

Notice of meeting of the
**SEWER EXTENSION SOUTH LIQUID WASTE MANAGEMENT PLAN ADDENDUM
JOINT TECHNICAL AND PUBLIC ADVISORY COMMITTEES (TACPAC)**

Tuesday, March 14, 2023

CVRD Civic Room, 770 Harmston Ave and Zoom

9:00am – 2:00pm

Join Zoom Meeting

<https://us02web.zoom.us/j/86397593067?pwd=WDdLVkZjbWFiRmRMMkZKaDVoc2xBQT09>

Meeting ID: 863 9759 3067

Passcode: 083327

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Item, Time	Description	Owner
3.5.1 9:00 – 9:05	Call to Order and Territorial Acknowledgement	Facilitator
3.5.2 9:05 – 9:10	Welcome	CVRD
3.5.3 9:10 – 9:20	Meeting #3: Meeting minutes, follow up items	Facilitator/CVRD
3.5.4 9:20 – 9:40	Meeting Overview: Committee decision points	Facilitator/CVRD
3.5.5 9:40 – 10:10	CVRD Updates and Briefing Notes – On-site Septic Systems <ul style="list-style-type: none"> • #1: Septic/Sewer – 50-year cost comparison • #2: Septic Regulatory Program • #3: New Septic Systems – Deferral Program Options 	CVRD
3.5.6 10:10 – 10:45	Committee Recommendations – On-site Septic Systems	Facilitator
3.5.7 10:45 – 11:00	Break	
3.5.8 11:00 – 11:15	Kilmarnock Collection System – Design Considerations and Cost Update	WSP
3.5.9 11:15 – 11:30	CVRD Updates and Briefing Notes – Collection System <ul style="list-style-type: none"> • #4: LPS considerations • Decision Matrix 	CVRD
3.5.10 11:30 – 12:00	Committee Recommendations – Collection System	Facilitator
3.5.11 12:00 – 12:30	Lunch	
3.5.12 12:30 – 12:50	CVRD Updates and Briefing Notes – Project Phasing <ul style="list-style-type: none"> • #5: Phase 1A Scope Methodology • #6: Cost Equity between Phases 	CVRD
3.5.13 12:50 – 1:20	Committee Recommendations – Project Phasing	Facilitator
3.5.14 1:20 – 1:30	CVRD Updates and Briefing Notes – Value Planning <ul style="list-style-type: none"> • #7: Value Planning 	CVRD

3.5.15 1:30 – 1:45	Next Steps, Meeting #4 Preview	Facilitator
3.5.16 1:45 – 2:00	Roundtable	Facilitator
3.5.17 2:00	Adjournment	Facilitator

Minutes of the meeting of the Sewer Extension South (SES) Liquid Waste Management Plan (LWMP) Addendum Joint Technical and Public Advisory Committee (TACPAC) held on December 12, 2022 in the CVRD Civic Room at 770 Harmston Avenue, Courtenay, and via Zoom conference commencing at 9:02 am

PRESENT:

A. Habkirk, Facilitator	Facilitator
R. Dyson, Chief Administrative Officer	CVRD
M. Rutten, General Manager of Engineering Services	CVRD
D. Monteith, Manager of Liquid Waste Planning	CVRD
V. Van Tongeren, Environmental Analyst	CVRD
C. Wile, Senior Manager of Strategic Initiatives	CVRD
A. Mullaly, General Manager of Planning and Development Services	CVRD
T. Trieu, Manager of Planning Services	CVRD
M. Briggs, Branch Assistant – Engineering Services	CVRD
I. Snyman	WSP
M. Levin	WSP
D. Silvester	Current Environmental
H. Sungaila	Current Environmental
C. Davidson, City of Courtenay	TAC
N. Clements, Island Health	TAC
E. Derby, Island Health (Alternate)	TAC
M. Mamoser, Ministry of Environment and Climate Change Strategy	TAC
L. Johnson, Ministry of Health	TAC
D. Arbour, Electoral Area A Director	PAC
I. Munro, Electoral Area A Alternate Director	PAC
M. Hewson, Association for Denman Island Marine Stewards	PAC
N. Prins, BC Shellfish Growers Association	PAC
C. Pierzchalski, Comox Valley Conservation Partnership	PAC
A. Gower, Comox Valley Chamber of Commerce	PAC
I. Heselgrave, School District No.71	PAC
N. Prince, Craigdarroch Resident Representative	PAC
R. Steinke, Craigdarroch Resident Representative	PAC
T. Donkers, Royston Resident Representative	PAC
K. Newman, Royston Resident Representative	PAC
J. Elliott, Union Bay Resident Representative	PAC
R. Lymburner, Union Bay Resident Representative	PAC

Item	Description	Owner
3.1 9:02- 9:03am	Call to Order and Territorial Acknowledgement The meeting was called to order at 9:02 am. The CVRD acknowledged that the committee is meeting on and the proposed Sewer Extension South Project will be constructed and operated on the traditional unceded territory of the K'omoks First Nation.	A. Habkirk
3.2 9:03- 9:05am	Welcome The CVRD thanked the committee for their attendance. The CVRD's consultants from Current Environmental introduced themselves to the committee.	D. Monteith
3.3 9:05- 9:11am	Meeting #2: Meeting Minutes, Follow Up Items MOTION: Adopt the minutes of the November 23, 2022 SES LWMP Addendum Joint TACPAC meeting. – I. Munro SECONDED: R. Steinke CARRIED UNANIMOUSLY V. Van Tongeren addressed questions from the previous meeting. Staff will be providing an update to residents early in the new year. Alternate forcemain alignments such as crossing the estuary were considered during previous LWMP process, but estuary crossing was rejected by the steering committee due to risk of carrying raw wastewater under estuary. WSP investigated an alignment under the estuary and determined it would be far more costly. More information on catchment areas and boundaries, as well as connection of newer septic systems, will be provided at next meeting. Staff have investigated example in Langford where delayed connection for new systems was allowed. Q: Environment risks were substantial for crossing and other options cheaper. Will additional studies be done, especially since Courtenay River siphon is at more environmentally sensitive area? A: Investigated capacity of siphon. Third pipe in place, but not yet used, that can provide capacity until 2060. Comment: Third pipe may be shown in drawings but not actually there. Recommend confirming presence of third pipe.	A. Habkirk / CVRD
3.4 9:11- 9:52am	Draft Environmental Impact Study D. Silvester gave an overview of the Environmental Impact Study (EIS) and its objectives. Investigated known contaminated sites, including possible sites for pump stations, and investigated low, medium, and high risk sites. 60 sites near alignment identified as possibly contaminated, with 9 designated high risk sites. The committee broke for recess due to technical issues at 9:21 am and reconvened at 9:29 am.	Current Environmental

	<p>Investigated potential contaminated sites near Royston pump station, including spill in the 90s on property across street that impacted adjoining properties and the roadway. Union Bay pump station is adjacent to coal sites, with some remediation occurring in the area. Site investigation recommended for all pump station sites. Unsure if investigation done on Union Bay Estates (UBE) roadway where trenching would occur.</p> <p>H. Sungaila gave an overview of environmentally sensitive areas. Investigated 13 possible ecological risks, including various bird and fish species, and four sensitive habitats within 100m around pump station and 30m around forcemain alignment. For Royston pump station, foreshore is considered Sensitive Ecosystem Inventory habitat, which will require mitigation efforts during construction.</p> <p>70+ possible bird species (13 at risk), a variety of mammals, and 14 possible amphibian and reptile species (four at risk) identified in project area. Five active bald eagle nests in close proximity to alignment (two near Trent River), with potential for Great Blue Heron habitats in area. Ground survey not completed yet, but should be conducted when breeding year corresponds with construction.</p> <p>Nine possible at-risk vegetation species. Invasive species present near pump station locations, and will require special handling and disposal during construction.</p> <p>15 streams/ditches (nine fish-bearing) within project area. Not expecting interaction with stream channel during construction, but mitigation efforts necessary when working near watercourses.</p> <p>D. Silvester noted that the bird nesting window is March 15 to August 15 and the in-stream reduced risk window is June 15 to September 15 (no direct incursion expected), which may require DFO request for review or <i>Water Sustainability Act</i> Section 11 notification. <i>Contaminated Sites Regulation</i> requires Phase 2 assessment if contaminated materials moved off-site for disposal. Archaeological permits required from the province and K'ómoks First Nation. Anticipated impacts and overall risk considered low.</p> <p>Q: Are streams unlikely to be directly affected due to forcemain not being very deep in ground? A: Required trenching will be relatively shallow compared to distance between road and culvert. Some maintenance may be required if culverts are damaged or at risk of collapse.</p> <p>Q: Remediation for UBE pump station location was done, but believe it was just covering it with dirt. When will testing be</p>	
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	<p>conducted in area to see what is actually there? Will residents be paying for work in UBE lands? A: Method of sampling not yet determined, but recommending that it occur. Will be addressed once have more detailed design.</p> <p>Q: Has a similar study been done for archaeological impact? A: Archaeological study completed in 2015, concluding most of the work will be done in heavily disturbed areas. A: Is pump station #3 in middle of archaeological zone? A: Yes. Q: Is the archaeological report available? A: Can be provided to the committee.</p>	
<p>3.6 9:52:- 11:37am</p>	<p>CVRD Updates Committee Process D. Monteith reiterated the LWMP process. Gave an overview of the committee structure and process for design making. Involves the TACPAC presenting recommendations to the SES Steering Committee (Electoral Areas Services Committee and Sewage Commission Chair), then decisions sent to Comox Valley Sewerage Service (CVSS) LWMP Steering Committee (Sewage Commission and Electoral Area A Director) and on to the CVRD Board.</p> <p>Goal of TACPAC Meeting #3 and #3.5 to provide recommendations to SES Steering Committee. SES Steering Committee will review recommendations and provide direction to proceed with draft addendum and consult First Nations and public. TACPAC Meeting #4 will review draft addendum and provide comments to be considered by SES Steering Committee and CVSS LWMP Steering Committee. Review addendum report at TACPAC Meeting #5 and direct to steering committees for review before submittal to province.</p> <p>Q: Will grant funding impact the process? A: Recommend committee put forward considerations regarding grant funding. Should form resolutions that consider what if grant funding doesn't happen, but can also acknowledge that it may not be possible without grant funding.</p> <p>Sewer Service Structure Amendment to expand CVSS service area adopted in August 2022 to include portions of Electoral Area A. CVSS responsible for conveyance, treatment, and discharge, with Area A contributing to operations and maintenance.</p> <p>Q: Conveyance and pump stations become part of CVSS, but collection systems are separate services? A: Yes.</p>	<p>CVRD</p>

	<p>Project Costs</p> <p>Q: Some areas may not see services for 5-10 years. Will they be paying for capital costs when there's no services available?</p> <p>A: Collection system infrastructure expected to be paid by area being serviced.</p> <p>Comment: Example of properties annexed into City of Courtenay who now pay higher taxes but haven't been provided with additional services.</p> <p>Response: Structure being contemplated would not see people paying before being provided service. Regional districts have service establishment option, which allows for only those participating in service to pay for service, rather than collected through broad-based tax.</p> <p>Q: Will grants and project partner contributions be applied only to the conveyance system or collection systems as well?</p> <p>A: Will discuss later.</p> <p>Currently have Class C cost estimate for conveyance infrastructure and Class D for local collection infrastructure. Applied for \$26.4M in grant funding, with decision expected in spring 2023. Provided an overview of Phase 1A and why the area was chosen for the initial phase to maximize the grant funding and address environmental risk.</p> <p>Q: Have we discussed later phases for areas in Royston?</p> <p>A: Timing not identified yet, but can discuss later.</p> <p>Q: Will outer areas join during or after Kilmarnock?</p> <p>A: Not determined yet.</p> <p>For properties connecting to CVSS, a Capital Improvement Cost Charge (CICC) is required for related upgrades to CVSS conveyance and treatment works. \$6,941 per unit for single family residential property, as defined in Bylaw No. 3008.</p> <p>Q: So any property within service area connecting to system would pay this fee?</p> <p>A: Yes. Same amount as paid through Development Cost Charges in the municipalities.</p> <p>Q: Would the CICC rate be paid for secondary dwellings too?</p> <p>A: Will investigate during break.</p> <p>Q: Are there alternate payment options other than one-time charge?</p> <p>A: Still evaluating options.</p> <p>Phase 1A with grant funding estimated to be \$0 per property for shared infrastructure (forcemain and pump stations), covered by</p>	
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	<p>project partners and grant funding. Without grant funding, would replace grant contribution with \$6.8M in borrowing and require an estimated \$13-17k per property for shared infrastructure.</p> <p>Q: Any consideration for parcel tax options? A: Options will be provided later in meeting.</p> <p>Q: Is \$13-17k in addition to CICC charge? A: Yes.</p> <p>Q: These charges don't include work required on each property? A: Yes.</p> <p>Q: So there are three components to be paid by property owners: contribution to CVSS (CICC), shared infrastructure, and on-site infrastructure? A: Yes, as well as collection infrastructure.</p> <p>Phase 1A with grant funding estimated to be \$13-17k per property for local collection infrastructure. Without grant funding, costs estimated to be \$41-45k per property for local collection infrastructure.</p> <p>On a per-year payment schedule, estimated to be \$900-1,200 per year for 25 years with grant funding, or \$3,900-4,200 per year for 25 years without grant funding. On-lot costs estimated at \$1,500-6,500 for connection from home to property line and \$1,000-2,000 to decommission septic system. Operation and maintenance costs estimated to be \$590 per year. Per property annual costs estimated to be \$1,430-1,850 per year with grant funding, or \$1,930-2,350 with CICC charges included. One-time costs estimated to be \$9,441 or higher with CICC, or \$2,500 or higher with CICC paid over time instead. Still evaluating payment options for CICC.</p> <p>Q: Why was a 25-year term for borrowing chosen when infrastructure has a closer to 100-year lifetime? Does this mean it's no longer on taxes after 25 years? A: Wouldn't be on taxes after term is up. Option to look at 30-year term, but don't believe terms longer than 30 years currently offered.</p> <p>Q: What does it cost if we don't do this? People likely to not like additional costs. Need to provide comparison of costs if properties stayed on septic, including costs if inspection and maintenance program implemented. A: Expect that once inspected, most older systems will need to be replaced. Could see \$25-50k cost for replacement, \$1-1.6k for annual inspection and maintenance, and \$200-300 for septic regulatory program annual parcel tax.</p>	
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	<p>Q: How can that be represented as an annual cost comparison? Average homeowner will want to see simple comparison of numbers.</p> <p>A: Benefit of public sewer service is the option to borrow over a long term and to distribute costs over many users, while septic system will place burden on individual property owners. Also need to consider asset life, with septic systems needing to be replaced over time.</p> <p>Q: What about next phases? May have very different charges per property for each phase, since grant funding may be different or absent. Should be able to include mechanism in place to ensure same charge for all users.</p> <p>A: Will be discussing costs for future phases at next meeting. Can look at different cost sharing structures, with or without grant funding.</p> <p>Comment: Need to consider the difficulty of keeping phase costs the same when some of them are 5-10 years away.</p> <p>Q: Why is UBE excluded from Phase 1A?</p> <p>A: UBE is responsible for the costs of their own infrastructure.</p> <p>First phase includes initial infrastructure that will include additional costs, such as the forcemain, while additional phases will require less infrastructure and likely see smaller grant amounts required. Can include language that adds principles in plan to help level costs for phases.</p> <p>Q: Everyone needs to know they're being treated fairly. Phase 1A said \$0 for shared infrastructure with grant funding. How will costs for future pump stations be addressed?</p> <p>A: Kilmarnock pump station will be considered regional infrastructure.</p> <p>Comment: Doesn't seem fair that a future phase may need to pay for pump station infrastructure when first phase may not.</p> <p>Comment: Do see fairness in that as phases join they pay for their pump station.</p> <p>Comment: First phase pays less and benefits from service.</p> <p>Parcel tax contemplated to cover borrowing costs, which is eligible for deferral.</p> <p>Q: These cost associated with the sewer connection that are eligible for deferral, does the province transfer the funds to the services?</p>	
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	<p>A: Yes, province will contribute to service to make up for deferral. Property owner will owe to province rather than the service.</p> <p>Q: What portion of costs are eligible for deferral? A: Borrowing costs for capital infrastructure.</p>	
<p>3.5 10:37- 10:56am</p>	<p>Break The committee broke for recess at 10:37 am and resumed its session at 10:56 am.</p>	
<p>3.7 10:56- 11:57am</p>	<p>Committee Process / Questions A. Habkirk discussed the motion process with the committee.</p> <p>Costs D. Monteith requested any questions or comments regarding costs. What considerations regarding funding support would the TACPAC like to see included in the plan? Will be discussing more on costs of future phases at next meeting.</p> <p>Q: Is Plan B septic system inspections? Q: Yes, that is what was put forward at last meeting. Presenting language on option is something that can be considered by the committee.</p> <p>Q: Is there an option for both sewer and septic? Most people think cost of septic is zero as long as no maintenance required. Septic enforcement may seem like a threat and people might not think it is a reality. A: CRD does have active enforcement. Q: If both sewer and septic are options, wouldn't that imply inspections required for those remaining on septic? Wouldn't staying on septic also not be possible since connection to sewer is still required to ensure costs are still equitable? A: Septic inspection may serve as holdover for those neighborhoods joining in later phases. Q: So wouldn't be septic maintenance program for Phase 1A but would be implemented for later phases? A: Staff can investigate further.</p> <p>Comment: Inspections should be conducted or organized by CVRD or Island Health (IH), since a Registered Onsite Wastewater Practitioner would benefit from additional work to replace a failing system.</p> <p>Q: Is CICC a one-time payment or paid over time? A: Both options proposed during last project.</p> <p>Comment: Would be useful to know what the one-time upfront cost would be.</p>	<p>A. Habkirk / CVRD</p>

	<p>Comment: No matter what option goes forward, a service for septic inspection and maintenance should be implemented.</p> <p>Comment: Committee should direct staff through motions to prepare analyses and information to help make key decisions at end of next meeting.</p> <p>MOTION: That staff prepare an analysis showing the estimated costs per connection by implementation phase, presuming no further grants and no further contributions from partner organizations, and further that staff present options and recommendations with respect to creating equitable costs per connection across all phases. – I. Munro SECONDED: R. Lymburner Further discussion was requested by the committee.</p> <p>Q: Can staff provide minutes and terms of reference? A: Should be included in agendas, but can distribute later.</p> <p>Q: In regards to equitable costs, different areas and different phases will have different costs. Are we proposing that phases that may cost less to connect will be subsidizing phases with higher costs? A: Yes, intention of motion is to make costs equal. From homeowners' perspective, they are using the system the same way as everyone else, so why would their costs be higher than others. Costs per property shouldn't be determined by circumstances such as geography or grant availability.</p> <p>Q: How do we define fair? Do we define it by geographical terms or timing? Need to reach consensus on definition. A: Staff should propose options and recommendations on what should be considered equitable. Example of equitable could be property assessment, water taken into house, pay the same as neighbor, etc.</p> <p>Q: How do you obtain that degree of equitableness when the service isn't already established? How do you fund the project and maintain the same costs from now compared to 10 years later? A: Staff can investigate other regional districts.</p> <p>Comment: Motion asks staff to prepare analysis and propose recommendation at next meeting so the committee can consider the options.</p> <p>Q: Has the assumption been that the cost would be attributed on a parcel basis rather than assessment basis. A: Assumptions have been based on per parcel basis.</p>	
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	<p>Comment: Resolution is asking to develop options, so essentially provide information.</p> <p>Q: Would phases be defined by catchment areas in motion? A: Yes, motion can be reworded to use catchment areas.</p> <p>MOTION: That staff prepare an analysis showing the estimated costs per connection by catchment area, presuming no further grants and no further contributions from partner organizations, and further that staff present options and recommendations with respect to creating equitable costs per connection across all catchment areas. – I. Munro SECONDED: R. Lymburner CARRIED UNANIMOUSLY.</p> <p>Comment: Will still need comparison of costs for septic maintenance program.</p> <p>Q: Are we asking CVRD and IH to investigate systems of all properties in proposed area? A: No, but to draft potential proposed bylaw and propose costs for septic regulation service. Would like to see analysis of costs for sewer and septic. Q: So suggesting comparing costs of septic system to sewer system over 25-year period? Costs for sewer would decrease after borrowing paid off, so maybe 50-year window better. A: Yes, if that sounds reasonable.</p> <p>Q: What is the estimated life of a properly maintained Type 2/3 septic system? A: Staff have been using 25-year life span for septic systems. 25 years is a common standard for IH, although some systems may fail after 10 years and others may fail after 40 years.</p> <p>Comment: Analysis of each community's failing septic systems should be brought back to committee.</p> <p>The committee was asked to consider the following questions: Are there other issues that can be considered in analysis? What happens if nothing is done? What about properties where septic is not ideal or possible? Does the committee want to consider these other options or explore consequences of doing nothing?</p> <p>Q: Isn't the intention of the committee that doing nothing isn't an option?</p> <p>Comment: Committee should consider motion to support a septic inspection program regardless of outcome of sewer. Would this only apply to Area A or have implications for Area B and C?</p>	
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	<p>Response: Would be helpful to consider a motion for implementation of septic maintenance service at next meeting.</p> <p>Q: Understood that enforcement was complaint based, so how will septic inspection and maintenance program be implemented? A: Proposed system wouldn't be complaint based but inspections would occur in regular intervals.</p> <p>Q: If you live in the next phase but your system fails, is the owner expected to pay for a new system when they have to connect to sewer in the near future? How can we implement a bylaw that accounts for this? Comment: We're requesting bylaw to see what it looks like, not to implement bylaw yet. Response: Bylaw doesn't need to be drafted, just the key points. Doesn't need to be adopted at this point. Up to staff to draft up bylaw and committee can consider language.</p> <p>Comment: Proposed service area is only one-third of south. Bylaw will still be required for area not in service area. Response: What the TACPAC can contemplate is restricted to the proposed service area. Could still bring forward similar bylaw to Electoral Areas Services Committee for whole area.</p> <p>MOTION: That staff prepare an analysis of the estimated "all in" annual costs of the sewer compared to the estimated "all in" estimated annual costs of a septic inspection, maintenance and enforcement bylaw. – I. Munro SECONDED: R. Steinke CARRIED UNANIMOUSLY</p> <p>Q: Capital costs of forcemain and pump stations are reliant on project partners. Is there are feeling of how it will be received by the project partners? A: Proposed costs have been discussed with project partners. Q: Has timing been considered as well, so not provided 10 years down the road? A: Yes.</p> <p>Comment: Low Pressure Sewer (LPS) system is less flexible and reliable, and more expensive. Don't get choice on type of system, since determined by geography. LPS should be made as equitable as possible. Potential for CVRD to supply pumps and cover costs for pump maintenance</p> <p>Q: What do other jurisdictions do in these cases where there is LPS and gravity? A: Generally property owner looks after infrastructure on property. As for costs, still investigating.</p>	
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	<p>Comment: 20-year system up-island with neighbourhood with grinder pumps and there is dispute about who pays for pump replacement.</p> <p>Comment: Should follow concept of polluter pays.</p> <p>Q: Will there be further investigation and resolution on LPS issue? A: Will have more fulsome discussion on collection systems later in meeting, and can discuss including private property infrastructure in shared costs.</p> <p>Comment: Would be for mandated unique private infrastructure such as the LPS grinder pump, not connection from house to property line.</p> <p>Response: Recommendation on LPS systems and costs could be suggested as policy.</p> <p>Comment: Not questioning use of LPS, just to make costs equitable.</p> <p>Q: Is there not an existing system in valley? What is used in those systems? A: Believe the municipal collection systems are primarily gravity based, but would need to investigate further if there is LPS.</p> <p>Q: So the costs would fall on the homeowner to maintain their systems? A: Yes.</p> <p>Committee Process</p> <p>A. Habkirk reviewed the committee process for the TACPAC. The committees work according to their terms of reference and act as a joint committee unless otherwise specified. Decisions are to be made by consensus, balancing project needs and community wants.</p> <p>Seeking impressions and preferences on options at today's meeting, with clear direction provided at next meeting.</p> <p>Q: Constraints mentioned geology and geography. Hasn't a geological assessment been done already? A: Desktop analyses done so far, but deeper investigation to occur as part of more detailed design.</p> <p>Comment: Not sure what a resolution by the committee would look like. Response: Provided example of input being requested (ex. Does the TACPAC have any considerations regarding the forcemain alignment?).</p> <p>Input was requested from the committee on the proposed forcemain alignment.</p>	
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	<p>Q: How do you fold value engineering into the committee decision-making process?</p> <p>A: Discussed value management at last meeting. Potential cost savings identified and will be brought back before committee. Seeking input from committee based on the information they have so far.</p> <p>Comment: Comfortable with the forcemain alignment using existing corridors and process will be done properly.</p> <p>Q: Can the committee share the information presented today with the public?</p> <p>A: Yes, it is a public meeting, so members may share information with the public. Open houses will be hosted in Spring.</p>	
3.8 11:57am- 12:34pm	Lunch The committee broke for lunch at 11:57 am and reconvened at 12:34 pm.	
3.9 12:34- 1:55pm	<p>Committee Process / Questions Continued</p> <p>A. Habkirk and D. Monteith reviewed the committee process.</p> <p>D. Monteith provided questions to be considered by the committee for the forcemain, pump stations, collection system, phasing, and costing.</p> <p>Forcemain: Does the TACPAC have any considerations regarding the forcemain alignment?</p> <p>Pump Stations: Which of the pump station designs does the TACPAC prefer? Which pump station location is preferred? Can consider locations outside coastal flood zone, but will limit use of gravity system.</p> <p>Collection System: Which of the collection options does the TACPAC prefer? Is there support for LPS for properties along foreshore? Are there other applications for LPS that should be considered?</p> <p>Phasing: Does the TACPAC support Phase 1A as proposed? Would the TACPAC like to develop criteria to assist in determining timing of future phases? Criteria could include partnership opportunities, grant funding potential, environmental need, property owner petitions, etc.</p> <p>Project Costs: TACPAC comments regarding costs? What considerations regarding funding support would the TACPAC like to see included in the plan?</p> <p>Q: CVSS LWMP had process of weighted scores in a matrix. Will that be utilized here?</p>	A. Habkirk / CVRD

	<p>A: For forcemain, only one option evaluated, so just requesting comments. Pump stations may require use of matrix. Can use matrix in situations where there are alternatives.</p> <p>Comment: Agree that matrix not needed for forcemain, since only one logical option, but would like matrix for others.</p> <p>Response: Have considered using matrix and weighting from CVSS LWMP as basis.</p> <p>Forcemain</p> <p>A. Habkirk requested any comments or concerns regarding the proposed forcemain alignment.</p> <p>Comment: Pump stations in Royston in recreational area. Ideally shouldn't be in such a highly used area.</p> <p>Response: Will address pump stations later in process.</p> <p>MOTION: The committee supports in principle the forcemain alignment as recommended by the CVRD's engineering consultant, WSP. – T. Donkers</p> <p>SECONDED: I. Munro</p> <p>CARRIED UNANIMOUSLY</p> <p>Pump Stations</p> <p>D. Monteith presented the questions asked of the committee regarding the pump station designs and locations.</p> <p>Q: Are these questions applicable by each individual pump station? Could one be a building and another a kiosk?</p> <p>A: Yes.</p> <p>A sample matrix for the pump stations was shared with the committee. The committee agreed that the use of a matrix would be helpful, and can work through the matrix and develop scoring at the next meeting. The matrix will be shared in advance of the next meeting.</p> <p>Q: How is the percentage calculated for each component total?</p> <p>A: All totals together would be 100 per cent, with weighting for each component.</p> <p>The committee performed a test run with the sample matrix, considering how the committee would weight the categories at a high level.</p> <p>Q: How is the environmental component being calculated? Seems to only show restoration and enhancement.</p> <p>A: Could add additional goals to each component if needed. Idea that mitigation efforts would be applied across the board, so not included.</p>	
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	<p>Comment: Technical aspects include environmental aspects, so some overlap.</p> <p>Comment: Some technical aspects are pretty much required, such as resilience to natural disasters and seasonal impact. Response: More for comparing impact that various options will have on aspects.</p> <p>Comment: Don't recall costs being very different for pump station options, so that should impact scale given to affordability.</p> <p>Comment: Should base percentage on what the public would consider most important.</p> <p>Q: Are we talking about all pump stations or certain ones? A: Only Phase 1A at this time.</p> <p>Comment: Cost difference between pump stations is about \$1M. Response: \$1M is for cost difference between Royston and Union Bay pump stations. The difference between building and kiosk option is closer to \$100k.</p> <p>A. Habkirk requested comments from the committee on any preferences for above ground or below ground pump stations.</p> <p>Comment: Above ground is more affordable to build and maintain, safer for operators, and has options for public amenities. Can be designed to not look like pump station.</p> <p>Comment: Preference depends on location. Above ground is safer from operational standpoint. Kiosk more likely to be vandalized or damaged.</p> <p>I. Snyman clarified that both options would have submersible pumps. Above ground has everything contained within building, while below ground does not have everything enclosed.</p> <p>Q: Is there difference in operator safety for these two options? A: Both require confined space entry for pumps, so little difference. Can be designed to minimize differences.</p> <p>Q: Will one option be quieter than the other? A: Generator will be largest contributor of noise. Enclosing in building will dampen impact of noise. Q: A significant difference? A: Not that much of a difference, since both will have acoustic hoods to dampen noise.</p>	
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	<p>Q: Wouldn't the system operate automatically with only operator intervention required when necessary?</p> <p>A: All pump stations require regular maintenance. Don't need 24/7 presence of operator, but need to visit regularly.</p> <p>Q: Beyond the washrooms, are there any other public amenities that could be provided? Public parking? Any other options that could be provided, or would lessen visual impact such as landscaping? Neighbourhoods likely want kids' facility.</p> <p>A: This is type of input being sought from committee, and encouraged to suggest ideas.</p> <p>Q: What is the difference for planned maintenance activity (access, frequency, etc.)? How will access to the wet wells be impacted? How often would access to confined spaces be needed?</p> <p>A: For both pump station option, there would be no difference since above ground would have access available to pull pump. Should only need to pull pumps every few months. For confined space, may be needed annually to perform visual inspection, but not part of regular maintenance.</p> <p>Comment: Overcomplicating decision-making process. Differences in resilience are minimal, so if they perform the same, should go for cheaper option and then consider public amenities and environmental impact.</p> <p>Response: Functionality and environmental impact is mostly the same. Kiosk may have slighter shorter lifespan due to exposed components. Quicker to build kiosk, but factored into costing.</p> <p>Comment: Decision seems highly knowledge based. Should be providing weighting for components and then consultant can provide recommendation.</p> <p>Q: Why include certain aspects in matrix if all options provide same impact? Could remove identical operational and environmental components.</p> <p>A: Can remove options that seem the same and then focus on those deemed more important, such as costs and social benefits.</p> <p>The committee requested that the proposed site visuals be shown while discussing the pump stations. The site plans for the Royston pump station were shared.</p> <p>I. Snyman advised the committee that the costs were \$1.4M for the building and \$1.1M for the kiosk, so \$300k more for building.</p> <p>Q: Are we deciding between the two locations as well?</p> <p>A: Yes.</p>	
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	<p>Q: The southern option seems close to Roy Creek. Is there an impact?</p> <p>A: It shouldn't be close enough to the creek to impact it.</p> <p>Q: What is the difference in reliance between the above ground and below ground options?</p> <p>A: Very few operational differences. Building may be more effective in resisting weather events. Pumps and valves not impacted, but electrical components will be influenced. Can put on second story, but then visual impact.</p> <p>Comment: Kiosk would be more impacted by vandalism.</p> <p>Comment: Preference for building since area is marine environment. Can provide washrooms for operators and public. Operators can store tools in building. Can elevate the electrical components in the building to mitigate risks.</p> <p>Q: Has climatic event frequencies been modeled when considering options?</p> <p>A: Looked at most recent coastal flooding map, which looks at 200-year event.</p> <p>Comment: Pump stations tend to only have problems during poor weather, so building would be better for operators.</p> <p>Comment: When working on the matrixes for the CVSS LWMP, TAC only dealt with technical aspects and PAC only dealt with public aspects. Should we consider similar approach for this TACPAC?</p> <p>Comment: If cost difference is just 0.2 per cent of the total costs, preference should be given to above ground due to additional social benefits.</p> <p>Comment: Option A (building) in northern Royston location preferred due to proximity to picnic benches and public amenities, and to keep all activity in one area.</p> <p>Comment: Northern location is across from empty lot that is unlikely to be developed due to prior history of contamination.</p> <p>Comment: Residents will want to see modelling. Response: Staff can prepare architectural drawings once a preferred option is decided.</p> <p>Comment: Should consider additional public amenities, such as playground.</p>	
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	<p>MOTION: The committee recommends Option A (above ground) for the Royston pump station. – I. Munro SECONDED: J. Elliot CARRIED UNANIMOUSLY</p> <p>Comment: Pump station be further from the barbeque pit.</p> <p>Comment: Pump station should be near public area to provide washrooms or other amenities.</p> <p>Q: Are there options to locate pump station west of the highway? A: Can look into it at committee recommendation, but need to consider impacts on collection system, such as additional use of LPS.</p> <p>Q: Was there concern from others about the location? A: Current proposed location allows for gravity collection system, while westward location may require small pump station on Marine Dr to collect wastewater. LPS wouldn't be enough to convey to highway.</p> <p>Q: Would it be more expensive or cheaper to have pump station west of highway? A: Westward location would increase costs. Typically want pump station at low point of land.</p> <p>Comment: Ideally don't want to add more LPS or extra pump stations, so lower site is preferred.</p> <p>Q: Would a westward pump station improve resilience of system? A: Regional pump station proposed near highway, which will have all pump stations connected to it. Royston pump station will eventually only be for Royston.</p> <p>MOTION: The committee recommends locating the Royston pump station in the proposed northerly location. – I. Munro SECONDED: T. Donkers CARRIED UNANIMOUSLY</p> <p>Collection System</p> <p>D. Monteith requested comments on the collection system from the committee to consider at the next meeting.</p> <p>Comment: Would like to know where LPS would be considered. Would be helpful to be shown on a map.</p> <p>Q: Would like more information on infrastructure along foreshore. What type of infrastructure would be installed? Would it only be for gravity system? A: Foreshore construction would only be needed for properties along foreshore if using gravity system.</p>	
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	<p>Q: Is that feasible? Not a lot of land in front of properties along shore.</p> <p>A: Would be very challenging to install.</p> <p>Phasing</p> <p>A. Habkirk asked the committee if there was any additional information on phasing requested for next meeting.</p> <p>Comment: Would like to better understand how Phase 1A was chosen. Understood that strategy was to maximize the grant funding per household. Should it be to minimize the cost per household?</p> <p>Response: Can provide cost per household if Phase 1A scope was expanded.</p>	
<p>3.10 1:55- 1:56pm</p>	<p>Meeting #4 Preview</p> <p>D. Monteith shared a slide detailing the items to be discussed at the next meeting.</p>	<p>D. Monteith</p>
<p>3.11 1:56- 1:56pm</p>	<p>Roundtable</p> <p>A. Habkirk requested that if the committee requires any additional information before the next meeting, that it be requested beforehand.</p>	<p>A. Habkirk</p>
<p>3.12 1:56pm</p>	<p>Adjournment</p> <p>The meeting adjourned at 1:56 pm.</p>	<p>A. Habkirk</p>

GENERAL:

The next SES LWMP Addendum Joint PACTAC meeting will be held on February 6, 2023 commencing at 9:00 am in the CVRD Civic Room at 770 Harmston Avenue, Courtenay, and via Zoom conference.

TERMINATION:

The meeting terminated at 1:56 pm.

SEWER EXTENSION SOUTH – ANNUAL COST COMPARISON BETWEEN SEPTIC SYSTEMS AND SEWER SERVICE
March 14, 2023

Background

Cost estimates for the Sewer Extension South Project were presented at the December 12, 2022 joint meeting of the Public and Technical Advisory Committees, including estimates of per-property up-front and annual costs. As an outcome of committee discussion and deliberation regarding project costs in relation to existing servicing by private septic systems, the following motion was passed:

That staff prepare an analysis of the estimated “all in” annual costs of the sewer compared to the estimated “all in” annual costs of septic replacement and inspection, maintenance and enforcement bylaw.

Further analysis of the annual costs of a new sewer service compared to estimated annual costs of continued use of septic systems has been conducted. In accordance with the discussion at the December 12 meeting, the analysis considered the following:

- Comparison over a 50-year time frame that would include one septic system replacement, along with an initial install of a new septic system.
- Comparison using Type 2 septic system costs in recognition of higher treatment needs on predominantly small lots in the proposed sewer service area.
- Assumption that a mandatory septic system inspection and maintenance program is in place.

The tables below outline the up-front and ongoing costs included in the analysis for each wastewater management scenario. Where a range of costs was available, a mid-range estimate of the item’s cost was used for the analysis.

Community Sewer

Figures below are based on Class ‘D’ cost estimates, and assume grant funding and partner contributions as presented at the December 12, 2022 TACPAC meeting have been secured. Figures are subject to change based on updated capital costs, financing rates, and external funding contributions.

Upfront costs	
Connection from house to sewer main	\$4,000
Septic system decommissioning	\$1,500
Ongoing (annual) costs	
Project financing (Incl CICC, 25-year term)	\$1,550
Operations & Maintenance	\$590

The Comox Valley Regional District respectfully acknowledges the land on which it operates is on the unceded traditional territory of the K’ómoks First Nation, the traditional keepers of this land.

Private Septic Systems

Figures below are based on the installation of Type 2 systems, replaced at 25 years per septic system service life figures provided by Island Health. Sites with additional constraints may require Type 3 systems, resulting in higher costs than shown below.

Upfront costs		
Installation of new Type 2 system	\$25,000	Years 1 & 26
Ongoing costs		
Septic Maintenance Bylaw property tax	\$250	per year
Maintenance	\$500	per year
Pump-out	\$600	every three years

Analysis of the total cash outlay of each option over a 50-year timeframe, at an annual inflation rate of 2.5 per cent illustrates the long term financial benefits of community sewer, as outlined below.

	Community Sewer	Private Septic Systems
Total expenditure over 50-year timeframe	\$100,200	\$153,100
Average expenditure per year	\$2,000	\$3,060

Land Use Considerations

Aside from the cost savings seen over the long term, there are other benefits to sewer servicing that would be more challenging to quantify. Without appropriate servicing in place, it may not be possible for continued land development within the proposed sewer service area, resulting in potential regulatory changes such as:

- Restrictions on adding secondary dwelling units, and/or
- Revised zoning that better considers the area's on-site wastewater treatment capacity.

With sewer servicing, regulatory changes such as these wouldn't be necessary, and individual property owners would also see the following benefits:

- Ability to use portions of their property currently occupied by septic system components;
- Increased property values; and
- Reduced property maintenance responsibilities.

SEWER EXTENSION SOUTH – SEPTIC REGULATORY PROGRAM March 14, 2023

Background

The CVRD has been exploring the feasibility of implementing a regulatory bylaw to help ensure septic systems in the electoral areas are properly operated and maintained in accordance with the requirements of the [Sewerage System Regulation](#). The idea of septic system regulation was originally explored in the lead up to the 2016 South Sewer Referendum, and was ultimately rejected as a long-term south region wastewater management option at that time. Stricter regulations for septic systems have also now been recommended through a working group formed in response to the 2022 norovirus outbreak traced to consumption of oysters produced in Baynes Sound.

The Capital Regional District has had a septic regulatory bylaw in place since 2008 that mandates septic pump-outs and/or maintenance in four member municipalities (Colwood, Langford, Saanich and View Royal). Their bylaw was authorized through their Core Area Liquid Waste Management Plan: [CRD Bylaw No 3479](#). This is the only regional district program currently in place in BC; though there are a few examples of local government septic regulatory programs in other jurisdictions such as Ontario and Washington State.

Since 2020, there have been three septic regulatory program-related staff reports presented to the CVRD's Electoral Areas Services Committee. These reports describe a spectrum of septic regulatory program options, and identify the potential level of risk associated with septic system failures in CVRD electoral area neighborhoods.

- May 2020 – [Septic Regulatory Program Options](#)
- November 2021 – [Septic Regulation Follow Up](#)
- May 2022 – [Initiatives to Mitigate Environmental and Public Health Impacts from On-Site Septic Systems](#)

As noted in the 2020 Regulatory Program Options study, it is best to avoid a “one size fits all” approach when developing a septic regulatory program. Program selection is best considered in the context of risk of septic system failure, whereby areas with a higher level of risk would be best served by an inspection-based program, while other areas could see a lower level regulatory approach such as a mandatory pump-out program. Homeowner education is considered a foundational part of any regulatory program, and has been in place in the CVRD since 2018.

The program concept under consideration by CVRD staff is a Mandatory Inspection program in higher-risk areas as identified in the 2020 Septic Regulatory Program Options Study, with a Mandatory Pump Out program in all other areas. The overall program, if established, could be phased in over a five year period, as shown in the following table.

Year	Description	Cost estimate
1	Assessment of high-risk areas, property owner and industry outreach, identify septic inspector capacity	\$100,000
2	Implement mandatory inspection in highest priority areas (high-risk areas along Baynes Sound, outside of Sewer Extension South proposed service area – Ships Point)	\$250,000
3	Implement mandatory inspection in other high-risk areas (Robinson Lake, Bates Beach, parts of Hornby Island)	\$350,000
4	Continued mandatory inspection roll out (Saratoga Beach, other identified areas, possibly Royston and Union Bay dependent upon status of Sewer Extension South project implementation)	\$450,000
5	Initiate mandatory pump out program in all other areas, continued mandatory inspections in high-risk areas	\$500,000

The cost estimates in the table above include inspections and staffing capacity for program administration and bylaw enforcement. All properties in higher risk areas would have an inspection completed on an approximately 8-year cycle, with approximately 200 inspections completed each year. Other costs to comply with program requirements would be the responsibility of property owners; this would include septic pump outs, any repairs or maintenance identified by inspections, or potentially septic system replacement in some cases.

The CVRD is currently seeking provincial guidance on options for gaining authority to enact a septic regulatory bylaw and establishing a regulatory service in order to provide resources for septic regulatory program administration, septic inspections and enforcement measures. Further information on the proposed septic regulatory program, options to initiate it, and provincial guidance on the authority process will be provided to the Electoral Areas Services Committee for their consideration in the spring.

SEWER EXTENSION SOUTH – NEW SEPTIC SYSTEM POLICY OPTIONS AND IMPACTS

March 14, 2023

Background

A key driver for the Sewer Extension South Project is the prevalence of old septic systems, particularly in areas where residential dwelling densities approach levels typically seen in municipal areas. Nevertheless, some properties in the Royston and Union Bay areas have been re-developed in recent years, and may have seen septic system upgrades completed as part of their redevelopment. One of the key questions the CVRD has been hearing from residents since re-engaging the discussion on sewer servicing in the south region has been whether properties with new septic systems will be required to connect if sewer servicing becomes available.

As presented at the November 23, 2022 joint Public and Technical Advisory Committee meeting, Island Health provided CVRD access to their complete septic system records going back to approximately 1970. This information on septic system ages and status in the project area enables analysis of the financial impacts of a program to allow property owners with newer septic systems to delay their connection to the sewer system.

Case Study: City of Langford New Septic System Deferral Program

A deferral program for newer septic systems was offered by the City of Langford in areas where sewer servicing was being introduced. The [2019 Sewer Connection Guide for Property Owners](#) included an exemption option where properties with septic systems newer than five years old could defer sewer connection and payment of connection fees until the septic system is five years old, or until the property is sold. Out of 630 properties that were required to connect to the municipal sewer system at the time, the City of Langford had 12 applicants seeking to defer connection.

Deferral Program Considerations

Given the approximate 2025/2026 timeframe for provision of sewer services to the south region, it is difficult to fully assess the impact or effectiveness of a program for systems newer than five years, as it is unknown how many new systems would be constructed between now and 2025/2026. This briefing note therefore estimates two options:

- (1) The financial impacts of an exemption program for all septic systems newer than five years, using years 2016-2021 as a representative sample from the records provided by Island Health in December 2021.
- (2) The financial impacts of an exemption program for Type 2 and 3 septic systems newer than 5 years, using years 2016-2021 as a representative sample from the records provided by Island Health in December 2021.

In the Union Bay pump station catchment area, seven per cent of properties have septic systems that have been replaced or upgraded from 2016 to 2021. The core Royston area included in sub-catchment S1-3 has a higher proportion of systems replaced or upgraded over this five-year period at 18 per cent. Overall, this results in 11 per cent of properties that would be eligible to defer connection to the sewer service based on a five year or newer threshold for deferral program eligibility. When considering only those properties that have Type 2 or Type 3 septic systems five years old or newer, five per cent of overall properties in the initial service area could qualify to defer.

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Deferral Program Financial Impacts

Based on the information above, an analysis of two program types has been completed as follows:

- Five years or newer, Type 2 or 3 systems only
- Five years or newer, all system types

The tables below summarize the estimated financial impacts of these two deferral program options, assuming that all qualifying properties would participate in the deferral program.

Five years or newer, Type 2 or 3 systems only

<i>Costs per property</i>	<i>No program</i>	<i>Deferral program</i>		<i>Cost difference</i>
	All properties	Qualifying properties	All connected properties	All connected properties
<i>Operating costs (\$/yr)</i>	590	0	620	30
<i>Project financing costs (\$/yr)*</i>	1550	0	1630	80
<i>Totals</i>	2140	0	2250	110

* Project financing costs include capital costs for collection and conveyance works assuming grant funding and partner contributions, and Comox Valley Sewer Service Capital Improvement Cost Charges (set by bylaw at current rate of \$6,941 per residential unit), all financed over a 25-year term.

Five years or newer, all system types

<i>Costs per property</i>	<i>No program</i>	<i>Deferral program</i>		<i>Cost difference</i>
	All properties	Qualifying properties	All connected properties	All other properties
<i>Operating costs (\$/yr)</i>	590	0	660	70
<i>Project financing costs (\$/yr)*</i>	1550	0	1740	190
<i>Totals (\$/yr)</i>	2140	0	2400	260

* Project financing costs include capital costs for collection and conveyance works assuming grant funding and partner contributions, and Comox Valley Sewer Service Capital Improvement Cost Charges (set by bylaw at current rate of \$6,941 per residential unit), all financed over a 25-year term.

As shown in the tables above, a deferral program’s financial impact on non-eligible properties could range from a \$30/year increase (for a program where properties with newer Type 2/3 systems are able to defer annual operating costs, but still pay project capital/borrowing costs), up to a \$260/year increase (for a program where all properties with newer systems could defer annual operating costs and project capital/borrowing costs).

The ideal deferral program for newer septic systems would balance the community’s need for an affordable sewer servicing solution to protect Baynes Sound water quality, while also offering some measure of financial relief to those property owners that have recently made significant investments in their septic systems, potentially exceeding \$50,000 for a new Type 3 system. Given the higher level of wastewater treatment provided by Type 2 and 3 systems, and their higher costs relative to Type 1 systems, a program to defer payment of operating costs for Type 2 and 3 systems up to five years old could be a suitable option to find this balance.

COMOX VALLEY REGIONAL DISTRICT
REPORT NUMBER: 18P-00276-00

TACPAC MEETING 3.5

DISCUSSION PAPER 1: KILMARNOCK PUMP STATION AND COLLECTOR SYSTEM DESIGN

March 08, 2023

CONFIDENTIAL



DISCUSSION PAPER #1

BACKGROUND

As the Sewer Extension South Liquid Waste Management Plan Addendum process has progressed, the Comox Valley Regional District (CVRD) has requested additional work to update the design and cost estimates for the Kilmarnock neighbourhood in order to assist the Public and Technical Advisory Committee in considering project phasing. This discussion paper includes design considerations and cost estimates for the collection system as well as the pump station for the Kilmarnock area.

The Kilmarnock Area is in Electoral Area 'A', located about 5km from Royston as shown in Figure 1. Electoral Area 'A' does not have a centralized sewage collection system and uses privately owned onsite septic systems for wastewater management.

As per CVRD direction, the PS #3 Kilmarnock catchment will also facilitate sewer loading from the future K'ómoks First Nation development west of Highway 19A.

The discussion paper includes the following information for the Kilmarnock neighbourhood:

- Summary of Kilmarnock collector system design.
- Summary of collector system cost estimate.
- Summary of pump station siting options and design.
- Summary of pump station cost estimate.

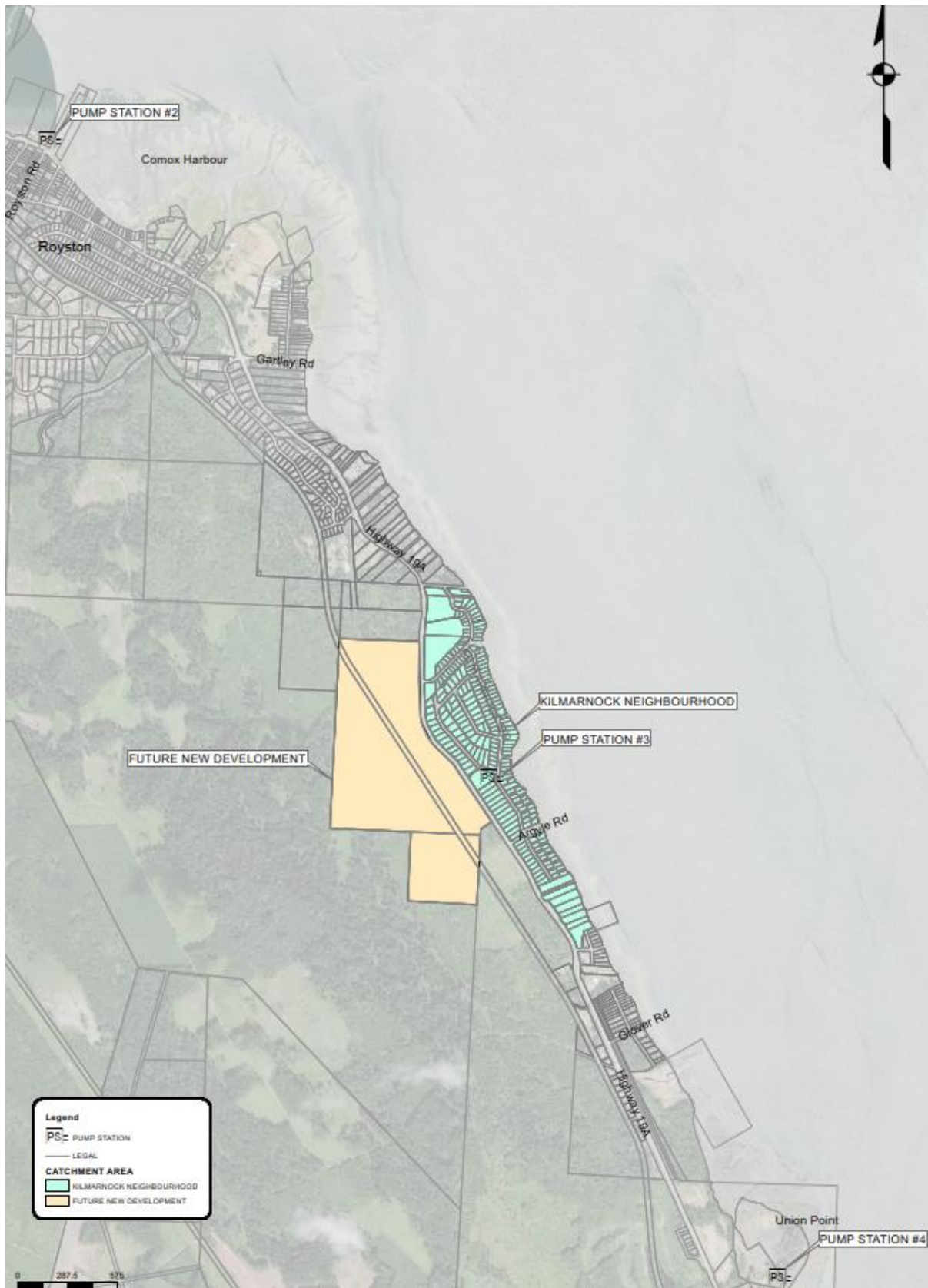


Figure 1: Pump Station Location

POPULATION AND DESIGN FLOW SUMMARY

The population and flow projections for the PS#3 Kilmarnock catchment were calculated in a previous stage of the project. Design criteria and detailed development can be referred to in the “South Region Service Area Impacts on CVSS Conveyance and Wastewater Infrastructure” report dated January 9, 2019. Table 1 summarises the contributing Average Dry Weather Flow (ADWF) and Peak Wet Weather Flow (PWWF) for the projected populations in 2025 and 2070.

Table 1: Pump Station #3 Kilmarnock Catchment Population, Area, and Flow

		PS#3 KILMARNOCK CATCHMENT	FUTURE NEW DEVELOPMENT	TOTAL
2025	Population	507	40	547
	Area (ha)	65	7.5	72.5
	Peaking Factor	3.2	3.2	-
	ADWF (L/s)	1.4	2.1	3.5
	PDWF (L/s)	4.5	6.7	11.2
	I&I (L/s)	3.9	0.4	4.3
	PWWF (L/s)	8.4	7.1	15.5
2070	Population	634	2309	2943
	Area (ha)	64.6	80.7	145.3
	Peaking Factor	3.2	3.0	-
	ADWF (L/s)	1.8	19.2	21.0
	PDWF (L/s)	5.7	57.0	62.7
	I&I (L/s)	3.9	4.8	8.7
	PWWF (L/s)	9.5	61.9	71.4

The following assumptions were used in the flow calculations:

- 240 L/cap/day was used as specified in the 2014 MMCD Design Guidelines for ADWF.
- The peaking factor was calculated using the formula from the 2014 MMCD Design Guidelines of $PF = 3.2/P0.105$, where P is the population in thousands rounded to the nearest thousand.
- The inflow and infiltration (I&I) rate for all existing and proposed developments is 0.06 L/s/ha as specified in the 2014 MMCD Design Guidelines.
- The PWWF was calculated using the formula for design flow from the 2014 MMCD Design Guidelines, where the design flow, $Q = \text{population} \times \text{per capita flow} \times \text{peaking factor} + \text{I\&I contribution}$.

The collector system was designed using the 2070 projected flows for the projected development in the area.

SYSTEM PHASING

The phasing of the CVRD South Region conveyance system has been outlined in previous discussion papers and TACPAC meetings. The focus of these discussion papers has been as on the initial phase which involved PS#1 and PS#6, this scope of work focuses on the addition of PS#3 located between PS#6 and PS#1. The process flow diagram (PFD) is shown in Figure 2 below. The contributing sub-catchments for the PS#3 include the Kilmarnock North existing developed area and future new developments. There is uncertainty about when the new developments will be constructed. This phase accommodates the flow of the new developments that will be constructed within PS#3's catchment area.

As in Phase 1A, the collection flow from PS#6 (Union Bay) is 34 L/s to maintain the minimum flushing velocity of 0.75m/s. Once constructed, this flow will be conveyed to PS#3 (Kilmarnock) through the 250 mm HDPE forcemain. From PS#3, 58 L/s is conveyed to PS#1 (Royston) through the 250 mm HDPE forcemain. The additional 24 L/s from PS#3 corresponds to a population equivalent of 1719 persons and equivalent dwellings of 819 units. The configuration downstream of PS#1 to the Courtenay River siphon is the same as Phase 1A, 72 L/s will be conveyed through this section in Phase 1B.

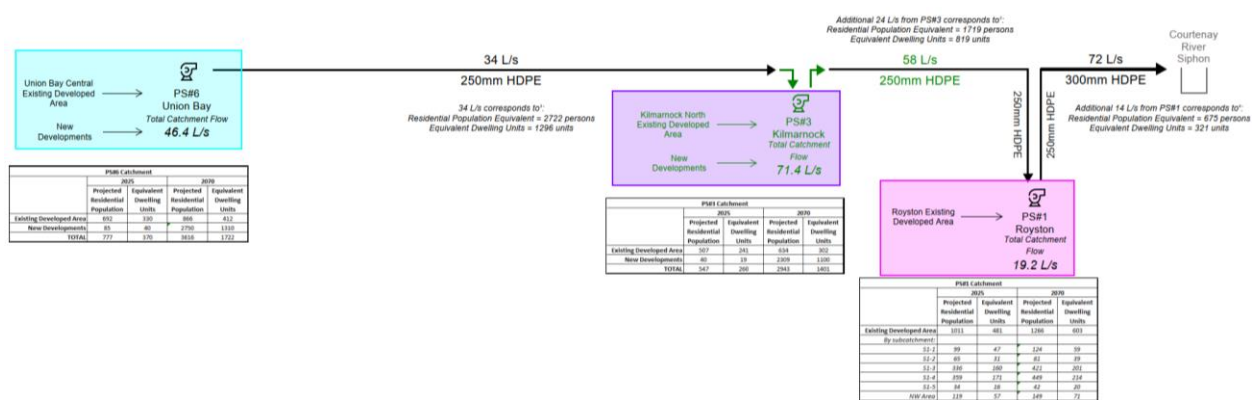


Figure 2: PFD - Phase 1B

COLLECTOR SYSTEM DESIGN

MODEL

PCSWMM modeling software was used to design the Kilmarnock collector system. This software ensures that the system has the required capacity. Using the combination of LIDAR and GIS components, the pipe invert levels were calculated, and the manholes were located and spaced according to The Master Municipal Construction Documents (MMCD 2021) requirements. A projected load for each parcel was calculated based on the area using the flow required. Parcel sub-catchments were assigned to the closest manhole. Sanitary loads from the future new development were evenly distributed between the three manhole locations as shown in Figure 2 below.

DESIGN STANDARDS AND CONSIDERATIONS

The proposed pipe depth varies along the length of the sanitary sewers but generally follows the ground profile with a minimum cover of 1m and maximum cover of 4.5m as required by MMCD (2021). Manholes are provided at every change of pipe size, change in grade and direction with the maximum spacing of 150m as required by MMCD (2021). Minimum grades of 0.6% are stipulated in the MMCD standards to maintain a minimum velocity of 0.6m/s. Collector systems are to have a minimum pipe size of 200mm or 150mm for upstream sections of a residential sewer where future extension is not possible. The pipes are designed to be flowing at a maximum capacity of 80%.

ALIGNMENT

During the design development of the collector system, achieving the minimum velocity requirements caused several challenges. To achieve the minimum velocity, pipe diameter and slope were reviewed. After discussions with the CVRD about the challenges, 100mm diameter pipes were designed for the upstream sections of the collector system. The decision to use smaller diameter pipes was made to strike a balance between velocity, grading and depth requirements.

To ensure the depths of the downstream sewers and the pump station are within MMCD guidelines while maintaining the cleansing velocity, three connections to the proposed 250mm South Royston forcemain were included. Flushing the system is required periodically to prevent the sewer line from the deposition or settlement of solids within the pipeline. The forcemain connection includes a 100mm tie-in connection to the forcemain with a chamber with actuated valve and flowmeter. The additional flow from the forcemain connections is estimated at 6L/s.

Two designs were proposed for the PS#3 Kilmarnock collector system shown in Figure 3 and Figure 4. The two options are similar, the only difference is the alignment at top of Montrose Drive and Inverness Road and the loads assigned.

In Option 1, the Future Development load is applied to the start of the Inverness Road and Arran Road line and the forcemain connection is applied to the upstream manhole on Montrose Drive. In Option 2, the Future Development load is applied to the upstream manhole on Montrose Drive and the forcemain connection is applied to the upstream manhole of the Inverness Road and Arran Road line. Both designs passed the MMCD capacity requirements of flowing 80% full and the minimum velocity of 0.6 m/s to ensure the self-cleaning of the pipelines. Both options were designed with three forcemain connections and three future new development sanitary loads noted in Figure 3 and Figure 4. Pipe sizes for both options range between 100-350 mm.

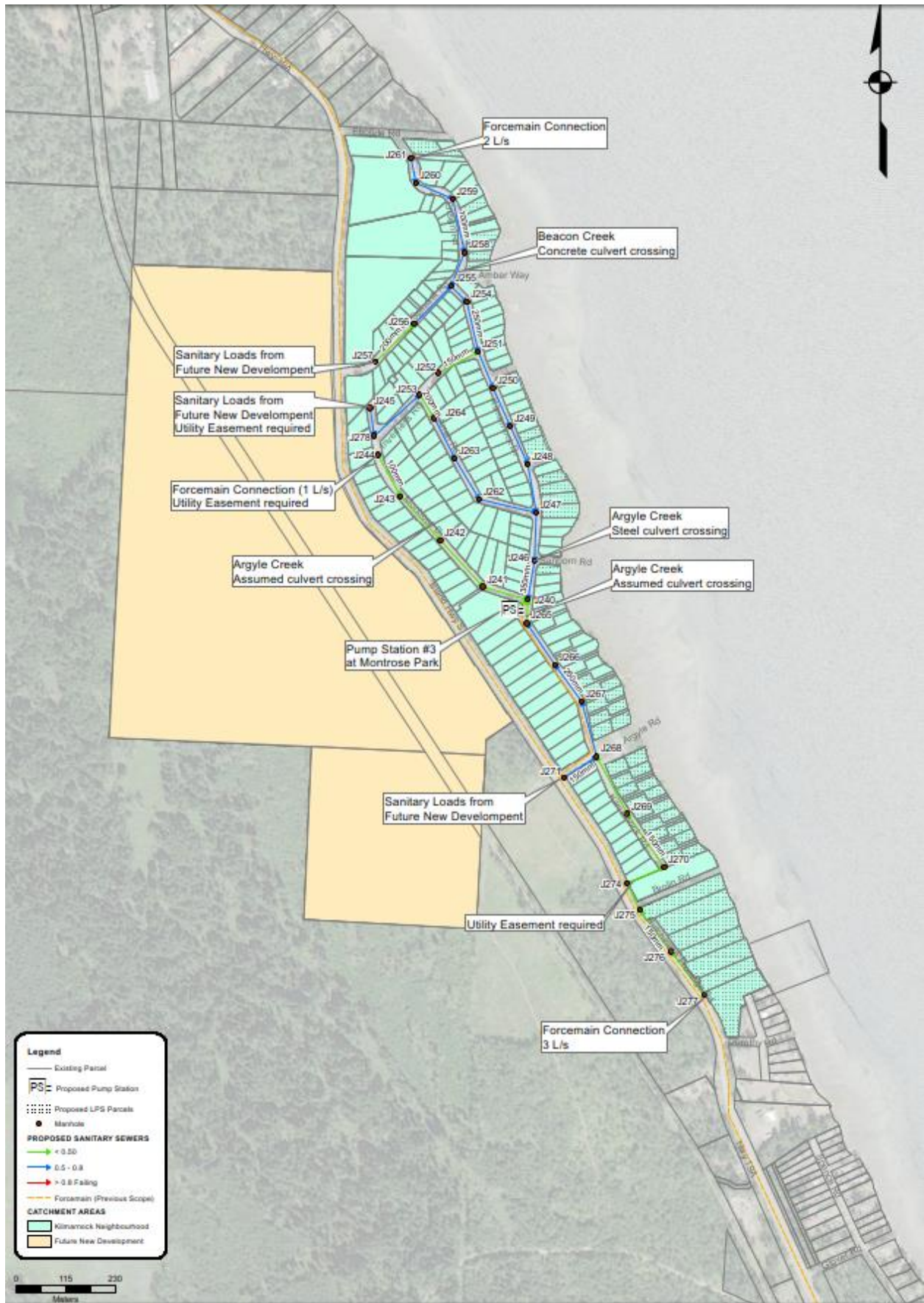


Figure 3: Pump station #3 Kilmarnock Neighbourhood proposed collector system – Option 1

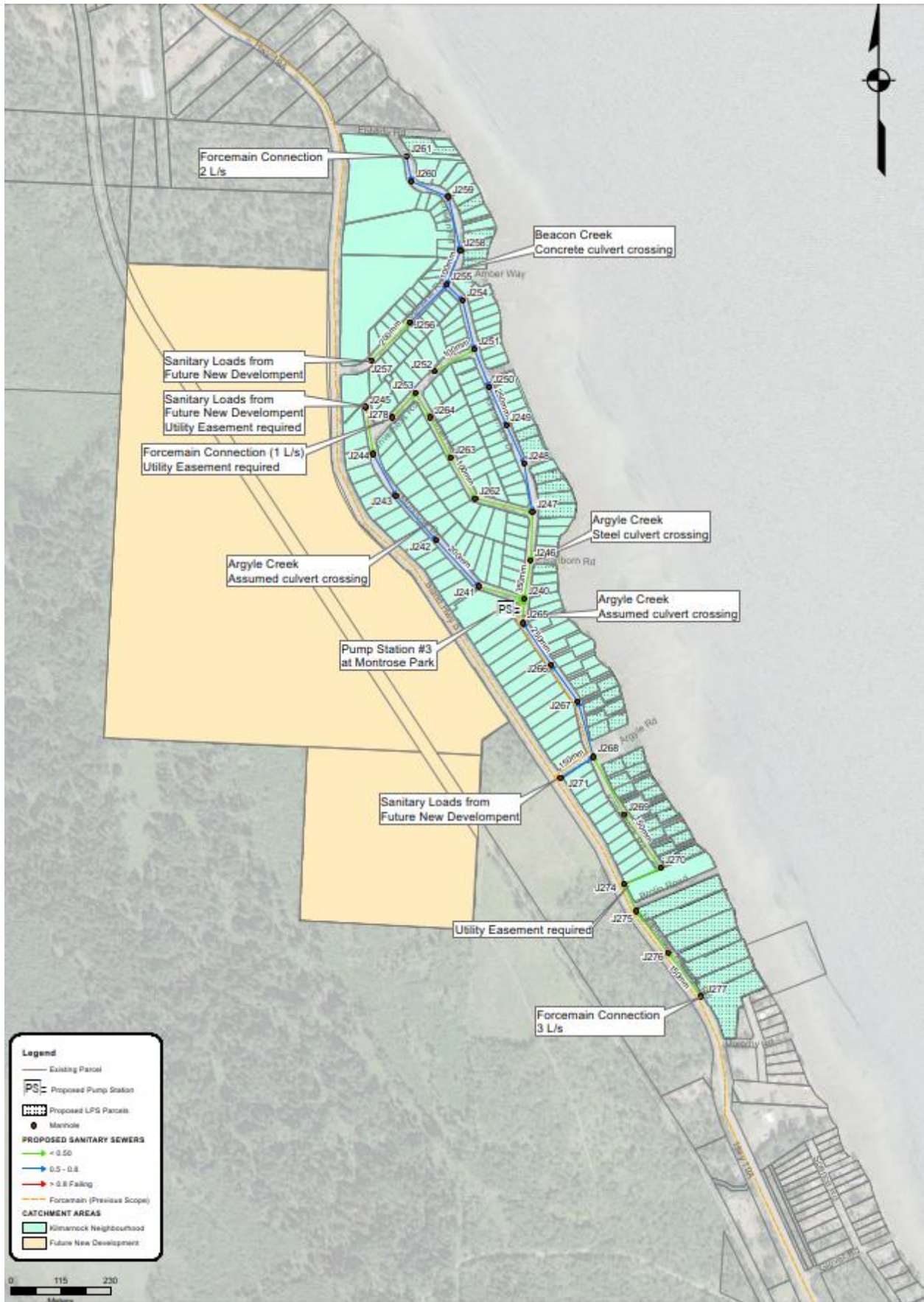


Figure 4: Pump station #3 Kilmarnock Neighbourhood proposed collector system – Option 2

LOW PRESSURE SEWERS (LPS)

In a Low Pressure Sewer (LPS) system, each connection point uses an effluent pump housed in either a lift station or two-chamber septic tank to transport the wastewater through the system. The proposed hybrid gravity LPS system uses grinder pumps in lift stations. These pumps serve individual homes with a low horsepower of 0.5 – 2 H.P.

A total of 46 parcels are identified as requiring an LPS system in Figure 3 and Figure 4. Parcels that are low lying causing the service connection to be less than 1m can't make use of conventional gravity sewers. Properties additional to those shown may require LPS connections dependent upon the depth of their service connections in relation to the sewer main in the fronting road.

COST ESTIMATE

At the preliminary design stage of projects, a Class "C" cost estimate will be prepared. For the purpose of the TACPAC meeting #3.5, a Class "D" cost estimate has been prepared with a 40% contingency to account for any unforeseen changes in detailed design. A Class "C" cost estimate will be provided in the draft Sewer Extension South Addendum Report. The Class "D" cost estimate of the Kilmarnock collector system is summarized in Table 4.

Table 2: Kilmarnock Collector System Cost Estimate

ITEM	DESCRIPTION	OPTION 1	OPTION 2
1.0	Sanitary Sewer- Gravity & LPS	\$3,475,000	\$3,460,000
2.0	Forcemain Connection	\$223,000	\$223,000
3.0	Site Works	\$954,000	\$949,000
4.0	General	\$468,000	\$466,000
	Subtotal	\$5,120,000	\$5,098,000
	Contingency (40%)	\$2,048,000	\$2,039,000
	Engineering (15%)	\$1,075,000	\$1,071,000
	TOTAL	\$8,243,000	\$8,208,000

The following general assumptions were used for preparing the cost estimate:

- Costs are rounded to the nearest \$1,000.
- Costs related to ROW and utility easements were not included in this estimate.
- Gravity service connection to property line not included.
- Cost of LPS lift station for properties with LPS service connections not included.

PUMP STATION DESIGN

A conceptual pump station sizing was completed for Kilmarnock PS#3 considering the information available at the time of assessment. Given the relatively long service life of asset infrastructure such as pump stations, it can be expected that the pump stations constructed in the initial phase will continue to be operated throughout the future phases of development up to build-out.

SITING CONSIDERATIONS

PS#3 is located in Kilmarnock to collect the flow from the Kilmarnock catchment area as well as the flow from the South Royston forcemain as shown in Figure 5. A previous study by Koers & Associates Engineering in 2016 reviewed locations for the pump station at Kilmarnock.

Three site options were considered,

- one site at Sanborn Road (Option 1) and
- two at Montrose Park (Option 2a, 2b)

The options, Montrose Park at Montrose Drive and Montrose Park at Kilmarnock Drive, were recommended in the review as they had lower estimated costs and were the public's preference.

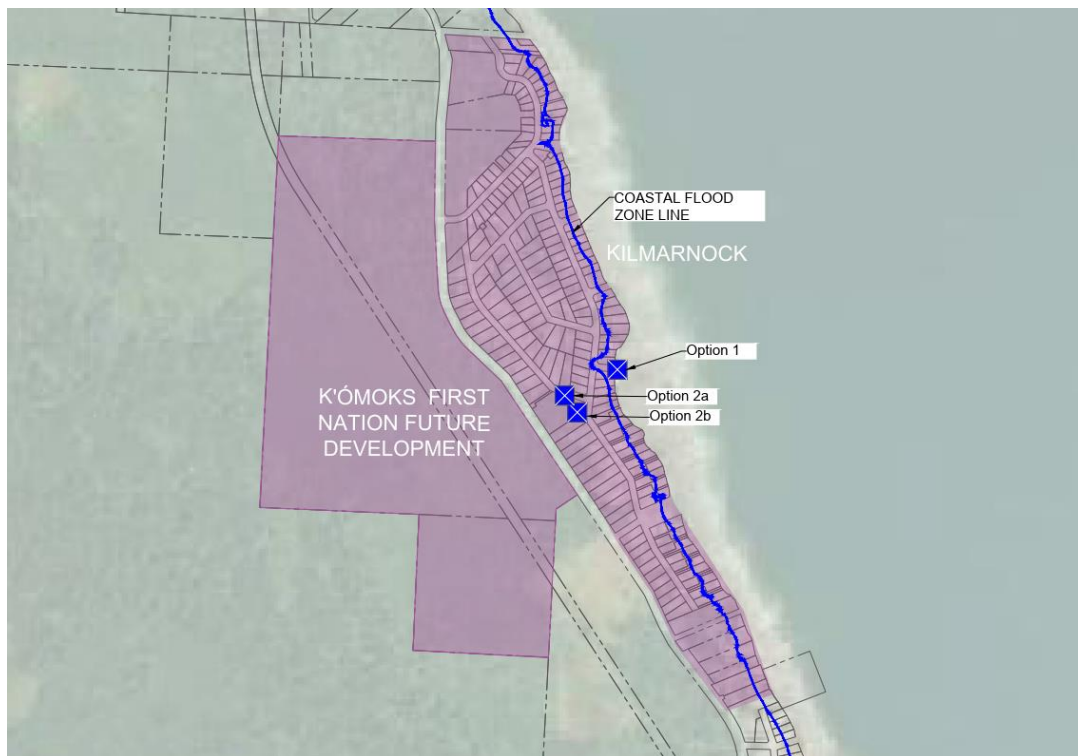


Figure 5: PS#3 Location

Option 1 is within the coastal flood zone as shown in Figure 5. Montrose Park is outside of the coastal flood zone, therefore Option 2a and 2b are not at risk of coastal flooding and do not require flood protection measures. As such, the preferred location of the pump station is at Montrose Park.

PRELIMINARY DESIGN

As discussed in the Section above, the preferred site location for the pump station is in Montrose Park. The site layout of the proposed pump station is shown in Figure 6 below.



Figure 6: PS#3 Site Layout

The pump station will consist of a fibre-reinforced plastic (FRP) manhole wet well for the collection of flow from the catchment areas. This configuration also provides the possibility of constructing a second manhole wet well in the future if this should be required, without the need to isolate PS#3. PS#3 will have an FRP wet well and submersible pumps with quick release couplings to remove the need for manual removal of the pumps. The conceptual layout of PS#3 is shown in Figure 7.

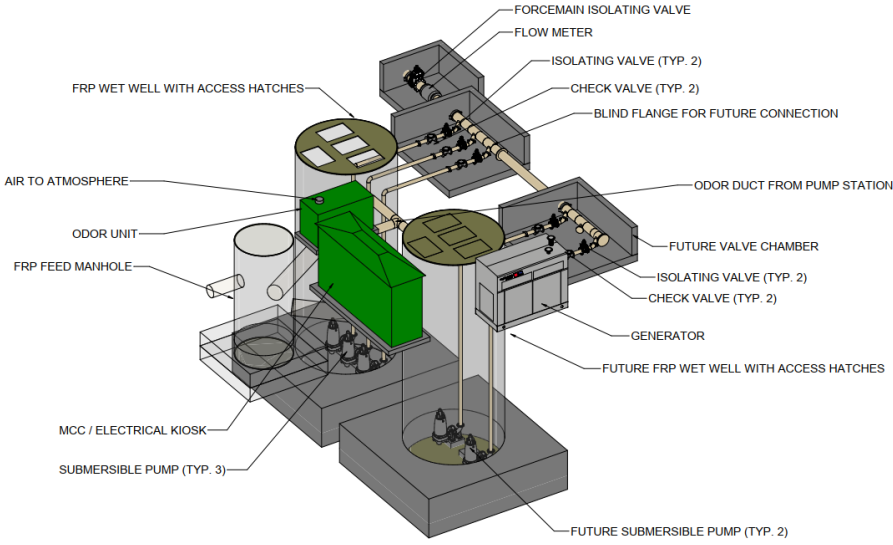


Figure 7: PS#3 Configuration

The wet well is sized for the initial flow of 58 L/s and not for future capacity upgrades. This reduces potential issues with residence time which could lead to odour problems. Provision of an additional sump has been made at PS#3 for future flows; this will be used to convey the additional flows from the catchment area and PS#6 as well as the flows conveyed from PS#4 and PS#5. The provision of an additional sump in the future phase allows for the selection of

smaller pumps at the initial stage that are potentially more energy efficient as the flow the pumps are required to convey is smaller. The pump station will have a flowmeter chamber with a flow meter and isolation valve. The isolation valve will be positioned at the required distance from the flowmeter to ensure the accuracy of the flow measurements.

Each pump outlet pipe will have an isolation valve and a check valve in a valve chamber with a separate access hatch to the wet well. The check valve will be a gate or plug valve and will prevent backflow to the pump, and the isolation valve is for maintenance purposes. The pumps will be removed by a crane truck in lieu of an overhead gantry to limit the visual impact of the pump station on local residents.

The generator, Motor Control Centre (MCC) and electrical kiosk and odour control unit are all in individual units. The electrical equipment and SCADA system would be housed in the electrical kiosk.

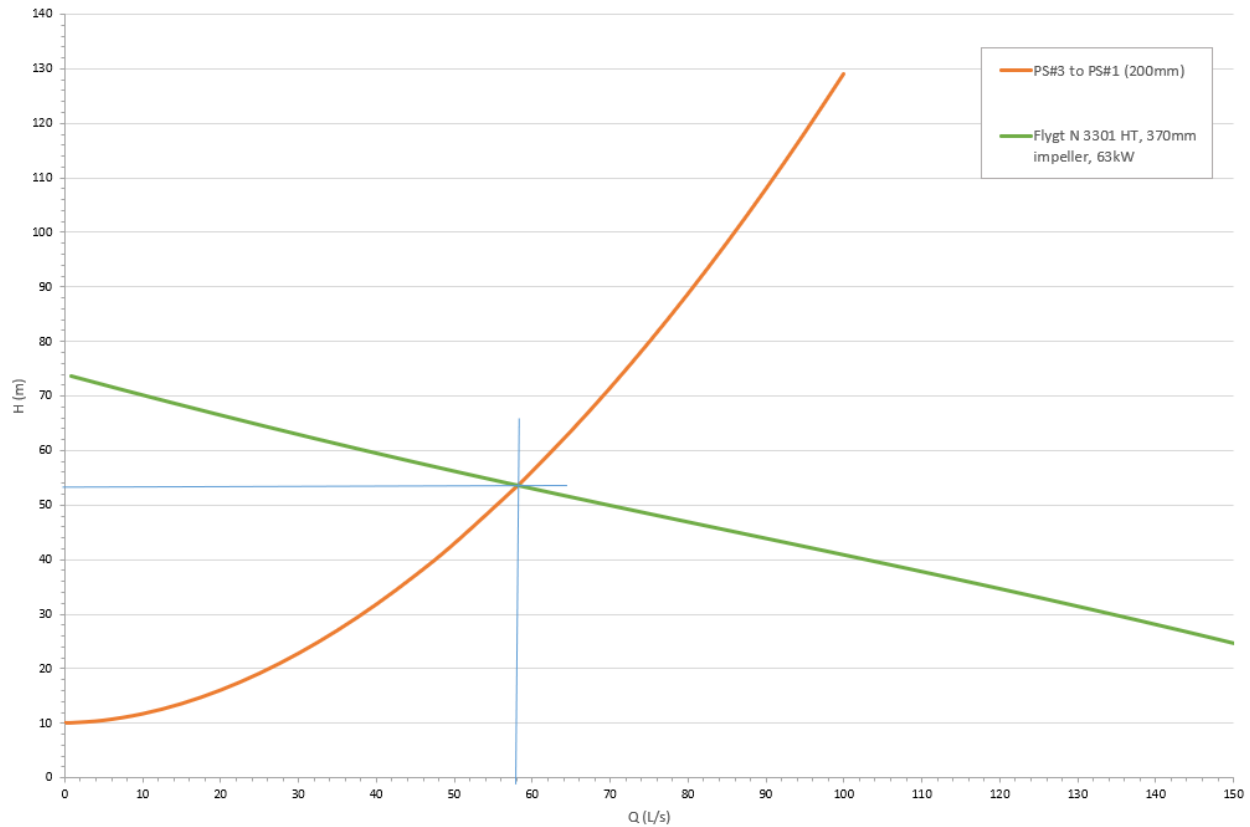


Figure 8: Pump Curve

The Flygt N3301 pump was selected for a 250mm forcemain for the duty point of 58 L/s at 54m as shown in Figure 8. The pump station will convey 34 L/s from PS#6 as well as additional flow from the PS#3 catchment. Table 3 outlines the additional flow of 24 L/s from the Kilmarnock catchment that can be conveyed for 250mm forcemains as well as the equivalent population and dwelling units.

Table 3: Design flow

	DESIGN FLOW	FLOW FROM PS#6	POPULATION EQUIVALENT	DWELLING UNITS
250 mm	58 L/s	34 L/s	1719	819

COST ESTIMATE

The PS#3 is very similar to the PS#6 and the majority of the cost have been used to calculate the Class “C” cost estimate. For the purpose of the TACPAC meeting #3.5, a Class “C” cost estimate has been prepared with a 30% contingency to account for any unforeseen changes in detailed design. The Class “C” cost estimate of PS#3 is summarized in Table 4.

Table 4: PS#3 Cost Estimate Summary

ITEM	DESCRIPTION	TOTAL
1.1	Earthworks and Site Works	\$79,000
1.2	Building	\$100,000
1.3	Mechanical	\$483,000
1.4	Electrical	\$462,000
2.0	General	\$230,000
	Subtotal	\$1,354,000
	Contingency (30%)	\$406,000
	Engineering (15%)	\$264,000
	TOTAL	\$2,024,000

The following general assumptions were used for preparing the cost estimate:

- Cost totals are rounded to the nearest \$1,000.
- Pump cost based on 1 duty + 1 standby, Flygt Model N 3301 HT, 370mm impeller, 63 kW (85 HP), 600 V, 3 phase.
- Mechanical installation is based on 2 people, 15 days, \$100/hr
- Odour control is assumed to be Pureair Odor Control Unit w/ Dry Chemical media, draw thru blower, mist eliminator - 250 cfm, w/ 1.5 HP motor, 600V/3 Ph, Class 1 Div 1 rated. A detailed study is required to confirm the odour control.
- Cost excludes tree removal at the site.

LOW PRESSURE SEWER SYSTEM CONSIDERATIONS

December 12, 2022 (Updated March 14, 2023)

Background

Low pressure sewer (LPS) systems are built in areas where servicing by traditional gravity systems is not viable, or when local factors prevent the siting of community pump stations. In the Royston/Union Bay area, proximity to coastal areas, presence of archaeological sites along the foreshore and other factors may make the construction of gravity collection infrastructure challenging in some parts of the proposed service area. Given these challenges, a low pressure sewer system can provide a more cost-effective wastewater collection solution in some areas.

As noted in the November 23, 2022 “Discussion Paper 2: Collection System Options” document, there are two main types of LPS systems as noted below:

1. Septic Tank Effluent Pump (STEP) uses a two-chamber septic tank to capture solids, while the liquid effluent is then pumped into the collection system network.
2. Grinder pumps grind sewage collected from the home into a slurry that is then pumped into the collection system network.

In relation to gravity systems, low pressure systems offer the following advantages and disadvantages:

Advantages	Disadvantages
Reduced inflow and infiltration, particularly in areas with high winter water table	Individual pump units installed on private property, with two-chamber septic tank required for STEP systems
Shallow/narrow excavation with potential for trenchless installation, thus limiting neighbourhood and archaeological impacts during construction	Operation and maintenance costs for property owners, including supplying and paying for power to the pump unit
Smaller pipes and shallower excavations can reduce initial capital costs	Limited storage capacity in pump chamber during power outages
Grinder pumps use smaller tank, with limited footprint on property	STEP systems require regular tank pump outs

Low Pressure Sewer Systems – Frequently Asked Questions

Q: When would a grinder pump or STEP system be required?

A: Dependent upon the preferred collection system configuration selected through the LWMP Addendum process and subsequent detailed design, the following instances are examples of where a pump unit would be required for servicing a property:

1. The wastewater plumbing exiting the home is lower than the gravity sewer main in the fronting street.
2. The sewer network in the fronting street is a low pressure sewer system.

The Comox Valley Regional District respectfully acknowledges the land on which it operates is on the unceded traditional territory of the K’ómoks First Nation, the traditional keepers of this land.

There may also be instances where a property owner prefers an LPS system as it may better suit the existing configuration of structures, landscaping or other features of their property.

Q: For properties requiring a pump, who owns, operates and maintains it?

A: As the pump unit would be installed on private property, the property owner would be responsible for installation, operation and maintenance costs. **In response to committee questions regarding responsibility for LPS operations and maintenance costs on private property, in other areas where LPS is used, it is not common practice for local government to operate and maintain LPS infrastructure on private property.**

That said, in order to enhance equity between properties serviced by gravity and those serviced by LPS, the CVRD is proposing to fund the initial cost to supply pump units as part of the overall cost of the Sewer Extension South Project. The CVRD is also proposing to maintain an inventory of pump units to provide at cost to property owners when replacement is required.

Q: **What properties in the proposed Sewer Extension South service area are anticipated to be serviced with LPS?**

A: **Maps showing anticipated LPS servicing areas in Royston, Kilmarnock and Union Bay are attached to this briefing note.**

Q: How long do grinder pumps last? What will it cost to replace it when it stops working?

A: Grinder pumps will typically last 10 to 15 years prior to requiring significant repairs or replacement. Replacements costs will depend upon the model chosen, and would currently be in the \$3000 range for full replacement. **As noted above, the CVRD is proposing to maintain an inventory of pump units to provide at cost when full replacement is needed.**

Q: What does it cost to operate and maintain a grinder pump?

A: In other areas, annual operating and maintenance costs in the \$40 to \$50 range are estimated for a typical household.

Q: What happens during a power outage? How much emergency storage capacity is available?

A: During a power outage, domestic water consumption is typically reduced as appliances like dishwashers and laundry machines won't be in use, though it would be recommended to significantly limit indoor water use during an outage. Emergency storage capacity would depend on the size of the pump chamber or tank installed, and could be up to 24 hours.

For prolonged power outages, the CVRD would consider additional mitigation measures, such as providing pump outs for properties serviced by LPS.

Local Use of Low Pressure Sewer Systems

There are several examples of low pressure sewer systems in operation on Vancouver Island and in the Salish Sea area, as listed below:

Courtenay/Comox

In Comox, LPS is only used on properties that don't have sufficient grade to reach the gravity collection system. The Town does not maintain LPS pumps on private property. In Courtenay, there are portions of the City that are serviced by LPS. The City maintains up to the property line, and charges the same sewer use fee as properties serviced by a gravity connection.

View Royal

The Town of View Royal sewer system includes several privately managed sewer grinder pumps, located on properties that are lower than the gravity sewer system. ([link](#))

Saanich

The District of Saanich recently upgraded the sewage system in Portage Inlet, replacing a gravity system and three sewer pump stations originally installed in the 1950s. After a comprehensive review of options to maintain sewer services in the area, a low pressure sewer system ranked the highest. This project brings the total number of LPS systems in Saanich to approximately 150. ([link](#))

Langford

The City of Langford has 200 to 300 LPS systems as part of its sewer system, which is operated by West Shore Environmental Services, a division of Corix Utilities. ([link](#))

Surrey

In areas that cannot be serviced by the City's gravity sanitary sewer network, low pressure sewer systems are used. Surrey has a few areas with LPS systems, with the largest being in the Bridgeview neighbourhood. ([link](#))

Port Orchard, WA

The Beach Drive community of 200+ homes was faced with a similar problem to Royston and Union Bay—septic systems were failing, causing a health issue and impacting shellfish resources in Puget Sound. Upon review of four options for sewer servicing in the Beach Drive area, a low pressure sewer grinder pump system ranked the highest, due to low capital costs and minimized operations and maintenance costs. A follow up study after seven years of operation found that service call frequency was considerably less than anticipated when planning the project. ([link](#))

Attachments: [Royston Catchment Area LPS Connections](#)
[Kilmarnock Catchment Area LPS Connections](#)
[Union Bay Catchment Area LPS Connections](#)

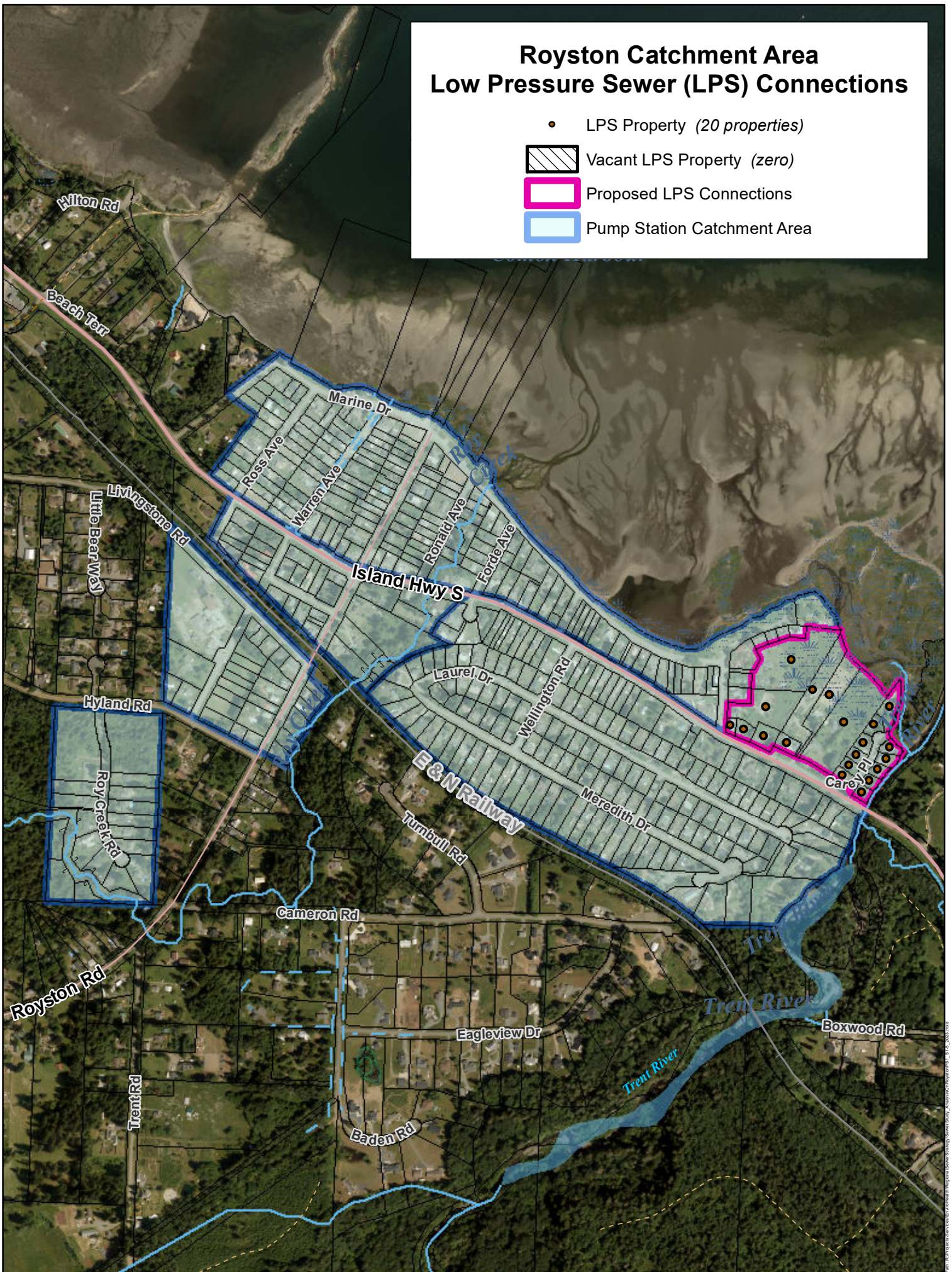
Royston Catchment Area Low Pressure Sewer (LPS) Connections

● LPS Property (20 properties)

▨ Vacant LPS Property (zero)

▭ Proposed LPS Connections

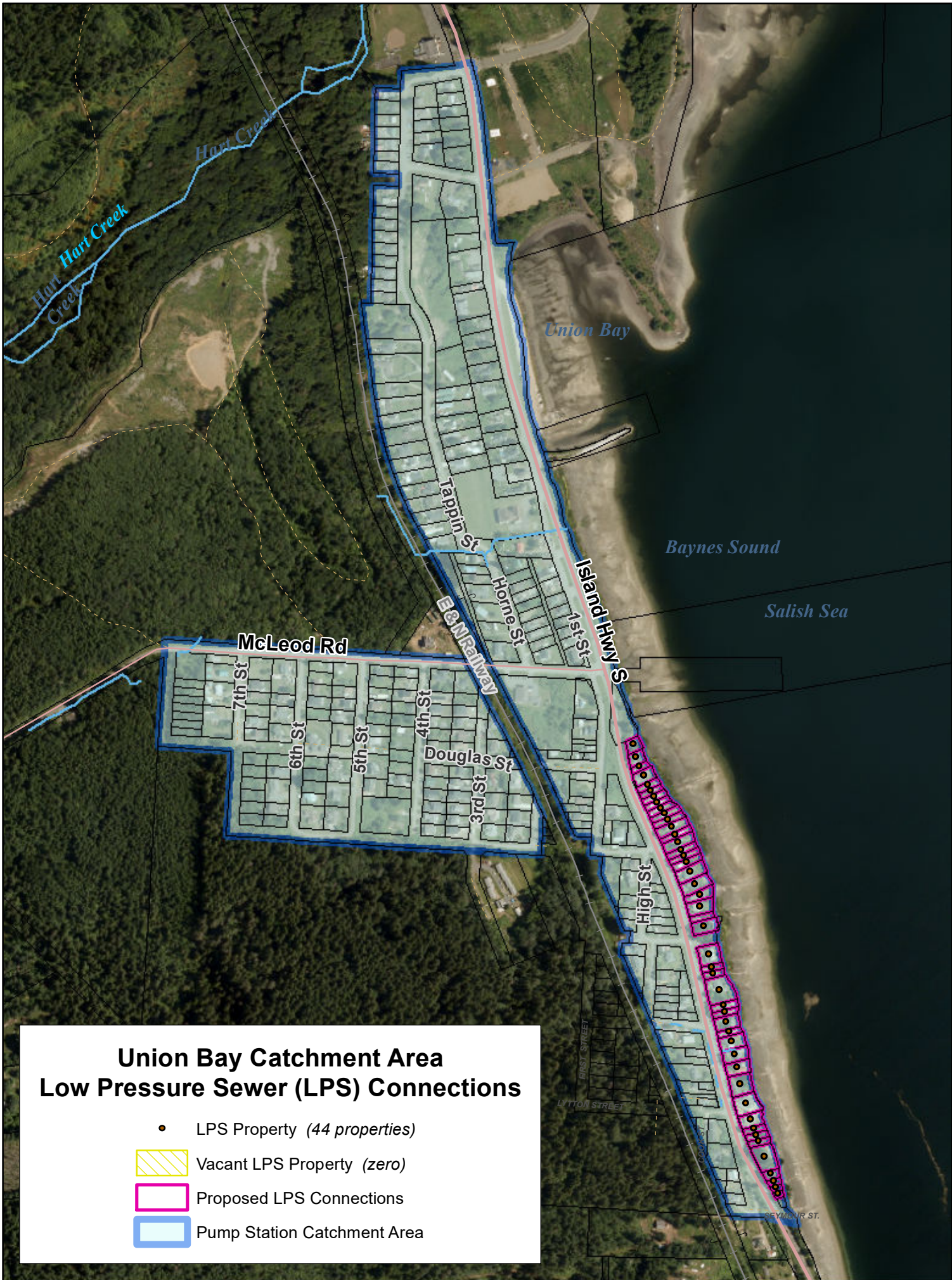
▭ Pump Station Catchment Area





Kilmarnock Catchment Area Low Pressure Sewer (LPS) Connections

- LPS Property (45 properties)
- ▨ Vacant LPS Property (two)
- ▭ Proposed LPS Connections
- ▭ Pump Station Catchment Area



Union Bay Catchment Area Low Pressure Sewer (LPS) Connections

- LPS Property (44 properties)
- ▨ Vacant LPS Property (zero)
- ▭ Proposed LPS Connections
- ▭ Pump Station Catchment Area

PHASE 1A PROJECT SCOPE – RATIONALE AND METHODOLOGY

March 14, 2023

Background

The Sewer Extension South Project will see wastewater collection and conveyance infrastructure installed in Electoral Area A neighborhoods from Royston south to Union Bay. Due to the scale of the project, it is proposed to be constructed in phases to ensure per property costs remain reasonable. The first phase of the project (Phase 1A) includes collection systems in Union Bay and the core area of Royston, two pump stations, and 13km of sewer forcemain from Union Bay to Courtenay. At the December 12, 2022 joint Public and Technical Advisory Committee meeting, committee members requested additional information to better understand how the neighbourhoods proposed to be included in Phase 1A were chosen.

Within the project area the Royston, Union Bay, and Kilmarnock neighbourhoods have the highest density development and are therefore the most cost efficient to service. These neighbourhoods are the focus of initial project phasing plans, and have been evaluated on a neighbourhood by neighbourhood basis. Smaller and/or lower density neighbourhoods where servicing is more expensive, including Gartley Point, Spence Road and Garvin Road are expected to see connection in later phases.

Community engagement around sewer servicing for the area has shown that project cost and environmental protection are primary concerns for area residents. For the project to be successful, Phase 1A is therefore focused on high density areas that present the greatest environmental risk, while ensuring servicing costs remain reasonable. Developing a project phasing plan that addresses the following project drivers was a key objective for the project team:

1. Services areas posing the greatest environmental risk.
2. Technically feasible, and includes expansion capacity for anticipated development.
3. Balances available grant funding, project partner contributions and a reasonable cost per connection for existing residents.

The selection of the Phase 1A community collection system areas formed the basis of a February 2022 application for project grant funding. This project scope was felt to be the best option to meet the objectives of the project, while also having the best chance for success under available grant programs.

Environmental Need

High density neighborhoods in close proximity to Baynes Sound present the greatest environmental risk to Baynes Sound water quality, for reasons including the following:

- Density of development
- Lot sizes smaller than Island Health subdivision standards (0.2ha)
- Age of septic systems
- Soil conditions
- Winter water table depth
- Proximity to water bodies

The Comox Valley Regional District respectfully acknowledges the land on which it operates is on the unceded traditional territory of the K'ómoks First Nation, the traditional keepers of this land.

Poor soil conditions and a high winter water table are prevalent throughout the Royston, Kilmarnock and Union Bay neighbourhoods. The table below includes a summary of septic system permits (before 2005) and filings (2005 - current) in each neighbourhood, as well as dwelling density and the percentage of properties in each area that are smaller than Island Health’s subdivision standards.

Permit/Filing year	Union Bay	Kilmarnock	Royston
No file	44.5%	8.7%	29.3%
Illegal	1.2%	-	-
Pre-1984	11.0%	34.1%	18.6%
1985-1994	10.6%	24.0%	14.8%
1995-2004	9.0%	10.9%	9.8%
2005-2014	14.7%	11.4%	12.5%
2015 - current	9.0%	10.9%	15.0%
Dwelling density (dwellings/ha)	5.7	3.8	3.6 (S1-3: 6.2)
Lots below 0.2ha	95%	72%	71% (S1-3: 93%)

As seen in the table, the existing developed areas of Union Bay and Royston both present a higher environmental risk due to overall density of development and the significant proportion of properties with no records of septic systems; these areas are therefore considered a greater priority for sewer servicing relative to the Kilmarnock neighborhood.

Technical Feasibility

As presented by WSP at the November 23, 2022 PACTAC meeting, technical constraints were also key considerations in developing the proposed Phase 1A scope for the first phase of the project. Conveyance infrastructure design has considered a variety of population growth scenarios and their impacts on wastewater flows that would be managed by the system. A significant variance in wastewater flows over time, and the unknown timing of development has required careful consideration of system hydraulics, pump capacities, and system operations and maintenance.

The distance from Union Bay to the Courtenay siphon is also a considerable technical constraint. Placing an intermediary pump station in the Royston area allows for operating pressures in the forcemain to be within acceptable limits. However, placing a pump station in this area without including a local collection system was not felt to be a practical solution. The S1-3 sub-catchment is directly adjacent to the Royston pump station, and also includes the infrastructure needed for future buildout of the collection system to adjacent Royston neighbourhoods.

Project Funding & Cost per Connection

Overall funding for the Sewer Extension South Project is anticipated to be provided through multiple sources, including grant funding, partner contributions, and project borrowing (to be recovered by parcel tax in the sewer service area).

The Union Bay area is identified as a Settlement Node in the Regional Growth Strategy and RGS policies support the provision of public servicing to facilitate future growth in this area. The conveyance infrastructure proposed in Phase 1A of the project includes capacity for existing developed areas. This first phase also has capacity for a portion of the population growth expected due to development, and considers future growth projections by including provisions for future

capacity expansion. Incorporating expansion capacity for wastewater flows from future development is of importance to facilitating financial contributions to the project from project partners.

The key senior government funding source identified for the project is the Investing in Canada Infrastructure Program (ICIP), for which an application was made in early 2022. This round of the ICIP program includes \$270M in total available funding in the Environmental Quality stream, of which 10 per cent is allowed to be allocated to any one individual project. With a total project cost exceeding \$70M, and a maximum of \$27M in available grant funding, several options were evaluated by staff in an effort to maximize benefits to local residents, while also maximizing number of connections for grant success/eligibility and ensuring per connection costs remain reasonable. Taking all of this into account alongside anticipated project partner contributions, the following options were investigated:

Option	Description	Estimated cost per connection
Proposed	Phase 1A – Royston core (S1-3) & Union Bay	\$13,000-\$17,000 + \$6941 CICC
Alternative 1	Royston (all) & Union Bay	\$20,000-\$24,000 + \$6941 CICC
Alternative 2	Royston (all), Kilmarnock & Union Bay	\$25,000-\$29,000 + \$6941 CICC

Phase 1A conveyance infrastructure will benefit the entire service area, forming the backbone of a system that will provide sewer service to existing and proposed development to 2070 and beyond. With its initial focus on converting the highest density neighborhoods serviced by aging septic systems to community sewer, Phase 1A will also reduce risks posed to Baynes Sound water quality by failing septic systems. All residents will realize the financial benefits from grant funding and partnership contributions secured to support the first phase of the project.

PROJECT PHASING – EQUITY CONSIDERATIONS**March 14, 2023****Background**

Following discussion during the December 12, 2022 joint Public and Technical Advisory Committee meeting, committee members expressed interest in better understanding options for ensuring an equitable distribution of costs between project phases. Based on these discussions, the following motion was passed by the committee:

THAT staff prepare an analysis showing the estimated costs per connection by catchment area, presuming no further grants and no further contributions from partner organizations;

AND FURTHER THAT staff present options and recommendations with respect to creating equitable costs per connection across all catchment areas.

The Sewer Extension South Project will see wastewater collection and conveyance infrastructure installed in Electoral Area A neighborhoods from Royston south to Union Bay. Due to the scale of the project it is proposed to be constructed in phases to ensure per property costs remain reasonable. Phase 1A of the project will include a 13km sewer forcemain from Union Bay to Courtenay, two pump stations, and collection system infrastructure for Union Bay and the Royston core, defined as catchment S1-3.

Future project phases will include the construction of neighborhood collection system infrastructure required to connect remaining properties within the project area to the sewer system. The timing of future phases is unknown at this time and will be dependent on a number of factors including:

- Environmental risk
- Available grant funding and/or partnership opportunities
- Property owner petition
- Other social considerations e.g. Royston Elementary School

As described in Briefing Note #5, titled “Phase 1A Project Scope – Rationale and Methodology,” the Royston, Union Bay, and Kilmarnock neighbourhoods have the highest density development and are therefore the most cost efficient to service. These areas have also been identified as having the greatest environmental need due to lot size, density and age of septic systems. It is therefore proposed that the remainder of the Royston catchment area and the Kilmarnock neighbourhood be the initial focus of future project phases to follow Phase 1A.

Smaller and/or lower density neighbourhoods where servicing is more expensive, including Gartley Point, Spence Road and Garvin Road are expected to see connection in later phases. The design for these catchment areas is not proposed to be advanced to the same level as for identified priority areas at this time. As such a Liquid Waste Management Plan (LWMP) update or amendment will be required if servicing for these areas is to be authorized through the LWMP process.

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Comparison of costs per connection by catchment area

The current estimated cost per connection for Phase 1A, Royston and Kilmarnock are shown in Table No. 1 below. Phase 1A costs are shown with grant funding and Royston and Kilmarnock costs are shown assuming no further grant funding. Cost estimates are Class D (+/- 40%) used to inform decision making at this conceptual design stage of a project. Project costs will be updated as engineering and design progress through the LWMP addendum process.

Table No. 1: Comparison of costs per connection for community collection system infrastructure

Description	Cost per connection with grant funding (1)(2)	Cost per connection without grant funding (1)(2)
Phase 1A Collection – Royston core (S1-3) & Union Bay	\$13,000-\$17,000	\$41,000-\$45,000(3)
Royston remainder (not including S1-3)	-----	\$34,000 - \$38,000
Kilmarnock	-----	\$44,000 - \$48,000

(1) Capital improvement cost charges (CICC) would also apply at a current rate of \$6,941 per connection.

(2) Amount does not include one time on-lot costs for works on private property.

(3) For comparative purposes, this amount only includes collection system costs. Without grant funding an estimated \$13,000-\$17,000 per connection would also be required to fund shared conveyance infrastructure in Phase 1A

Opportunities for grant funding

Ongoing community engagement around the project has shown cost to be a primary concern for area residents. The regional district is committed to applying for grant funding to support the future expansion of collection system infrastructure to existing neighborhood catchment areas; however, the success of future applications cannot be guaranteed. Traditional federal/provincial grant programs offer funding up to approximately 2/3 of project costs with a maximum allowable funding limit proportional to the amount offered through the funding program. These programs are generally oversubscribed and include a competitive review process. Grant program requirements and objectives also change over time as government priorities evolve. While it is likely environmental protection will remain a key objective of future programs, changing priorities could impact the amount of funding available for community wastewater projects.

Table No. 2 illustrates the impact that 2/3 grant funding would have on future project phases. As shown, funding amounts required to support future phases are significantly less than the \$26.4M grant funding request for Phase 1A. This is because major conveyance infrastructure, including forcemain and pump stations, will have been constructed as part of the first phase of the project, providing financial benefit to all residents in the proposed service area.

Table No. 2: Impact of grant funding on future project phases

Description	Estimated capital cost	Cost per connection without grant funding (1)(2)	2/3 Grant funding	Cost per connection with grant funding (1)(2)
Royston remainder (not including S1-3)	\$8.8M	\$34,000 - \$38,000	\$5.9M	\$11,000 - \$15,000
Kilmarnock	\$9.9M	\$44,000 - \$48,000	\$6.6M	\$14,000 - \$18,000

(1) Capital improvement cost charges (CICC) would also apply, at a current rate of \$6,941 per connection.

(2) Amount does not include one time on-lot costs for works on private property.

While timing and funding limits for future grant programs is unknown, it is expected that these lower funding amounts will make securing grants easier for future phases of the project.

Options for Creating Equity between Project Phases

There are many uncertainties around future project phasing, making it difficult to ensure cost equity between phases, including:

- Unknown timing;
- Impacts of inflationary pressure on project costs; and
- Unknown grant funding or contributions.

If equity is a priority for the TACPAC when considering future project phases, staff suggest that the committee recommend policy statements be added to the Sewer Extension South LWMP Addendum to reflect this. One example of such a statement is provided below for the committee's consideration.

The Comox Valley Regional District will make all reasonable efforts to identify and secure additional grants, partnerships and funding opportunities to help create equitable costs between all phases of the Sewer Extension South Project.

VALUE PLANNING SUMMARY

March 14, 2023

Background

Value management planning involves a systematic and function-based review of a project by a multidisciplinary team of subject matter experts. This third-party review also improves accountability and transparency through the decision-making process for large capital projects, providing an enhanced level of confidence that the selected project approach is the best alternative.

Comox Valley Regional District (CVRD) policy P90, [Value Management Review of Capital Projects](#), was adopted by the CVRD Board in June 2022. Adoption of this policy was an outcome of the utilities governance review completed for the Comox Valley Water Committee and Sewage Commission, and followed the successful utilization of value management reviews for the Comox Valley Water Treatment and Sewer System Conveyance projects. The policy is to apply to all capital projects identified in the financial plan where total project costs exceed \$25.0M.

The project team worked with Strategic Value Solutions (the value engineering consultants used for Water Treatment and Sewer Conveyance projects) to have a value management process completed for the Sewer Extension South Project. In mid-November 2022, SVS convened a team of subject matter experts for a week-long workshop to review the functional requirements of the project, explore options for adding value to the project, and develop design alternatives for the project team’s consideration.

Over the course of the workshop, the value management team generated over 60 ideas for changes to the current project design. After review of these ideas and input from the project team, four design suggestions have been identified for further consideration; their descriptions and the CVRD response to them is included in the table below.

Alternative # / Description	CVRD Response
RP-02 – Use the E&N Railway Corridor for the forcemain alignment	The CVRD will work with its design consultants on options for moving some or all of the proposed forcemain alignment to the E&N rail corridor. The CVRD has reviewed the E&N corridor for the purposes of the water service extension project; this previous work will help inform consideration of this corridor for the sewer extension project.
RP-08 – Modify sewer loading design criteria to reduce all pipe and/or pump sizes	Sewer loading and inflow and infiltration rates have been conservatively selected at this stage of design, and will be reconsidered as project design is advanced.
RP-11 – Use majority of native backfill/existing granular material as backfill above the forcemain pipe	The opportunity to use native material for backfill will be further assessed during detailed design, where it will be informed by geotechnical field investigation of the project alignment.
SG-03 – Move Pump Station #1 and Pump Station #6 above the flood level	As project design advances, the CVRD and its technical consultants will assess options for flood resilient design of these pump stations, which could also include relocating them above the flood level.

The Comox Valley Regional District respectfully acknowledges the land on which it operates is on the unceded traditional territory of the K’ómoks First Nation, the traditional keepers of this land.

As noted in the CVRD Response column in the above table, all four of the above alternatives are under assessment by WSP to confirm their suitability for the overall project. A technical memo is in development and is tentatively scheduled to be presented to the Steering Committee this spring, and subsequently included as part of the draft LWMP addendum report.