Comox Valley REGIONAL DISTRICT

Minutes

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

PRESENT:

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

ITEMS:

ITEM	DESCRIPTION	OWNER
2.1	Call to Order. Opening remarks by Kris La Rose: • CVRD respects and honors the time commitment that each member of the committee is making to participate in our process and that in return, we are committed to sincere engagement and a transparent planning process.	Allison, Kris

ITEM	DESCRIPTION	OWNER
2.1	• There has been a lot of study work, analysis and design done for certain elements of the possible works, our intention is for that work to support rather than constrain the planning process.	Allison, Kris
2.2	Review of Minutes of Meeting #1 & LWMP Roadmap Clarification of minutes; • Section 1.8: change "How the recommendation got to the Comox Valley Sewage Commission for *adoption*" to "How the recommendation got to the Comox Valley Sewage Commission for *consideration*". (K. van Velzen). Paul reviewed the roadmap, noting the Ministry of Environment position that proper managing of wastewater is "not optional".	Allison & Paul
2.3	Wastewater 101 – Fundamentals of Wastewater Treatment. • Aline gave a thorough outline of wastewater treatment.	WSP
2.4	Regulatory Framework. • Treatment standards for different discharge environments was included in the wastewater 101 presentation. • Of note that standards for some reclaimed water uses align with standards for ocean discharge.	WSP
2.5	Goals – what are they and how will we use them? Paul outlined the framework of the evaluation system and definitions of: • LWMP components (conveyance, treatment, resource recovery), • Objectives – functions which **must** be achieved for each component, • Options – different projects that can achieve the objectives, • Goals – aspirational goals for things other than the objectives, • "Low Cost" is an aspirational goal, • Actions – ways to meet or move towards the goals, • Evaluation – how well does an option address the goals? The "best" option is the one that achieves all the objectives and as many of the goals as possible.	Paul
2.6	Initial public feedback; Christianne presented results of Phase 1 public consultation conducted over summer and fall: • 22 participants at the summer workshops, • 104 responses to online survey, • Excellent attendance at the November 6 and 8 Open House at the Comox Valley Water Pollution Control Centre (CVWPCC) – 110 people. Major themes: • Concern about negatively impacting the environment, • Importance of long term planning and making sound decisions now, • Importance of moving forward quickly due to risks of ageing infrastructure.	Christianne

ITEM	DESCRIPTION	OWNER
2.7	Examples of award winning, goal-driven projects (videos) Conveyance – Marwayne, AB • Noted that while this was a conveyance project, the funding and FCM award received were for the "neighborhood redevelopment" that took place in concert with the conveyance project Treatment – Sechelt BC • Noted that this project was the result of community-set goals to treat to high standards and pursue resource recovery. The reclaimed water is not yet being used. • Resource Recovery – Cranbrook BC (video) (case study)	Paul
2.8	Committee Exercise – brainstorming the goals. PAC, TAC and Staff • Categories for the goals: o Technical/functional, o Cost/affordability, o Economic benefit, o Environmental benefit, o Social benefit. A five minute "written brainstorming" session was held for each of the three LWMP components, with goals being written on sticky notes and posted to the flip charts. The final count was 168 goals distributed as: • Conveyance 67, • Treatment 54, • Resource Recovery 47. The goals were sorted and grouped ready for voting over the lunch break.	Allison
2.9	Comparison of committee goals to official plan goals. CVRD Staff reviewed the major planning documents for goals and policies related to wastewater: • Official Community Plan's, • Regional Growth Strategy, • Comox Valley Sustainability Strategy, • Climate Action Revenue Incentive Program. Results of this are attached to the minutes as Table 1(A) through Table 1 (C).	Paul
2.10	Turning the goals into the evaluation system. Explanation of the evaluation matrix as a guide for decision making. **Note for clarity that the example scoring shown for the Comox No.2 Pump Station Project was merely to illustrate how the evaluation system functions. It does not represent the actual evaluation of this project.*	
	Lunch Break	
2.11	Prioritising the goals. • Ranking of the cost and benefit goals by PAC members, • Ranking of the functional goals by the TAC members. Ranking was performed by a numerical voting system, with different colours representing PAC and TAC members.	Allison

	There were too many goals and votes to be tallied at the meeting, this was done offline.	
ITEM	DESCRIPTION	OWNER

2.12	Preview of;
	• Public Workshops (Phase 2 of consultation) on November 27 and 28, 2018:
	  o Public review of draft goals and objectives.
	• TACPAC #3 on December 11, 2018:
	  o Review of public feedback, make recommendation on goals.
		Allison

2.13	Round Table discussion and Q&A.
	The following summarises the pertinent questions and answers for the meeting:
	• Water use at the CVWPCC was reduced by a third over the last two years due to recycling water at enclosed water uses. However, we recognize there is still room for improvement (M. Imrie).
	• How are pathogens disinfected at the CVRD Compost Facility? (W. Cole-Hamilton)
	  ➢ The composting process and the disinfection is controlled by controlling the temperature. High temperature for a set period of time kills pathogens. (M. Imrie)
	• Are the categories set in stone or is there room for making changes in them? Is there an opportunity for committee members to come up with more goals? (R. O'Grady)
	  ➢ These are starting points to focus our ideas and save the committee some time. However, if there are good goals to be added, there is room for change. We would like to make the December 11 meeting the deadline for coming up with new goals unless a 'game changer' idea comes up later than that date. This is to ensure the process stays focused and on schedule. (A. Habkirk and P. Nash)
	• What was the basis to create the categories? Surprised to see "economic benefits" in the list. (A. Hamir)
	  ➢ These categories are a variation of standard practice. The 'economic benefits' category is there to identify potential economic benefits that are typically not directly associated with wastewater systems. (P. Nash)
	  ➢ Economic benefits can also include economic impacts such as impacts of options that may potentially hinder economic benefits would be evaluated. (K. La Rose)
	• What is the point of achieving advanced levels of treatment (such as the one by Sechelt) if no opportunities for use exist? (W. Cole-Hamilton)
	  ➢ The main value is only achieved if the water is indeed reused. The opportunities do exist, but have not yet been pursued, for various reasons. Nevertheless, significant grant funding (up to 50 per cent) was achieved in part due to setting high
		Allison

	goals for innovation and treatment performance and then meeting them. (P. Nash)	

ITEM	DESCRIPTION	OWNER
2.13	• Does this goal setting exercise include future/potential service areas in the region (e.g. South Sewer)? (R. O'Grady) ➢ Let us focus on existing service areas for now. (K. La Rose) • Is there collaboration between the municipalities on the sewer plans/projects? (S.Carey) ➢ Yes, member municipalities and the CVRD work together collaboratively in different levels (Sewage Advisory Committees, Advisory groups on staff level…etc.). (K. La Rose) • Social Health context can be considered as social benefit from a public health needs perspective. (R. O'Grady) • Is there a second chance for these rankings? (K. VanVelzen) ➢ Yes, options ranking can be reviewed if members feel the need for reconsideration. (A.Hebkirk and P. Nash) • High quality effluent is important because of the especially sensitive nature of the local environment. (T. Ennis) In addition to the main requirements for achieving a certain level of effluent quality, the province asks for an Environmental Impact Study to determine the impact of effluent discharge to the local environment. (A. Bennet)	Allison
2.14	Meeting Schedule Change. Note schedule change for TACPAC Meeting # 4, from Thursday, January 17, 2019 to Thursday, January 24, 2019, 9:00 am to 2:00pm, at the CVRD Boardroom.	
2.15	CVRD Wastewater Facilities Tour for PAC members. A familiarization tour of the CVRD facilities will be held on two dates; 1. Tuesday 3 Dec, 9am -12, starting at CVRD office 2. Friday 7th Dec 9am -12, starting at CVRD office	
2.16	Next Meeting. The next LWMP Joint TACPAC meeting will be held on December 11, 2018 commencing at 9:00am at the Native Sons Hall, Lower Lodge Room, 360 Cliffe Ave, Courtenay, BC.	
2.17	Adjournment The meeting adjourned at 2:00pm	Allison

Attachments

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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