020 07:15 AM	How does the drilling effect vibrations on homes ie: drywall cracking etc. A neighbour used a compactor once when finishing their driveway and it cracked a bunch of drywall and loosened tiles in the kitchen and bathroom. How many trees would be effected along Lazo Road?
Anonymous 10/02/2020 03:50 PM	Would like an option to comment NEGATIVELY re: diverting traffic to a quiet residential street (Donovan Drive) which already is a shortcut for Town of Comox Vehicles heading back and forth the works yard, as well as many non-local traffic.
Anonymous 10/05/2020 08:44 AM	Installing piping below ground will make leak detection much harder. Given the critical effect of a leak, why are tunneled options even being considered?
Anonymous 10/05/2020 10:26 AM	Can other areas where extensive tree roots are encountered be candidates for tunneling?

Anonymous

10/06/2020 04:55 PM

Please look at changing the route, too many 90 degrees. Option: From Comox Ave, Tunnel "North" on Anderton Rd, "East" on Guthrie Road to Lazo Rd, straight to the Plant! Avoid 'through' Brooklyn Creek Park or MacDonald Wood Park.

Anonymous

10/10/2020 12:19 AM

The route shown here is incorrect as the tunnels through Lazo do not follow established roadways but rather would go underneath private property...this should have been made clear to the public.

[REDACTED]

10/10/2020 11:33 AM

1)wells must NOT be impacted...2)you keep talking "ground water", this is different than aquifer that nobody has addressed, 3)why wasn't your hydrologist available at the meetings to ask direct questions to people attending info questions...IF in the future people in the well/septic field residences were forced to join this built sewage system can it more easily be done by this tunnelled method???

Anonymous

10/10/2020 11:45 AM

Other urban properties not currently directly connected can be joined.

[REDACTED]

10/11/2020 01:53 PM

The foreshore pipe MUST come out, but if there is truly 15-years of trustworthy life in the estuary pipe, it seems inefficient to remove it while it is still viable.

Anonymous

10/12/2020 02:48 PM

Reduced pumping pressure is very important to me.

[REDACTED]

10/12/2020 09:15 PM

All 2nd in my view.

Optional question (33 response(s), 279 skipped)


Question type: Essay Question

Q9 Rank the CHALLENGES/RISKS below from most concerning to you (1) to least concerning (4)

OPTIONS	AVG. RANK
Addressing groundwater concerns: Managing groundwater along tunneled sections through Comox Hill and Lazo Hill to ensure there is no impact to groundwater levels and individual wells.	1.93
Increased construction risk: Though preliminary assessments show favourable ground conditions, tunneling work introduces more risk to the construction phase.	2.46
Additional rights-of-way required: Because this route moves off already established road right-of-ways, new agreements would have to be negotiated with landowners.	2.54
Additional laydown area: A portion of Comox Rd and Balmoral Rd (Stewart to Port Augusta) will be heavily impacted due to the need to assemble and lay down pipe before it is fed underground.	3.01

Optional question (272 response(s), 40 skipped)
Question type: Ranking Question

Q10 Are there other challenges or risks that we should be considering for this option?

Anonymous 9/15/2020 06:22 AM	Could the tunnels just go under the existing right of way under Lazo road and Comox road/avenue Rather than cutting underneath the residential neighborhoods?
Anonymous 9/15/2020 04:18 PM	new technology
 9/16/2020 11:32 AM	CVRD should put municipal water into those areas without it.
Anonymous 9/16/2020 01:12 PM	Don't go with a low bid tunnelling contractor .
Anonymous 9/16/2020 02:33 PM	not aware of any

Anonymous

9/17/2020 08:44 AM

What do you mean by "Additional laydown area along Balmoral" in front of 4 condos, shopping centre entrance and golf course? Will traffic [i.e. cars from these sites] be completely shut down? How will emergency services [i.e. ambulance, fire, hydro, etc] be delivered to these sites?

[REDACTED]

9/17/2020 10:17 AM

Anderton park access needs to be maintained as it is heavily used by children, tennis players, and Berwick residents. It is also the footpath access to Comox mall. Access to Comox golf course must also be considered as they have already had access limited by condo construction for over 12 months. Consider a temporary left turn signal or lane eastbound into Comox mall from Comox Ave. Blocking the Balmoral entrance will create havoc at Comox mall.

Anonymous

9/17/2020 01:59 PM

increased traffic on Anderton Road is to be expected

Anonymous

9/18/2020 09:08 AM

overall and ongoing cost is a challenge

Anonymous

9/18/2020 01:44 PM

using a number of different construction techniques rather than just one process, make the project more complicated, less efficient, and subject to more potential variances in costs as things move along on various phases and sections. likely hood of extra construction costs increases. This will end up costing more than option 1.

Anonymous

9/18/2020 02:45 PM

the least impact to landowners the better.

Anonymous

9/19/2020 08:33 AM

I say again lazo Rd to Brent Rd to plant . Close to surface for easy leak detection clean up and repair !

Anonymous

9/19/2020 08:58 AM

I am concerned about the potential impacts to the sensitive wetland and sand dune ecosystems during and post construction.

Anonymous

9/20/2020 01:33 PM

too much ground water flowing to golf creek

Anonymous

9/20/2020 04:51 PM

Could have major impacts on businesses in the downtown area due to the construction. Also could impact Filberg Festival and tourism due to the tunnel construction in the area

Anonymous


9/20/2020 06:39 PM

I am VERY concerned that this option runs the HIGH risk of major cost increases and delays if/when undocumented underground infrastructure and/or archeological remains and/or unexpected geological features are encountered during the tunneling

Anonymous

9/24/2020 01:26 PM

Major risk of cost overruns. It looks cheaper than Option 1 now, but because of the additional risk it could end up costing a lot more. If a local HDD

	contractor is used, they may not have sufficient experience. If a more experienced HDD contractor from the mainland is brought in, it may be more expensive.
Anonymous 9/25/2020 05:12 PM	no
Anonymous 9/26/2020 12:41 PM	No
Anonymous 9/27/2020 03:47 PM	As mentioned above, this option increases impact for KFN community. Their concerns should be well considered.
Anonymous 9/28/2020 07:50 PM	The unknowns of tunnelling and potential delays that might result. The route through the middle of Comox is problematic enough without increasing the disruption time.
Anonymous 10/01/2020 06:33 AM	That people will not choose this option because they are fixated on saving money for themselves rather than thinking about the savings for future generations.
Anonymous 10/02/2020 07:15 AM	What right of ways would be involved? This should be shown so people who may be impacted are advised.
Anonymous 10/02/2020 03:50 PM	impact of traffic on quiet residential street (Donovan Drive) which is already used as a "shortcut" by many Town of Comox vehicles and other "non-local" traffic.
Anonymous 10/02/2020 09:44 PM	They are all the same option, just doing it in a different way. How about offering real options? If the HMCS Quadra pump station is going to be left as is, wouldn't there still be a risk of a leak into the Comox Bay?
Anonymous 10/05/2020 01:53 PM	going under Lazo Marsh could put groundwater and individual wells at risk as will as if there is a rupture.
Anonymous 10/06/2020 04:55 PM	Please look at changing the route, too many 90 degrees. Option: From Comox Ave, Tunnel "North" on Anderton Rd, "East" on Guthrie Road to Lazo Rd, straight to the Plant! Avoid 'through' Brooklyn Creek Park or MacDonald Wood Park.
Anonymous 10/09/2020 01:03 PM	Stability of banks on comox hill. Drilling impacts on surrounding area and residents.
Anonymous 10/10/2020 12:19 AM	The Quadra Aquifer serves over 1500 wells. Any pollution of that aquifer is a major
 10/10/2020 11:33 AM	1)the impact of the aquifer vs. "ground water"...i think there is a big difference

Anonymous

10/10/2020 11:45 AM

Having urban properties not currently directly connected do so.

Anonymous

10/12/2020 02:48 PM

Preservation of vegetation, particularly trees, especially old ones that cannot possibly be replaced is important to me.

[REDACTED]

10/12/2020 09:15 PM

Not our preferred option.

Optional question (33 response(s), 279 skipped)

Question type: Essay Question

Q11 Rank the BENEFITS below from most important to you (1) to least important (5)

OPTIONS	AVG. RANK
Addresses urgent environmental risk: The at-risk pipe at Willemar Bluffs would be replaced quickest as part of the first, immediate, phase of construction.	2.06
Maximizes life of existing infrastructure: The existing foreshore pipe in Comox estuary – which has been assessed and is still in good condition – remains in place for another 15-20 years.	2.97
Lower operating and lifecycle costs: Reduced pressure requirements means it costs less to operate.	3.00
Reduced short term capital cost: By splitting the work into phases, a significant portion of cost is postponed/spread out over a longer timeframe with more users to contribute.	3.08
Reduced construction impact: By completing half of the route at a time, the short-term construction impact is smaller.	3.82

Optional question (272 response(s), 40 skipped)

Question type: Ranking Question

Q12 Are there other benefits for this option that we should be considering?

Anonymous

9/14/2020 10:55 AM

New technology might be discovered between now and 15-20 years...which may benefit us when we are ready to replace the phase 2 pipes.

Anonymous

9/14/2020 11:28 AM

Not interested in option 3.

Anonymous

9/14/2020 11:36 AM

This seems like the best option of the three. However, if there's good grant funding opportunities from potential COVID-19 stimulus, it would be better to take advantage and get the whole project done and maximize senior level funding.

Anonymous

9/15/2020 04:18 PM

new technology as the total cost is still over 60 million when it could be done for 9 million a super saving for the taxpayer and the environment

Anonymous

9/16/2020 02:33 PM

not aware of any other benefits.

Anonymous

9/17/2020 08:44 AM

Same concerns as option 2.

[REDACTED]

9/17/2020 10:17 AM

Less aggravation for local business and community in short term. Allows more time to assess and integrate future community development plans to align with future phases while dealing with immediate concerns.

Anonymous

9/17/2020 12:44 PM

Still believe a offshore pipeline should be investigated as all this is a massive upheaval and prone to cost overruns and endless delays.

Anonymous

9/17/2020 01:28 PM

Best to deal with eliminating foreshore pipe as soon as possible. Thus, do not like this option. Do it right the first time. Anyone in private practice would not choose this option as the cost later will be significantly higher than what it is do either of the other two options now.

Anonymous

9/17/2020 07:44 PM

Better to build the whole thing asap. Postponing the second phase means there is more likelihood of running into difficulties later. Expanded future growth means it would have higher long term impacts and costs would most likely be much more than anticipated. Get it over with now, and then it's done.

Anonymous

9/18/2020 01:44 PM

Best option with least immediate impact, deals with most pressing shoreline problem.

Anonymous

9/18/2020 02:45 PM

let us take the brunt of the cost now. do the entire line. delete this option entirely. when we are ready to do phase 2 it will cost more than phase one by then

Anonymous

9/19/2020 08:33 AM

I say again lazo Rd to Brent Rd to plant ! Still think I should be able to give equal importance to certain issues . This survey forced me to put more importance on certain issues because of limiting choice .

[REDACTED]

9/20/2020 10:37 AM

None that I can think of.

Anonymous 9/20/2020 01:33 PM	work with bc hydro to remove any possible poles
Anonymous 9/20/2020 04:51 PM	Capital costs will likely be higher at the time of phase 2 work beginning. Perhaps if Option 1 or 2 were chosen the capital costs could be spread over a longer period to mitigate the impacts of inflation while ensuring an equitable cost for current residents vs future residents.
Anonymous 9/22/2020 10:14 AM	In 15 to 20 years from now, there will be more population to fund Phase 2 as well as the likelihood of better and more efficient construction technology.
Anonymous 9/23/2020 03:37 AM	The way this question is worded makes it seem like this is the preferred option for the survey writer. There should be more discussion about the risks of this option.
Anonymous 9/24/2020 09:23 AM	Not committing funds/capital until needed. Future solutions may include; local sewage treatment plants, tertiary treatment plants, increased use of gray water at the source (e.g. homes and businesses) reducing sewage volumes.
Anonymous 9/24/2020 02:21 PM	Phased development provides opportunity to better assess impact of future infrastructure plans (additional bridge crossing estuary?) or traffic pattern changes within the community as well as any additional or new environmental challenges to the project.
Anonymous 9/24/2020 02:51 PM	impossible to know the cost of phase 2 in 15 yrs time it may be too costly to complete then ,also the impact on Marina Park is unacceptable do not think this option should be considered
Anonymous 9/25/2020 05:12 PM	no
Anonymous 9/26/2020 08:17 AM	Too long of a time period - not recommended
Anonymous 9/26/2020 12:41 PM	No
Anonymous 9/27/2020 03:47 PM	We don't like this option at all.
Anonymous 9/28/2020 07:50 PM	I don't like this option and would prefer it to be removed.
Anonymous 9/29/2020 11:03 AM	Minimal impact to residential areas, ie, Jane Place Pumping Station. Removing the JP Pumping Station entirely would be preferable. It really shouldn't be at this location and should never have been installed there in the first place.
Anonymous	due to a large elderly population, I feel any project that has less cost to the

10/03/2020 10:50 AM

homeowner is what would be best.

Anonymous

10/04/2020 12:17 AM

Are the 20 year lifespan accurate? is there risk phase 2 areas could need replacement sooner? What can happen in 20 years that may change perspective on plan?

Anonymous

10/04/2020 12:33 PM

Thank you for this opportunity to contribute opinion. I support options 2 and 3 for the tunnelling, and I'll vote from Option 3 because of the more immediate replacement of the Willemar Bluffs pipe.

Anonymous

10/05/2020 10:26 AM

The survey should compare the environmental risk and benefits of the three options. Which of the three would do the best job of preserving existing urban forest, for example? Comment: High impact zones along Balmoral Avenue do not agree on map compared with verbal description. Which is correct?

Anonymous

10/06/2020 04:55 PM

Please look at changing the route, too many 90 degrees. Option: From Comox Ave, Tunnel "North" on Anderton Rd, "East" on Guthrie Road to Lazo Rd, straight to the Plant! Avoid 'through' Brooklyn Creek Park or MacDonald Wood Park.


10/07/2020 07:15 AM

no

Anonymous

10/09/2020 07:43 AM

Make "doing it right" the first priority. Stand up to a few selfish landowners and get a long term sustainable system!!

Anonymous

10/09/2020 01:03 PM

Addresses primary concerns at Willemar bluffs as priority.


10/10/2020 11:33 AM

capital costs are only going to go UP as projects are delayed, we all know that...

Anonymous

10/10/2020 11:45 AM

I do not like this option because costs will only be significantly greater for phase 2; and for a project of this magnitude the entire community needs to be receiving value.



10/11/2020 01:53 PM

Assuming the viability of the pipe within the estuary is truly 15-years, then a cost deferred is a cost not incurred.

Anonymous

10/12/2020 10:15 AM

This is my preferred option. Most efficient and least impactful and utilizes existing infrastructure to its fullest life span.


10/12/2020 09:15 PM

Still not the RIGHT solution.

Optional question (40 response(s), 272 skipped)

Question type: Essay Question


Q13 Rank the below CHALLENGES/RISKS from most concerning to you (1) to least concerning (5)

OPTIONS	AVG. RANK
Addressing groundwater concerns: Managing groundwater along tunneled sections through Comox Hill and Lazo Hill to ensure there is no impact to groundwater levels and individual wells.	2.27
Increased construction risk: Though preliminary assessments show favourable ground conditions, tunneling work introduces more risk to the construction phase.	2.65
Challenging connection at Marina Park: To complete a challenging connection between the new system and existing, there will be high construction impacts at Marina Park, limited impact to boat ramp access, and medium impacts along Wilcox Street	2.82
Foreshore pipe remains along the Comox Estuary: While condition assessment shows this pipe in good condition, some community members want to see it removed.	3.45
Additional laydown area required: Because the pipe needs to be assembled before feeding underground, long stretches of roadway will need to be used as 'laydown' areas – including a portion of Balmoral between Stewart and Port Augusta.	3.74

Optional question (275 response(s), 37 skipped)
Question type: Ranking Question

Q14 Are there other challenges or risks that we should be considering for this option?

Anonymous 9/14/2020 10:55 AM	I am concerned that the phase 2 18M will be a much higher bill in 15-20 years due to inflation, etc...
Anonymous 9/14/2020 11:28 AM	Scrap option 3
Anonymous 9/14/2020 11:36 AM	Best to maximize the use of the foreshore pipe if possible, unless grant funding opportunities dictates a reduced burden on tax payers today for replacement.

Anonymous 9/14/2020 03:53 PM	Future costs of the portion that would be replace 15-20 years later. Rising sea levels could make it more challenging than it is currently to replace that portion
Anonymous 9/14/2020 09:01 PM	will cost much more to do phase 2 in 15 - 20 years than it will now, so just passing the decision making and cost to future residents and decision makers
Anonymous 9/14/2020 10:09 PM	Why are we moving everything so far?
Anonymous 9/15/2020 04:18 PM	none of this is required if proven new technology would be used
Anonymous 9/16/2020 07:03 AM	This is my favored option. Why replace what still has 15 years life? Keep that till needing to be replaced.
Anonymous 9/16/2020 01:12 PM	How long can the existing system be shut down so the connection can be made? Do residents have to be aware that this work will be taking place so they will not flush etc?
Anonymous 9/16/2020 01:40 PM	I think the cost of this construction should be assumed by real estate developers in both Comox and Courtenay who are responsible for this construction. The new development areas such as Crown Isle need to bear the brunt of the costs of this construction.
Anonymous 9/16/2020 02:33 PM	not aware of any
 9/17/2020 10:17 AM	Same concerns as option #2. Additionally complexities at marina park sound like cost overruns would be more likely.
Anonymous 9/17/2020 01:28 PM	Remove the pipe from the foreshore. Having been here when it was installed along Willemar Bluffs, it has been an ongoing problem.
Anonymous 9/17/2020 01:59 PM	delaying part of the project could result in increased costs down the line. We don't know what the economic climate will be in 15 to 20 years. If we do the whole job now, there is some certainty to that.
Anonymous 9/18/2020 09:08 AM	overall and ongoing cost is a challenge
Anonymous 9/18/2020 01:44 PM	none of these are as important as the benefits of this option
Anonymous 9/18/2020 02:45 PM	what diameter is this new pipe? Phase 2 - after the entire line in from option 1 or 2 , remove the estuary line.

Anonymous

9/19/2020 08:33 AM

I say again lazo Rd to Brent Rd to plant ! Close to surface for easy leak detection cleanup and repair !

Anonymous

9/19/2020 08:58 AM

Prices change. It is already more costly than the other options. By the time we commence phase 2, the costs will likely be higher. But I do like using existing infrastructure while it's still in good shape.



9/20/2020 10:37 AM

Let's get it done.

Anonymous

9/20/2020 04:51 PM

Future financial situation may be different and make infrastructure projects in 15-20 years difficult to follow up on. Could be criticized for leaving the mess for the future and so on.

Anonymous

9/23/2020 03:37 AM

The fact we are deferring work.

Anonymous

9/23/2020 10:19 PM

Why can't the route continue to be where it's at, with repairs completed. There has to be away to resolve the issues without changing the whole route.

Anonymous

9/24/2020 01:26 PM

I am not in favour of dragging the project out in phases. In my opinion, it would be best to "bite the bullet" and get the job done while interest rates are historically low. There are going to be other very demanding and expensive infrastructure projects associated with climate change coming in the next two decades. We should take care of our LWM problem now!

Anonymous

9/24/2020 02:51 PM

Marina Park should not be a part of the project

Anonymous

9/25/2020 10:34 AM

ya the #1 risk is increasing/unknown construction costs in phase #2. Construction costs increase each year and 15-20 years presents potential cost increases that have not been addressed. As someone who finances phased construction projects I am very surprised more analysis regarding the potential increased costs of phase #2 has not been shared. If we have money for a curling rink a small % of the population uses than surely we have money to complete the project now rather than phasing.

Anonymous

9/25/2020 05:12 PM

The extra cost of Labour in the second phase. As wages will have gone up and there will be new environmental rules probably which could increase cost.

Anonymous

9/26/2020 08:17 AM

Too long of a time period The never never project

Anonymous

9/26/2020 12:41 PM

No. I favour this option

Anonymous

Spreading the cost and construction over a long period of time will increase

9/28/2020 09:12 AM

costs overall and likely introduce new challenges as settlement in the area changes over time.

Anonymous

9/28/2020 07:50 PM

Losing the momentum to get the job done!

Anonymous

9/29/2020 11:03 AM

This survey is biased to Option 3. Furthermore, the survey is flawed where the the choice, once chosen, drops off the list giving only remaining options. IE, perhaps we would like to have chosen, for example #3, for more than one of the questions but it is not available. once already chosen.

Anonymous

9/30/2020 09:16 PM

Is it safe to say that the population base for the Comox Valley and/or the affordability of the project will be the same as it is now in 15-20yrs? Baby boomers will be passing away with no where close to the amount of people to replace them & help pay for the project. Construction costs rarely go down & could skyrocket by then, leaving much bigger tax implications to the remaining residents.

Anonymous

10/01/2020 06:33 AM

The risk of people choosing this option as the cheapest without considering the costs for future generations.

[REDACTED]

10/03/2020 09:32 AM

Increased future costs for Phase 2. I prefer to get the whole project done at once.

Anonymous

10/04/2020 12:17 AM

Is the plan to remove the foreshore pipe in phase 2, in 20 years?

Anonymous

10/04/2020 12:33 PM

I submit my preference for Option 3

Anonymous

10/05/2020 01:53 PM

Tunneling under Lazo Marsh is a concern as it could affect groundwater and wells in my area and if there is a rupture that could also affect the groundwater and wells.

Anonymous

10/06/2020 11:22 AM

The ground water on and around Curtis Road is a huge issue. Going under Lazo Marsh is potentially a huge problem. We do not want anything that might destroy our aquifer. Please protect our water.

Anonymous

10/06/2020 04:55 PM

Please look at changing the route, too many 90 degrees. Option: From Comox Ave, Tunnel "North" on Anderton Rd, "East" on Guthrie Road to Lazo Rd, straight to the Plant! Avoid 'through' Brooklyn Creek Park or MacDonald Wood Park.

[REDACTED]

10/07/2020 07:15 AM

no

Anonymous

10/09/2020 11:30 AM

the best option for us

Anonymous

10/10/2020 12:19 AM

These challenges apply also to option 2

Anonymous

10/10/2020 11:45 AM

Potion 3 is far too short sighted.

Anonymous

10/11/2020 12:10 PM

Inflation risk not mentioned. Inflation of construction costs can exceed general inflation. Risk that cost of second phase of construction could be significantly higher for our kids and grandkids. They won't thank us.

Anonymous

10/11/2020 03:07 PM

How can I remain in my residence while this is going on? 137 Port Augusta Street.

Anonymous

10/12/2020 02:48 PM

Preservation of vegetation, particularly trees, especially old ones along the route is very important to me.

 10/12/2020 09:15 PM

We need to fix the sewage problems for generations to come, let's do the right thing, option 1!!

Optional question (48 response(s), 264 skipped)

Question type: Essay Question

COMOX VALLEY SEWER SERVICE LIQUID WASTE MANAGEMENT PLANNING

Report Back to Community – Summary Report

APRIL 2022



comoxvalleyrd.ca



Table of Contents

Executive Summary	2
1.0 Introduction	2
1.1 Project Background.....	2
1.2 LWMP Consultation Overview	3
2.0 LWMP Consultation Wrap-Up Overview.....	3
2.1 Approach	3
2.2 Engagement Tools	4
2.3 By the Numbers	5
2.4 Themes of Comments.....	5
3.0 Conclusion	5
4.0 Next Steps	6
Appendices	6

Executive Summary

As a final phase to the Comox Valley Sewer Service's Liquid Waste Management Plan (LWMP) multi-stage public consultation process, the Comox Valley Regional District (CVRD) provided a report back to the community in the spring of 2022.

This report-back provided details to the public about the Stage 2 Draft Plan, as well as insight into how community input was considered hand-in-hand with technical evaluations to inform decisions and next steps and ultimately helped determine outcomes and decisions for moving forward.

The CVRD also used the opportunity to inform residents about the next steps for the Sewer Conveyance Project, which is derived from the LWMP planning process. Community updates took place during the month of April, with the following key outreach tools:

- **Information session:** A public open-house event in compliance with COVID-19 protocols was held at the Comox Rec Centre.
- **Online webinar:** For those not comfortable attending an in-person event, and to offer a guided-learning format, an online webinar was also held via ZOOM.
- **Website updates:** Event information (before and after) was posted to the dedicated project web page where background resources are available, along with FAQs, timelines, route maps, etc.

The participation results of this phase were the result of extensive outreach using a variety of methods including a press release, social media, print and radio ads. Roughly 40 participants were in attendance at the in-person open house, with 25 participants attending the online webinar.

In general, the CVRD heard support for the final plan, with interest in next steps for construction planning on the Sewer Conveyance Project, and questions about specific impacts of that work.

1.0 Introduction

1.1 Project Background

The Comox Valley Sewer Service treats raw sewage (wastewater) from homes and businesses in Courtenay, Comox and K'ómoks First Nation. More than 14,000 cubic metres of wastewater from these communities flows daily through a pipe located along the Willemar Bluffs which poses a significant environmental risk.

In order to address this risk, and create a long-term plan for the service, the CVRD launched a Liquid Waste Management plan (LWMP) in 2018. Along with extensive studies, assessments and financial and implementation planning, the LWMP delivered a multi-stage public consultation process throughout the stages of plan development

Stages 1-4 of this consultation has been summarized in other reports, providing guidance to staff and directors for decisions made within in the LWMP. As a final stage in that consultation, the Comox Valley Regional District completed a final round of public outreach in spring 2022, reporting back about the completed LWMP process, the decisions that have been made, and how feedback influenced these outcomes.

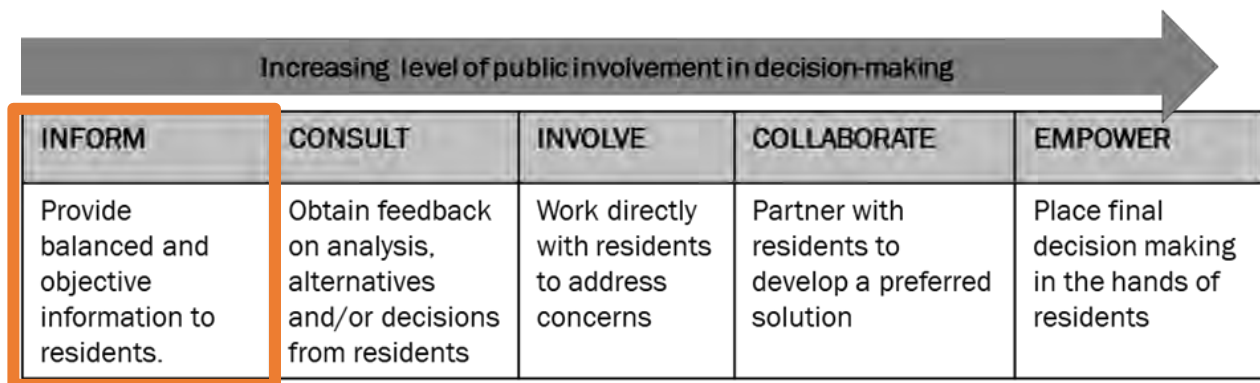
1.2 LWMP Consultation Overview

The development of a long-term wastewater management planning tool began in 2018 and included multiple stages of assessment, analysis and public engagement.

This LWMP work has determined long-term plans for pipes, pump stations and the treatment plant that currently manages sewage from Courtenay, Comox and K'ómoks First Nation, while prioritizing the most urgent concern around an aging forcemain that runs along Balmoral Beach (Willemar Bluffs) and lies at risk of damage from waves, rocks and logs.

To fully understand the potential impacts of these plans on the local community, continuous and dedicated engagement is required, and the International Association of Public Participation (IAP2) spectrum of public participation has been used to define engagement goals for this project as a whole.

The outreach completed in April 2022, as a wrap up to the LWMP process, fell on the INFORM level of the spectrum.



Engagement for the LWMP is now complete, achieving the below stated objectives:

1. Provide information about the LWMP process.
2. Offer opportunities for active public involvement.
3. Clearly explain how feedback will be received and considered.
4. Create a record of engagement at the end of the process.
5. Demonstrate how engagement was considered and how input influenced final decisions.

2.0 LWMP Consultation Wrap-Up Overview

2.1 Approach

The current report back to the community kicked off in early April 2022. This included the following methods of approach:

Open House

This event took place on April 4, 2022 from 4-6 pm at the Comox Recreation Centre. Vaccine passports were required and checked as per Public Health Office COVID-19 protocols. Masks

were optional. Information boards featuring details of final LWMP were on display, with members of the project team on hand to answer questions. Comment forms were also available for participants to submit to the team.

Webinar

An online webinar was hosted by the project team on April 13, 2022 from 12-1 pm via ZOOM. The first half of the hour ran through the details presented at the open house, and was followed by a Q&A period for participants to pose questions to the project team.

Website Updates

Event information from display boards at the open house, as well as the recording of the webinar, was posted on the [project web page](#) for those who were unable to attend but wished to move through the information at their own pace.

Promotional/Awareness Tools

- **Press release:** Event details and project background information was distributed on the CVRD website, and to Comox Valley media outlets.
- **Social media:** Posts promoting the events were published to the CVRD Twitter and Facebook pages, and shared by Area Directors, councillors, partnering municipalities and interested residents.
- **Print ads:** A half- page advertisement was published in the local newspaper to further promote events.
- **Radio ads:** 42 radio advertisements ran on two local stations leading up the events (6x a day for one week).

2.2 Engagement Tools

The overall success of the final phase of engagement was the result of a blend of tools used to promote, inform and encourage participation.



COVID-19 protocols were reduced at this time, though vaccine passports were still in place during the open house event, and were checked as per PHO guidelines. Masks were optional. The project team also offered an online update via Zoom for those who preferred a virtual environment.

Both the in-person and online events were intended to provide details on the final LWMP including the resulting decisions for wastewater treatment, integrated resource recovery and conveyance, as well as a summary of the process to date, and next steps forward.

2.3 By the Numbers

The numbers below highlight key data collected at the end of the consultation.



2.4 Themes of Comments

Along with the questions posed by participants during the online webinar's Q&A, there were feedback boards at the in-person open house, as well as comment forms.

The following themes from residents emerged to complement the existing themes presented in previous consultation reports:



Impacts of construction: Respondents outlined infrastructure and environmental concerns around the proposed construction phase including protection of marsh areas, bird nests and other natural elements.



Additional upgrades: Requests to consider partnership opportunities with the Town on Comox during construction came up, such as the addition of traffic calming measures on Balmoral Road, and opportunities for new active transportation paths.



Area-specific concerns and issues: Residents provided both personal and specific feedback to their circumstances, including proximity to well water and the protection of important trees.

3.0 Conclusion

Developing a final, long-term plan for wastewater within the CVRD has required both critical technical evaluation as well as considered public input. The engagement plan has been a powerful tool to successfully draw out key impacts and advantages from a community perspective.

Environmental concerns, which emerged as a top priority in prior phases, remains a key potential impact for residents. Concerns also continue to highlight how work will impact their specific areas in regards to the water, trees, traffic, etc. nearby.

Feedback also included impact concerns during the proposed construction phase. These varied and thoughtful comments will provide valuable insight for the project team to consider during the proposed construction phase.

Participation in the final stage of engagement remained high despite COVID-19 protocols, which continued to inform the decisions around the tools and methods used to keep the community informed.

4.0 Next Steps

A commitment was made by the CVRD to follow up with the outcome of the public consultation process, and the following steps will be taken:

- **Closing the loop:** A wrap-up outlining the completion of the consultation process will be made available on the project web page.
- **Sharing new updates when applicable:** The project team will continue to provide updates on the LWMP as needed, including approval options.
- **Continuing with established communications:** Relevant information in subsequent related projects, such as the [Comox Valley Sewer Conveyance Project](#), will be ongoing.

Appendices

Appendix 1 – Event Display Boards

Appendix 2 – Webinar Presentation

Appendix 3 – Print & Radio Advertisement Samples

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Table of Contents

Executive Summary	2
1.0 Introduction	2
1.1 Project Background.....	2
1.2 LWMP Consultation Overview	3
2.0 LWMP Consultation Wrap-Up Overview.....	3
2.1 Approach	3
2.2 Engagement Tools	4
2.3 By the Numbers	5
2.4 Themes of Comments.....	5
3.0 Conclusion	5
4.0 Next Steps	6
Appendices	6

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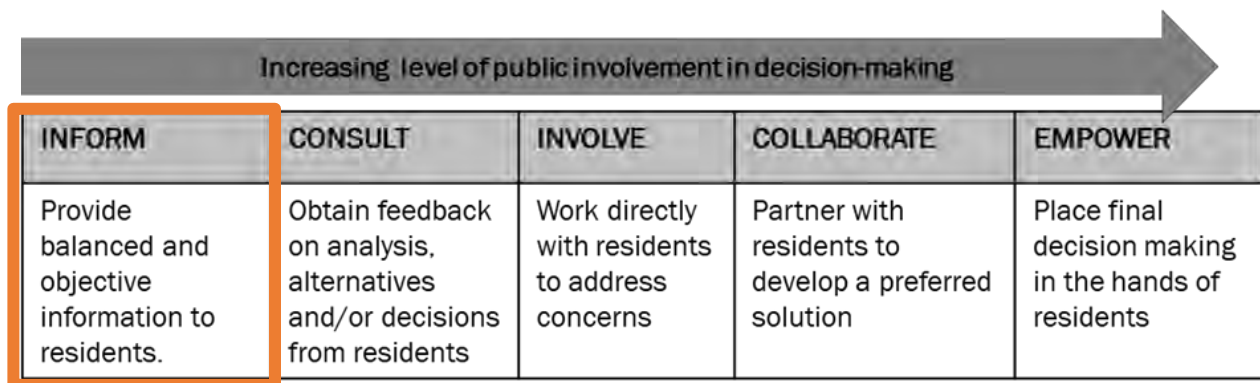
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were optional. Information boards featuring details of final LWMP were on display, with members of the project team on hand to answer questions. Comment forms were also available for participants to submit to the team.

Webinar

An online webinar was hosted by the project team on April 13, 2022 from 12-1 pm via ZOOM. The first half of the hour ran through the details presented at the open house, and was followed by a Q&A period for participants to pose questions to the project team.

Website Updates

Event information from display boards at the open house, as well as the recording of the webinar, was posted on the [project web page](#) for those who were unable to attend but wished to move through the information at their own pace.

Promotional/Awareness Tools

- **Press release:** Event details and project background information was distributed on the CVRD website, and to Comox Valley media outlets.
- **Social media:** Posts promoting the events were published to the CVRD Twitter and Facebook pages, and shared by Area Directors, councillors, partnering municipalities and interested residents.
- **Print ads:** A half- page advertisement was published in the local newspaper to further promote events.
- **Radio ads:** 42 radio advertisements ran on two local stations leading up the events (6x a day for one week).

2.2 Engagement Tools

The overall success of the final phase of engagement was the result of a blend of tools used to promote, inform and encourage participation.



COVID-19 protocols were reduced at this time, though vaccine passports were still in place during the open house event, and were checked as per PHO guidelines. Masks were optional. The project team also offered an online update via Zoom for those who preferred a virtual environment.

Both the in-person and online events were intended to provide details on the final LWMP including the resulting decisions for wastewater treatment, integrated resource recovery and conveyance, as well as a summary of the process to date, and next steps forward.

2.3 By the Numbers

The numbers below highlight key data collected at the end of the consultation.



2.4 Themes of Comments

Along with the questions posed by participants during the online webinar's Q&A, there were feedback boards at the in-person open house, as well as comment forms.

The following themes from residents emerged to complement the existing themes presented in previous consultation reports:



Impacts of construction: Respondents outlined infrastructure and environmental concerns around the proposed construction phase including protection of marsh areas, bird nests and other natural elements.



Additional upgrades: Requests to consider partnership opportunities with the Town on Comox during construction came up, such as the addition of traffic calming measures on Balmoral Road, and opportunities for new active transportation paths.



Area-specific concerns and issues: Residents provided both personal and specific feedback to their circumstances, including proximity to well water and the protection of important trees.

3.0 Conclusion

Developing a final, long-term plan for wastewater within the CVRD has required both critical technical evaluation as well as considered public input. The engagement plan has been a powerful tool to successfully draw out key impacts and advantages from a community perspective.

Environmental concerns, which emerged as a top priority in prior phases, remains a key potential impact for residents. Concerns also continue to highlight how work will impact their specific areas in regards to the water, trees, traffic, etc. nearby.

Feedback also included impact concerns during the proposed construction phase. These varied and thoughtful comments will provide valuable insight for the project team to consider during the proposed construction phase.

Participation in the final stage of engagement remained high despite COVID-19 protocols, which continued to inform the decisions around the tools and methods used to keep the community informed.

4.0 Next Steps

A commitment was made by the CVRD to follow up with the outcome of the public consultation process, and the following steps will be taken:

- **Closing the loop:** A wrap-up outlining the completion of the consultation process will be made available on the project web page.
- **Sharing new updates when applicable:** The project team will continue to provide updates on the LWMP as needed, including approval options.
- **Continuing with established communications:** Relevant information in subsequent related projects, such as the [Comox Valley Sewer Conveyance Project](#), will be ongoing.

Appendices

Appendix 1 – Event Display Boards

Appendix 2 – Webinar Presentation

Appendix 3 – Print & Radio Advertisement Samples

APPENDIX 1

Event Display Boards

PLANNING THE FUTURE OF OUR LIQUID WASTE

Liquid Waste Management Plans are a tool used by communities to plan for the long-term management of their wastewater. They include engineering study, environmental assessment, financial analysis and significant public consultation. In 2018, the CVRD kicked off the Comox Valley Sewer Service Liquid Waste Management Plan:



DECISIONS ABOUT OUR WASTEWATER

The LWMP was an intensive process that led to some clear decisions about the future of our wastewater infrastructure. These included:

PROVIDE SECONDARY TREATMENT FOR ALL FLOWS

- The preferred treatment option selected will see secondary treatment to all flows – as the system does currently. Upgrades and expansion to existing components will occur to increase capacity and comply with regulations over time.
- Disinfection – to achieve 'recreational' standards – will be added as a new component to the treatment process.

RESOURCE RECOVERY DISCUSSION DEFERRED

- Consultants concluded the only financially feasible option for the use of reclaimed water is within the treatment facility. This is due to a short irrigation season and the very long distances required for conveying the reclaimed water to potential customers.
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PREFERRED CONVEYANCE OPTION

- A blended option of trenched and tunneled force main along Comox Road/Comox Avenue to Lazo area, was selected as the preferred option.
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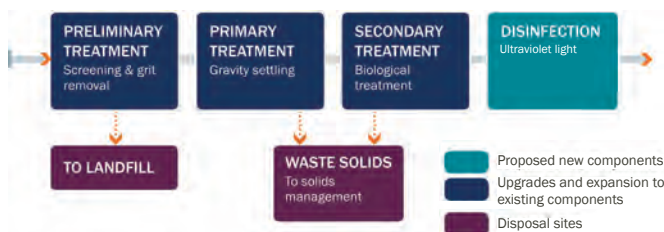


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As part of the planning process, the community provided comment on a long-list of four options for the future of wastewater treatment in the Comox Valley Sewer Service. That feedback, along with technical assessment, led to a narrowing of options until the preferred option of providing secondary treatment for all flows was selected. This option was approved by the Comox Valley Sewage Commission in December 2020.

ABOUT THE PREFERRED OPTION

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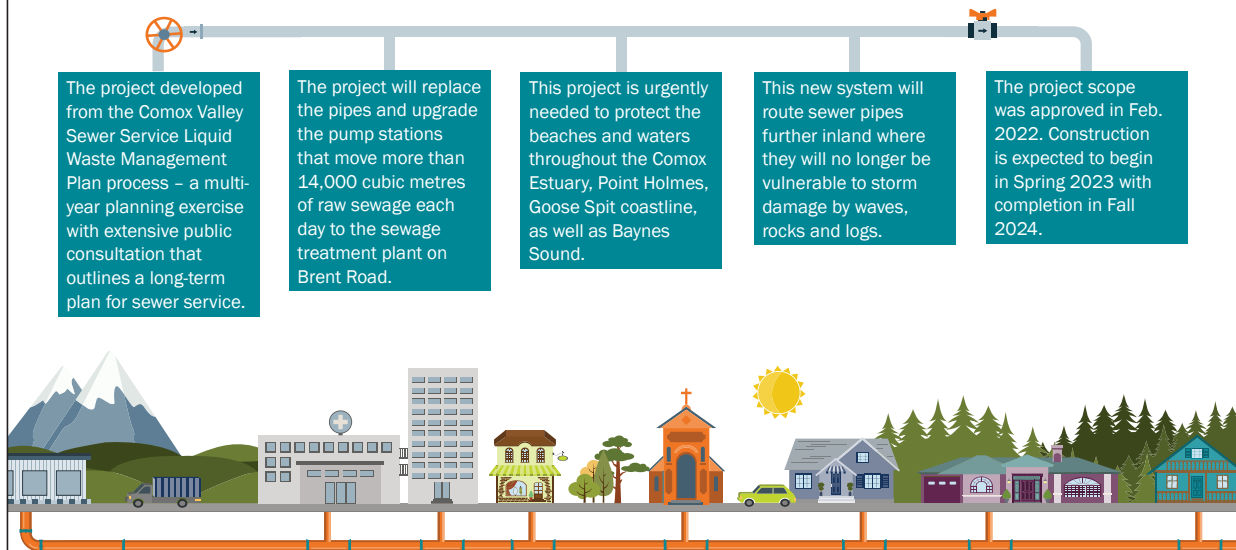


SECONDARY TREATMENT FOR THE ENTIRE PLANT FLOW:

- Secondary treatment removes 90% of organic material and solids on average (note that the treatment plant currently achieves greater than 95% removal of total suspended solids (TSS) and greater than 93% removal of 5-day Biochemical Oxygen Demand (BOD5))
- Secondary treatment removes 80-95% of microplastics on average
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ABOUT COMOX VALLEY SEWER CONVEYANCE PROJECT

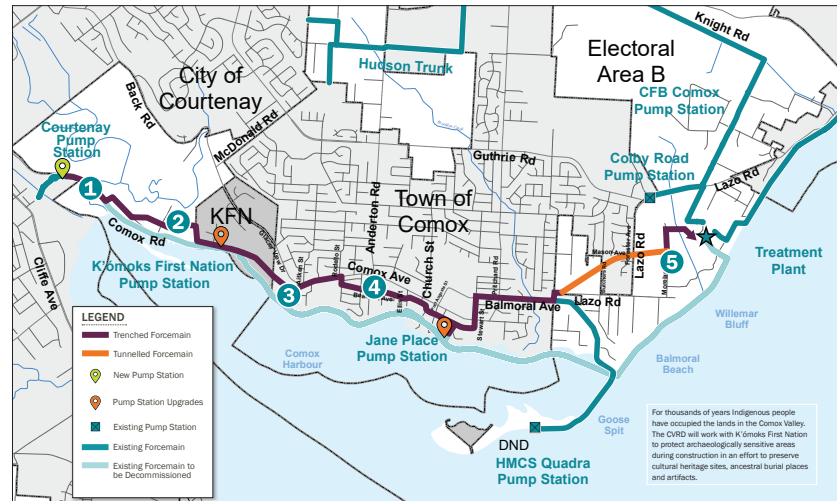
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CONVEYANCE PROJECT: ROUTE ALIGNMENT

The overall project alignment includes some proposed changes from the preliminary map shared last year, including:

- 1 Proposed rebuild and re-location of Courtenay Pump Station for seismic upgrades and climate resiliency
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ROUTE DETAILS: PUMP STATION + COMOX RD.

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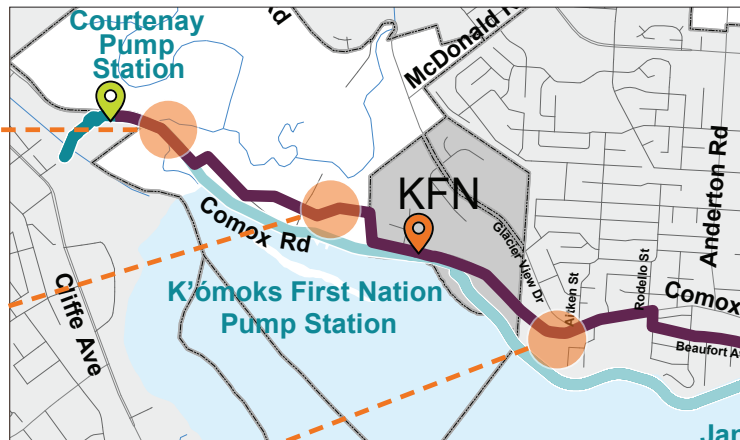
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- It allows the station to be relocated farther away from the estuary.

ROUTE AWAY FROM CULTURALLY SENSITIVE AREA

A section of the pipe has been rerouted from Comox Road because:

- It avoids areas already identified as having intact archeological findings – discoveries that could impact construction if found during excavation
- Our partners, KFN identified the disturbance of culturally sensitive areas as a concern
- By moving construction off Comox Road in this area, we can reduce some of the traffic impacts.



NO TUNNEL AT COMOX HILL

Using traditional cut and cover (trenching) to install the pipe at Comox Hill was selected over tunneling in this area because technical assessment and cost/benefit analysis indicated trenching is the better choice given the land elevations.

ROUTE DETAILS: TOWN OF COMOX DETAILS

The CVRD project team has been working with the Town of Comox to create a project plan that reduces the impact on the community.

MOVING CONSTRUCTION OFF COMOX AVENUE

Between Rodello and Stewart streets, the pipe will be routed off of Comox Avenue, to Beaufort Avenue.

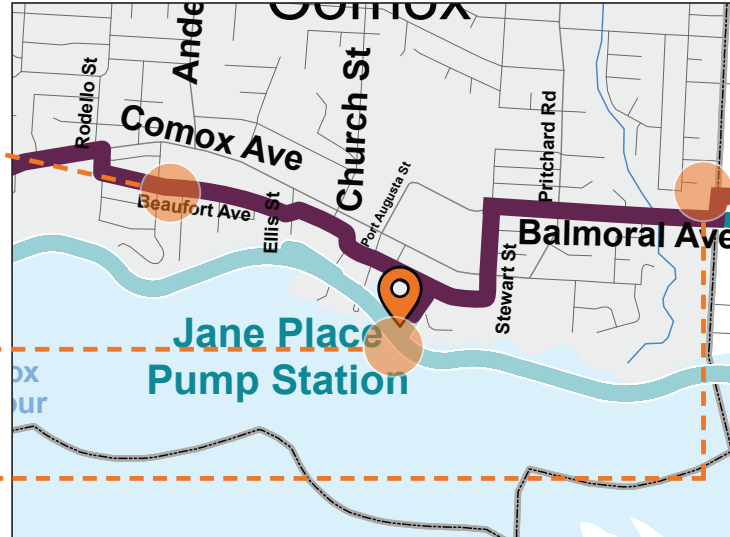
ALIGNING WITH TOWN OF COMOX UPGRADES

Pipe construction disruption can align with road and utility upgrades planned in this area. The project team will continue working with the Town of Comox to synergize with its existing plans. Further details on these upgrades will be confirmed with the public as contracts are awarded and construction planning begins.

UPGRADE JANE PLACE PUMP STATION

In order to serve the revised pumping requirements and ensure it meets current standards, the Jane Place Pump Station will be extensively upgraded, but will remain within the same footprint.

The pipe route will follow Balmoral Avenue until it reaches the tunnel entry pit at Lazo and Torrence. The project team will work with Town staff toward a construction plan that will reduce the impact on traffic flow where possible.



ROUTE DETAILS: LAZO HILL ALIGNMENT

The forcemain will be tunneled below Lazo Hill. This confirmed alignment is the result of significant assessment, and consideration of community feedback.

Highlights

- ✓ Single shorter line from Torrence/Lazo to existing right-of-way at Morland Road
- ✓ Minimum 20-metre offset from all deep water wells in the area (as per recommendation by groundwater consultant)
- ✓ Impacts fewest properties
- ✓ Laydown on Morland/Brent Road reduces disruption
- ✓ Alignment allows for gravity flow in the pipe through Lazo Hill, reducing operational risks.

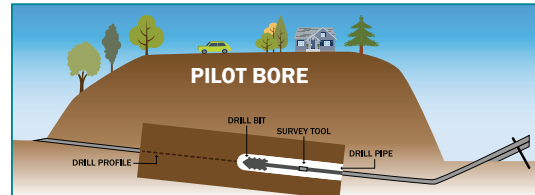


ABOUT HORIZONTAL DIRECTIONAL DRILLING

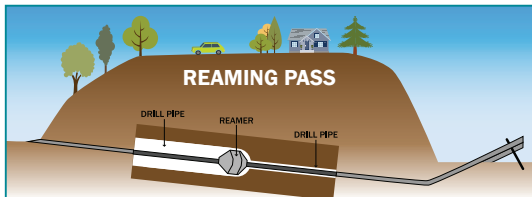
Horizontal Directional Drilling (HDD) will be used to avoid surface impacts through Lazo Hill and minimize the maximum pipe elevation to reduce lifecycle costs and risk.

HDD is typically used to install pipelines under environmental sensitive areas to avoid surface disturbance.

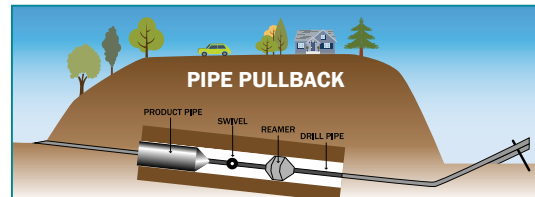
The contractor uses a drill rig to horizontally drill an underground pathway for the new pipe between an entry and an exit pit. This process happens in three stages.



1. Pilot Bore: A process called a pilot bore establishes the underground path for the new sewer pipe.



2. Reaming Passes: The contractor will enlarge the tunnel to the final pipe size using a reamer. A bentonite-based drilling fluid keeps the borehole stabilized – the drilling mud is collected and recycled.



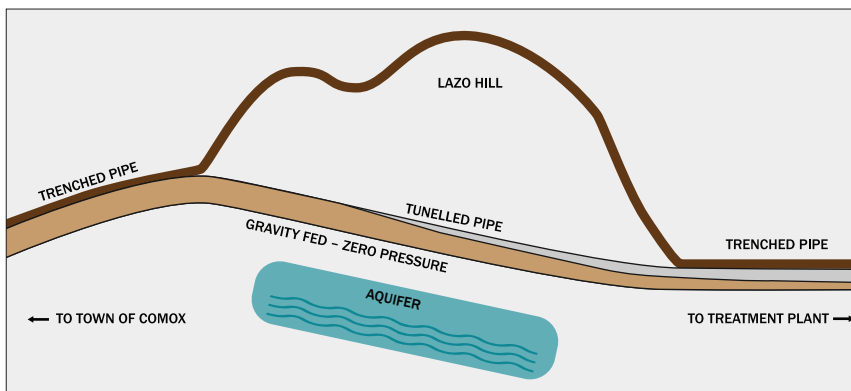
3. Pipe Pullback: The pipeline is assembled at surface in a long single string and is then pulled through the tunnel into its final position.

TECHNOLOGY

Engineering decisions about the method and materials for the new system provide additional environmental protection.

GRAVITY FED LINE

- Non-pressurized flow, virtually eliminating an already very-low risk of a leak
- Allows route to remain 10m above aquifer, eliminating penetration of aquifer
- Pipe wall designed to withstand installation stress, far exceeding the zero-pressure of operational flow

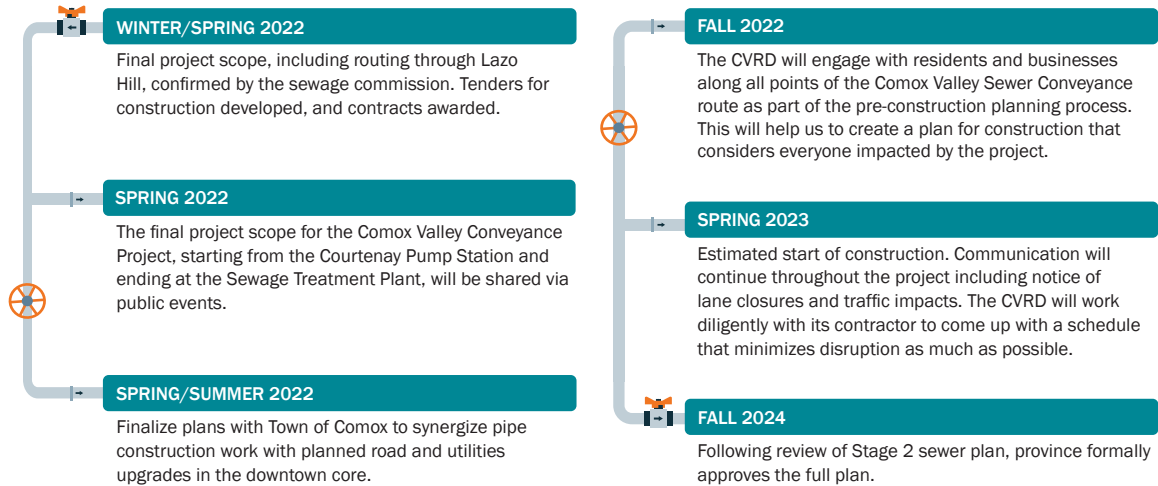


MATERIAL (High Density Polyethylene)

- Shorter route allows for use of HDPE, which is far more resistant to corrosion than steel
- HDPE is more flexible and better suited to withstand seismic activity
- Continuously fused to eliminate all joints
- More resistant to abrasion and has no coating that can be damaged during installation

TIMELINE AHEAD

A lot of work has been completed to date, but there is still much to be done before this project is complete. Here's a look at upcoming key milestones to expect in the coming 18 months.



SHARE YOUR FEEDBACK

Planning continues for the Comox Valley Sewer Conveyance Project and the CVRD is committed to engaging with the community throughout the process. Please share with us any questions, concerns or comments that you would like the project team to consider as we enter the construction planning phase.



APPENDIX 2

Webinar Presentation

Comox Valley LWMP Update

April 13, 2022
Russell Dyson, CAO



About Liquid Waste Management Plans



Outline long-term plan for
wastewater (sewage)



Tool for local governments, with
review/approval by province



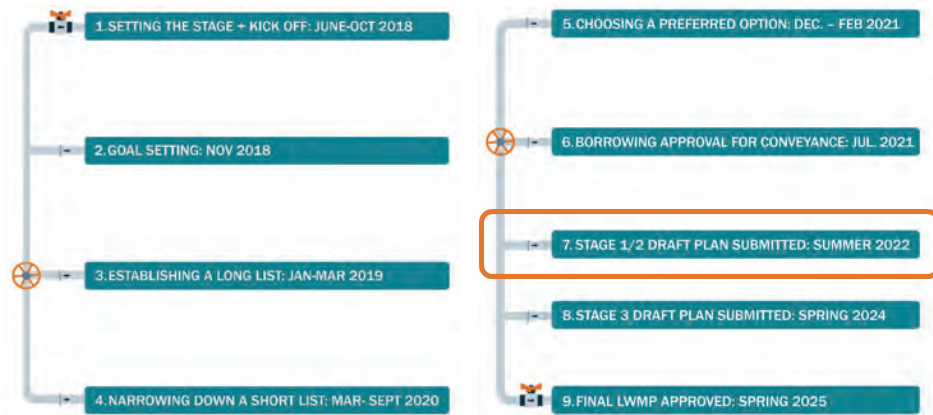
Require engineering study,
environmental assessment and
financial analysis



Significant public consultation
required

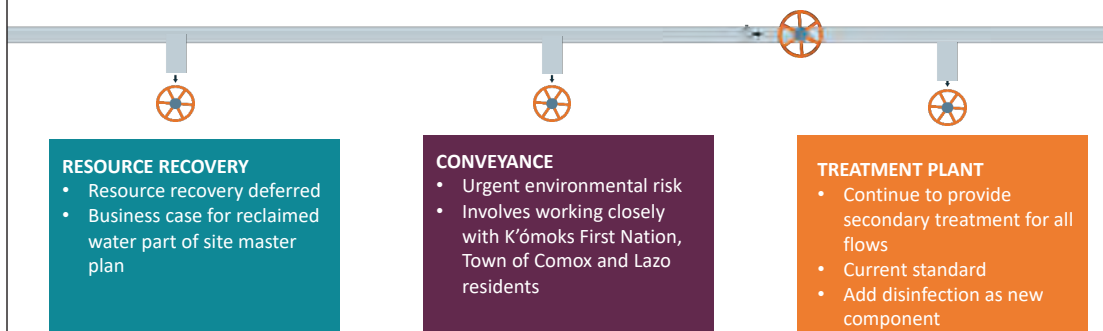


Timeline



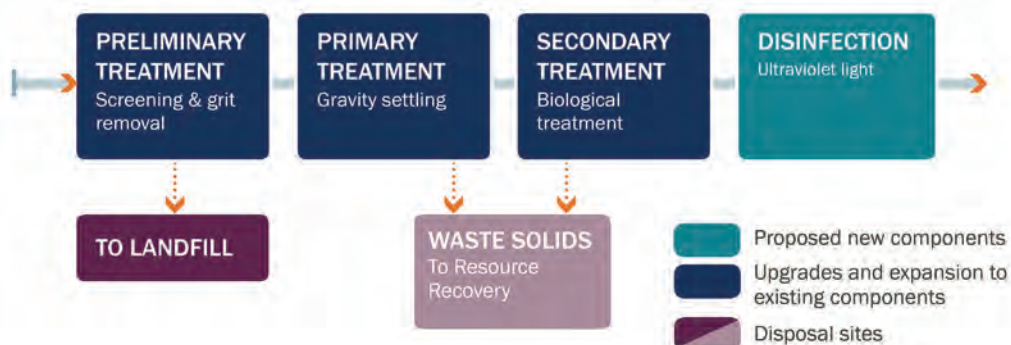
3 of 13

Decisions Made About Wastewater



4 of 13

Preferred Treatment Option



5 of 13

About the Conveyance Project



Urgent need identified by Liquid Waste Management Plan

Upgrade to pipes + pump stations

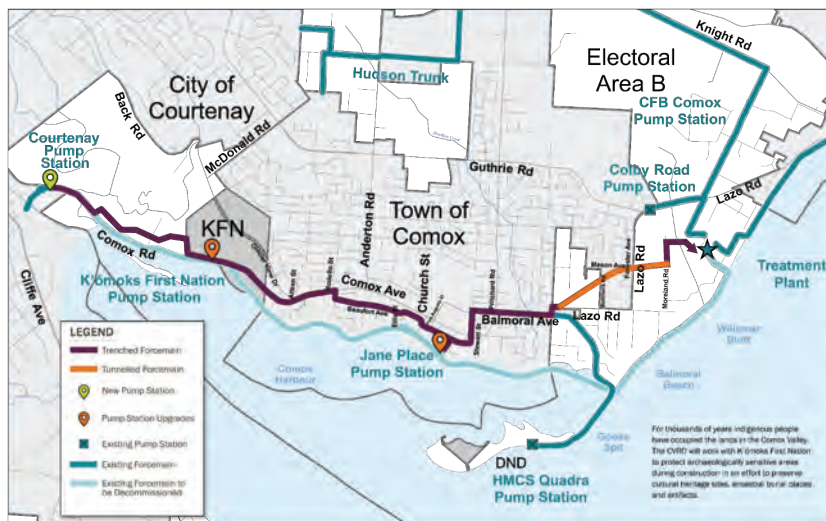
Protect estuary, beach + Baynes Sound

Move pipes inland away from water

Construction start spring 2023

6 of 13

Comox Valley
REGIONAL DISTRICT



7 of 13

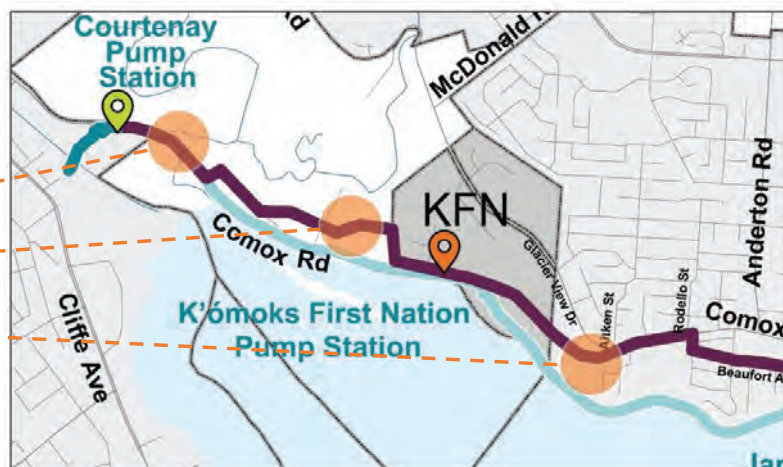
Comox Valley
REGIONAL DISTRICT

Route Details: Pump Station + Comox Rd.

New Courtenay Pump Station

Route Away from Culturally-Sensitive Areas

No Tunnel At Comox Hill



8 of 13

Comox Valley
REGIONAL DISTRICT

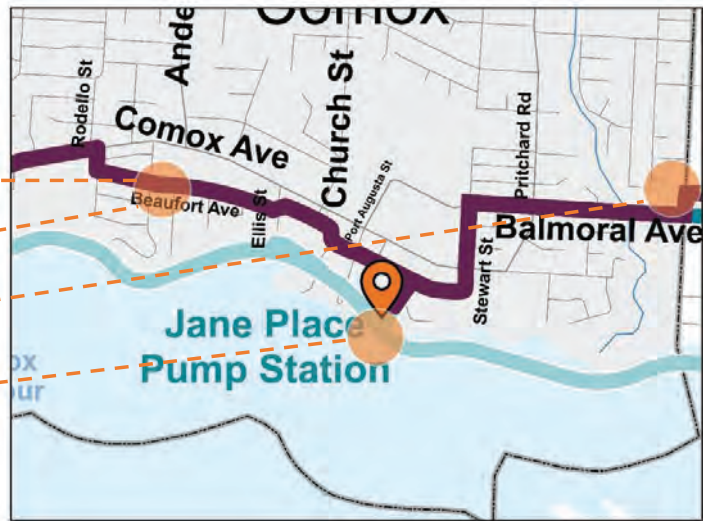
Route Details: Town of Comox

Moving Construction Off
Comox Ave

Aligning with Town of
Comox Upgrades

Balmoral Pipe Route

Upgrade Jane Place
Pump Station

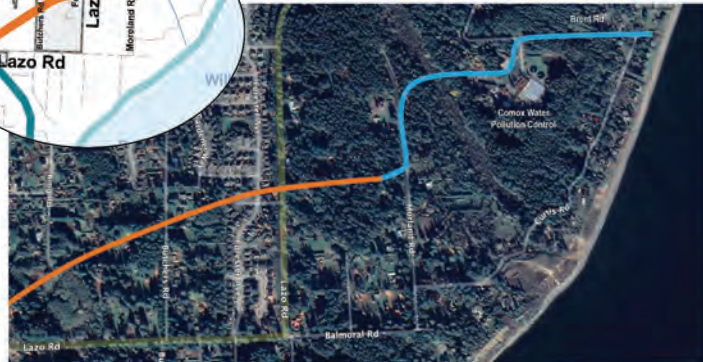


9 of 13

Route Details: Lazo Hill Alignment

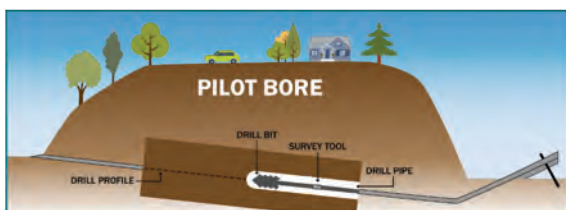
BENEFITS

- Single shorter HDD Line
- Minimum 20m offset from all deep groundwater wells
- Impacts fewer properties
- Laydown on Morland/Brent Road reduces disruption
- Gravity flow at Lazo Hill = reduced operational risks

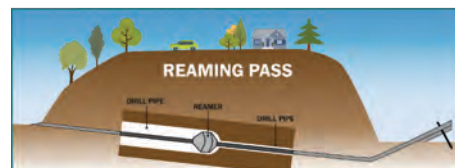


10 of 13

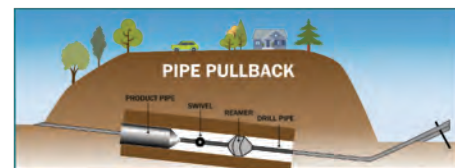
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1. Pilot bore: A process called a pilot bore established the underground path for the new sewer pipe.



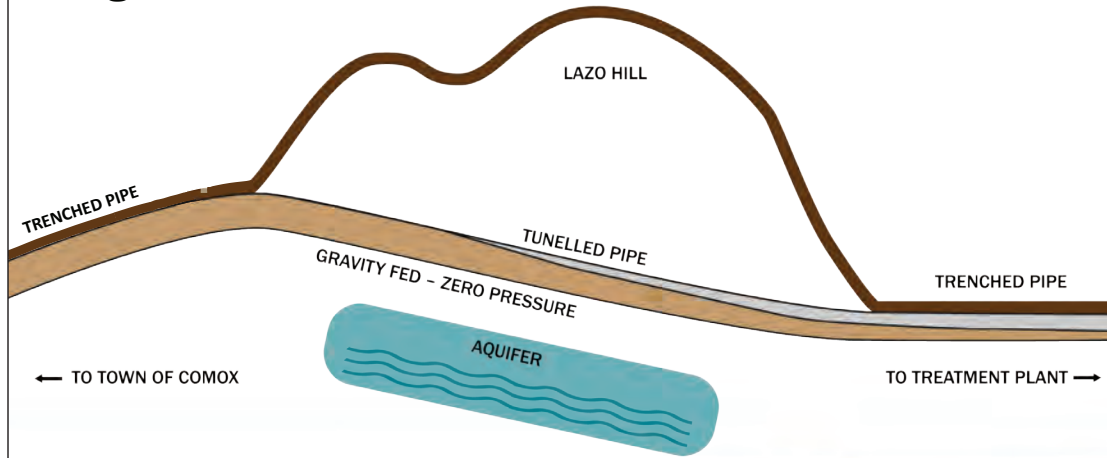
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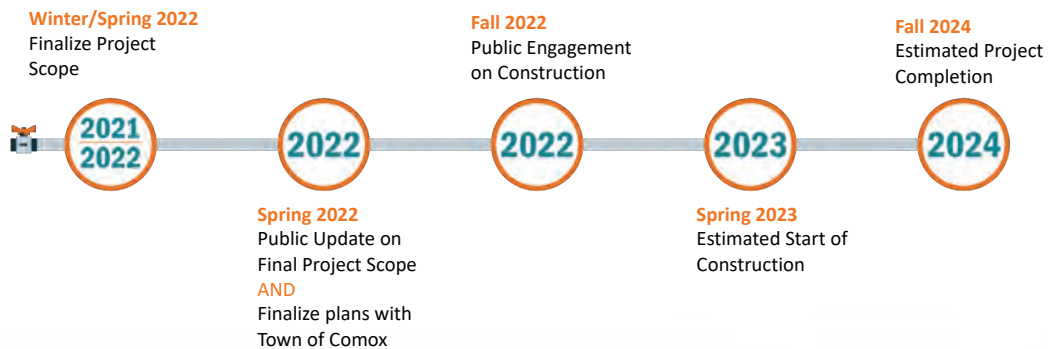
11 of 13

Designed Risk Reduction



12 of 13

Timeline Ahead



13 of 13

APPENDIX 3

Print & Radio Advertisement Samples

PRINT



We've Got Big Projects Coming Down the Pipe

We are ready to share our long term plan for sewer services, including the final route for the Comox Valley Sewer Conveyance Project and future upgrades at the Sewage Treatment Plant. Join us to learn about how this plan will protect the beaches and waters throughout the Comox Estuary, Point Holmes, Goose Spit coastline and Baynes Sound.


COME LEARN MORE

Attend an Open House Monday, April 4 4:00 pm to 6:00 pm Comox Rec Centre, 1855 Noel Ave., Comox	Join a ZOOM Webinar: Wednesday, April 13 12:00 pm to 1:00 pm Visit link below to register
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Visit www.comoxvalleyrd.ca/lwmp to learn more about the work to come, register for webinar, and sign up for updates moving forward.

Questions?
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comoxvalleyrd.ca

SOCIAL MEDIA

Sewer Planning Open House

Online Info-session (ZOOM)
April 13, 12-1 pm. Link below.



Sewer Planning Open House

Comox Rec: Apr 4
Online: Apr 13



RADIO



RADIO AD SCRIPT (DRAFT)

PROJECT: CV Sewer Conveyance /LWMP
MEDIA: 30 second ads
CAMPAIGN: Open House/Project Update Invitation
RUN DATES: March 28 – April 3
FREQUENCY: 6x/day

SCRIPT – Ad #1 Mar. 28 – Apr. 3

There are big things coming down the pipe for the Comox Valley Sewer Service – and the Comox Valley Regional District is ready to share the long-term plan for wastewater collection and treatment in the community.

You're invited to learn more about planning, construction and how these plans will protect beaches and waters of the area.

Join us at an in-person open house on Monday, April fourth from four p-m to six p-m, at the Comox Rec Centre. Or, register to join an online webinar April thirteenth from noon until one p-m.

For details, visit [connect -C-V-R-D <dot> C-A <slash> L-W-M-P](http://connect-cv-r-d.ca/lwmp).

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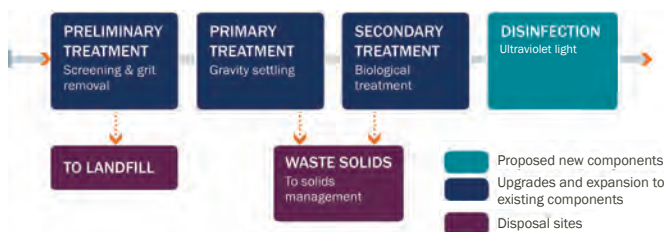


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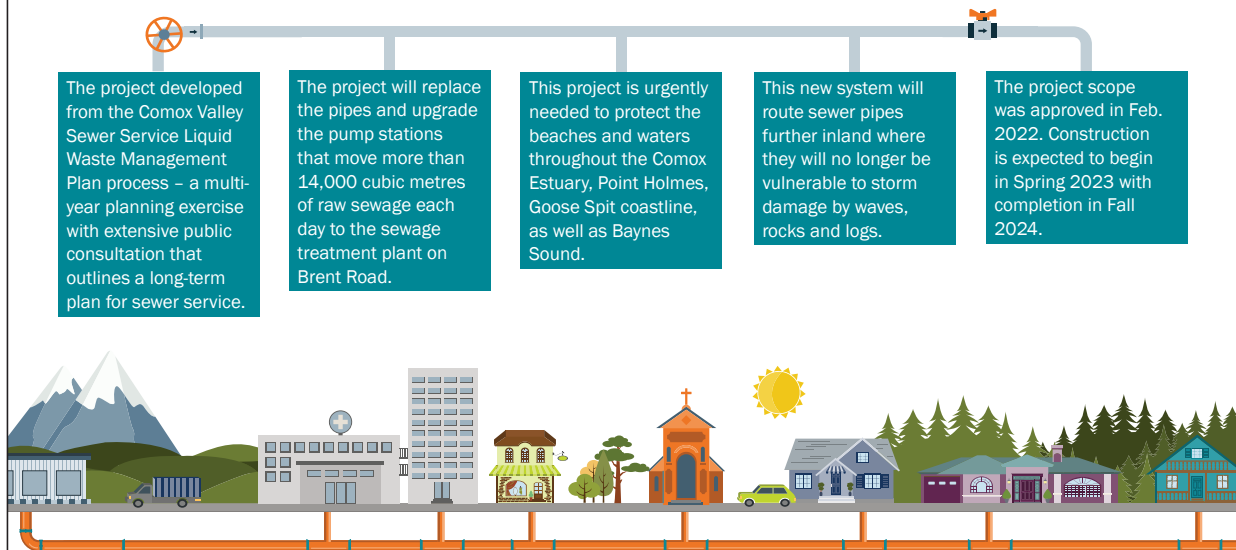


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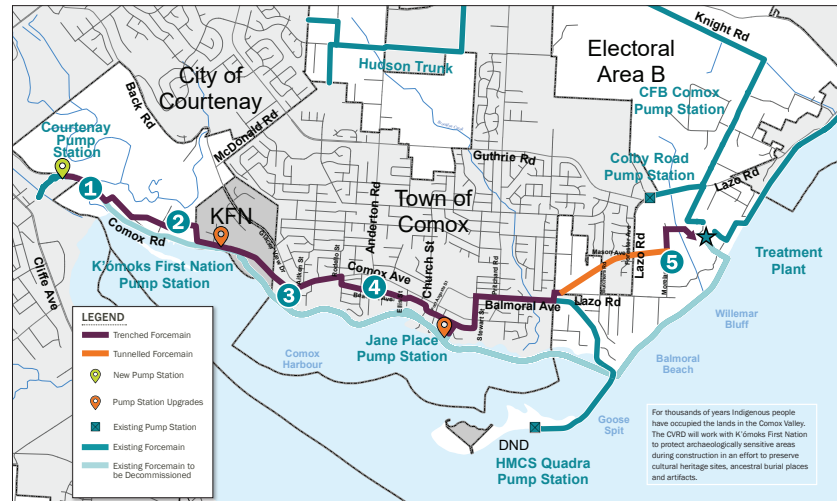
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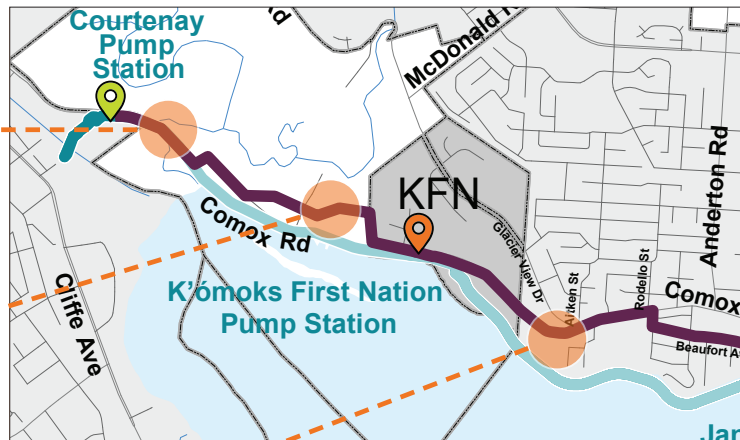
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MOVING CONSTRUCTION OFF COMOX AVENUE

Between Rodello and Stewart streets, the pipe will be routed off of Comox Avenue, to Beaufort Avenue.

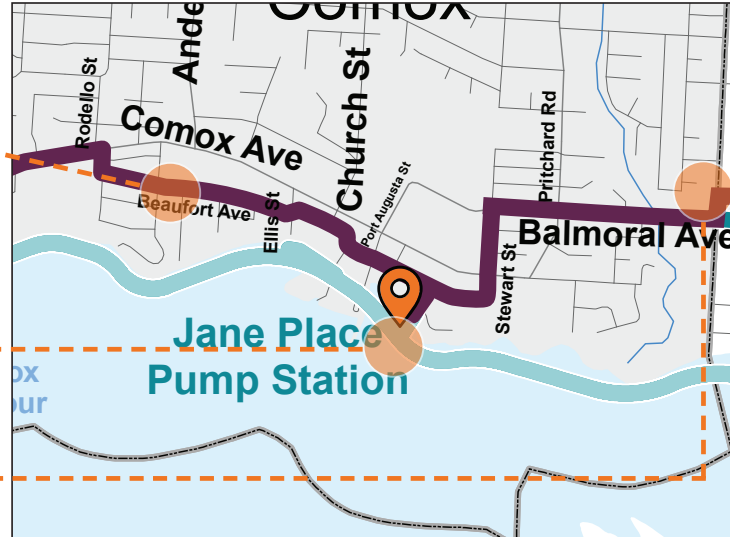
ALIGNING WITH TOWN OF COMOX UPGRADES

Pipe construction disruption can align with road and utility upgrades planned in this area. The project team will continue working with the Town of Comox to synergize with its existing plans. Further details on these upgrades will be confirmed with the public as contracts are awarded and construction planning begins.

UPGRADE JANE PLACE PUMP STATION

In order to serve the revised pumping requirements and ensure it meets current standards, the Jane Place Pump Station will be extensively upgraded, but will remain within the same footprint.

The pipe route will follow Balmoral Avenue until it reaches the tunnel entry pit at Lazo and Torrence. The project team will work with Town staff toward a construction plan that will reduce the impact on traffic flow where possible.



ROUTE DETAILS: LAZO HILL ALIGNMENT

The forcemain will be tunneled below Lazo Hill. This confirmed alignment is the result of significant assessment, and consideration of community feedback.

Highlights

- ✓ Single shorter line from Torrence/Lazo to existing right-of-way at Morland Road
- ✓ Minimum 20-metre offset from all deep water wells in the area (as per recommendation by groundwater consultant)
- ✓ Impacts fewest properties
- ✓ Laydown on Morland/Brent Road reduces disruption
- ✓ Alignment allows for gravity flow in the pipe through Lazo Hill, reducing operational risks.

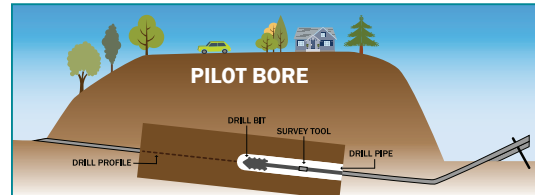


ABOUT HORIZONTAL DIRECTIONAL DRILLING

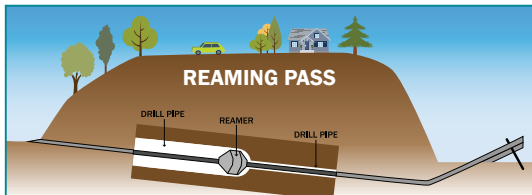
Horizontal Directional Drilling (HDD) will be used to avoid surface impacts through Lazo Hill and minimize the maximum pipe elevation to reduce lifecycle costs and risk.

HDD is typically used to install pipelines under environmental sensitive areas to avoid surface disturbance.

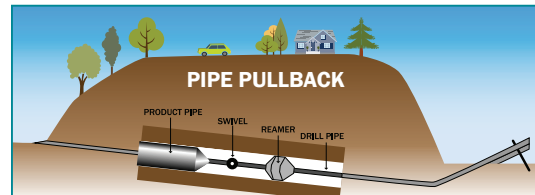
The contractor uses a drill rig to horizontally drill an underground pathway for the new pipe between an entry and an exit pit. This process happens in three stages.



1. Pilot Bore: A process called a pilot bore establishes the underground path for the new sewer pipe.



2. Reaming Passes: The contractor will enlarge the tunnel to the final pipe size using a reamer. A bentonite-based drilling fluid keeps the borehole stabilized – the drilling mud is collected and recycled.



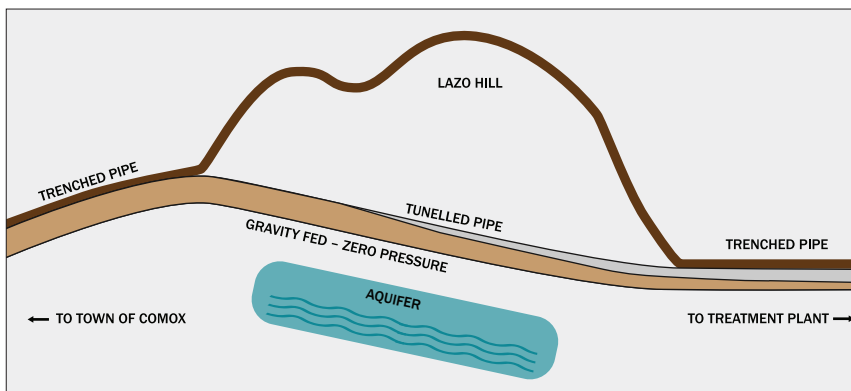
3. Pipe Pullback: The pipeline is assembled at surface in a long single string and is then pulled through the tunnel into its final position.

TECHNOLOGY

Engineering decisions about the method and materials for the new system provide additional environmental protection.

GRAVITY FED LINE

- Non-pressurized flow, virtually eliminating an already very-low risk of a leak
- Allows route to remain 10m above aquifer, eliminating penetration of aquifer
- Pipe wall designed to withstand installation stress, far exceeding the zero-pressure of operational flow

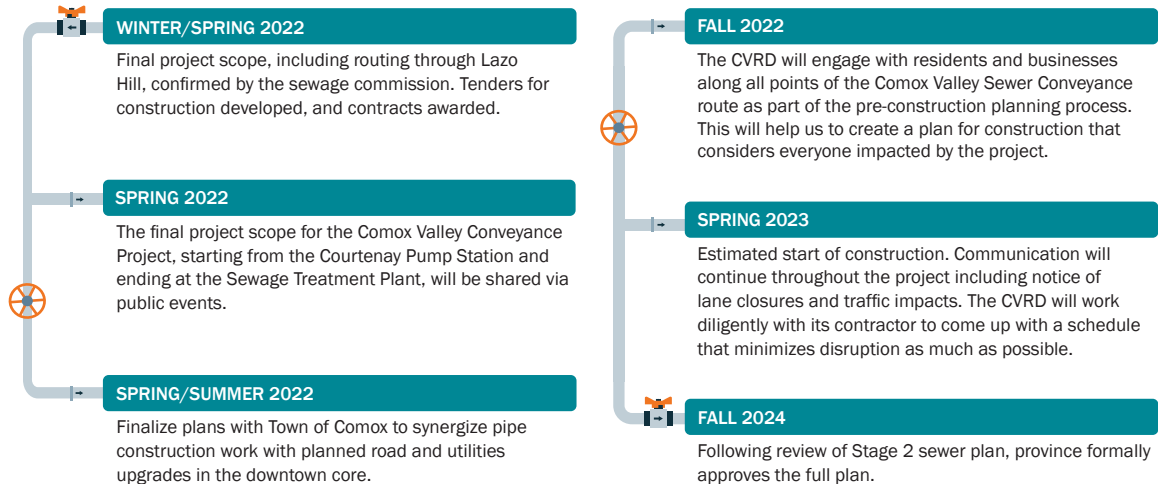


MATERIAL (High Density Polyethylene)

- Shorter route allows for use of HDPE, which is far more resistant to corrosion than steel
- HDPE is more flexible and better suited to withstand seismic activity
- Continuously fused to eliminate all joints
- More resistant to abrasion and has no coating that can be damaged during installation

TIMELINE AHEAD

A lot of work has been completed to date, but there is still much to be done before this project is complete. Here's a look at upcoming key milestones to expect in the coming 18 months.



SHARE YOUR FEEDBACK

Planning continues for the Comox Valley Sewer Conveyance Project and the CVRD is committed to engaging with the community throughout the process. Please share with us any questions, concerns or comments that you would like the project team to consider as we enter the construction planning phase.



APPENDIX 2

Webinar Presentation

Comox Valley LWMP Update

April 13, 2022
Russell Dyson, CAO



About Liquid Waste Management Plans



Outline long-term plan for wastewater (sewage)



Tool for local governments, with review/approval by province



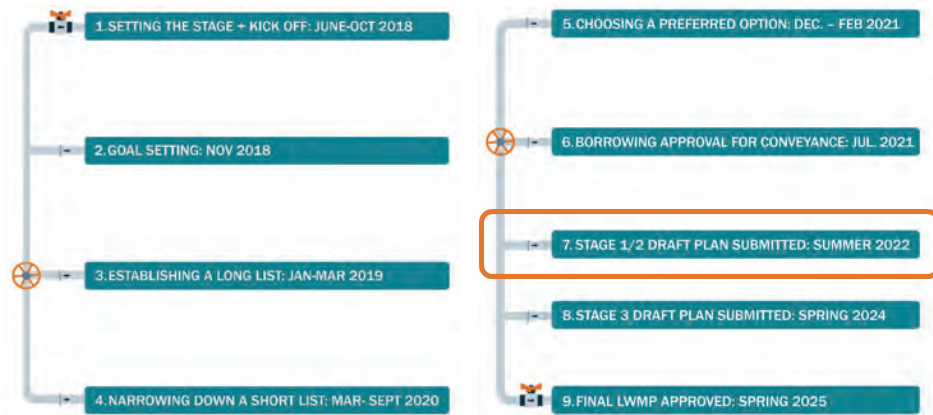
Require engineering study, environmental assessment and financial analysis



Significant public consultation required

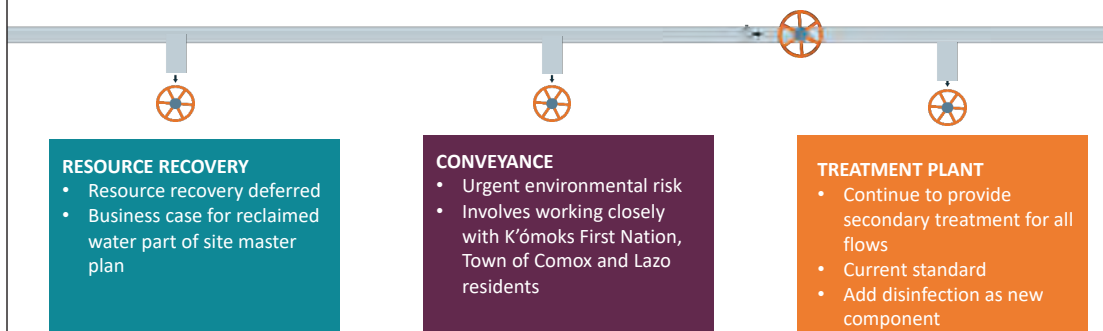


Timeline



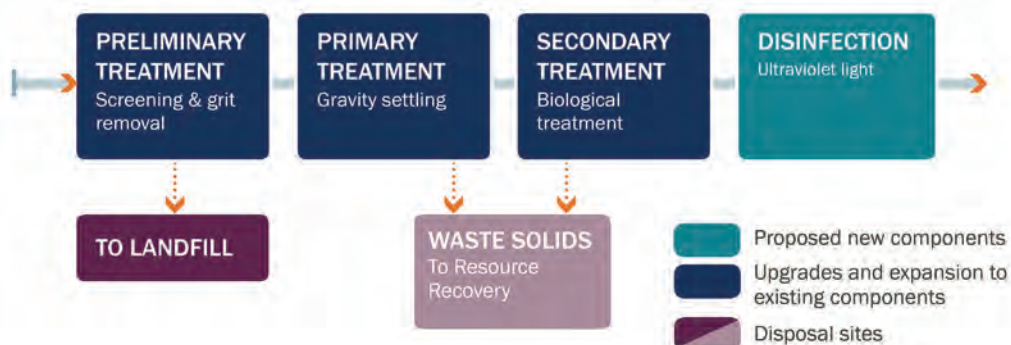
3 of 13

Decisions Made About Wastewater



4 of 13

Preferred Treatment Option



5 of 13

About the Conveyance Project



Urgent need identified by Liquid Waste Management Plan

Upgrade to pipes + pump stations

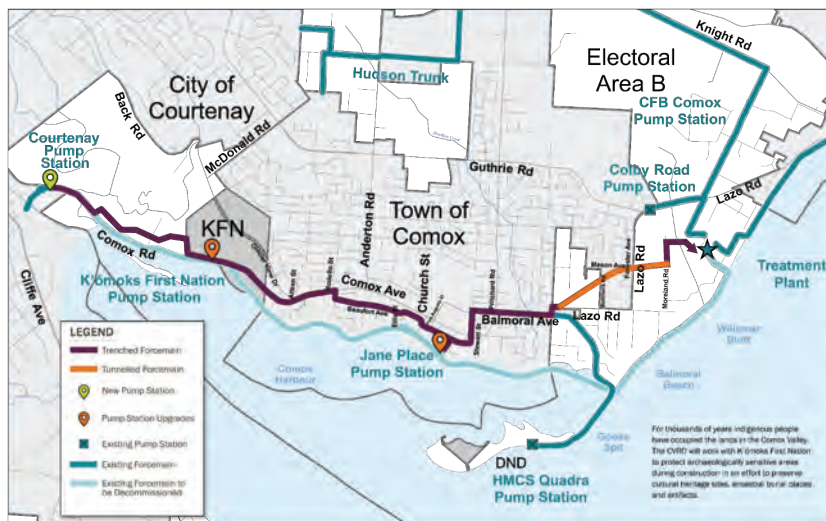
Protect estuary, beach + Baynes Sound

Move pipes inland away from water

Construction start spring 2023

6 of 13

Comox Valley
REGIONAL DISTRICT



7 of 13

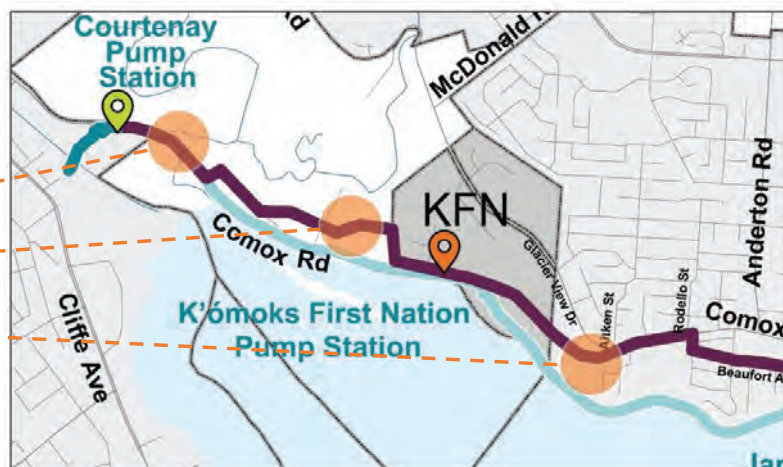
Comox Valley
REGIONAL DISTRICT

Route Details: Pump Station + Comox Rd.

New Courtenay Pump Station

Route Away from Culturally-Sensitive Areas

No Tunnel At Comox Hill



8 of 13

Comox Valley
REGIONAL DISTRICT

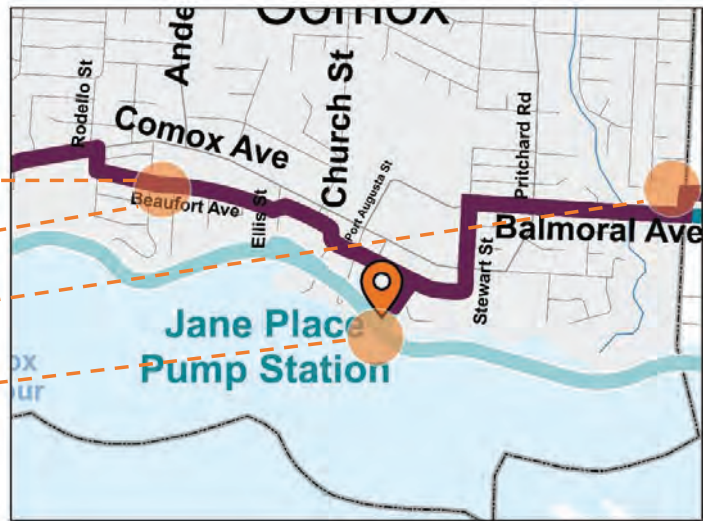
Route Details: Town of Comox

Moving Construction Off
Comox Ave

Aligning with Town of
Comox Upgrades

Balmoral Pipe Route

Upgrade Jane Place
Pump Station

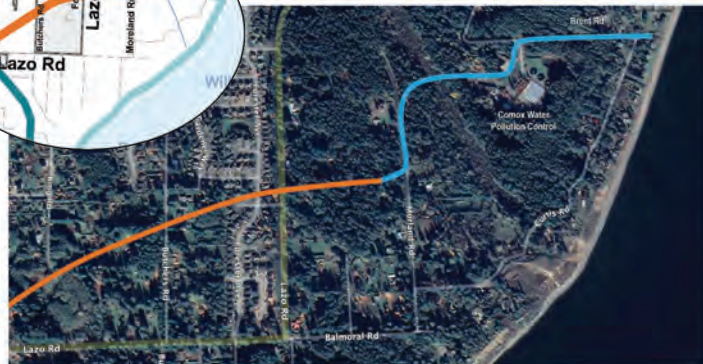


9 of 13

Route Details: Lazo Hill Alignment

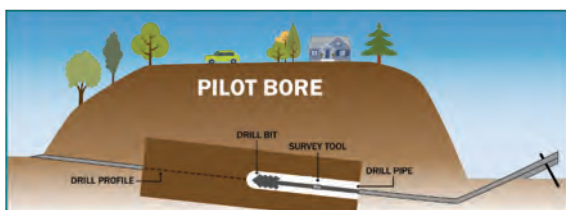
BENEFITS

- Single shorter HDD Line
- Minimum 20m offset from all deep groundwater wells
- Impacts fewer properties
- Laydown on Morland/Brent Road reduces disruption
- Gravity flow at Lazo Hill = reduced operational risks

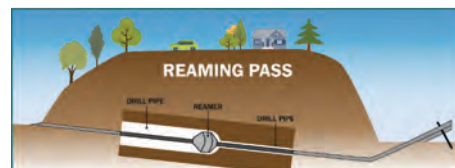


10 of 13

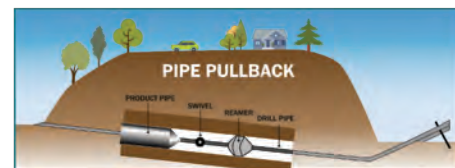
About Horizontal Directional Drilling (HDD)



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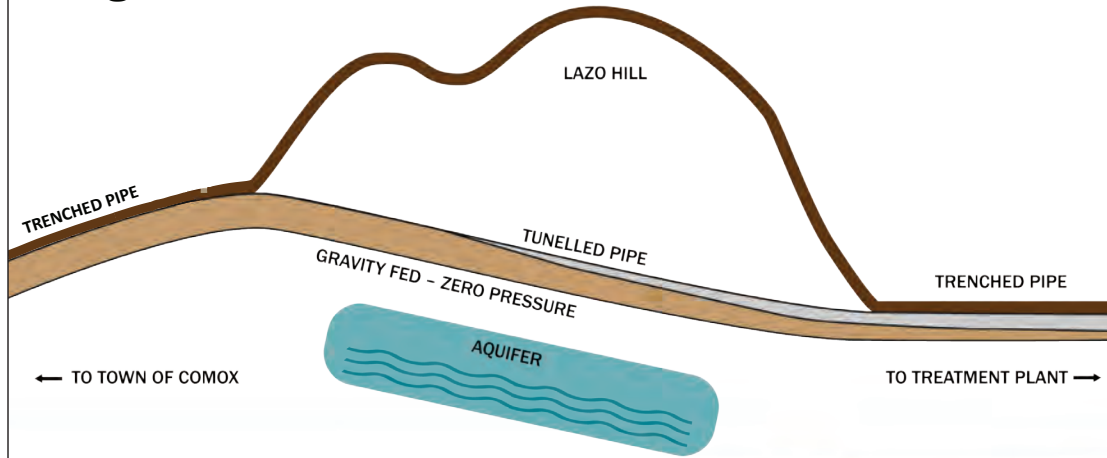
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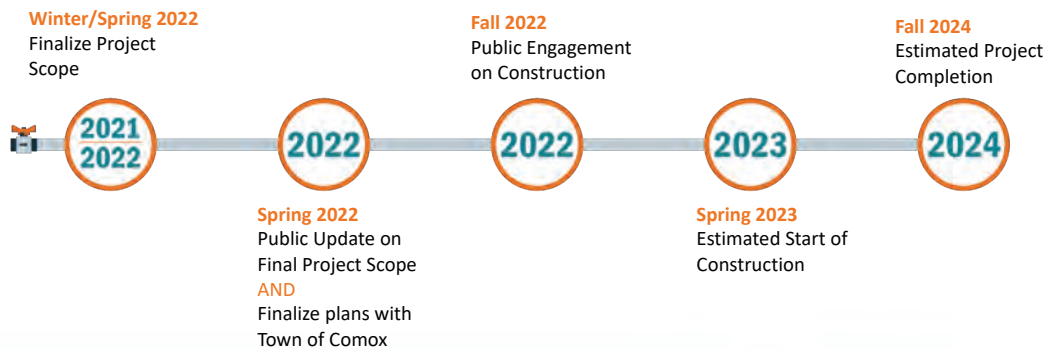
11 of 13

Designed Risk Reduction



12 of 13

Timeline Ahead



13 of 13

APPENDIX 3

Print & Radio Advertisement Samples

PRINT



We've Got Big Projects Coming Down the Pipe

We are ready to share our long term plan for sewer services, including the final route for the Comox Valley Sewer Conveyance Project and future upgrades at the Sewage Treatment Plant. Join us to learn about how this plan will protect the beaches and waters throughout the Comox Estuary, Point Holmes, Goose Spit coastline and Baynes Sound.


COME LEARN MORE

Attend an Open House Monday, April 4 4:00 pm to 6:00 pm Comox Rec Centre, 1855 Noel Ave., Comox	Join a ZOOM Webinar: Wednesday, April 13 12:00 pm to 1:00 pm Visit link below to register
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Visit www.comoxvalleyrd.ca/lwmp to learn more about the work to come, register for webinar, and sign up for updates moving forward.

Questions?
Call: **250-334-6000**
Email: engineering@comoxvalleyrd.ca





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comoxvalleyrd.ca

SOCIAL MEDIA

Sewer Planning Open House

Online Info-session (ZOOM)
April 13, 12-1 pm. Link below.



Sewer Planning Open House

Comox Rec: Apr 4
Online: Apr 13



RADIO



RADIO AD SCRIPT (DRAFT)

PROJECT: CV Sewer Conveyance /LWMP
MEDIA: 30 second ads
CAMPAIGN: Open House/Project Update Invitation
RUN DATES: March 28 – April 3
FREQUENCY: 6x/day

SCRIPT – Ad #1 Mar. 28 – Apr. 3

There are big things coming down the pipe for the Comox Valley Sewer Service – and the Comox Valley Regional District is ready to share the long-term plan for wastewater collection and treatment in the community.

You're invited to learn more about planning, construction and how these plans will protect beaches and waters of the area.

Join us at an in-person open house on Monday, April fourth from four p-m to six p-m, at the Comox Rec Centre. Or, register to join an online webinar April thirteenth from noon until one p-m.

For details, visit [connect -C-V-R-D <dot> C-A <slash> L-W-M-P](http://connect-cv-r-d.ca/lwmp).