What is an "Option"?

An "Option" is a combination of a treatment system and a discharge location

The purpose of Stage 1 is to develop various "Options" for the "treatment" and "discharge" of the liquid waste.

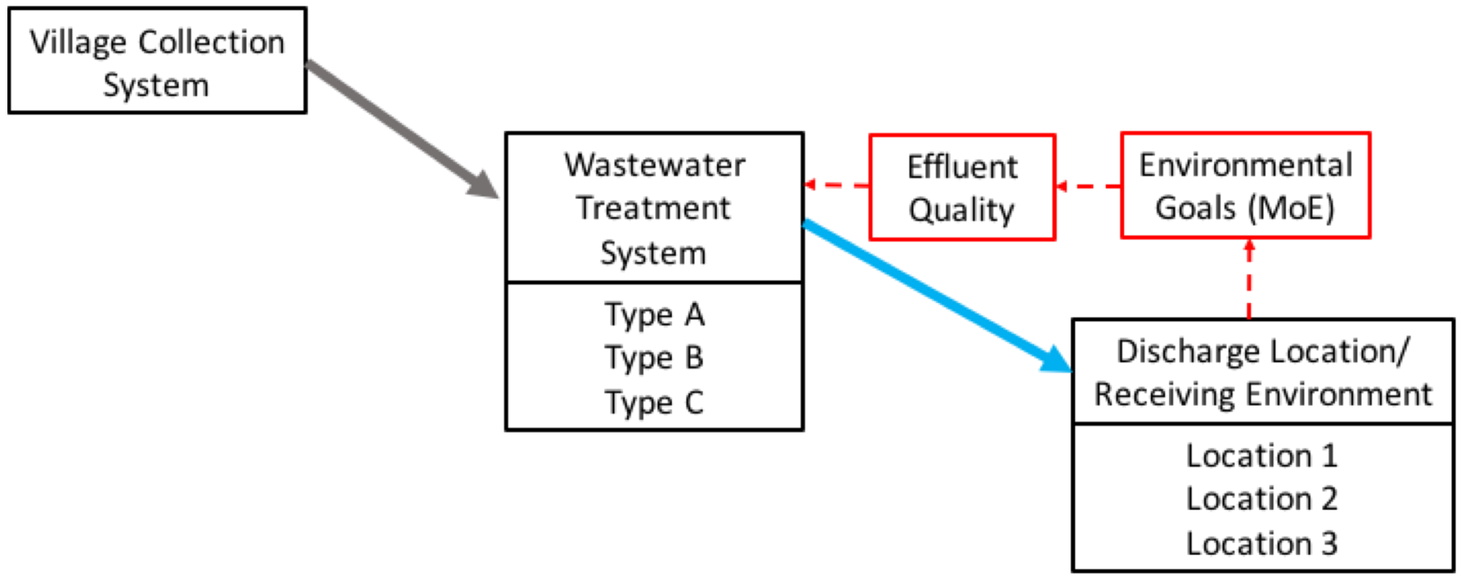
Specifically, the "discharge" location is where the treated water returns to the natural environment, called the "receiving environment"

The level of treatment required before discharge is set by the BC Ministry of Environment, and is different for different receiving environments.

There can also be different requirements for the same receiving environment at different times of the year, or different flowrates in streams.

For example, a limit on the amount of Phosphorous in water to Maple Lake Creek will only apply from May to September.

The treatment system is then designed to meet the requirements of the discharge location. Different types treatment systems have different pros and cons, so there could be several Options that have the same discharge location, but use different types of treatment systems.



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Evaluation System

- **Stage 1 "Decision Gates"**

How the "Decision Gates" work…

The basic concept is that any Option has to pass through all these gates before it is studied in detail.

Each gate represents a "pass or fail" decision, and if it fails, then the option goes no further.

This system flags the "showstoppers" – aspects that if unresolved, or are unresolvable, lead to a failure or unacceptable result.

Options that make it through the gates are then studied in detail in Stage 2

Area	Criteria	Determined by	On basis of	Decision Type	Comments	"Desirable" example	"Undesirable" example
Regulatory	Environmental regulations/ effluent quality	Ministry of Environment Ministry of Health	Discharge location & time of year	**pass/fail**	Some locations may simply be ruled out by MoE or MoH	Ocean discharge	Discharge directly to a drinking water system
Technical	Technical feasibility	Technical Consultants	Treatment system required to meet effluent quality	**pass/fail**	Some treatment solutions may be just unworkable	Established technology	Prototype
	Constructability	Technical Consultants	complexity, site requirements	**high/low**	Some projects are just too difficult to build	Modular, pre-engineered	Complex construction or geotechnically risky
	Time risk for 2021 deadline	Technical Consultants	complexity, permits, etc	**high/low**	Assessment of chances for delays	Plug and play	Every part has to be custom designed
Politics	Politically acceptable to Cumberland	WAC	Cumberland values	**pass/fail**	OCP, etc	Clever, inspiring, different	Boring, brick in the wall
	Politically Acceptable Externally	WAC	External Values	**pass/fail**	Entities include CVRD, Komoks First Nation and others. Compatibility with CV Sustainability Strategy	Discharge to Cape Lazo	Discharge to Baynes Sound, status quo
Affordability	Capital cost	Technical Consultants	Treatment + piping to disch location	**pass/fail**	Decision by Tech consultants if option is "unaffordable"	Conventional treatment methods	Reverse Osmosis, Ultradialysis, other exotic methods
	Grant probability	PC+TC+staff	Everything	high/med/ low	Completely subjective at Stage 1	Innovative, beneficial	Conventional, minimal external benefit
	Ability to pay	Staff	Reserves, borrowing capacity, DCC's	high/med/ low	Limited borrowing capacity and reserves,	Willing residents, lots of DCC's	Unwilling residents, no DCC's

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Evaluation System

- **Stage 2 "Scored Evaluation"**

How the "Evaluation" works...

The idea is to score each of the Options on how well they meet the various Goals. So where Stage 1 was to eliminate on the basis of avoiding negatives, Stage 2 is to choose on the basis of the most benefits

The scores are weighted according to the pre-determined "weightings" column, and tallied to get a final score for each Option.

The Option with the highest score is deemed to be the Preferred Option, and is what is studied for implementation in Stage 3.

Criteria	Determined by	On basis of	Decision Type	Weighting	Comments	"Desirable" example	"Undesirable" example
Net Economic Cost	Project Coordinator, Technical Consultant, staff	Combination of capital cost, operating cost, grants, ability to pay	**score**	**20%**	Net Cost = [cost - grants]	Net cost is within ability to pay	Cost greater than ability to pay
Economic Benefits	WAC	Goal Setting, (OCP, etc)	**score**	**25%**	Benefits that occur over the life of the project	reclaimed water for productive use	No discernable benefits, other than increased treatment capacity
Environmental Benefits	WAC	Goal Setting (Sustainability Strategy, etc)	**score**	**30%**	Benefits that occur over the life of the project	Environmental leadership	No environmental benefits, other than ending current "pollution"
Social Benefits	WAC	Goal Setting (Social Procurement Policy, etc)	**score**	**25%**	Benefits that occur over the life of the project	A uniquely "Cumberland Style" solution that people are proud of	Something that no one wants to talk about, or admit it even exists
			total	**100%**			

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Economic Goals

How the goals work...

The “Aspirational Goals” are the desired outcomes.

The “Actions” are measures that can be taken to work towards the Aspirational Goals.

There may be more Actions that can be taken to achieve the Aspirational Goals

Goal Type	Category	Scores (max = 40)	Ranking	Description	Consultant's Comments
Aspirational	Economic Cost	40	1	Affordability- Ensure tax burden on residents sustainable	This was the only category that got a unanimous vote from the Committee During session the over-riding discussion was that of affordability to Village and it's residents. All other Economic/Social and Environmental goals pale in comparison for importance over building affordable treatment. This is overwhelmingly important to the committee members.
Action	Economic Cost	30	2	Attract grant funding	Based on information provided, this was of great interest as this provides an option to reduce overall cost (per the Sechelt model). However, it is understood that doing extra things for funding adds extra cost to the project. The net result must be that an initiative does not result in added tax burden.
	Subtotal Cost	**70**			
Aspirational	Economic Benefit	24	5	Attract and retain Industry and draw tourism through innovation in meeting community wide goals, and branding green	Building on the underlying concern about retaining cost effective treatment options, other industries was strongly supported however specific concepts of new industry were not well articulated. Probably strongest potential was partnering with legal marijuana operator.
Action	Economic Benefit	30	3	Productive use of reclaimed water - agriculture, industry (=job creation), potable water infrastructure reduction	This gained support as the meeting progressed and as the re-use issue was effectively placed on the parking lot as a separate issue the low grading is not surprising. We treated this as a technical issue so suggest this mark be considered artificially low based on verbal feedback during discussion
Action	Economic Benefit	25	4	Reduce energy use, pursue renewable energy production and obtain GHG credits	This creates an interesting issue. Where lagoon treatment is favored as it is considered more robust (i.e. nothing to break down) and more cost effective (re-purpose existing investment), the treatment is probably the least viable for energy recovery.
Action	Economic Benefit	12	6	Artist based beautification	This will be something that needs some definition and should be addressed at time of implementation. WAC will be required to define these needs with a functional narrative for the plant design.
	Subtotal Benefits	**91**			
Total Economic Goals		**161**			

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Environmental Goals

How the goals work...

The “Aspirational Goals” are the desired outcomes.

The “Actions” are measures that can be taken to work towards the Aspirational Goals.

There may be more Actions that can be taken to achieve the Aspirational Goals

Goal Type	Category	Scores (max = 40)	Ranking	Description	Comment
Aspirational	Environmental	27	1	Innovation/Environmental leadership	The committee provided a strong mandate during discussion to meeting an innovative solution, and maximising environmental benefits, while addressing the Village's liquid waste management but there is a caveat of being mindful of the limited funding the Village possesses.
Aspirational	Environmental	20	4	Sustainability, Climate Change resilience/adaptation/robustness	This goal is also reflected in the Comox Valley Sustainability Strategy, and is a major evaluation consideration in all Federal and Provincial funding programs
Aspirational	Environmental	10	5	Clean air	This goal would include limits to processes that may affect air quality in Cumberland, such as the use of recovered heat to displace wood burning. This does not specifically relate to odour
Action	Environmental	23	2	Support health of waterways with robust treatment	The Committee understands that the outfall of the plant must meet treated water quality to prevent damage to the environment. This goal is specific to treatment and will ultimately be based on a pass / fail to the selected solution of meeting discharge criteria defined by MOE for the selected receiving environment. This will remain the mandate of the Technical team to active thus goal with robust treatment
Action	Environmental	23	3	Use of existing ecosystems to control cost including low tech solution and or bio solutions plus beneficial use of produced biosolids	The committee discussed desire for a "natural" type of treatment as either the base treatment or augmenting treatment in meeting with the protection of the environment. Using or enhancing a natural wetland, ground water recharge/ lake recharge, (both in and surrounding VoC) would be an example of this goal
Action	Environmental	9	6	reduce manmade toxins	This goal is to go beyond MOE mandated treatment to eliminate all manmade toxins. Examples include pharmaceuticals and endocrine interrupters that would typically pass normal biological treatment
Total Environmental Goals		**112**			

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Social Goals

How the goals work...

The “Aspirational Goals” are the desired outcomes.

The “Actions” are measures that can be taken to work towards the Aspirational Goals.

There may be more Actions that can be taken to achieve the Aspirational Goals

Goal Type	Category	Scores (max = 40)	Ranking	Description	Comment
Aspirational	Social	37	1	Inclusivity of Cumberland to create an identity and or positive legacy adding to the social license	This goal is to create something special - something sexy - that the community can be proud of, and add an identifiable element to the community. Some examples include - dog waterpark - public art - water gardens/features
Aspirational	Social	8	4	Coal Mine/Railroad Heritage	This goal is to integrate the heritage of the community into the final treatment solution
Aspirational	Social	1	7	Strengthen Comox Valley relationship	The stewardship of water will be done for both local benefit and align to goals outside Cumberland in neighboring CVRD communities
Action	Social	15	2	Inclusive costing/metered sewer	This goal is to have a user pay initiative to reward those that conserve water and have those that use more, pay for the added treatment costs. Also possibility of assistance for low income households?
Action	Social	12	3	Purple pipe ready	This goal is aligned with re-use where the Village to adapt purple pipe to direct water from a receiving body and use treated effluent for beneficial use within the community thus reducing impact to environment. This could lead to keeping lawns green longer on community parks
Action	Social	8	5	Public Education	This goal is to add elements of education pertaining to water use to create a culture of sustainable water use throughout the community
Action	Social	8	6	gardens/zen/all year green lawn and city parks	The treated water and the storm water can be used to create a water feature and or warm water that would be useful to retain green lawns or areas that would be more free of snow and ice. Maintain good appearance of city parks and gardens
Total Social Goals		**89**			

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