

Core Area Wastewater Treatment Program Assessment of of Liquid Train Treatment Options Appendix H - Triple Bottom Line Considerations



OPTION SCREENING SUMMARY SHEET

Option Name: Rock Bay Tertiary Plant 108 MLD (MBR Tertiary Treatment)

Option Description: Single Regional Treatment Plant (108 MLD MBR)

Rating System Proposed:

Very Good (5)	Good (4)	Average (3)	Fair (2)	Poor (1)
The impact of the option is very favourable and far exceeds minimum expectations.	The impact of the option is favourable and clearly exceeds minimum expectations.	The impact of the option is acceptable and meets or somewhat exceeds minimum expectations.	The impact of the option barely meets minimum expectations.	Option fails to meet basic requirements of the criterion.

Criteria and Description	Considerations	Evidence
Economic Criteria		
EC-01 Capital Costs Construction costs including both direct and indirect costs in 2016 dollars.		Capital Cost of Option: \$ 1,159 million
EC-02 Whole Life Cycle Costs Operating and maintenance costs, expressed as a net present value cost using a 25 year life cycle cost and a 4% discount rate, added to capital costs.		Whole Life Cycle Cost of Option: \$1,535 million
EC-03 CRD Capital Cost Contribution	<ul style="list-style-type: none"> The current approved project capital budget is \$788 million. The draft Federal/Provincial funding agreements total \$502 million. The CRD share of the capital cost is calculated as the Option Capital Cost (EC-01) minus \$502 million. 	CRD Capital Cost Contribution: \$657 million
EC-07 Schedule of Completion	Impacts included in the Schedule assumption: <ul style="list-style-type: none"> Timing needed for rezoning and permitting requirements (e.g. development permit) Environmental permitting requirements Commissioning Date Site conditions that may extend construction (i.e., piling, shoring) Construction Schedule 	Estimated Service Commencement Date: Mar 31st, 2024 Evidence: <ul style="list-style-type: none"> Existing zoning is M3 Industrial, which would trigger the need for a rezoning. The estimated time to complete is 18 months. Environmental Impact Study (EIS) will need to be completed. Development Permit (DP) will be required. Preliminary site geotechnical report indicate that piling may be required which will add time to the construction schedule.

Criteria and Description	Considerations	Evidence
Environmental Criteria		
<p>EN-01</p> <p>Carbon Footprint</p> <p>Net carbon dioxide equivalent (eCO₂) during the construction and operation of the treatment plant (tonnes/year). Excludes consideration of the biosolids treatment</p>	<ul style="list-style-type: none"> • Technology impacts to carbon footprint; • Pumping and other conveyance impacts to carbon footprint 	<p>Conclusion</p> <p>Evidence:</p> <ul style="list-style-type: none"> • Estimated carbon footprint Construction (One Time) – 17,136 tonnes. • Estimated carbon footprint Operations (Annual) – 3,612 tonnes/year. • MBR technology carbon operations footprint is 513 tonnes/year higher than BAF secondary treatment. • The need to pump from Clover Point for treatment will increase the carbon footprint during operations by 11 tonnes/year. • The need to pump from Macaulay Point for treatment will increase carbon footprint by 11 tonnes/year. • The need to pump from Rock Bay to outfall will increase carbon footprint by 340 tonnes/year. <p>Conclusion: Poor</p>
<p>EN-02</p> <p>Heat Recovery Potential</p> <p>Heat recovered from the liquid stream treatment results in a low grade heat. This criterion is defined as the options' estimated opportunity to earn revenue, or save operating costs, from heat recovery.</p>	<ul style="list-style-type: none"> • Proximity of plant to potential existing customers • Proximity of plant to potential future customers 	<p>Evidence:</p> <ul style="list-style-type: none"> • Energy offset gained through the use of heat recovered from the plant's final effluent. Energy use can be both internal to the treatment plant and external via a district energy scheme. • Market studies conducted by Stantec in 2009 concluded that there is limited interest from existing Industrial/Commercial/Institutional (ICI) customers to purchase reclaimed heat due to the high cost of conversion of existing Heating Ventilation Air Conditioning (HVAC) systems. • A district heating system could be incorporated into the community plan. <ul style="list-style-type: none"> ○ The City of Victoria concept for development of the site includes mixed used commercial and public uses. ○ These future residents could be users of recovered heat. New development could more easily incorporate recovered heat. <p>Conclusion: Good</p>
<p>EN-03</p> <p>Water Reuse Potential</p> <p>The option's estimated opportunity to earn revenue, or save operating costs, from water reuse. Effluent reuse can be both internal to the treatment plant and external via an end product user. The use of treated water is based on provincial regulations that requires tertiary treatment and disinfection.</p>	<ul style="list-style-type: none"> • Proximity of option to potential existing customers • Proximity of option to potential future customers • Potential of option to produce reclaimed water for reuse opportunities 	<p>Evidence:</p> <ul style="list-style-type: none"> • Market studies conducted by Stantec in 2009 concluded that there is limited demand from existing Industrial/Commercial/Institutional (ICI) customers to purchase reclaimed water. Water reuse is typical in semi-arid regions where water supplies are limited. CRD has an abundant water supply and the irrigation season in the Region is relatively short (4 months). The largest users of reclaimed water are agricultural and golf courses. There is potential for use in public parks. The costs to retrofit existing residential properties (~\$2500/dwelling) make the economics of conversion of existing residences unfavourable. • Option is located in an existing industrial/commercial area so the potential for adding reuse water customers is favourable. • MBR treatment technology will yield tertiary effluent quality which is suitable for water

Criteria and Description	Considerations	Evidence
		reuse. <ul style="list-style-type: none"> • Potential for future development at Rock Bay may result in customers for reclaimed water. • Potential for existing industry in Rock Bay area to use reclaimed water. Conclusion: Good
EN-04 Environmental Considerations for Site Impacts to the local environment during construction of the treatment plant.	<ul style="list-style-type: none"> • Degree of remediation required to prepare site for construction • Disturbance of natural environment • Natural or disturbed site • Requirement for blasting • Extent of shoring and piling required • Disturbance of natural habitat and vegetation • Elevation of the proposed sites (e.g. need to build tsunami walls) • Extent of dewatering required • Potential impacts due to climate change (sea level rise) 	Evidence: <ul style="list-style-type: none"> • Site was previously a BC Hydro gasification facility that has been fully remediated. • Geotechnical conditions and rock excavation requirement uncertain. • Due to the site's elevation, an extensive tsunami wall will be required; in addition, the site will require filling. • Based on a preliminary level of site understanding, there may be a need for ground densification or piles to meet post-disaster foundation requirements. • Minimal vegetation exists on site. • Vapour barrier and extraction may be required on underground pipe galleries. • Dewatering water may require treatment. Conclusion: Fair
EN-05 Flexibility for Integrated Resource Management and Resource Recovery Suitability of the products produced from the liquid stream treatment for IRM with biosolids, organic waste and solid waste streams.	<ul style="list-style-type: none"> • The potential for Integrated Resource Management resides principally with the Biosolids Management Strategy rather than the liquid treatment portion of the project • The ability of the option to accommodate an IRM planning process either now or in the future (e.g. future retrofits to accommodate different uses for waste products). 	Evidence: <ul style="list-style-type: none"> • Estimated biosolids production at 108 MLD is 10,877 Dry Tonnes (DT)/year. • MBR technology will recover an additional 2,160 kg/day of biosolids (7.2% increase). • Effluent water could be reused for plant process water. • Internal heat recovery system could be included in plant heating design. • Option is located in near existing industrial and commercial properties and the potential for reuse water systems and reclaimed heat systems is more favourable (Reference EN-02 and EN-03). Conclusion: Good
EN-06 Wet weather treatment resiliency Ability to modify the treatment plant's operating procedures to adjust to varying wet weather flow conditions.	<ul style="list-style-type: none"> • Ability of technology to ramp up/down during wet weather flow events experienced in the CRD while maintaining effluent regulatory requirements. 	Evidence: <ul style="list-style-type: none"> • Primary plant capacity with multiple units and ability to turn on & off Chemically Enhanced Primary Treatment (CEPT); excellent for range of flow up to 4 x ADWF. Conclusion: Good
EN-07 Flexibility for more stringent treatment regulations in future The flexibility to expand or readily modify the treatment process to meet future permits requirements.	<ul style="list-style-type: none"> • Ability of treatment process to be modified or expanded to meet higher treatment standards. • Cost impacts of future modifications • Schedule impacts of future modifications • How does the future retrofit impact plant operations? 	Evidence: <ul style="list-style-type: none"> • MBR technology results in effluent that exceeds current regulatory standards site. • MBR bioreactor can be modified to meet more stringent discharge requirements. • Future modifications can be accommodated at reasonable costs. • Future modifications can be phased to minimize impacts on plant operations.

Criteria and Description	Considerations	Evidence
<p>EN-08 Terrestrial vegetation and Inter-tidal impacts Impact that a given site would have on existing terrestrial and inter-tidal habitat, and the degree of mitigation that may be required.</p>	<ul style="list-style-type: none"> Impact on the vegetation and habitat for terrestrial areas of the site during construction Degree of mitigation required for terrestrial and marine environment 	<p>Conclusion: Very Good</p> <p>Evidence:</p> <ul style="list-style-type: none"> Rock Bay is a disturbed site which has been remediated. There is limited terrestrial vegetation on site. There are trees located outside the roadway along conveyance route. Construction impacts are expected to be minimal. This Option assumes the reuse of existing outfalls at Clover Point and Macaulay Point. There would be no disturbance of the intertidal zone and no mitigation measures would be required. <p>Conclusion: Average</p>
<p>EN-09 Environmental Performance The extent to which the system exceeds current regulatory requirements.</p>	<ul style="list-style-type: none"> Degree that the option's treatment technology exceeds current regulatory requirements. 	<p>Evidence:</p> <ul style="list-style-type: none"> MBR design will achieve 2/2 mg/L BOD/TSS effluent which far exceed the WSER regulatory requirements. <p>Conclusion: Very Good</p>
<p>Social Criteria (Including Health and Safety)</p>		
<p>SO-01 Operations Traffic Amount of traffic nuisance caused to neighbouring residents post-construction.</p>	<ul style="list-style-type: none"> Classification of local community, e.g. residential, industrial, or commercial properties Number, and types, of schools along the access route Types of roads; for example, residential, arterial 	<p>Evidence:</p> <ul style="list-style-type: none"> Daily traffic for staff access estimated at 8 to 10 vehicle movements per day. Site is adjacent to existing arterial roads which experience significant daily truck traffic from normal daily traffic on Government and Bay streets due to other industrial / commercial activities in this area. No biosolids related traffic due to biosolids pumping to Hartland. Anticipate delivery of bulk chemicals up to twice per month. <p>Conclusion: Good</p>
<p>SO-02 Operations Impacts on local community Potential for operational noise and vibration which can be heard and felt by the neighbouring residents during operation of the treatment facility.</p>	<ul style="list-style-type: none"> Impact of noise and vibration on local community Classification of local community (e.g. residential or industrial) Distance of nearest neighbour to source of noise and vibration (e.g. 25 m) 	<p>Evidence:</p> <ul style="list-style-type: none"> The adjacent property is commercial/industrial. All mechanical equipment designed to minimize vibration and noise. All mechanical equipment contained inside buildings. Plant can be designed to attenuate vibration and noise levels. Site is within 100 meters of storefront commercial and office space. Victoria is thinking about mixed used zoning on the balance of the BC Hydro site which could put residential immediately adjacent to the plant. Design specifications will call for design to be compliant with municipal noise bylaw. <p>Conclusion: Average</p>

Criteria and Description	Considerations	Evidence
<p>SO-03 Odour Impacts on local community Impact of nuisance odours on residents or business in close proximity to the plant. This covers nuisance odour related to opening tank covers during maintenance. Locations closer to residents would have a higher probability of nuisance odours. It is assumed all plants would have odour control facilities for normal operations.</p>	<ul style="list-style-type: none"> Proximity to local community (e.g. 25m) and classification of local community (e.g. commercial, industrial, residential) Potential odour due to fugitive emission Degree of mission containment Degree of odour control equipment Dispersion specs and impact nearest residences 	<p>Evidence:</p> <ul style="list-style-type: none"> Site is adjacent to commercial/industrial property. All unit processes contained in buildings. Process tankage covered to contain odours. Plant designed to stringent odour control requirements. Odours will be scrubbed to meet low levels at site boundary. Emission modeling will be completed to confirm low odour numbers at property boundaries. Due to the close proximity of treatment site and nearest residences, there is a higher potential for infrequent odour complaints from fugitive emissions. <p>Conclusion: Average</p>
<p>SO-04 Visual Aesthetics Aesthetic visual impact for neighbouring residents and visual impact from adjacent roadways.</p>	<ul style="list-style-type: none"> Impact of views from both land side and water side Buffer zones of lawns and landscaping Care and attention to architecture of buildings required Care and attention to architectural treatment of tsunami walls 	<p>Evidence:</p> <ul style="list-style-type: none"> All process units covered or inside building. Architecture and site landscaping are designed to high standards. Tsunami wall can be designed to blend with natural landscape. The design review process will ensure that the facility blends with the community through architectural finishes, landscaping and site amenities. View from the water will be a low rise industrial building which will blend well with other nearby waterfront buildings. <p>Conclusion: Average</p>
<p>SO-05 Amenities Potential How the option can impact consideration of community integration opportunities.</p>	<ul style="list-style-type: none"> The opportunities for amenity enhancements such as public access, mixed use zoning, public art, waterfront access The ability to facilitate additional public amenities Size of site to accommodate walking trails, etc. Space to accommodate complimentary opportunities (e.g. educational facilities, research from UVic, learning centres for public on wastewater treatment) 	<p>Evidence:</p> <ul style="list-style-type: none"> The following amenity provisions requested by the City of Victoria have not yet been negotiated with the City of Victoria Planning Department since a site rezoning application has not yet been submitted. Potential amenities for consideration at this site included. <ul style="list-style-type: none"> The provision of public open space improvements including waterfront access. Public Walkway: Design of building and development of site to incorporate public accessible trails. Incorporation of existing historic buildings into plant design. Integration of reclaimed water and heat into adjacent new development. <p>Conclusion: Good</p>
<p>SO-06 Construction Impacts (Conveyance) Impacts to the local community of the plant and along the conveyance route alignments during construction, including the alignments that pass through more environmentally sensitive areas.</p>	<ul style="list-style-type: none"> Consider the impacts (noise, dust and vibration) of conveyance construction to the local community (focusing on residential and commercial) Impact to private property owners Impacts to vegetation and property, including any costs of remediation Possible damage to property(consider causes, e.g. blasting or vibration) Inconvenience due to construction, i.e. traffic detours and delays. 	<p>Evidence:</p> <ul style="list-style-type: none"> Construction of conveyance piping from both Clover Point and Macaulay Point will cause temporary disruption on residential and arterial streets for up to 2 years. The conveyance piping is large diameter and will be installed below existing utilities (i.e. 4 to 5 metres). Replacement of a portion of existing infrastructure is expected. Blasting may be required along portions of the conveyance route. Due to the close proximity of the conveyance pipe route to residences (< 20m), noise

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		dust and vibration impacts may be experienced by homeowners. <ul style="list-style-type: none"> Some of the pipeline construction will be adjacent to commercial properties. Conclusion: Poor
SO-07 Construction Impacts (Plant) Impacts to the local community of the plant during construction.	<ul style="list-style-type: none"> Consider the impacts (noise, dust and vibration) of plant construction to the local community (focusing on residential and commercial) Impacts to environmentally sensitive areas Interruption of “quiet enjoyment” of private property owners Impacts to vegetation and property, including any costs of remediation 	Evidence: <ul style="list-style-type: none"> The Rock Bay site is located in an industrial site; therefore that there will be dust, vibration, and noise impacts to the residential neighbours will be minimal. Property within 100 m of the site may experience dust, noise and vibration nuisance. The expected need for piling may extend construction noise for several months. The expected need for shoring / sheet piling may extend construction noise for several months. Traffic along arterial roads will be impacted for the duration of construction due to the delivery of materials and equipment to the site. This impact could be mitigated through a Traffic Management Plan under management by the contractor. There is no vegetation on site so impacts are expected to be minimal. Access to existing industrial operators adjacent to site will have to be coordinated and maintained during construction and post construction. Conclusion: Average
SO-08 Impacts to Existing Public Amenities Options’ impact the community’s ability to enjoy existing public amenities such as park land	<ul style="list-style-type: none"> Impacts on existing public amenities (e.g. parks, playgrounds, or access) during the construction and operations of the facility Impacts on municipality’s revenue opportunities associated with the public amenities. 	Evidence: <ul style="list-style-type: none"> No impact to the community’s enjoyment of existing public amenities because the treatment site is surrounded by industrial zoning. There are no public spaces adjacent or near the site. Conclusion: Very Good
SO-09 Compatibility with Official Community Plan Does the option fit within the approved Official Community Plan or existing zoning?	<ul style="list-style-type: none"> Compatibility with existing Official Community Plan Requirement for rezoning or variance on zoning, including risk of receiving variance in a timely manner Development permitting process, including risk of achieving Development Permit in a timely manner Anticipated opposition to rezoning by host municipality or impacted property owners 	Evidence: <ul style="list-style-type: none"> Rezoning from existing M3 Heavy Industrial to public use will be required. City of Victoria rezoning process is estimated to take 18 months to complete. Public opposition from property owners adjacent to conveyance pipe routes could add time and complexity to the rezoning application process. OCP amendment would be required but would not impact schedule since this process follows the rezoning process. Conceptual design will satisfy typical height and setback requirements for typical public utility zoning. City of Victoria Development Permit will be required. Conclusion: Average

Criteria and Description	Considerations	Evidence
<p>SO-10 Archeological Findings Risk of discovering archeological items during construction.</p>	<ul style="list-style-type: none"> Greenfield (undisturbed) vs. Brownfield (disturbed) Consider archeological studies completed to date 	<p>Evidence:</p> <ul style="list-style-type: none"> Effects on archaeological features are expected to be less than significant as Rock Bay is a brownfield site which was remediated by excavation of contaminated materials. <ul style="list-style-type: none"> Environmental Impact Study of Core Area Wastewater Treatment Program Facilities – Terrestrial Environment - March 2014- p. 34 (Tera) Risk of discovering archaeological findings along the conveyance pipe routes are unknown and would have to be assessed by a qualified archaeologist. <p>Conclusion: Good</p>
<p>SO-11 Impact to local First Nations How the option impacts local First Nations?</p>	<ul style="list-style-type: none"> Has the local First Nations been consulted on the proposed sites? Are there opportunities for the local First Nations to benefit through the development of the option? 	<p>Evidence:</p> <ul style="list-style-type: none"> CRD has consulted impacted First Nations extensively for all of the options under review and there is no material difference in how the options meet this criterion. Local First Nations will financially benefit from this option through the sale of land. <p>Conclusion: Good</p>
<p>SO-12 Leading Development Opportunity to be a catalyst for future development or improvements in existing development.</p>	<ul style="list-style-type: none"> Opportunity to enable further development or beautification of an area (e.g. project could bring in roads and utilities, which will encourage future development). Opportunities to improve existing communities (e.g. through upgrades to off-site services) 	<p>Evidence:</p> <ul style="list-style-type: none"> Surrounding area has access to gas, hydro, water, and sewer lines; which are in good condition. Upgrades are not required. Development of plant site may encourage additional development along Government Street. <p>Conclusion: Good</p>
<p>SO-13 Cultural and Heritage impacts Ability to use and/or respect culture and heritage. This would include consideration of existing structures or features on the proposed sites.</p>	<ul style="list-style-type: none"> How the option respects and incorporates existing cultural or heritage structures, site, or artifacts 	<p>Evidence:</p> <ul style="list-style-type: none"> The site contains two existing structures with historical significance that could be incorporated into the plant design. The design of the administration building exterior and site landscaping will reflect and honor history, culture, and heritage. <p>Conclusion: Very Good</p>

OPTION SCREENING SUMMARY SHEET

Option Name: Rock Bay 108 MLD / Secondary Treatment Plant

Option Description: Single Regional Treatment Plant (108 MLD BAF)

Rating System Proposed:

Very Good (5)	Good (4)	Average (3)	Fair (2)	Poor (1)
The impact of the option is very favourable and far exceeds minimum expectations.	The impact of the option is favourable and clearly exceeds minimum expectations.	The impact of the option is acceptable and meets or somewhat exceeds minimum expectations.	The impact of the option barely meets minimum expectations.	Option fails to meet basic requirements of the criterion.

Criteria and Description	Considerations	Evidence
Economic Criteria		
EC-01 Capital Costs Construction costs including both direct and indirect costs in 2016 dollars.		Capital Cost of Option: \$ 984 million
EC-02 Whole Life Cycle Costs Operating and maintenance costs, expressed as a net present value cost using a 25 year life cycle cost and a 4% discount rate, added to capital costs.		Whole Life Cycle Cost of Option: \$1,248 million
EC-03 CRD Capital Cost Contribution	<ul style="list-style-type: none"> The current approved project capital budget is \$788 million. The draft Federal/Provincial funding agreements total \$502 million. The CRD share of the capital cost is calculated as the Option Capital Cost (EC-01) minus \$502 million. 	CRD Capital Cost Contribution: \$482 million
EC-04 Schedule of Completion	Estimated Service Commencement Date Impacts included in the Schedule assumption: <ul style="list-style-type: none"> Timing needed for rezoning and permitting requirements (e.g. development permit) Environmental permitting requirements Commissioning Date Site conditions that may extend construction(i.e. piling, shoring) Construction Schedule 	Estimated Service Commencement Date: Mar 31st, 2024 Evidence: <ul style="list-style-type: none"> Existing zoning is M3 Industrial, which would trigger the need for a rezoning. The estimated time to complete is 18 months. Environmental Impact Study (EIS) will need to be completed. Development Permit (DP) will be required. Preliminary site geotechnical report indicate that piling may be required which will add time to the construction schedule.

Criteria and Description	Considerations	Evidence
Environmental Criteria		
<p>EN-01</p> <p>Carbon Footprint</p> <p>Net carbon dioxide equivalent (eCO₂) during the construction and operation of the treatment plant (tonnes/year). Excludes consideration of the biosolids treatment</p>	<ul style="list-style-type: none"> • Technology impacts to carbon footprint; • Pumping and other conveyance impacts to carbon footprint 	<p>Evidence:</p> <ul style="list-style-type: none"> • Estimated carbon footprint Construction (One Time) – 14,021 tonnes. • Estimated carbon footprint Operations (Annual) – 3,099 tonnes/year. • The need to pump from Clover Point for treatment will increase the carbon footprint during operations by 11 tonnes/year. • The need to pump from Macaulay Point for treatment will increase carbon footprint by 11 tonnes/year. • The need to pump from Rock Bay to outfall will increase carbon footprint by 340 tonnes/year. <p>Conclusion: Average</p>
<p>EN-02</p> <p>Heat Recovery Potential</p> <p>Heat recovered from the liquid stream treatment results in a low grade heat. This criterion is defined as the options' estimated opportunity to earn revenue, or save operating costs, from heat recovery.</p>	<ul style="list-style-type: none"> • Proximity of plant to potential existing customers • Proximity of plant to potential future customers 	<p>Evidence:</p> <ul style="list-style-type: none"> • Energy offset gained through the use of heat recovered from the plant's final effluent. Energy use can be both internal to the treatment plant and external via a district energy scheme. • Market studies conducted by Stantec in 2009 concluded that there is limited interest from existing Industrial/Commercial/Institutional (ICI) customers to purchase reclaimed heat due to the high cost of conversion of existing Heating Ventilation Air Conditioning (HVAC) systems. • A district heating system could be incorporated into the community plan. <ul style="list-style-type: none"> ○ The City of Victoria concept for development of the site includes mixed used commercial and public uses. ○ These future residents could be users of recovered heat. New development could more easily incorporate recovered heat. <p>Conclusion: Good</p>
<p>EN-03</p> <p>Water Reuse Potential</p> <p>The option's estimated opportunity to earn revenue, or save operating costs, from water reuse. Effluent reuse can be both internal to the treatment plant and external via an end product user. The use of treated water is based on provincial regulations that requires tertiary treatment and disinfection.</p>	<ul style="list-style-type: none"> • Proximity of option to potential existing customers • Proximity of option to potential future customers • Potential of option to produce reclaimed water for reuse opportunities 	<p>Evidence:</p> <ul style="list-style-type: none"> • Market studies conducted by Stantec in 2009 concluded that there is limited demand from existing Industrial/Commercial/Institutional (ICI) customers to purchase reclaimed water. Water reuse is typical in semi-arid regions where water supplies are limited. CRD has an abundant water supply and the irrigation season in the Region is relatively short (4 months). The largest users of reclaimed water are agricultural and golf courses. There is potential for use in public parks. The costs to retrofit existing residential properties (~\$2500/dwelling) make the economics of conversion of existing residences unfavourable. • Option is located in an existing industrial/commercial area so the potential for adding future reuse water customers is somewhat favourable. • BAF treatment technology will yield secondary effluent quality which is unsuitable for water reuse.

Criteria and Description	Considerations	Evidence
<p>EN-04 Environmental Considerations for Site Impacts to the local environment during construction of the treatment plant.</p>	<ul style="list-style-type: none"> Degree of remediation required to prepare site for construction Disturbance of natural environment Natural or disturbed site Requirement for blasting Extent of shoring and piling required Disturbance of natural habitat and vegetation Elevation of the proposed sites (e.g. need to build tsunami walls) Extent of dewatering required Potential impacts due to climate change (sea level rise) 	<p>Conclusion: Poor</p> <p>Evidence:</p> <ul style="list-style-type: none"> Site was previously a BC Hydro gasification facility that has been remediated. Geotechnical conditions and rock excavation requirement uncertain. Due to the site's elevation, an extensive tsunami wall will be required; in addition, the site will require filling. Based on a preliminary level of site understanding, there may be a need for ground densification or piles to meet post-disaster foundation requirements. Minimal vegetation exists on site. Vapour barrier and extraction may be required on underground pipe galleries. Dewatering water may require treatment. <p>Conclusion: Fair</p>
<p>EN-05 Flexibility for Integrated Resource Management and Resource Recovery Suitability of the products produced from the liquid stream treatment for IRM with biosolids, organic waste and solid waste streams.</p>	<ul style="list-style-type: none"> The potential for Integrated Resource Management resides principally with the Biosolids Management Strategy rather than the liquid treatment portion of the project The ability of the option to accommodate an IRM planning process either now or in the future (e.g. future retrofits to accommodate different uses for waste products). 	<p>Evidence:</p> <ul style="list-style-type: none"> Estimated biosolids production at 108 MLD is 10,877 Dry Tonnes (DT)/year Effluent water will be reused for plant process water Internal heat recovery system will be included in plant heating design Option is located in near existing industrial and commercial properties and the potential for reuse water systems and reclaimed heat systems is somewhat favourable (Reference EN-02 and EN-03). <p>Conclusion: Average</p>
<p>EN-06 Wet weather treatment resiliency Ability to modify the treatment plant's operating procedures to adjust to varying wet weather flow conditions.</p>	<ul style="list-style-type: none"> Ability of technology to ramp up/down during wet weather flow events experienced in the CRD while maintaining effluent regulatory requirements. 	<p>Evidence:</p> <ul style="list-style-type: none"> Primary plant capacity with multiple units and ability to turn on & off Chemically Enhanced Primary Treatment (CEPT); excellent for range of flow up to 4 x ADWF. BAF technology is robust for varying flow conditions. Capacity is sized for 2 X ADWF and can handle short terms peaks in excess of 2 x ADWF. <p>Conclusion: Good</p>
<p>EN-07 Flexibility for more stringent treatment regulations in future The flexibility to expand or readily modify the treatment process to meet future permits requirements.</p>	<ul style="list-style-type: none"> Ability of treatment process to be modified or expanded to meet higher treatment standards. Cost impacts of future modifications Schedule impacts of future modifications How does the future retrofit impact plant operations? 	<p>Evidence:</p> <ul style="list-style-type: none"> Most of site will be utilized by BAF Secondary plant, but tertiary disc filters could be added in the future. Future upgrade might include conversion of the plant to MBR technology. This would involve the construction of additional unit processes. Insufficient land available on the current site for this type of modification. 108 MLD BAF treatment plant can be accommodated on existing site. Tertiary disc filters can easily be added to process in future with minimal impact on existing operations.

Criteria and Description	Considerations	Evidence
<p>EN-08 Terrestrial vegetation and Inter-tidal impacts Impact that a given site would have on existing terrestrial and inter-tidal habitat, and the degree of mitigation that may be required.</p>	<ul style="list-style-type: none"> Impact on the vegetation and habitat for terrestrial areas of the site during construction Degree of mitigation required for terrestrial and marine environment 	<p>Conclusion: Average</p> <p>Evidence:</p> <ul style="list-style-type: none"> Rock Bay is a disturbed site which has been remediated. There is limited terrestrial vegetation on site. There are trees located outside the roadway along conveyance route. Construction impacts are expected to be minimal. This Option assumes the reuse of existing outfalls at Clover Point and Macaulay Point. There would be no disturbance of the intertidal zone and no mitigation measures would be required. <p>Conclusion: Average</p>
<p>EN-09 Environmental Performance The extent to which the system exceeds current regulatory requirements.</p>	<ul style="list-style-type: none"> Degree that the option's treatment technology exceeds current regulatory requirements. 	<p>Evidence:</p> <ul style="list-style-type: none"> BAF design will achieve 25/25 mg/L BOD/TSS effluent which meet the WSER regulatory requirements. <p>Conclusion: Average</p>
<p>Social Criteria (Including Health and Safety)</p>		
<p>SO-01 Operations Traffic Amount of traffic nuisance caused to neighbouring residents post-construction.</p>	<ul style="list-style-type: none"> Classification of local community, e.g. residential, industrial, or commercial properties Number, and types, of schools along the access route Types of roads; for example, residential, arterial 	<p>Evidence:</p> <ul style="list-style-type: none"> Daily traffic for staff access estimated at 8 to 10 vehicle movements per day. Site is adjacent to existing arterial roads which experience significant daily truck traffic from normal daily traffic on Government and Bay streets due to other industrial / commercial activities in this area. No biosolids related traffic due to biosolids pumping to Hartland. Anticipate delivery of bulk chemicals up to twice per month. <p>Conclusion: Good</p>
<p>SO-02 Operations Impacts on local community Potential for operational noise and vibration which can be heard and felt by the neighbouring residents during operation of the treatment facility.</p>	<ul style="list-style-type: none"> Impact of noise and vibration on local community Classification of local community (e.g. residential or industrial) Distance of nearest neighbour to source of noise and vibration (e.g. 25 m) 	<p>Evidence:</p> <ul style="list-style-type: none"> The adjacent property is commercial/industrial. All mechanical equipment designed to minimize vibration and noise. All mechanical equipment contained inside buildings. Plant can be designed to attenuate vibration and noise levels. Site is within 100 meters of storefront commercial and office space. Victoria is thinking about mixed used zoning on the balance of the BC Hydro site which could put residential immediately adjacent to the plant. Design specifications will call for design to be compliant with municipal noise bylaw. <p>Conclusion: Average</p>

Criteria and Description	Considerations	Evidence
<p>SO-03 Odour Impacts on local community Impact of nuisance odours on residents or business in close proximity to the plant. This covers nuisance odour related to opening tank covers during maintenance. Locations closer to residents would have a higher probability of nuisance odours. It is assumed all plants would have odour control facilities for normal operations.</p>	<ul style="list-style-type: none"> Proximity to local community (e.g. 25m) and classification of local community (e.g. commercial, industrial, residential) Potential odour due to fugitive emission Degree of mission containment Degree of odour control equipment Dispersion specs and impact nearest residences 	<p>Evidence:</p> <ul style="list-style-type: none"> Site is adjacent to commercial/industrial property. All unit processes contained in buildings. Process tankage covered to contain odours. Plant designed to stringent odour control requirements. Odours will be scrubbed to meet low levels at site boundary. Emission modeling will be completed to confirm low odour numbers at property boundaries. Due to close proximity the treatment site and nearest residences, there is a higher potential for infrequent odour complaints from fugitive emissions. <p>Conclusion: Average</p>
<p>SO-04 Visual Aesthetics Aesthetic visual impact for neighbouring residents and visual impact from adjacent roadways.</p>	<ul style="list-style-type: none"> Impact of views from both land side and water side Buffer zones of lawns and landscaping Care and attention to architecture of buildings required Care and attention to architectural treatment of tsunami walls 	<p>Evidence:</p> <ul style="list-style-type: none"> All process units covered or inside building. Architecture and site landscaping are designed to high standards. Tsunami wall can be given architectural treatment to blend with natural landscape. The design review process will ensure that the facility blends with the community through architectural finishes, landscaping and site amenities. View from the water will be a low rise industrial building which will blend well with other nearby waterfront buildings. <p>Conclusion: Average</p>
<p>SO-05 Amenities Potential How the option can impact consideration of community integration opportunities.</p>	<ul style="list-style-type: none"> The opportunities for amenity enhancements such as public access, mixed use zoning, public art, waterfront access The ability to facilitate additional public amenities Size of site to accommodate walking trails, etc. Space to accommodate complimentary opportunities (e.g. educational facilities, research from UVic, learning centres for public on wastewater treatment) 	<p>Evidence:</p> <ul style="list-style-type: none"> The following amenity provisions requested by the City of Victoria have not yet been negotiated with the City of Victoria Planning Department since a site rezoning application has not yet been submitted. Potential amenities for consideration at this site included. <ul style="list-style-type: none"> The provision of public open space improvements including waterfront access. Public Walkway: Design of building and development of site to incorporate public accessible trails. Incorporation of existing historic buildings into plant design. Integration of reclaimed water and heat into adjacent new development. <p>Conclusion: Good</p>
<p>SO-06 Construction Impacts (Conveyance) Impacts to the local community of the plant and along the conveyance route alignments during construction, including the alignments that pass through more environmentally</p>	<ul style="list-style-type: none"> Consider the impacts (noise, dust and vibration) of conveyance construction to the local community (focusing on residential and commercial) Impact to private property owners Impacts to vegetation and property, including any costs of remediation Possible damage to property(consider causes, e.g. blasting or vibration) 	<p>Evidence:</p> <ul style="list-style-type: none"> Construction of conveyance piping from both Clover Point and Macaulay Point will cause temporary disruption on residential and arterial streets for up to 2 years. The conveyance piping is large diameter and will be installed below existing utilities (i.e.4 to 5 metres). Replacement of a portion of existing infrastructure is expected.

Criteria and Description	Considerations	Evidence
sensitive areas.	<ul style="list-style-type: none"> Inconvenience due to construction, i.e. traffic detours and delays. 	<ul style="list-style-type: none"> Blasting may be required along portions of the conveyance route. Due to the close proximity of the conveyance pipe route to residences (< 20m), noise dust and vibration impacts may be experienced by homeowners. Some of the pipeline construction will be adjacent to commercial properties. <p>Conclusion: Poor</p>
<p>SO-07</p> <p>Construction Impacts (Plant)</p> <p>Impacts to the local community of the plant during construction.</p>	<ul style="list-style-type: none"> Consider the impacts (noise, dust and vibration) of plant construction to the local community (focusing on residential and commercial) Impacts to environmentally sensitive areas Interruption of “quiet enjoyment” of private property owners Impacts to vegetation and property, including any costs of remediation 	<p>Evidence:</p> <ul style="list-style-type: none"> The Rock Bay site is located in an industrial site; therefore that there will be dust, vibration, and noise impacts to the residential neighbours will be minimal. Property within 100 m of the site may experience dust, noise and vibration nuisance. The expected need for piling may extend construction noise for several months. The expected need for shoring / sheet piling may extend construction noise for several months. Traffic along arterial roads will be impacted for the duration of construction due to the delivery of materials and equipment to the site. This impact could be mitigated through a Traffic Management Plan under management by the contractor. There is no vegetation on site so impacts are expected to be minimal. Access to existing industrial operators adjacent to site will have to be coordinated and maintained during construction and post construction. <p>Conclusion: Average</p>
<p>SO-08</p> <p>Impacts to Existing Public Amenities</p> <p>Options’ impact the community’s ability to enjoy existing public amenities such as park land</p>	<ul style="list-style-type: none"> Impacts on existing public amenities (e.g. parks, playgrounds, or access) during the construction and operations of the facility Impacts on municipality’s revenue opportunities associated with the public amenities. 	<p>Evidence:</p> <ul style="list-style-type: none"> No impact to the community’s enjoyment of existing public amenities because the treatment site is surrounded by industrial zoning. There are no public spaces adjacent or near the site. <p>Conclusion: Very Good</p>
<p>SO-09</p> <p>Compatibility with Official Community Plan</p> <p>Does the option fit within the approved Official Community Plan or existing zoning?</p>	<ul style="list-style-type: none"> Compatibility with existing Official Community Plan Requirement for rezoning or variance on zoning, including risk of receiving variance in a timely manner Development permitting process, including risk of achieving Development Permit in a timely manner Anticipated opposition to rezoning by host municipality or impacted property owners 	<p>Evidence:</p> <ul style="list-style-type: none"> Rezoning from existing M3 Heavy Industrial to public use will be required. City of Victoria rezoning process is estimated to take 18 months to complete. Public opposition from property owners adjacent to conveyance pipe routes could add time and complexity to the rezoning application process. OCP amendment would be required but would not impact schedule since this process follows the rezoning process. Conceptual design will satisfy typical height and setback requirements for typical public utility zoning. City of Victoria Development Permit will be required. <p>Conclusion: Average</p>

Criteria and Description	Considerations	Evidence
<p>SO-10 Archaeological Findings Risk of discovering archeological items during construction.</p>	<ul style="list-style-type: none"> Greenfield (undisturbed) vs. Brownfield (disturbed) Consider archaeological studies completed to date 	<p>Evidence:</p> <ul style="list-style-type: none"> Effects on archaeological features are expected to be less than significant as Rock Bay is a brownfield site which was remediated by excavation of contaminated materials. <ul style="list-style-type: none"> Environmental Impact Study of Core Area Wastewater Treatment Program Facilities – Terrestrial Environment - March 2014- p. 34 (Tera) Risk of discovering archaeological findings along the conveyance pipe routes are unknown and would have to be assessed by a qualified archaeologist. <p>Conclusion: Good</p>
<p>SO-11 Impact to local First Nations How the option impacts local First Nations?</p>	<ul style="list-style-type: none"> Has the local First Nations been consulted on the proposed sites? Are there opportunities for the local First Nations to benefit through the development of the option? 	<p>Evidence:</p> <ul style="list-style-type: none"> CRD has consulted impacted First Nations extensively for all of the options under review and there is no material difference in how the options meet this criterion. Local First Nations will financially benefit from this option through the sale of land. <p>Conclusion: Good</p>
<p>SO-12 Leading Development Opportunity to be a catalyst for future development or improvements in existing development.</p>	<ul style="list-style-type: none"> Opportunity to enable further development or beautification of an area (e.g. project could bring in roads and utilities, which will encourage future development). Opportunities to improve existing communities (e.g. through upgrades to off-site services) 	<p>Evidence:</p> <ul style="list-style-type: none"> Surrounding area has access to gas, hydro, water, and sewer lines; which are in good condition. Upgrades are not required. Development of plant site may encourage additional development along Government Street. <p>Conclusion: Good</p>
<p>SO-13 Cultural and Heritage impacts Ability to use and/or respect culture and heritage. This would include consideration of existing structures or features on the proposed sites.</p>	<ul style="list-style-type: none"> How the option respects and incorporates existing cultural or heritage structures, site, or artifacts 	<p>Evidence:</p> <ul style="list-style-type: none"> The site contains two existing structures with historical significance that could be incorporated into the plant design. The design of the administration building exterior and site landscaping will reflect and honor history, culture, and heritage. <p>Conclusion: Very Good</p>

OPTION SCREENING SUMMARY SHEET

Option Name: Rock Bay Tertiary Plant 108 MLD (Tertiary Treatment)

Option Description: Single Regional Treatment Plant (108 MLD BAF + Tertiary Disc Filters)

Rating System Proposed:

Very Good (5)	Good (4)	Average (3)	Fair (2)	Poor (1)
The impact of the option is very favourable and far exceeds minimum expectations.	The impact of the option is favourable and clearly exceeds minimum expectations.	The impact of the option is acceptable and meets or somewhat exceeds minimum expectations.	The impact of the option barely meets minimum expectations.	Option fails to meet basic requirements of the criterion.

Criteria and Description	Considerations	Evidence
Economic Criteria		
EC-01 Capital Costs Construction costs including both direct and indirect costs in 2016 dollars.		Capital Cost of Option: \$ 1,004 million
EC-02 Whole Life Cycle Costs Operating and maintenance costs, expressed as a net present value cost using a 25 year life cycle cost and a 4% discount rate, added to capital costs.		Whole Life Cycle Cost of Option: \$1,268 million
EC-03 CRD Capital Cost Contribution	<ul style="list-style-type: none"> The current approved project capital budget is \$788 million. The draft Federal/Provincial funding agreements total \$502 million. The CRD share of the capital cost is calculated as the Option Capital Cost (EC-01) minus \$502 million. 	CRD Capital Cost Contribution: \$502 million
EC-04 Schedule of Completion	Estimated Service Commencement Date Impacts included in the Schedule assumption: <ul style="list-style-type: none"> Timing needed for rezoning and permitting requirements (e.g. development permit) Environmental permitting requirements Preparation of procurement documents and tendering process Commissioning Date Site conditions that may extend construction(i.e. piling, shoring) Construction Schedule 	Estimated Service Commencement Date: Mar 31st, 2024 Evidence: <ul style="list-style-type: none"> Existing zoning is M3 Industrial, which would trigger the need for a rezoning. The estimated time to complete is 18 months. Environmental Impact Study (EIS) will need to be completed. Development Permit (DP) will be required. Preliminary site geotechnical report indicate that piling may be required which will add time to the construction schedule.

Criteria and Description	Considerations	Evidence
Environmental Criteria		
<p>EN-01</p> <p>Carbon Footprint</p> <p>Net carbon dioxide equivalent (eCO₂) during the construction and operation of the treatment plant (tonnes/year). Excludes consideration of the biosolids treatment</p>	<ul style="list-style-type: none"> • Technology impacts to carbon footprint; • Pumping and other conveyance impacts to carbon footprint 	<p>Evidence:</p> <ul style="list-style-type: none"> • Estimated carbon footprint Construction (One Time) – 14,578 tonnes. • Estimated carbon footprint Operations (Annual) – 3,135 tonnes/year. • The need to pump from Clover Point for treatment will increase the carbon footprint during operations by 11 tonnes/year. • The need to pump from Macaulay Point for treatment will increase carbon footprint by 11 tonnes/year. • The need to pump from Rock Bay to outfall will increase carbon footprint by 340 tonnes/year. <p>Conclusion: Average</p>
<p>EN-02</p> <p>Heat Recovery Potential</p> <p>Heat recovered from the liquid stream treatment results in a low grade heat. This criterion is defined as the options' estimated opportunity to earn revenue, or save operating costs, from heat recovery.</p>	<ul style="list-style-type: none"> • Proximity of plant to potential existing customers • Proximity of plant to potential future customers 	<p>Evidence:</p> <ul style="list-style-type: none"> • Energy offset gained through the use of heat recovered from the plant's final effluent. Energy use can be both internal to the treatment plant and external via a district energy scheme. • Market studies conducted by Stantec in 2009 concluded that there is limited interest from existing Industrial/Commercial/Institutional (ICI) customers to purchase reclaimed heat due to the high cost of conversion of existing Heating Ventilation Air Conditioning (HVAC) systems. • A district heating system could be incorporated into the community plan. <ul style="list-style-type: none"> ○ The City of Victoria concept for development of the site includes mixed used commercial and public uses. ○ These future residents could be users of recovered heat. <p>Conclusion: Good</p>
<p>EN-03</p> <p>Water Reuse Potential</p> <p>The options' estimated opportunity to earn revenue, or save operating costs, from water reuse. Effluent reuse can be both internal to the treatment plant and external via an end product user. The use of treated water is based on provincial regulations that require tertiary treatment and disinfection.</p>	<ul style="list-style-type: none"> • Proximity of option to potential existing customers • Proximity of option to potential future customers • Potential of option to produce reclaimed water for reuse opportunities 	<p>Evidence:</p> <ul style="list-style-type: none"> • Market studies conducted by Stantec in 2009 concluded that there is limited demand from existing Industrial/Commercial/Institutional (ICI) customers to purchase reclaimed water. Water reuse is typical in semi-arid regions where water supplies are limited. CRD has an abundant water supply and the irrigation season in the Region is relatively short (4 months). The largest users of reclaimed water are agricultural and golf courses. There is potential for use in public parks. The costs to retrofit existing residential properties (~\$2500/dwelling) make the economics of conversion of existing residences unfavourable. • Option is located in an existing industrial/commercial area so the potential for adding future reuse water customers is somewhat favourable. • BAF + tertiary disc filters treatment technology will yield tertiary effluent quality which is suitable for water reuse. <p>Conclusion: Good</p>

Criteria and Description	Considerations	Evidence
<p>EN-04 Environmental Considerations for Site Impacts to the local environment during construction of the treatment plant.</p>	<ul style="list-style-type: none"> Degree of remediation required to prepare site for construction Disturbance of natural environment Natural or Disturbed site Requirement for blasting Extent of shoring and piling required Disturbance of natural habitat and vegetation Elevation of the proposed sites (e.g. need to build tsunami walls) Extent of dewatering required Potential impacts due to climate change (sea level rise) 	<p>Evidence:</p> <ul style="list-style-type: none"> Site was previously a BC Hydro gasification facility that has been fully remediated. Geotechnical conditions and rock excavation requirement uncertain. Due to the site's elevation, an extensive tsunami wall will be required; in addition, the site will require filling. Based on a preliminary level of site understanding, there may be a need for ground densification or piles to meet post-disaster foundation requirements. Minimal vegetation on the site exists. Vapour barrier and extraction may be required on underground pipe galleries. Dewatering water may require treatment <p>Conclusion: Fair</p>
<p>EN-05 Flexibility for Integrated Resource Management and Resource Recovery Suitability of the products produced from the liquid stream treatment for IRM with biosolids, organic waste and solid waste streams.</p>	<ul style="list-style-type: none"> The potential for Integrated Resource Management resides principally with the Biosolids Management Strategy rather than the liquid treatment portion of the project The ability of the option to accommodate an IRM planning process either now or in the future (e.g. future retrofits to accommodate different uses for waste products). 	<p>Evidence:</p> <ul style="list-style-type: none"> Estimated biosolids production at 108 MLD is 10,877 Dry Tonnes (DT)/year. Tertiary Disc Filters will recover an additional 2,160 kg/day of biosolids. Effluent water will be reused for plant process water. Internal heat recovery system will be included in plant heating design. Option is located in near existing industrial and commercial properties and the potential for reuse water systems and reclaimed heat systems is somewhat favourable (Reference EN-02 and EN-03). <p>Conclusion: Good</p>
<p>EN-06 Wet weather treatment resiliency Ability to modify the treatment plant's operating procedures to adjust to varying wet weather flow conditions.</p>	<ul style="list-style-type: none"> Ability of technology to ramp up/down during wet weather flow events experienced in the CRD while maintaining effluent regulatory requirements. 	<p>Evidence:</p> <ul style="list-style-type: none"> Primary plant capacity with multiple units and ability to turn on & off Chemically Enhanced Primary Treatment (CEPT); excellent for range of flow up to 4 x ADWF. BAF technology is robust for varying flow conditions. Capacity is sized for 2 X ADWF. <p>Conclusion: Good</p>
<p>EN-07 Flexibility for more stringent treatment regulations in future The flexibility to expand or readily modify the treatment process to meet future permits requirements.</p>	<ul style="list-style-type: none"> Ability of treatment process to be modified or expanded to meet higher treatment standards. Cost impacts of future modifications Schedule impacts of future modifications How does the future retrofit impact plant operations? 	<p>Evidence:</p> <ul style="list-style-type: none"> Most of site will be utilized by BAF Secondary plant and tertiary disc filters. 108 MLD BAF + tertiary disc filters treatment plant can be accommodated on existing site. Expansion at site will be difficult. <p>Conclusion: Average</p>
<p>EN-08 Terrestrial vegetation and Inter-tidal impacts Impact that a given site would have on existing terrestrial and inter-tidal habitat, and the degree of mitigation that may be</p>	<ul style="list-style-type: none"> Impact on the vegetation and habitat for terrestrial areas of the site during construction Degree of mitigation required for terrestrial and marine environment 	<p>Evidence:</p> <ul style="list-style-type: none"> Rock Bay is a disturbed site which has been remediated. There is limited terrestrial vegetation on site.

Criteria and Description	Considerations	Evidence
required.		<ul style="list-style-type: none"> There is vegetation on the streets along the first conveyance route, which is between Clover Point and Rock Bay. There has not been an impact assessment study completed for this route. There is vegetation on the streets along the second conveyance route, which is between Rock Bay and McLoughlin Point. There has not been an impact assessment study completed for this route. This Option assumes the reuse of existing outfalls at Clover Point and Macaulay Point. There would be no disturbance of the intertidal zone and no mitigation measures would be required. <p>Conclusion: Average</p>
<p>EN-09 Environmental Performance Whether and extent to which regulatory requirements meet or exceed regulatory requirements.</p>	<ul style="list-style-type: none"> Degree that the option's treatment technology exceeds current regulatory requirements. 	<p>Evidence:</p> <ul style="list-style-type: none"> BAF + tertiary disc filters design will achieve 5/5 mg/L BOD/TSS effluent which exceeds the WSER regulatory requirements. <p>Conclusion: Good</p>
Social Criteria (Including Health and Safety)		
<p>SO-01 Operations Traffic Amount of traffic nuisance caused to neighbouring residents post-construction.</p>	<ul style="list-style-type: none"> Classification of local community, e.g. residential, industrial, or commercial properties Number, and types, of schools along the access route Types of roads; for example, residential, arterial 	<p>Evidence:</p> <ul style="list-style-type: none"> Daily traffic for staff access estimated at 8 to 10 vehicle movements per day. Site is adjacent to existing arterial roads which experience significant daily truck traffic. No biosolids related traffic due to biosolids pumping and conveyance piping plans. Anticipate delivery of bulk chemicals up to twice per month. <p>Conclusion: Average</p>
<p>SO-02 Operations Impacts on local community Potential for operational noise and vibration which can be heard and felt by the neighbouring residents during operation of the treatment facility.</p>	<ul style="list-style-type: none"> Impact of noise and vibration on local community Classification of local community (e.g. residential or industrial) Distance of nearest neighbour to source of noise and vibration (e.g. 25 m) 	<p>Evidence:</p> <ul style="list-style-type: none"> The adjacent property is commercial/industrial. All mechanical equipment designed to minimize vibration and noise. All mechanical equipment contained inside buildings. Plant designed for limited vibration and noise levels. <p>Conclusion: Average</p>
<p>SO-03 Odour Impacts on local community Impact of nuisance odours on residents or business in close proximity to the plant. This covers nuisance odour related to opening tank covers during maintenance. Locations closer to residents would have a higher probability of nuisance odours. It is assumed all plants would have odour control facilities for normal operations.</p>	<ul style="list-style-type: none"> Proximity to local community (e.g. 25m) and classification of local community (e.g. commercial, industrial, residential) Potential odour due to fugitive emission Degree of omission containment Degree of odour control equipment Dispersion specs and impact nearest residences 	<p>Evidence:</p> <ul style="list-style-type: none"> Site is adjacent to commercial/industrial property with 250 metre radius. All unit processes contained in buildings. Plant designed to stringent odour control requirements. Odour control system include biofilter and activated carbon filter. Emission modeling has ensured low odour numbers at property boundaries. Due to the close proximity of the treatment site and nearest residences, there is a lower probability of odour complaints from fugitive emissions.

Criteria and Description	Considerations	Evidence
<p>SO-04 Visual Aesthetics Aesthetic visual impact for neighbouring residents and visual impact from adjacent roadways.</p>	<ul style="list-style-type: none"> • Impact of views from both land side and water side • Buffer zones of lawns and landscaping • Care and attention to architecture of buildings required • Care and attention to architectural treatment of tsunami walls. 	<p>Conclusion: Average</p> <p>Evidence:</p> <ul style="list-style-type: none"> • All process units covered or inside building. • Architecture and site landscaping are designed to high standards. • Treatment site is an improvement over the prior use, which was a gasification plant. • The DP process will ensure that the facility blends with the community through architectural finishes, landscaping and site amenities. • View from the water will be a low rise industrial building which will blend well with other nearby waterfront buildings. • Tsunami wall can be given architectural treatment to blend with natural landscape. <p>Conclusion: Average</p>
<p>SO-05 Amenities Potential How the option can impact consideration of community integration opportunities.</p>	<ul style="list-style-type: none"> • CRD has capped amenities package at \$20 million which will be prorated based on capacity of the option • The opportunities for amenity enhancements such as public access, mixed use zoning, public art, waterfront access • The ability to facilitate (encourage) additional public amenities • Size of site to accommodate walking trails, etc. • Space to accommodate complimentary opportunities (e.g. educational facilities, research from UVic, learning centres for public on wastewater treatment) • Opportunity for job creation, consider both construction and operations 	<p>Evidence:</p> <ul style="list-style-type: none"> • The following amenity provisions requested by the City of Victoria have not yet been negotiated with the City of Victoria Planning Department since a site rezoning application has not yet been submitted. Potential amenities for consideration at this site included. <ul style="list-style-type: none"> ○ The provision of public open space improvements including waterfront access. ○ Public Walkway: Design of building and development of site to incorporate public accessible trails. ○ Incorporation of existing historic building into plant design. ○ Integration of reclaimed water and heat into adjacent new development. ○ Good opportunity for job creation. <p>Conclusion: Good</p>
<p>SO-06 Construction Impacts (Conveyance) Impacts to the local community of the plant and along the conveyance route alignments during construction, including the alignments that pass through more environmentally sensitive areas.</p>	<ul style="list-style-type: none"> • Consider the impacts (noise, dust and vibration) of conveyance construction to the local community (focusing on residential and commercial) • Interruption of “quiet enjoyment” of private property owners • Impacts to vegetation and property, including any costs of remediation 	<p>Evidence:</p> <ul style="list-style-type: none"> • Construction of conveyance piping from both Clover Point and Macaulay Point will cause major disruption on residential and arterial streets for up to 2 years. • The conveyance piping is large diameter and will be installed below existing utilities (i.e. 4 to 5 metres). Replacement of existing infrastructure is expected. • Blasting will be required along portions of the conveyance route. Damage to property (cracking) may be claimed. • Due to the close proximity of the conveyance pipe route to residences (< 20m), noise dust and vibration impacts may be experienced by homeowners. • Some of the pipeline construction will be adjacent to commercial properties. Business interruption may be claimed. • Construction planning will mitigate disruption to neighbouring properties. <p>Conclusion: Poor</p>

Criteria and Description	Considerations	Evidence
<p>SO-07 Construction Impacts (Plant) Impacts to the local community of the plant during construction.</p>	<ul style="list-style-type: none"> Consider the impacts (noise, dust and vibration) of plant construction to the local community (focusing on residential and commercial) Impacts to environmentally sensitive areas Interruption of “quiet enjoyment” of private property owners Impacts to vegetation and property, including any costs of remediation Possible damage to property (consider causes, e.g., blasting or vibration) 	<p>Evidence:</p> <ul style="list-style-type: none"> The Rock Bay site is located in an industrial site; therefore that there will be dust, vibration, and noise impacts to the residential neighbours will be minimal. Property within 100 m of the site may experience dust, noise and vibration nuisance. The expected need for piling may extend construction noise for several months. The expected need for shoring / sheet piling may extend construction noise for several months. Traffic along arterial roads will be impacted for the duration of construction due to the delivery of materials and equipment to the site. This impact could be mitigated through a Traffic Management Plan under management by the contractor. There is no vegetation on site so impacts are expected to be minimal. Access to existing industrial operators adjacent to site will have to be coordinated and maintained. <p>Conclusion: Average</p>
<p>SO-08 Impacts to existing public amenities Options’ impact the community’s ability to enjoy existing public amenities such as park land, either existing or future.</p>	<ul style="list-style-type: none"> Impacts on existing public amenities (e.g. parks, playgrounds, or access) during the construction and operations of the facility Impacts on municipality’s revenue opportunities associated with the public amenities 	<p>Evidence:</p> <ul style="list-style-type: none"> No impact to the community’s enjoyment of existing public amenities because the treatment site is surrounded by industrial zoning. There are no public spaces adjacent or near the site. <p>Conclusion: Very Good</p>
<p>SO-09 Compatibility with Official Community Plan Does the option fit within the approved Official Community Plan or existing zoning?</p>	<ul style="list-style-type: none"> Compatibility with existing Official Community Plan Requirement for rezoning or variance on zoning, including risk of receiving variance in a timely manner Development permitting process, including risk of achieving DP in a timely manner Anticipated opposition to rezoning by host municipality or impacted property owners 	<p>Evidence:</p> <ul style="list-style-type: none"> Rezoning from existing M3 Heavy Industrial to public use will be required. City of Victoria rezoning process is estimated to take 18 months to complete. Public opposition from property owners adjacent to conveyance pipe routes could add time and complexity to the rezoning application process. OCP amendment would be required but would not impact schedule since this process follows the rezoning process. Conceptual design will satisfy typical height and setback requirements for typical public utility zoning. City of Victoria Development Permit will be required. <p>Conclusion: Average</p>
<p>SO-10 Archeological Findings Risk of discovering archeological items during construction.</p>	<ul style="list-style-type: none"> Greenfield (undisturbed) vs. Brownfield (disturbed) Consider archeological studies completed to date 	<p>Evidence:</p> <ul style="list-style-type: none"> Effects on archaeological features are expected to be less than significant at all CAWTP facility sites <ul style="list-style-type: none"> Environmental Impact Study of Core Area Wastewater Treatment Program Facilities – Terrestrial Environment - March 2014- p. 34 (Tera)

Criteria and Description	Considerations	Evidence
		<ul style="list-style-type: none"> Risk of discovering archeological findings along the conveyance pipe routes are unknown and would have to be assessed by a qualified archeologist <p>Conclusion: Good</p>
<p>SO-11</p> <p>Impact to local First Nations</p> <p>How the option impacts local First Nations, either by providing benefits, or lack of consultation.</p>	<ul style="list-style-type: none"> Has the local First Nations been consulted on the proposed sites? Are there opportunities for the local First Nations to benefit through the development of the option? 	<p>Evidence:</p> <ul style="list-style-type: none"> CRD has consulted impacted First Nations extensively for all of the options under review and there is no material difference in how the options meet the criterion. Local First Nations will financially benefit from this option through the sale of land. <p>Conclusion: Good</p>
<p>SO-12</p> <p>Leading Development</p> <p>Opportunity to be a catalyst for future development or improvements in existing development.</p>	<ul style="list-style-type: none"> Opportunity to enable further development or beautification of an area (e.g. project could bring in roads and utilities, which will encourage future development). Opportunities to improve existing communities (e.g. through upgrades to off-site services) 	<p>Evidence:</p> <ul style="list-style-type: none"> Surrounding area has access to gas, hydro, water, and sewer lines; which are in good condition. Upgrades are not required. CRD Staff have advised that the City of Victoria staff believe that this option would be a catalyst for the development of residual surplus land at the BC Hydro/Transport Canada site as well as the existing industrial/commercial land around the site. <p>Conclusion: Good</p>
<p>SO-13</p> <p>Cultural and Heritage impacts</p> <p>Ability to use and/or respect culture and heritage. This would include consideration of existing structures or features on the proposed sites.</p>	<ul style="list-style-type: none"> How the option respects and incorporates existing cultural or heritage structures, site, or artifacts 	<p>Evidence:</p> <ul style="list-style-type: none"> The site contains two existing structures with historical significance that could be incorporated into the plant design. The design of the administration building exterior and site landscaping will reflect and honor history, culture, and heritage. <p>Conclusion: Very Good</p>

OPTION SCREENING SUMMARY SHEET

Option Name: McLoughlin Secondary Plant 108 MLD (Secondary Treatment)

Option Description: Single Regional Treatment Plant (108 MLD BAF Secondary Treatment)

Rating System Proposed:

Very Good (5)	Good (4)	Average (3)	Fair (2)	Poor (1)
The impact of the option is very favourable and far exceeds minimum expectations.	The impact of the option is favourable and clearly exceeds minimum expectations.	The impact of the option is acceptable and meets or somewhat exceeds minimum expectations.	The impact of the option barely meets minimum expectations.	Option fails to meet basic requirements of the criterion.

Criteria and Description	Considerations	Evidence
Economic Criteria		
EC-01 Capital Costs Construction costs including both direct and indirect costs in 2016 dollars.		Capital Cost of Option: \$ 822 million
EC-02 Whole Life Cycle Costs Operating and maintenance costs, expressed as a net present value cost using a 25 year life cycle cost and a 4% discount rate, added to capital costs.		Whole Life Cycle Cost of Option: \$1,058 million
EC-03 CRD Capital Cost Contribution	<ul style="list-style-type: none"> The current approved project capital budget is \$788 million. The draft Federal/Provincial funding agreements total \$502 million. The CRD share of the capital cost is calculated as the Option Capital Cost (EC-01) minus \$502 million. 	CRD Capital Cost Contribution: \$320 million
EC-04 Schedule of Completion	Estimated Service Commencement Date Impacts included in the Schedule assumption: <ul style="list-style-type: none"> Timing needed for rezoning and permitting requirements (e.g. development permit) Environmental permitting requirements Preparation of procurement documents and tendering process Commissioning Date Site conditions that may extend construction(i.e. piling, shoring) 	Evidence: <ul style="list-style-type: none"> Estimated Service Commencement Date: December 31st, 2020. Zoning completed for 108 MLD Waste Water Plant at this site (Esquimalt Zoning Bylaw 1992 (Consolidated), Bylaw No. 2050, Amendment No. 209 (McLoughlin Point – Special Use) (Bylaw 2806) EIS completed. Development Permit will be required. <ul style="list-style-type: none"> Development consistent with conditions identified in the document entitled “Design Guidelines – McLoughlin Point Wastewater Treatment Plant” prepared by

Criteria and Description	Considerations	Evidence
	<ul style="list-style-type: none"> Construction Schedule 	<p>CitySpaces Consulting Ltd. Revised May 2013, copy of which is attached to the Official Community Plan.</p> <ul style="list-style-type: none"> Preferred Proponent identified.
Environmental Criteria		
<p>EN-01 Carbon Footprint Net carbon dioxide equivalent (eCO₂) during the construction and operation of the treatment plant (tonnes/year). Excludes consideration of the biosolids treatment</p>	<ul style="list-style-type: none"> Technology impacts to carbon footprint; Pumping and other conveyance impacts to carbon footprint 	<p>Evidence:</p> <ul style="list-style-type: none"> Estimated carbon footprint Construction (One Time) – 13,562 tonnes Estimated carbon footprint Operations (Annual) – 2,736 tonnes/year This option has lowest carbon footprint and all options under consideration. <p>Conclusion: Good</p>
<p>EN-02 Heat Recovery Potential Heat recovered from the liquid stream treatment results in a low grade heat. This criterion is defined as the options' estimated opportunity to earn revenue, or save operating costs, from heat recovery.</p>	<ul style="list-style-type: none"> Proximity of plant to potential existing customers Proximity of plant to potential future customers 	<p>Evidence:</p> <ul style="list-style-type: none"> Energy offset gained through the use of heat recovered from the plant's final effluent. Energy use can be both internal to the treatment plant and external via a district energy scheme Market studies conducted by Stantec in 2009 concluded that there is limited interest from existing Industrial/Commercial/Institutional (ICI) customers to purchase reclaimed heat due to the high cost of conversion of existing Heating Ventilation Air Conditioning (HVAC) systems. A district heating system could be installed to service downtown redevelopment of Esquimalt & Upper Harbour customers / military base. Plant site is remote from potential users of recovered heat. <p>Conclusion: Average</p>
<p>EN-03 Water Reuse Potential The options' estimated opportunity to earn revenue, or save operating costs, from water reuse. Effluent reuse can be both internal to the treatment plant and external via an end product user. The use of treated water is based on provincial regulations that require tertiary treatment and disinfection.</p>	<ul style="list-style-type: none"> Proximity of option to potential existing customers Proximity of option to potential future customers Potential of option to produce water for reuse opportunities 	<p>Evidence:</p> <ul style="list-style-type: none"> BAF treatment technology will yield secondary effluent quality which is unsuitable for water reuse. Potential users (if tertiary sidestream added) are remote from plant site. <p>Conclusion: Poor</p>
<p>EN-04 Environmental Considerations for Site Impacts to the local environment during construction of the treatment plant.</p>	<ul style="list-style-type: none"> Degree of remediation required to prepare site for construction Disturbance of natural environment Natural or disturbed site Requirement for blasting Extent of shoring and piling required Disturbance of natural habitat and vegetation Elevation of the proposed sites (e.g. need to build tsunami walls) 	<p>Evidence:</p> <ul style="list-style-type: none"> Site was previously bulk petroleum storage facility that has been remediated. Elevation of site mainly favourable to storm surge although a tsunami wall is required. Site is a brownfield site which has been remediated. Site will require some blasting. Piling is not anticipated, localized shoring may be required. Minimal vegetation on the site exists.

Criteria and Description	Considerations	Evidence
	<ul style="list-style-type: none"> Potential impacts due to climate change (sea level rise) 	<ul style="list-style-type: none"> Sea level of 1 m included in plant hydraulic gradient. <p>Conclusion: Average</p>
<p>EN-05</p> <p>Flexibility for Integrated Resource Management and Resource Recovery</p> <p>Suitability of the products produced from the liquid stream treatment for IRM with biosolids, organic waste and solid waste streams.</p>	<ul style="list-style-type: none"> The potential for Integrated Resource Management resides principally with the Biosolids Management Strategy rather than the liquid treatment portion of the project The ability of the option to accommodate an IRM planning process either now or in the future (e.g. future retrofits to accommodate different uses for waste products). 	<p>Evidence:</p> <ul style="list-style-type: none"> IRM and Resource Recovery not materially different for all of the treatment plant options under consideration. Estimated biosolids production at 108 MLD is 10,877 Dry Tonnes (DT)/year. Effluent water will be reused for plant process water. Internal heat recovery system will be included in plant heating design. <p>Conclusion: Good</p>
<p>EN-06</p> <p>Wet weather treatment resiliency</p> <p>Ability to modify the treatment plant's operating procedures to adjust to varying wet weather flow conditions.</p>	<ul style="list-style-type: none"> Ability of technology to ramp up/down during wet weather flow events experienced in the CRD while maintaining effluent regulatory requirements. 	<p>Evidence:</p> <ul style="list-style-type: none"> Primary plant capacity with multiple units and ability to turn on & off Chemically Enhanced Primary Treatment (CEPT); excellent for range of flow up to 4 x ADWF. BAF secondary treatment is robust for varying flow conditions. Capacity is sized for 2 X ADWF and can handle short term peaks in excess of 2 x ADWF. <p>Conclusion: Good</p>
<p>EN-07</p> <p>Flexibility for more stringent treatment regulations in future</p> <p>The flexibility to expand or readily modify the treatment process to meet future permits requirements.</p>	<ul style="list-style-type: none"> Ability of treatment process to be modified or expanded to meet higher treatment standards. Cost impacts of future modifications Schedule impacts of future modifications How does the future retrofit impact plant operations 	<p>Evidence:</p> <ul style="list-style-type: none"> Most of site will be utilized by BAF Secondary plant, but space can be provided for future tertiary disc filters. Future upgrade might include tertiary filtration and disinfection for water reuse, plus more stringent treatment for Contaminants of Emerging Concern (CEC) using advanced oxidation (ozone hydrogen peroxide). Future modifications can be accommodated however must be planned now because of site size constraints. The adjacent site is vacant and not used by Department of Defence. Land could be used in future for expansion but would have to be purchased from DND. BAF design is modular and can be upgraded in phased approach. <p>Conclusion: Average</p>
<p>EN-08</p> <p>Terrestrial vegetation and Inter-tidal impacts</p> <p>Impact that a given site would have on existing terrestrial and inter-tidal habitat, and the degree of mitigation that may be required.</p>	<ul style="list-style-type: none"> Impact on the vegetation and habitat for terrestrial areas of the site during construction Degree of mitigation required for terrestrial and marine environment 	<p>Evidence:</p> <ul style="list-style-type: none"> McLoughlin Point is a disturbed site which has been remediated. Terrestrial vegetation limited on site. Conveyance route vegetation limited (Dallas Road) Outfall route close to current outfall. Mitigation measures minimal for inter-tidal zone tunnel outfall to below inter tidal zone. <p>Conclusion: Good</p>

Criteria and Description	Considerations	Evidence
<p>EN-09 Environmental Performance Whether and extent to which regulatory requirements meet or exceed regulatory requirements</p>	<ul style="list-style-type: none"> Degree that the option's treatment technology exceeds current regulatory requirements. 	
Social Criteria (Including Health and Safety)		
<p>SO-01 Operations Traffic Amount of traffic nuisance caused to neighbouring residents post-construction.</p>	<ul style="list-style-type: none"> Classification of local community, e.g. residential, industrial, or commercial properties Number, and types, of schools along the access route Types of roads; for example, residential, arterial 	<p>Evidence:</p> <ul style="list-style-type: none"> Daily traffic for staff access estimated at 8 to 10 vehicle movements per day. Site is located approximately 500 meters from nearest residential property. Access road to the site is a residential street with some commercial property near the plant site. Biosolids piping and transmission minimizes biosolids related traffic. Delivery of bulk chemicals once or twice per month. Relatively small impact considering access route and development along the route. <p>Conclusion: Average</p>
<p>SO-02 Operations Impacts on local community Potential for operational noise and vibration which can be heard and felt by the neighbouring residents during operation of the treatment facility.</p>	<ul style="list-style-type: none"> Impact of noise and vibration on local community Classification of local community (e.g. residential or industrial) Distance of nearest neighbour to source of noise and vibration (e.g. 25 m) 	<p>Evidence:</p> <ul style="list-style-type: none"> Residences are isolated by military base and vacant bare land. Plant site is remote from residences, noise impacts will be low. All mechanical equipment designed to minimize vibration and noise. All mechanical equipment contained inside buildings. Vibration and noise levels specified in plant specs. <p>Conclusion: Very Good</p>
<p>SO-03 Odour Impacts on local community Impact of nuisance odours on residents or business in close proximity to the plant. This covers nuisance odour related to opening tank covers during maintenance. Locations closer to residents would have a higher probability of nuisance odours. It is assumed all plants would have odour control facilities for normal operations.</p>	<ul style="list-style-type: none"> Proximity to local community (e.g. 25m) and classification of local community (e.g. commercial, industrial, residential) Potential odour due to fugitive emission Degree of omission containment Degree of odour control equipment Dispersion specs and impact nearest residences 	<p>Evidence:</p> <ul style="list-style-type: none"> All unit processes contained in buildings. Odour control system will include odour scrubbing. Emission modeling has ensured low odour numbers at property boundaries. Impact of fugitive emissions due to operations are low because plant is not located adjacent to residences. <p>Conclusion: Very Good</p>
<p>SO-04 Visual Aesthetics Aesthetic visual impact for neighbouring residents and visual impact from adjacent roadways.</p>	<ul style="list-style-type: none"> Impact of views from both land side and water side Buffer zones of lawns and landscaping Care and attention to architecture of buildings required Care and attention to architectural treatment of tsunami walls 	<p>Evidence:</p> <ul style="list-style-type: none"> All process units covered or inside building. Architecture and site landscaping are designed to high standards. Tsunami wall can be given architectural treatment to blend with natural landscape.

Criteria and Description	Considerations	Evidence
		<ul style="list-style-type: none"> The Development Permit process which will ensure that the facility blends with the community through architectural finishes, landscaping and site amenities. View from the water will be a low rise institutional building which may distract from the natural bare land setting. <p>Conclusion: Average</p>
<p>SO-05 Amenities Potential How the option can impact consideration of community integration opportunities.</p>	<ul style="list-style-type: none"> The opportunities for amenity enhancements such as public access, mixed use zoning, public art, waterfront access The ability to facilitate (encourage) additional public amenities Size of site to accommodate walking trails, etc. Space to accommodate complimentary opportunities (e.g. educational facilities, research from UVic, learning centres for public on wastewater treatment) 	<p>Evidence:</p> <ul style="list-style-type: none"> The following amenity provisions were included in the Township of Esquimalt 2013 rezoning of the McLoughlin Point site to Special Use (Wastewater Treatment) <ul style="list-style-type: none"> The provision of public open space improvements of a value no less than \$75,000, including picnic benches and “tot” park play lot with appropriately themed play equipment and safety features given proximity to open water. Pier or dock, of sufficient size to fulfill previous condition, including with provision of harbour tugboat pedestrian ferry service. Public Walkway: Design of building and development of site to incorporate public accessible trails, and off-site. Construction of trail connection to West Bay Neighbourhood. Additional traffic integration amenities, in the form of additional traffic calming and bike lanes on all remaining. Streets between Lampson Road and Esquimalt Road. Education and Interpretive Centre – additional 25 square metres of floor area for total of 75 square metres, including portion for a “Center of Excellence” to educate, promote and facilitate energy technology or other industries focussed on utilizing the wind and wave energy at the subject property. High efficiency air filters systems to improve air quality and odour reduction for schools within the Extended Community. Extension of Green Building and Design Features to additional portions of development. Integration of reclaimed water into the design of the buildings, including a rooftop wetland and landscaped feature. Heritage Interpretative Signage, recognizing the historic uses on the subject property and process to transition to current uses. CRD has capped amenities package at \$20 million. <p>Conclusion: Good</p>
<p>SO-06 Construction Impacts (Conveyance) Impacts to the local community of the plant and along the conveyance route alignments during construction, including the alignments that pass through more environmentally</p>	<ul style="list-style-type: none"> Consider the impacts (noise, dust and vibration) of conveyance construction to the local community (focusing on residential and commercial) Interruption of “quiet enjoyment” of private property owners Impacts to vegetation and property, including any costs of remediation Possible damage to property(consider causes, e.g. blasting or vibration) 	<p>Evidence:</p> <ul style="list-style-type: none"> Laydown area for conveyance pipe for Harbour crossing HDD operation will impact up to 1 km of Dallas Road. Launch shaft for Harbour crossing horizontal drilling will impact Ogden Point area for up to 6 months. These will be approximately 10 trucks/day hauling excavated material away

Criteria and Description	Considerations	Evidence
sensitive areas.		from the shaft site. <ul style="list-style-type: none"> Impacts to roadways in Esquimalt for forcemain construction from Macaulay pump station to McLoughlin site. Conclusion: Average
SO-07 Construction Impacts (Plant) Impacts to the local community of the plant during construction.	<ul style="list-style-type: none"> Consider the impacts of plant construction to the local community Impacts to environmentally sensitive areas Impacts to nearby properties (focusing on residential and commercial) Community impacts resulting from noise and dust Impacts to vegetation and property, including any costs of remediation Possible damage to property (consider causes, e.g., blasting or vibration) 	Evidence: <ul style="list-style-type: none"> Impacts on nearby properties are minimal, good isolation to nearest residence (500 m). Isolation of plant minimizes potential for fugitive dust, vibration and noise during construction. The Contractor may be required to barge material and equipment to / from site and minimize construction traffic through residential neighbourhoods. Admiral's residence is only home in close proximity to the plant. Conclusion: Good
SO-08 Impacts to existing public amenities Options' impact the community's ability to enjoy existing public amenities such as park land, either existing or future.	<ul style="list-style-type: none"> Impacts on existing public amenities (e.g. parks, playgrounds, or access) during the construction and operations of the facility Impacts on municipality's revenue opportunities associated with the public amenities. 	Evidence: <ul style="list-style-type: none"> McLoughlin Point site is landlocked and surrounded by the DND military base so this will not negatively impact enjoyment of existing public amenities. Conclusion: Very Good
SO-09 Compatibility with Official Community Plan Does the option fit within the approved Official Community Plan or existing zoning?	<ul style="list-style-type: none"> Compatibility with existing Official Community Plan Requirement for rezoning or variance on zoning, including risk of receiving variance in a timely manner Development permitting process, including risk of achieving DP in a timely manner Anticipated opposition to rezoning by host municipality or impacted property owners 	Evidence: <ul style="list-style-type: none"> Zoning in place for WWTP use. OCP has been amended for intended land use. Esquimalt constraints have been satisfied by redesign of the Indicative Design to meet height and shoreline encroachment restrictions. Development Permit process with Township of Esquimalt may cause some schedule delays. Conclusion: Very Good
SO-10 Archeological Findings Risk of discovering archeological items during construction.	<ul style="list-style-type: none"> Greenfield (undisturbed) vs. Brownfield (disturbed) Consider archeological studies completed to date 	Evidence: <ul style="list-style-type: none"> Previous EIS studies gathered information about and assessed the traditional and cultural use of marine resources in this area, as well as the traditional transportation routes and marine resource harvesting. McLoughlin was identified as a traditional gathering area. <ul style="list-style-type: none"> CRD Core Area Wastewater Treatment Program - Stage 2 Environmental Impact Study - 18 Feb 2013- p. 34 (Worley Parsons). Effects on archaeological features are expected to be less than significant at all CAWTP facility sites. <ul style="list-style-type: none"> Environmental Impact Study of Core Area Wastewater Treatment Program Facilities - Terrestrial Environment - March 2014- p. 34 (Tera).

Criteria and Description	Considerations	Evidence
<p>SO-11 Impact to local First Nations How the option impacts local First Nations, either by providing benefits, or lack of consultation.</p>	<ul style="list-style-type: none"> • Has the local First Nations been consulted on the proposed sites? • Are there opportunities for the local First Nations to benefit through the development of the option? 	<p>Conclusion: Average</p> <p>Evidence:</p> <ul style="list-style-type: none"> • CRD has consulted impacted First Nations extensively for all of the options under review and there is no material difference in how the options meet the criterion. <p>Conclusion: Average</p>
<p>SO-12 Leading Development Opportunity to be a catalyst for future development or improvements in existing development.</p>	<ul style="list-style-type: none"> • Opportunity to enable further development or beautification of an area (e.g. project could bring in roads and utilities, which will encourage future development) • Opportunity to improve existing communities (e.g. through upgrades to off-site services) 	<p>Evidence:</p> <ul style="list-style-type: none"> • Surrounding area has access to gas, hydro, water, and sewer mains. Upgrades are not required. • Potential for district heating in Town Centre and DND base. • No developable land in close proximity to plant. <p>Conclusion: Average</p>
<p>SO-13 Cultural and Heritage impacts Ability to use and/or respect culture and heritage. This would include consideration of existing structures or features on the proposed sites.</p>	<ul style="list-style-type: none"> • How the option impacts the physical and cultural heritage value • How the option impacts any cultural or heritage structures, site, or artifacts 	<p>Evidence:</p> <ul style="list-style-type: none"> • The site does not contain any existing structures with historical significance that could be used in the design. • The design of the building exterior and site landscaping could reflect and honor history, culture, and heritage. <p>Conclusion: Average</p>

OPTION SCREENING SUMMARY SHEET

Option Name: McLoughlin Tertiary Plant 108 MLD (Tertiary Treatment – Disc Filters)

Option Description: Single Regional Treatment Plant (108 MLD BAF + Tertiary Disc Filters)

Rating System Proposed:

Very Good (5)	Good (4)	Average (3)	Fair (2)	Poor (1)
The impact of the option is very favourable and far exceeds minimum expectations.	The impact of the option is favourable and clearly exceeds minimum expectations.	The impact of the option is acceptable and meets or somewhat exceeds minimum expectations.	The impact of the option barely meets minimum expectations.	Option fails to meet basic requirements of the criterion.

Criteria and Description	Considerations	Evidence
Economic Criteria		
EC-01 Capital Costs Construction costs including both direct and indirect costs in 2016 dollars.		Capital Cost of Option: \$ 842 million
EC-02 Whole Life Cycle Costs Operating and maintenance costs, expressed as a net present value cost using a 25 year life cycle cost and a 4% discount rate, added to capital costs.		Whole Life Cycle Cost of Option: \$1,078 million
EC-03 CRD Capital Cost Contribution	<ul style="list-style-type: none"> The current approved project capital budget is \$788 million. The draft Federal/Provincial funding agreements total \$502 million. The CRD share of the capital cost is calculated as the Option Capital Cost (EC-01) minus \$502 million. 	CRD Capital Cost Contribution: \$340 million
EC-04 Schedule of Completion	Estimated Service Commencement Date Impacts included in the Schedule assumption: <ul style="list-style-type: none"> Timing needed for rezoning and permitting requirements (e.g. development permit) Environmental permitting requirements Preparation of procurement documents and tendering process Commissioning Date Site conditions that may extend construction(i.e. piling, shoring) Construction Schedule 	Evidence: <ul style="list-style-type: none"> Estimated Service Commencement Date: December 31st, 2020 Zoning completed for 108 MLD Waste Water Plant at this site (Township of Esquimalt Zoning Bylaw 1992 (Consolidated), Bylaw No. 2050, Amendment No. 209 (McLoughlin Point – Special Use) (Bylaw 2806) EIS completed. Development Permit will be required. <ul style="list-style-type: none"> Development consistent with conditions identified in the document entitled "Design Guidelines – McLoughlin Point Wastewater Treatment Plant" prepared by CitySpaces Consulting Ltd. Revised May 2013, copy of which is attached to the Official Community Plan

Criteria and Description	Considerations	Evidence
Environmental Criteria		
<p>EN-01</p> <p>Carbon Footprint</p> <p>Net carbon dioxide equivalent (eCO₂) during the construction and operation of the treatment plant (tonnes/year). Excludes consideration of the biosolids treatment</p>	<ul style="list-style-type: none"> Technology impacts to carbon footprint; Pumping and other conveyance impacts to carbon footprint 	<p>Evidence:</p> <ul style="list-style-type: none"> Estimated carbon footprint Construction (One Time) – 14,119 tonnes Estimated carbon footprint Operations (Annual) – 2,772 tonnes/year <p>Conclusion: Good</p>
<p>EN-02</p> <p>Heat Recovery Potential</p> <p>Heat recovered from the liquid stream treatment results in a low grade heat. This criterion is defined as the options' estimated opportunity to earn revenue, or save operating costs, from heat recovery.</p>	<ul style="list-style-type: none"> Proximity of plant to potential existing customers Proximity of plant to potential future customers 	<p>Evidence:</p> <ul style="list-style-type: none"> Energy offset gained through the use of heat recovered from the plant's final effluent. Energy use can be both internal to the treatment plant and external via a district energy scheme. Market studies conducted by Stantec in 2009 concluded that there is limited interest from existing Industrial/Commercial/Institutional (ICI) customers to purchase reclaimed heat due to the high cost of conversion of existing Heating Ventilation Air Conditioning (HVAC) systems. A district heating system could be installed to service downtown redevelopment of Esquimalt & Upper Harbour customers / military base. Plant site is remote from potential users of recovered heat. <p>Conclusion: Average</p>
<p>EN-03</p> <p>Water Reuse Potential</p> <p>The options' estimated opportunity to earn revenue, or save operating costs, from water reuse. Effluent reuse can be both internal to the treatment plant and external via an end product user. The use of treated water is based on provincial regulations that requires tertiary treatment and disinfection.</p>	<ul style="list-style-type: none"> Proximity of option to potential existing customers Proximity of option to potential future customers Potential of option to produce water for reuse opportunities 	<p>Evidence:</p> <ul style="list-style-type: none"> Market studies conducted by Stantec in 2009 concluded that there is limited demand from existing Industrial/Commercial/Institutional (ICI) customers to purchase reclaimed water. Water reuse is typical in semi-arid regions where water supplies are limited. CRD has an abundant water supply and the irrigation season in the Region is relatively short (4 months). The largest users of reclaimed water are agricultural and golf courses. There is potential for use in public parks. The costs to retrofit existing residential properties (~\$2500/dwelling) make the economics of conversion of existing residences unfavourable. Cost of retrofitting plumbing systems and installing "purple pipe" reclaimed water distribution piping is high. Site is remote from potential users of reclaimed water. Option is located in a remote area and the cost of retrofitting existing systems is high. BAF + tertiary disc filters treatment technology will yield tertiary effluent quality which is suitable for water reuse. <p>Conclusion: Average</p>

Criteria and Description	Considerations	Evidence
<p>EN-04 Environmental Considerations for Site Impacts to the local environment during construction of the treatment plant,.</p>	<ul style="list-style-type: none"> • Degree of remediation required to prepare site for construction • Disturbance of natural environment • Natural or Disturbed site • Requirement for blasting • Extent of shoring and piling required • Disturbance of natural habitat and vegetation • Elevation of the proposed sites (e.g. need to build tsunami walls) • Potential impacts from climate change (sea level rise) 	<p>Evidence:</p> <ul style="list-style-type: none"> • Site was previously bulk petroleum storage facility that has been remediated. • Elevation of site mainly favourable to storm surge although a tsunami wall is required. • Site is a brownfield site which has been remediated. • Site will require some blasting. • Piling is not anticipated, localized shoring may be required. • Minimal vegetation on the site exists. • See level rise of 1 m included in plant hydraulic gradient. <p>Conclusion: Average</p>
<p>EN-05 Flexibility for Integrated Resource Management and Resource Recovery Suitability of the products produced from the liquid stream treatment for IRM with biosolids, organic waste and solid waste streams.</p>	<ul style="list-style-type: none"> • The potential for Integrated Resource Management resides principally with the Biosolids Management Strategy rather than the liquid treatment portion of the project • The ability of the option to accommodate an IRM planning process either now or in the future (e.g. future retrofits to accommodate different uses for waste products). 	<p>Evidence:</p> <ul style="list-style-type: none"> • Estimated biosolids production at 108 MLD is 10,877 Dry Tonnes (DT)/year. • Tertiary Disc Filters will recover an additional 2,160 kg/day of biosolids. • Effluent water will be reused for plant process water. • Internal heat recovery system will be included in plant heating design. • Option is located in a remote area and the cost of retrofitting existing systems is high. <p>Conclusion: Good</p>
<p>EN-06 Wet weather treatment resiliency Ability to modify the treatment plant's operating procedures to adjust to varying wet weather flow conditions.</p>	<ul style="list-style-type: none"> • Ability of technology to ramp up/down during wet weather flow events experienced in the CRD while maintaining effluent regulatory requirements. 	<p>Evidence:</p> <ul style="list-style-type: none"> • Primary plant capacity with multiple units and ability to turn on & off Chemically Enhanced Primary Treatment (CEPT); excellent for range of flow up to 4 x ADWF. • BAF secondary treatment is robust for varying flow conditions. Capacity is sized for 2 X ADWF and can handle short term peaks in excess of 2 x ADWF. <p>Conclusion: Good</p>
<p>EN-07 Flexibility for more stringent treatment regulations in future The flexibility to expand or readily modify the treatment process to meet future permits requirements.</p>	<ul style="list-style-type: none"> • Ability of treatment process to be modified or expanded to meet higher treatment standards. • Cost impacts of future modifications • Schedule impacts of future modifications • How does the future retrofit impact plant operations 	<p>Evidence:</p> <ul style="list-style-type: none"> • 108 MLD BAF + Tertiary disc filters treatment plant can be accommodated on existing site. • The adjacent site is vacant not used Department of Defence (DND). Land that could be utilized in the future for expansion needs but would have to be purchased from DND. • Advanced oxidation can be added. • BAF design and filters are modular and can be upgraded in a phased approach. <p>Conclusion: Good</p>

Criteria and Description	Considerations	Evidence
<p>EN-08 Terrestrial vegetation and Inter-tidal impacts Impact that a given site would have on existing terrestrial and inter-tidal habitat, and the degree of mitigation that may be required.</p>	<ul style="list-style-type: none"> Impact on the vegetation and habitat for terrestrial areas of the site during construction Degree of mitigation required for terrestrial and marine environment 	<p>Evidence:</p> <ul style="list-style-type: none"> McLoughlin Point is a disturbed site which has been remediated. There is limited terrestrial vegetation on site. There is limited vegetation along the conveyance route, which would follow Dallas Road. This option will have a new outfall which will be installed using tunnelling methods. No impact to intertidal vegetation is expected. <p>Conclusion: Good</p>
<p>EN-09 Environmental Performance Whether and extent to which regulatory requirements meet or exceed regulatory requirements</p>	<ul style="list-style-type: none"> Degree that the option's treatment technology exceeds current regulatory requirements. 	<p>Evidence:</p> <ul style="list-style-type: none"> BAF with disc filters design will meet 5/5 mg/L BOD/TSS which exceeds the WSER regulatory requirement. <p>Conclusion: Good</p>
<p>Social Criteria (Including Health and Safety)</p>		
<p>SO-01 Operations Traffic Amount of traffic nuisance caused to neighbouring residents post-construction.</p>	<ul style="list-style-type: none"> Classification of local community, e.g. residential, industrial, or commercial properties Number, and types, of schools along the access route Types of roads; for example, residential, arterial 	<p>Evidence:</p> <ul style="list-style-type: none"> Daily traffic for staff access estimated at 8 to 10 vehicle movements per day. Site is located approximately 500 meters from nearest residential property. Access road to the site is a residential street with some commercial property near the plant site. Biosolids piping and transmission minimizes biosolids related traffic. Delivery of bulk chemicals once or twice per month. Relatively small impact considering access route and development along the route. <p>Conclusion: Average</p>
<p>SO-02 Operations Impacts on local community Potential for operational noise and vibration which can be heard and felt by the neighbouring residents during operation of the treatment facility.</p>	<ul style="list-style-type: none"> Impact of noise and vibration on local community Classification of local community (e.g. residential or industrial) Distance of nearest neighbour to source of noise and vibration (e.g. 25 m) 	<p>Evidence:</p> <ul style="list-style-type: none"> There is a buffer comprised of the military base and vacant bare land between the treatment site and the residents. Plant site is remote from residences, noise impacts will be low. All mechanical equipment designed to minimize vibration and noise. All mechanical equipment contained inside buildings. Plant designed for limited vibration and noise levels. <p>Conclusion: Very Good</p>
<p>SO-03 Odour Impacts on local community Impact of nuisance odours on residents or business in close proximity to the plant. This covers nuisance odour related to opening tank covers during maintenance. Locations closer to residents would have a higher probability of nuisance odours.</p>	<ul style="list-style-type: none"> Proximity to local community (e.g. 25m) and classification of local community (e.g. commercial, industrial, residential) Potential odour due to fugitive emission Degree of omission containment Degree of odour control equipment 	<p>Evidence:</p> <ul style="list-style-type: none"> All unit processes contained in buildings. Plant designed to stringent odour control requirements. Odour control system to include odour scrubbing. Emission modeling has ensured low odour numbers at property boundaries.

Criteria and Description	Considerations	Evidence
<p>It is assumed all plants would have odour control facilities for normal operations.</p>	<ul style="list-style-type: none"> Dispersion specs and impact on nearest residences 	<ul style="list-style-type: none"> Due to the distance between the treatment site and nearby residences, there is a low probability of complaints relating to fugitive odour emissions. <p>Conclusion: Very Good</p>
<p>SO-04 Visual Aesthetics Aesthetic visual impact for neighbouring residents and visual impact from adjacent roadways.</p>	<ul style="list-style-type: none"> Impact of views from both land side and water side Buffer zones of lawns and landscaping Care and attention to architecture of buildings required Care and attention to architectural treatment of tsunami walls 	<p>Evidence:</p> <ul style="list-style-type: none"> All process units covered or inside building. Architecture and site landscaping are designed to high standards. Tsunami wall can be given architectural treatment to blend with natural landscape. The Development Permit process which will ensure that the facility blends with the community through architectural finishes, landscaping and site amenities. View from the water will be a low rise institutional building which may distract from the natural bare land setting. <p>Conclusion: Average</p>
<p>SO-05 Amenities Potential How the option can impact consideration of community integration opportunities.</p>	<ul style="list-style-type: none"> The opportunities for amenity enhancements such as public access, mixed use zoning, public art, waterfront access The ability to facilitate (encourage) additional public amenities Size of site to accommodate walking trails, etc. Space to accommodate complimentary opportunities (e.g. educational facilities, research from UVic, learning centres for public on wastewater treatment) 	<p>Evidence:</p> <ul style="list-style-type: none"> The following amenity provisions were included in the Township of Esquimalt 2013 rezoning of the McLoughlin Point site to Special Use (Wastewater Treatment). <ul style="list-style-type: none"> The provision of public open space improvements of a value no less than \$75,000, including picnic benches and “tot” park play lot with appropriately themed play equipment and safety features given proximity to open water. Pier or dock, of sufficient size to fulfill previous condition, including with provision of harbour tugboat pedestrian ferry service. Public Walkway: Design of building and development of site to incorporate public accessible trails, and off-site. Construction of trail connection to West Bay Neighbourhood. Additional traffic integration amenities, in the form of additional traffic calming and bike lanes on all remaining. Streets between Lampson Road and Esquimalt Road. Education and Interpretive Centre – additional 25 square metres of floor area for total of 75 square metres, including portion for a “Center of Excellence” to educate, promote and facilitate energy technology or other industries focussed on utilizing the wind and wave energy at the subject property. High efficiency air filters systems to improve air quality and odour reduction for schools within the Extended Community. Extension of Green Building and Design Features to additional portions of development. Integration of reclaimed water into the design of the buildings, including a rooftop wetland and landscaped feature. Heritage Interpretative Signage, recognizing the historic uses on the subject

Criteria and Description	Considerations	Evidence
		<p>property and process to transition to current uses.</p> <ul style="list-style-type: none"> ○ Annual contribution of \$55,000 to McLoughlin Point Amenity Reserve Fund. ○ CRD has capped amenity package at \$20 million. <p>Conclusion: Good</p>
<p>SO-06 Construction Impacts (Conveyance) Impacts to the local community of the plant and along the conveyance route alignments during construction, including the alignments that pass through more environmentally sensitive areas.</p>	<ul style="list-style-type: none"> • Consider the impacts (noise, dust and vibration) of conveyance construction to the local community (focusing on residential and commercial) • Interruption of “quiet enjoyment” of private property owners • Impacts to vegetation and property, including any costs of remediation • Possible damage to property(consider causes, e.g. blasting or vibration) 	<p>Evidence:</p> <ul style="list-style-type: none"> • Laydown area in James Bay needed for the conveyance pipe, required for Harbour crossing HDD operation, will impact up to 1 km of Dallas Road for laydown. • Launch shaft for Harbour crossing horizontal drilling will impact Ogden Point area for up to 6 months. There will be approximately 10 trucks/day hauling excavated material away from the launch shaft site. • Installation of the conveyance piping from Clover Point Pump Station to Harbour Crossing will be along Dallas Road but in the boulevard south of travelled roadway, which will impact traffic along that route for 4 months. • Construction planning will mitigate disruption to neighbouring properties. • Admiral’s residence is only in close proximity to the plant. <p>Conclusion: Average</p>
<p>SO-07 Construction Impacts (Plant) Impacts to the local community of the plant during construction.</p>	<ul style="list-style-type: none"> • Consider the impacts (noise, dust and vibration) of plant construction to the local community (focusing on residential and commercial) • Impacts to environmentally sensitive areas • Interruption of “quiet enjoyment” of private property owners • Impacts to vegetation and property, including any costs of remediation • Possible damage to property (consider causes, e.g., blasting or vibration) 	<p>Evidence:</p> <ul style="list-style-type: none"> • Due to the remoteness of the treatment site (e.g. 500-600 m), the impacts on nearby properties are minimal. • Due to the remoteness of the treatment site (e.g. 500-600 m), there is a low risk of significant dust, vibration, and noise impacts to the neighbours. • The contractor may be required to barge material and equipment to/from site and minimize construction traffic through residential neighbourhoods. • Admiral’s residence is the only home in close proximity to the plant. <p>Conclusion: Good</p>
<p>SO-08 Impacts to existing public amenities Options’ impact the community’s ability to enjoy existing public amenities such as park land, either existing or future.</p>	<ul style="list-style-type: none"> • Impacts on existing public amenities (e.g. parks, playgrounds, or access) during the construction and operations of the facility • Impacts on municipality’s revenue opportunities associated with the public amenities. 	<p>Evidence:</p> <ul style="list-style-type: none"> • No impact to the community’s enjoyment of existing public amenities because the treatment site is surrounded by the DND vacant lands. <p>Conclusion: Very Good</p>
<p>SO-09 Compatibility with Official Community Plan Does the option fit within the approved Official Community Plan or existing zoning?</p>	<ul style="list-style-type: none"> • Compatibility with existing Official Community Plan • Requirement for rezoning or variance on zoning, including risk of receiving variance in a timely manner • Development permitting process, including risk of achieving DP in a timely manner • Anticipated opposition to rezoning by host municipality or impacted property 	<p>Evidence:</p> <ul style="list-style-type: none"> • Zoning in place for 108 MLD Wastewater Treatment Plant (Township of Esquimalt Zoning Bylaw 1992 (Consolidated), Bylaw No. 2050, Amendment No. 209 (McLoughlin Point – Special Use) (Bylaw 2806) • OCP has been amended. • Revised Indicative Design for treatment site meets approved height and shoreline

Criteria and Description	Considerations	Evidence
	owners	encroachment zoning requirements. <ul style="list-style-type: none"> Development Permit process with Township of Esquimalt may cause some schedule delays. Conclusion: Very Good
SO-10 Archeological Findings Risk of discovering archeological items during construction.	<ul style="list-style-type: none"> Greenfield (undisturbed) vs. Brownfield (disturbed) Consider archeological studies completed to date 	Evidence: <ul style="list-style-type: none"> Previous EIS studies gathered information about and assessed the traditional and cultural use of marine resources in this area, as well as the traditional transportation routes and marine resource harvesting. McLoughlin was identified as a traditional gathering area. <ul style="list-style-type: none"> CRD Core Area Wastewater Treatment Program - Stage 2 Environmental Impact Study – 18 Feb 2013- p. 34 (Worley Parsons) Effects on archaeological features are expected to be less than significant at all CAWTP facility sites <ul style="list-style-type: none"> Environmental Impact Study of Core Area Wastewater Treatment Program Facilities – Terrestrial Environment - March 2014- p. 34 (Tera) Risk of discovering archeological findings along the Dallas Road conveyance pipe route are unknown and would have to be assessed by a qualified archaeologist. Conclusion: Average
SO-11 Impact to local First Nations How the option impacts local First Nations, either by providing benefits, or lack of consultation.	<ul style="list-style-type: none"> Has the local First Nations been consulted on the proposed sites? Are there opportunities for the local First Nations to benefit through the development of the option? 	Evidence: <ul style="list-style-type: none"> CRD has consulted impacted First Nations extensively for all of the options under review and there is no material difference in how the options meet the criterion. Conclusion: Average
SO-12 Leading Development Opportunity to be a catalyst for future development or improvements in existing development.	<ul style="list-style-type: none"> Opportunity to enable further development or beautification of an area (e.g. project could bring in roads and utilities, which will encourage future development) Opportunities to improve existing communities (e.g. through upgrades to off-site services) 	Evidence: <ul style="list-style-type: none"> Surrounding area has access to gas, hydro, water, and sewer mains. Upgrades are not required. Potential for district heating in Town Centre and DND base. No developable land in close proximity to plant. Conclusion: Average
SO-13 Cultural and Heritage impacts Ability to use and/or respect culture and heritage. This would include consideration of existing structures or features on the proposed sites.	<ul style="list-style-type: none"> How the option respects and incorporates existing cultural or heritage structures, site, or artifacts 	Evidence: <ul style="list-style-type: none"> The site does not contain any existing structures with historical significance that could be used in the design. The design of the building exterior and site landscaping could reflect and honour history, culture, and heritage. Conclusion: Average

OPTION SCREENING SUMMARY SHEET

Option Name: Two Plants: McLoughlin 60 MLD, Clover Point 48 MLD Tertiary Plant (Tertiary Treatment)

Option Description: Two Plants: McLoughlin 60 MLD MBR / Clover Point 48 MLD MBR (Tertiary Treatment)

Rating System Proposed:

Very Good (5)	Good (4)	Average (3)	Fair (2)	Poor (1)
The impact of the option is very favourable and far exceeds minimum expectations.	The impact of the option is favourable and clearly exceeds minimum expectations.	The impact of the option is acceptable and meets or somewhat exceeds minimum expectations.	The impact of the option barely meets minimum expectations.	Option fails to meet basic requirements of the criterion.

Criteria and Description	Considerations	Evidence
Economic Criteria		Conclusion
EC-01 Capital Costs Construction costs including both direct and indirect costs in 2016 dollars.		Capital Cost of Option: \$ 1,078 million
EC-02 Whole Life Cycle Costs Operating and maintenance costs, expressed as a net present value cost using a 25 year life cycle cost and a 4% discount rate, added to capital costs.		Whole Life Cycle Cost of Option: \$1,434 million
EC-03 CRD Capital Cost Contribution	<ul style="list-style-type: none"> The current approved project capital budget is \$788 million. The draft Federal/Provincial funding agreements total \$502 million. The CRD share of the capital cost is calculated as the Option Capital Cost (EC-01) minus \$502 million. 	CRD Capital Cost Contribution: \$576 million
EC-04 Schedule of Completion	<p>Estimated Service Commencement Date</p> <p>Impacts included in the Schedule assumption:</p> <ul style="list-style-type: none"> Timing needed for rezoning and permitting requirements (e.g. development permit) Environmental permitting requirements Preparation of procurement documents and tendering process Commissioning Date Site conditions that may extend construction(i.e. piling, shoring) 	<p>Estimated Service Commencement Date: December 31st, 2023</p> <p>Evidence:</p> <p>McLoughlin Point</p> <ul style="list-style-type: none"> Zoning completed for 108 MLD Waste Water Plant at this site (Township of Esquimalt Zoning Bylaw 1992 (Consolidated), Bylaw No. 2050, Amendment No. 209 (McLoughlin Point – Special Use) (Bylaw 2806) Environmental Impact Study (“EIS”) completed. Development Permit (“DP”) will be required.

Criteria and Description	Considerations	Evidence
	<ul style="list-style-type: none"> Construction Schedule 	<ul style="list-style-type: none"> Development consistent with conditions identified in the document entitled “Design Guidelines – McLoughlin Point Wastewater Treatment Plant” prepared by CitySpaces Consulting Ltd. Revised May 2013, copy of which is attached to the Official Community Plan. <p>Clover Point</p> <ul style="list-style-type: none"> Existing zoning is R1-B Zone, Single Family Dwelling District. Rezoning would be required. The estimated time to complete is 18 months. Based on feedback from the Public consultation process, public opposition to rezoning is anticipated to be high. EIS will need to be completed. DP will be required. Procurement process would have to be redone. Cost and schedule impacts. Underground plant construction is required which results in a longer construction period.
Environmental Criteria		
<p>EN-01 Carbon Footprint Net carbon dioxide equivalent (eCO₂) during the construction and operation of the treatment plant (tonnes/year). Excludes consideration of the biosolids treatment</p>	<ul style="list-style-type: none"> Technology impacts to carbon footprint; Pumping and other conveyance impacts to carbon footprint 	<p>Evidence:</p> <ul style="list-style-type: none"> Estimated carbon footprint Construction (One Time) – 24,306 tonnes. Estimated carbon footprint Operations (Annual) – 3,407 tonnes/year. Operations when utilizing MBR technology generates a higher carbon operations footprint, approximately 500 tonnes/year, than BAF secondary treatment. The underground treatment plant will also have higher carbon footprint in odour control, ventilation etc. approximately – 340 tonnes/year. <p>Conclusion: Fair</p>
<p>EN-02 Heat Recovery Potential Heat recovered from the liquid stream treatment results in a low grade heat. This criterion is defined as the options’ estimated opportunity to earn revenue, or save operating costs, from heat recovery.</p>	<ul style="list-style-type: none"> Proximity of plant to potential existing customers Proximity of plant to potential future customers 	<p>Evidence:</p> <ul style="list-style-type: none"> Energy offset gained through the use of heat recovered from the plant’s final effluent. Energy use can be both internal to the treatment plant and external via a district energy scheme. Market studies conducted by Stantec in 2009 concluded that there is limited demand from existing Industrial/Commercial/Institutional (ICI) customers to purchase reclaimed heat due to the high cost of conversion of existing Heating Ventilation Air Conditioning (HVAC) systems. <p>McLoughlin Point</p> <ul style="list-style-type: none"> A small district heating system could be installed to service downtown redevelopment of Esquimalt & Upper Harbour customers / military base. <p>Clover Point</p> <ul style="list-style-type: none"> Adjacent land is park and existing residential. Low probability of developing an economical district heating system at this location. Cost of retrofit to existing heating systems would be high. <p>Conclusion: Fair</p>

Criteria and Description	Considerations	Evidence
<p>EN-03</p> <p>Water Reuse Potential</p> <p>The options' estimated opportunity to earn revenue, or save operating costs, from water reuse.</p> <p>Effluent reuse can be both internal to the treatment plant and external via an end product user. The use of treated water is based on provincial regulations that require tertiary treatment and disinfection.</p>	<ul style="list-style-type: none"> Proximity of option to potential existing customers Proximity of option to potential future customers Potential of option to produce water for reuse opportunities 	<p>Evidence:</p> <ul style="list-style-type: none"> Market studies conducted by Stantec in 2009 concluded that there is limited demand from existing Industrial/Commercial/Institutional (ICI) customers to purchase reclaimed water. Water reuse is typical in semi-arid regions where water supplies are limited. CRD has an abundant water supply and the irrigation season in the Region is relatively short (4 months). The largest users of reclaimed water are agricultural and golf courses. There is potential for use in public parks. The costs to retrofit existing residential properties (~\$2500/dwelling) make the economics of conversion of existing residences unfavourable. MBR treatment technology will yield tertiary effluent quality which is suitable for water reuse. <p>McLoughlin Point</p> <ul style="list-style-type: none"> Option is located in a remote area and the cost of retrofitting existing plumbing systems is high. Purple pipe reclaimed water distribution system cost is high. <p>Clover Point</p> <ul style="list-style-type: none"> Possibility of using reuse water for park irrigation (Clover Point, Holland Park, Beacon Hill Park). <p>Conclusion: Average</p>
<p>EN-04</p> <p>Environmental Considerations for Site</p> <p>Impacts to the local environment during construction of the treatment plant.</p>	<ul style="list-style-type: none"> Degree of remediation required to prepare site for construction Disturbance of natural environment Natural or Disturbed site Requirement for blasting Extent of shoring and piling required Disturbance of natural habitat and vegetation Elevation of the proposed sites (e.g. need to build tsunami walls) 	<p>Evidence:</p> <p>McLoughlin Point</p> <ul style="list-style-type: none"> Site was previously a bulk petroleum storage facility that has been fully remediated. Elevation of site mainly favourable to storm surge although a tsunami wall is required. Minimal vegetation on the site exists. <p>Clover Point</p> <ul style="list-style-type: none"> Site is currently parkland. Minimal vegetation on the site exists. Site previously excavated for construction of Clover Point Pump Station. Underground plant construction will require extensive shoring via sheet piling around perimeter of excavation. Due to depth of excavation (10-12 m), there is a high probability that rock blasting will be required. Significant site disturbance at Clover due to deep excavation. Site elevation is above sea level rise and tsunami walls not required. <p>Conclusion: Average</p>

Criteria and Description	Considerations	Evidence
<p>EN-05 Flexibility for Integrated Resource Management and Resource Recovery Suitability of the products produced from the liquid stream treatment for IRM with biosolids, organic waste and solid waste streams.</p>	<ul style="list-style-type: none"> The potential for Integrated Resource Management resides principally with the Biosolids Management Strategy rather than the liquid treatment portion of the project The ability of the option to accommodate an IRM planning process either now or in the future (e.g. future retrofits to accommodate different uses for waste products). 	<p>Evidence:</p> <ul style="list-style-type: none"> Estimated biosolids production at 108 MLD is 10,877 Dry Tonnes (DT)/year. MBR technology will recover an additional 2,160 kg/day of biosolids. Effluent water will be reused for plant process water. Internal heat recovery system will be included in plant buildings heating design. <p>McLoughlin Point</p> <ul style="list-style-type: none"> Option is located in a remote area and the potential for reuse water systems and reclaimed heat systems is low (Reference EN-02 and EN-03). <p>Clover Point</p> <ul style="list-style-type: none"> Option is located in near existing parkland and residential properties and the potential for reuse water systems is more favourable. Potential for reclaimed heat systems is low (Reference EN-02 and EN-03). <p>Conclusion: Good</p>
<p>EN-06 Wet weather treatment resiliency Ability to modify the treatment plant's operating procedures to adjust to varying wet weather flow conditions.</p>	<ul style="list-style-type: none"> Ability of technology to ramp up/down during wet weather flow events experienced in the CRD while maintaining effluent regulatory requirements. 	<p>Evidence:</p> <ul style="list-style-type: none"> Primary plant capacity with multiple units and ability to turn on & off Chemically Enhanced Primary Treatment (CEPT); excellent for range of flow up to 4 x ADWF. MBR is slightly less robust for varying flow conditions. Capacity is sized for 2 X ADWF. <p>Conclusion: Good</p>
<p>EN-07 Flexibility for more stringent treatment regulations in future The flexibility to expand or readily modify the treatment process to meet future permits requirements.</p>	<ul style="list-style-type: none"> Ability of treatment process to be modified or expanded to meet higher treatment standards. Cost impacts of future modifications Schedule impacts of future modifications How does the future retrofit impact plant operations 	<p>Evidence:</p> <ul style="list-style-type: none"> MBR effluent will exceed current regulatory standards. <p>McLoughlin Point</p> <ul style="list-style-type: none"> 60 MLD MBR treatment plant can be accommodated on existing site, which means that there is available area on the site for expansion, if needed in the future. Future expansion could be undertaken with minimal impact on plant operations. <p>Clover Point</p> <ul style="list-style-type: none"> 48 MLD MBR treatment plant can be accommodated on existing site. No space for expansion as site is limited. <p>Conclusion: Very Good</p>
<p>EN-08 Terrestrial vegetation and Inter-tidal impacts Impact that a given site would have on existing terrestrial and inter-tidal habitat, and the degree of mitigation that may be required.</p>	<ul style="list-style-type: none"> Impact on the vegetation and habitat for terrestrial areas of the site during construction Degree of mitigation required for terrestrial and marine environment 	<p>Evidence:</p> <p>McLoughlin Point</p> <ul style="list-style-type: none"> McLoughlin Point is a disturbed site which has been remediated. There is limited terrestrial vegetation on site. There is limited vegetation along the conveyance route, which would follow Dallas Road.

Criteria and Description	Considerations	Evidence
		<ul style="list-style-type: none"> The marine outfall would be the existing Macaulay Point outfall. There would be no disturbance of the intertidal zone and no mitigation measures would be required. <p>Clover Point</p> <ul style="list-style-type: none"> Clover Point is a disturbed site. There is limited terrestrial vegetation on site other than grass and plantings. This Option assumes the reuse of existing outfall at Clover Point. There would be no disturbance of the intertidal zone and no mitigation measures would be required. <p>Conclusion: Good</p>
<p>EN-09 Environmental Performance Whether and extent to which regulatory requirements meet or exceed regulatory requirements.</p>	<ul style="list-style-type: none"> Degree that the option's treatment technology exceeds current regulatory requirements. 	<p>Evidence:</p> <ul style="list-style-type: none"> MBR design will achieve 2/2 mg/L BOD/TSS effluent which exceed the WSER regulatory requirements. Dispersion modelling of effluent plume has shown that bacterial levels will be less than 5 coliforms /100 ml at the perimeter of the Initial Dilution Zone which far exceeds the regulatory requirement for marine discharges. <p>Conclusion: Very Good</p>
Social Criteria (Including Health and Safety)		
<p>SO-01 Operations Traffic Amount of traffic nuisance caused to neighbouring residents post-construction.</p>	<ul style="list-style-type: none"> Classification of local community, e.g. residential, industrial, or commercial properties Number, and types, of schools along the access route Types of roads; for example, residential, arterial 	<p>Evidence:</p> <ul style="list-style-type: none"> Daily traffic for staff access estimated at 8 to 10 vehicle movements per day/each site. No biosolids related traffic due to biosolids pumping and conveyance piping plans. Anticipate delivery of bulk chemicals up to twice per month. <p>McLoughlin Point</p> <ul style="list-style-type: none"> Site is located approximately 500 meters from nearest residential property. Access road to the site is a residential street with some commercial property near the plant site. Route to and from the site needs to go through a residential area. <p>Clover Point</p> <ul style="list-style-type: none"> Site is within 20 metres of residential properties and is located in an active park. <p>Conclusion: Average</p>
<p>SO-02 Operations Impacts on local community Potential for operational noise and vibration which can be heard and felt by the neighbouring residents during operation of the treatment facility.</p>	<ul style="list-style-type: none"> Impact of noise and vibration on local community Classification of local community (e.g. residential or industrial) Distance of nearest neighbour to source of noise and vibration (e.g. 25 m) 	<p>Evidence:</p> <ul style="list-style-type: none"> All mechanical equipment designed to minimize vibration and noise. All mechanical equipment contained inside buildings. Plant designed for limited vibration and noise levels. Performance specifications for design require low noise and vibration levels.

Criteria and Description	Considerations	Evidence
		<p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> • There is a buffer comprised of the military base and vacant bare land between the treatment site and the residents. • Nearest residential property is 500 metres away. <p><u>Clover Point</u></p> <ul style="list-style-type: none"> • The adjacent property is residential. • Nearest residential property is 20 metres away. <p>Conclusion: Average</p>
<p>SO-03 Odour Impacts on local community Impact of nuisance odours on residents or business in close proximity to the plant. This covers nuisance odour related to opening tank covers during maintenance. Locations closer to residents would have a higher probability of nuisance odours. It is assumed all plants would have odour control facilities for normal operations.</p>	<ul style="list-style-type: none"> • Proximity to local community (e.g. 25m) and classification of local community (e.g. commercial, industrial, residential) • Potential odour due to fugitive nuisance emission during maintenance • Degree of emission containment • Degree of odour control equipment • Dispersion specs and impact on nearest residences 	<p>Evidence:</p> <ul style="list-style-type: none"> • All unit processes contained in buildings. • All process tankage covered. • Redundancy required on odour control system. • Plant designed to stringent odour control requirements with scrubbing of odourous air. • Emission modeling will confirm low odour numbers at property boundaries. <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> • Due to the distance between the treatment site and nearby residences, there is a low probability of odour complaint from fugitive nuisance odour emissions. <p><u>Clover Point</u></p> <ul style="list-style-type: none"> • Site is adjacent to residential properties within 50 metres. • There may be some concern regarding odour due to the close proximity of nearby residences; however, it is expected that there will be little odour at the property line because the plant is underground and will be equipped with best available odour control technology. <p>Conclusion: Average</p>
<p>SO-04 Visual Aesthetics Aesthetic visual impact for neighbouring residents and visual impact from adjacent roadways.</p>	<ul style="list-style-type: none"> • Impact of views from both land side and water side • Buffer zones of lawns and landscaping • Care and attention to architecture of buildings required • Care and attention to architectural treatment of tsunami walls 	<p>Evidence:</p> <ul style="list-style-type: none"> • All process units covered or inside building. • Architecture and site landscaping are designed to high standards. <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> • The Development Permit process will ensure that the facility blends with the community through architectural finishes, landscaping and site amenities. • View from the water will be a low rise industrial building which may distract from the natural bare land setting. • Plant design can be given a high degree of architectural treatment to provide a visual appealing facility. • Tsunami wall can be given architectural treatment to blend with natural landscape.

Criteria and Description	Considerations	Evidence
		<p><u>Clover Point</u></p> <ul style="list-style-type: none"> • Treatment plant will be underground with park restored on top. • View from residential neighbours and roadway will be similar to existing view. • There will be a 1 storey window wall (approximately 75 m in length) viewed from the waterside, which may distract from the natural bare land setting. • The Development Permit process will ensure that the facility blends with the community through architectural finishes, landscaping and site amenities. <p>Conclusion: Average</p>
<p>SO-05 Amenities Potential How the option can impact consideration of community integration opportunities.</p>	<ul style="list-style-type: none"> • CRD has capped amenities package at \$20 million which will be prorated based on capacity of the option • The opportunities for amenity enhancements such as public access, mixed use zoning, public art, waterfront access • The ability to facilitate (encourage) additional public amenities • Size of site to accommodate walking trails, etc. • Space to accommodate complimentary opportunities (e.g. educational facilities, research from UVic, learning centres for public on wastewater treatment) • Opportunity for job creation, consider both construction and operations 	<p>Evidence:</p> <ul style="list-style-type: none"> • Two plants Option will provide more local job opportunities both during construction and operations. • Since the amenity package (\$20 million) will be distributed between two sites, the extent of improvements at each site will have to be determined. <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> • The Township of Esquimalt added the need for amenities during the site rezoning in 2013. This list of amenities is extensive. • With a two plant option the \$20 million amenity package will be prorated between sites, which mean there may not be sufficient funds for all of the required amenities from the zoning bylaw. <p>The following is a list of items that were requested as part of the zoning by law.</p> <ul style="list-style-type: none"> ○ The provision of public open space improvements of a value no less than \$75,000, including picnic benches and “tot” park play lot with appropriately themed play equipment and safety features given proximity to open water. ○ Pier or dock, of sufficient size to fulfill previous condition, including with provision of harbour tugboat pedestrian ferry service. ○ Public Walkway: Design of building and development of site to incorporate public accessible trails, and off-site. ○ Construction of trail connection to West Bay Neighbourhood. ○ Additional traffic integration amenities, in the form of additional traffic calming and streets between Lampson Road and Esquimalt Road. ○ Education and Interpretive Centre – additional 25 square metres of floor area for total of 75 square metres, including portion for a “Center of Excellence” to educate, promote and facilitate energy technology or other industries focussed on utilizing the wind and wave energy at the subject property.

Criteria and Description	Considerations	Evidence
		<ul style="list-style-type: none"> ○ High efficiency air filters systems to improve air quality and odour reduction for schools within the Extended Community. ○ Extension of Green Building and Design Features to additional portions of development. ○ Integration of reclaimed water into the design of the buildings, including a rooftop wetland and landscaped feature. ○ Heritage Interpretative Signage, recognizing the historic uses on the subject property and process to transition to current uses. ○ Annual contribution of \$55,000 to McLoughlin Point Amenity Reserve Fund. <p><u>Clover Point</u></p> <ul style="list-style-type: none"> ● Since a rezoning application has not been submitted, the amenity provisions for Clover Point are unknown. <p>Conclusion: Average</p>
<p>SO-06 Construction Impacts (Conveyance) Impacts to the local community of the plant and along the conveyance route alignments during construction, including the alignments that pass through more environmentally sensitive areas.</p>	<ul style="list-style-type: none"> ● Consider the impacts (noise, dust and vibration) of conveyance construction to the local community (focusing on residential and commercial) ● Interruption of “quiet enjoyment” of private property owners ● Impacts to vegetation and property, including any costs of remediation ● Possible damage to property(consider causes, e.g. blasting or vibration) 	<p>Evidence:</p> <ul style="list-style-type: none"> ● Construction planning will mitigate disruption to neighbouring properties. <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> ● Installation of the conveyance piping from Macaulay Point Pump Station to McLoughlin Point Treatment Plant will cause disruption along existing residential streets. ● This disruption will last approximately 4 months. <p><u>Clover Point</u></p> <ul style="list-style-type: none"> ● Proposed Treatment Plant site is adjacent to existing Clover Point Pump Station and conveyance piping will be integrated with the underground construction of the plant. <p>Conclusion: Good</p>
<p>SO-07 Construction Impacts (Plant) Impacts to the local community of the plant during construction.</p>	<ul style="list-style-type: none"> ● Consider the impacts (noise, dust and vibration) of plant construction to the local community (focusing on residential and commercial) ● Impacts to environmentally sensitive areas ● Interruption of “quiet enjoyment” of private property owners ● Impacts to vegetation and property, including any costs of remediation ● Possible damage to property (consider causes, e.g., blasting or vibration) 	<p>Evidence:</p> <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> ● Due to the remoteness of the treatment site (e.g. 500-600 m) from the residences, there is a low risk of significant dust, vibration, and noise impacts to the neighbours. ● The contractor may be required to barge material and equipment to/from site and minimize construction traffic through residential neighbourhoods during construction. <p><u>Clover Point</u></p> <ul style="list-style-type: none"> ● Due to the location of the treatment site (i.e. in an active park and within 20 m of existing residential properties), the impacts on the local community will be significant. ● In addition, due to the location of the site, there is a high risk of significant dust, vibration, and noise impacts to the residential neighbours.

Criteria and Description	Considerations	Evidence
		<ul style="list-style-type: none"> The expected duration of the disruption is 42 months. Sheet piling or alternative shoring will be required at the site due to the deep excavation which will create additional noise for approximately 4 months. Traffic along Dallas Road will be impacted for the duration of construction due to the delivery of materials and equipment to the site. This option will generate a significant volume of excavated material that will likely result in significant truck traffic along Dallas Road. <p>Conclusion: Fair</p>
<p>SO-08 Impacts to existing public amenities Options' impact the community's ability to enjoy existing public amenities such as park land, either existing or future.</p>	<ul style="list-style-type: none"> Impacts on existing public amenities (e.g. parks, playgrounds, or access) during the construction and operations of the facility Impacts on municipality's revenue opportunities associated with the public amenities. 	<p>Evidence:</p> <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> No impact to the community's enjoyment of existing public amenities because the treatment site is surrounded by the DND vacant lands. <p><u>Clover Point</u></p> <ul style="list-style-type: none"> Clover Point is an active park and tourist attraction. It is expected that access and use of the park will be restricted during construction. <p>Conclusion: Fair</p>
<p>SO-09 Compatibility with Official Community Plan Does the option fit within the approved Official Community Plan or existing zoning?</p>	<ul style="list-style-type: none"> Compatibility with existing Official Community Plan Requirement for rezoning or variance on zoning, including risk of receiving variance in a timely manner Development permitting process, including risk of achieving DP in a timely manner Anticipated opposition to rezoning by host municipality or impacted property owners 	<p>Evidence:</p> <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> Zoning in place for 108 MLD Wastewater Treatment Plant (Township of Esquimalt Zoning Bylaw 1992 (Consolidated), Bylaw No. 2050, Amendment No. 209 (McLoughlin Point – Special Use) (Bylaw 2806) OCP has been amended for Special Use – Waste Water Treatment. Existing design for treatment site meets current height and shoreline encroachment restrictions. Development Permit process with Township of Esquimalt may cause some schedule delays due to single treatment plant option. <ul style="list-style-type: none"> Development consistent with conditions identified in the document entitled "Design Guidelines – McLoughlin Point Wastewater Treatment Plant" prepared by CitySpaces Consulting Ltd. Revised May 2013, copy of which is attached to the Official Community Plan <p><u>Clover Point</u></p> <ul style="list-style-type: none"> This option is incompatible with the OCP and, if advanced, could trigger an amendment to the OCP. Rezoning from existing zoning (R1-B Zone, Single Family Dwelling District) to a public utility zoning will be required. This process is estimated to take 18 months to complete.

Criteria and Description	Considerations	Evidence
		<ul style="list-style-type: none"> There may have a Restrictive Covenant on a portion of the site which restricts the use of the land to park. CRD would have to negotiate a revision to this Agreement with the federal government. Stakeholder engagement has demonstrated that there is significant public opposition from adjacent property owners and park users to this option. This could impact the rezoning and DP processes. <p>Conclusion: Poor</p>
<p>SO-10 Archeological Findings Risk of discovering archaeological items during construction.</p>	<ul style="list-style-type: none"> Greenfield (undisturbed) vs. Brownfield (disturbed) Consider archeological studies completed to date 	<p>Evidence:</p> <ul style="list-style-type: none"> Previous EIS studies gathered information about and assessed the traditional and cultural use of marine resources in this area, as well as the traditional transportation routes and marine resource harvesting. McLoughlin Point was identified as a traditional gathering area. <ul style="list-style-type: none"> CRD Core Area Wastewater Treatment Program - Stage 2 Environmental Impact Study – 18 Feb 2013- p. 34 (Worley Parsons) Effects on archaeological features are expected to be less than significant at all CAWTP facility sites <ul style="list-style-type: none"> Environmental Impact Study of Core Area Wastewater Treatment Program Facilities – Terrestrial Environment - March 2014- p. 34 (Tera) Risk of discovering archeological findings along the conveyance pipe routes are unknown and would have to be assessed by a qualified archaeologist. Both sites have been previously excavated and disturbed so there is a very low probability of an archeological discovery. <p>Conclusion: Good</p>
<p>SO-11 Impact to local First Nations How the option impacts local First Nations, either by providing benefits, or lack of consultation.</p>	<ul style="list-style-type: none"> Has the local First Nations been consulted on the proposed sites? Are there opportunities for the local First Nations to benefit through the development of the option? 	<p>Evidence:</p> <ul style="list-style-type: none"> CRD has consulted impacted First Nations extensively for all of the options under review and there is no material difference in how the options meet the criterion. <p>McLoughlin Point</p> <ul style="list-style-type: none"> Local First Nations will not benefit financially or otherwise from this option. <p>Clover Point</p> <ul style="list-style-type: none"> Local First Nations will not benefit financially or otherwise from this option. <p>Conclusion: Average</p>
<p>SO-12 Leading Development Opportunity to be a catalyst for future development or improvements in existing development.</p>	<ul style="list-style-type: none"> Opportunity to enable further development or beautification of an area (e.g. project could bring in roads and utilities, which will encourage future development). Opportunities to improve existing communities (e.g. through upgrades to off-site services) 	<p>Evidence:</p> <ul style="list-style-type: none"> Surrounding area for both sites have access to gas, hydro, water, and sewer lines; which are in good condition. Upgrades are not required. <p>Conclusion: Average</p>

Criteria and Description	Considerations	Evidence
<p>SO-13 Cultural and Heritage impacts Ability to use and/or respect culture and heritage. This would include consideration of existing structures or features on the proposed sites.</p>	<ul style="list-style-type: none"> How the option respects and incorporates existing cultural or heritage structures, site, or artifacts 	<p>Evidence:</p> <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> The site does not contain any existing structures with historical significance that could be used in the design. The design of the building exterior and site landscaping will reflect and honor history, culture, and heritage. <p><u>Clover Point</u></p> <ul style="list-style-type: none"> The site does not contain any existing structures with historical significance that could be used in the design. The design of site landscaping will reflect and honor history, culture, and heritage. <p>Conclusion: Average</p>

OPTION SCREENING SUMMARY SHEET

Option Name: Two Plants: McLoughlin 92 MLD (Secondary Treatment), East Saanich 16 MLD (Tertiary Treatment)

Option Description: Two Plants: McLoughlin 92 MLD BAF (Secondary Treatment), East Saanich 16 MLD MBR (Tertiary Treatment)

Rating System Proposed:

Very Good (5)	Good (4)	Average (3)	Fair (2)	Poor (1)
The impact of the option is very favourable and far exceeds minimum expectations.	The impact of the option is favourable and clearly exceeds minimum expectations.	The impact of the option is acceptable and meets or somewhat exceeds minimum expectations.	The impact of the option barely meets minimum expectations.	Option fails to meet basic requirements of the criterion.

Criteria and Description	Considerations	Evidence
Economic Criteria		Conclusion
EC-01 Capital Costs Construction costs including both direct and indirect costs in 2016 dollars.		Capital Cost of Option: \$ 995 million
EC-02 Whole Life Cycle Costs Operating and maintenance costs, expressed as a net present value cost using a 25 year life cycle cost and a 4% discount rate, added to capital costs.		Whole Life Cycle Cost of Option: \$1,257 million
EC-03 CRD Capital Cost Contribution	<ul style="list-style-type: none"> The current approved project capital budget is \$788 million. The draft Federal/Provincial funding agreements total \$502 million. The CRD share of the capital cost is calculated as the Option Capital Cost (EC-01) minus \$502 million. 	CRD Capital Cost Contribution: \$493 million

Criteria and Description	Considerations	Evidence
<p>EC-04 Schedule of Completion</p>	<p>Estimated Service Commencement Date</p> <p>Impacts included in the Schedule assumption:</p> <ul style="list-style-type: none"> • Timing needed for rezoning and permitting requirements (e.g., development permit) • Environmental permitting requirements • Commissioning Schedule • Site conditions that may extend construction(i.e., piling, shoring) • Construction Schedule 	<p>Evidence:</p> <ul style="list-style-type: none"> • Estimated Service Commencement Date: December 31, 2022 <p>McLoughlin Point</p> <ul style="list-style-type: none"> • Zoning completed for 108 MLD Waste Water Plant at this site (Township of Esquimalt Zoning Bylaw 1992 (Consolidated), Bylaw No. 2050, Amendment No. 209 (McLoughlin Point – Special Use) (Bylaw 2806) • EIS completed • Development Permit will be required <ul style="list-style-type: none"> ○ Development consistent with conditions identified in the document entitled “Design Guidelines – McLoughlin Point Wastewater Treatment Plant” prepared by CitySpaces Consulting Ltd. Revised May 2013, copy of which is attached to the Official Community Plan • Preferred Proponent identified <p>East Saanich</p> <ul style="list-style-type: none"> • Zoning is P-2WL – Utility Woodland Zone. • Rezoning would be required. Estimated time to complete is 18 months. • EIS will need to be completed. • Development Permit will be required. • Permit required for outfall extension.
<p>Environmental Criteria</p>		
<p>EN-01 Carbon Footprint Net carbon dioxide equivalent (eCO₂) during the construction and operation of the treatment plant (tonnes/year). Excludes consideration of the biosolids treatment</p>	<ul style="list-style-type: none"> • Technology impacts to carbon footprint; • Pumping and other conveyance impacts to carbon footprint 	<p>Evidence:</p> <ul style="list-style-type: none"> • Estimated carbon footprint Construction (One Time) – 21,523 tonnes • Estimated carbon footprint Operations (Annual) – 2,940 tonnes/year <p>Conclusion: Average</p>

Criteria and Description	Considerations	Evidence
<p>EN-02</p> <p>Heat Recovery Potential</p> <p>Heat recovered from the liquid stream treatment results in a low grade heat. This criterion is defined as the options' estimated opportunity to earn revenue, or save operating costs, from heat recovery.</p>	<ul style="list-style-type: none"> Proximity of plant to potential existing customers Proximity of plant to potential future customers 	<p>Evidence:</p> <ul style="list-style-type: none"> Energy offset gained through the use of heat recovered from the plant's final effluent. Energy use can be both internal to the treatment plant and external via a district energy scheme. Market studies conducted by Stantec in 2009 concluded that there is limited demand from existing Industrial/Commercial/Institutional (ICI) customers to purchase reclaimed heat due to the high cost of conversion of existing Heating Ventilation Air Conditioning (HVAC) systems. <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> A small district heating system could be installed to service downtown redevelopment of Esquimalt & Upper Harbour customers / military base. <p><u>East Saanich</u></p> <ul style="list-style-type: none"> University of Victoria is relatively close to the East Saanich site. There is good potential for a district heating system with this large institutional user. <p>Conclusion: Average</p>
<p>EN-03</p> <p>Water Reuse Potential</p> <p>The options' estimated opportunity to earn revenue, or save operating costs, from water reuse.</p> <p>Effluent reuse can be both internal to the treatment plant and external via an end product user. The use of treated water is based on provincial regulations that requires tertiary treatment and disinfection.</p>	<ul style="list-style-type: none"> Proximity of option to potential existing customers Proximity of option to potential future customers Potential of option to produce water for reuse opportunities 	<p>Evidence:</p> <ul style="list-style-type: none"> Market studies conducted by Stantec in 2009 concluded that there is limited interest from existing Industrial/Commercial/Institutional (ICI) customers to purchase reclaimed water. Water reuse is typical in semi-arid regions where water supplies are limited. CRD has an abundant water supply and the irrigation season in the Region is relatively short (4 months). The largest users of reclaimed water are agricultural and golf courses. There is potential for use in public parks. The costs to retrofit existing residential properties (~\$2500/dwelling) make the economics of conversion of existing residences unfavourable. BAF treatment technology at McLoughlin will yield secondary effluent quality which is unsuitable for water reuse. MBR treatment technology at East Saanich will yield tertiary effluent quality which is suitable for water reuse. <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> Secondary effluent is not suitable for water reuse. <p><u>East Saanich</u></p> <ul style="list-style-type: none"> Option is located in close proximity to UVic and several golf courses so the potential for adding reuse water customers is more favourable. <p>Conclusion: Fair</p>

Criteria and Description	Considerations	Evidence
<p>EN-04 Environmental Considerations for Site Impacts to the local environment during construction of the treatment plant.</p>	<ul style="list-style-type: none"> Degree of remediation required to prepare site for construction Disturbance of natural environment Natural or Disturbed site Requirement for blasting Extend of shoring and piling required Disturbance of natural habitat and vegetation Elevation of the proposed sites (e.g., need to build tsunami walls) 	<p>Evidence:</p> <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> Site was previously a bulk petroleum storage facility that has been fully remediated. Elevation of site mainly favourable to storm surge although a tsunami wall is required Minimal vegetation exist on the site. <p><u>East Saanich</u></p> <ul style="list-style-type: none"> Site is a woodlot with public trails. Elevation is sufficiently high that a tsunami wall is not required. Extensive vegetation exists on the site. <p>Conclusion: Average</p>
<p>EN-05 Flexibility for Integrated Resource Management and Resource Recovery Suitability of the products produced from the liquid stream treatment for IRM with biosolids, organic waste and solid waste streams.</p>	<ul style="list-style-type: none"> The potential for Integrated Resource Management resides principally with the Biosolids Management Strategy rather than the liquid treatment portion of the project The ability of the option to accommodate an IRM planning process either now or in the future (e.g., future retrofits to accommodate different uses for waste products). 	<p>Evidence:</p> <ul style="list-style-type: none"> Estimated biosolids production at 108 MLD total flow is 10,877 Dry Tonnes (DT)/year. MBR treatment at East Saanich site will recover an additional 368 kg/day of biosolids (~1.3%). Effluent water will be reused for plant process water. Internal heat recovery system will be included in plant heating design. <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> Option is located in a remote isolated area and the potential for reuse water systems and reclaimed heat systems is low. <p><u>East Saanich</u></p> <ul style="list-style-type: none"> Option is located in near existing institutional and recreational properties and the potential for reuse water systems and reclaimed heat systems is more favourable. <p>Conclusion: Average</p>
<p>EN-06 Wet weather treatment resiliency Ability to modify the treatment plant's operating procedures to adjust to varying wet weather flow conditions.</p>	<ul style="list-style-type: none"> Ability of technology to ramp up/down during wet weather flow events experienced in the CRD while maintaining effluent regulatory requirements. 	<p>Evidence:</p> <ul style="list-style-type: none"> Primary plant capacity with multiple units and ability to turn on & off Chemically Enhanced Primary Treatment (CEPT); excellent for range of flow up to 4 x ADWF. BAF secondary treatment is robust for varying flow conditions. Capacity is sized for 2 X ADWF. <p>Conclusion: Good</p>

Criteria and Description	Considerations	Evidence
<p>EN-07 Flexibility for more stringent treatment regulations in future The flexibility to expand or readily modify the treatment process to meet future permits requirements.</p>	<ul style="list-style-type: none"> Ability of treatment process to be modified or expanded to meet higher treatment standards. Cost impacts of future modifications Schedule impacts of future modifications How does the future retrofit impact plant operations? 	<p>Evidence:</p> <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> Site is suitable for a 92 MLD BAF treatment plant. Tertiary disc filters could be added to BAF in the future on existing site. The adjacent site is vacant Department of Defence (DND) land that could be utilized in the future for significant expansion needs. Site would have to be purchased. <p><u>East Saanich</u></p> <ul style="list-style-type: none"> MBR will exceed current regulatory standards for the foreseeable future. 16 MLD MBR treatment plant can be accommodated on existing site. <p>Conclusion: Average</p>
<p>EN-08 Terrestrial vegetation and Inter-tidal impacts Impact that a given site would have on existing terrestrial and inter-tidal habitat, and the degree of mitigation that may be required.</p>	<ul style="list-style-type: none"> Impact on the vegetation and habitat for terrestrial areas of the site during construction Degree of mitigation required for terrestrial and marine environment 	<p>Evidence:</p> <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> McLoughlin Point is a disturbed site which has been remediated. There is limited terrestrial vegetation on site. There is limited vegetation along the conveyance route, which would follow Dallas Road. The new marine outfall for this option would be installed by tunneling under the intertidal zone. There would be no disturbance of the intertidal zone and no mitigation measures would be required. <p><u>East Saanich</u></p> <ul style="list-style-type: none"> East Saanich is an undisturbed site. There is extensive terrestrial vegetation on site. This Option assumes the extension of an outfall. There would be disturbance of the intertidal zone. Mitigation measures would be determined by the EIS. <p>Conclusion: Average</p>

Criteria and Description	Considerations	Evidence
<p>EN-09 Environmental Performance Whether and extent to which regulatory requirements meet or exceed regulatory requirements.</p>	<ul style="list-style-type: none"> Degree that the option's treatment technology exceeds current regulatory requirements. 	<p>Evidence:</p> <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> BAF design will achieve 25/25 mg/L BOD/TSS effluent which meet the WSER regulatory requirements. Dispersion modelling of effluent plume has shown that bacterial levels will be less than 14 coliform /100 ml at the perimeter of the Initial Dilution Zone which meets the regulatory requirement for marine discharges. <p><u>East Saanich</u></p> <ul style="list-style-type: none"> MBR design will achieve 2/2 mg/L BOD/TSS effluent which far exceed the WSER regulatory requirements. Dispersion modelling of effluent plume has shown that bacterial levels will be less than 2 coliforms /100 ml at the perimeter of the Initial Dilution Zone (IDZ) which far exceeds the regulatory requirement for marine discharges. <p>Conclusion: Average</p>
Social Criteria (Including Health and Safety)		
<p>SO-01 Operations Traffic Amount of traffic nuisance caused to neighbouring residents post-construction.</p>	<ul style="list-style-type: none"> Classification of local community, e.g., residential, industrial, or commercial properties Number, and types, of schools along the access route Types of roads; for example, residential, arterial 	<p>Evidence:</p> <ul style="list-style-type: none"> Daily traffic for staff access estimated at 8 to 10 vehicle movements per day/each site. No biosolids related traffic due to biosolids pumping and conveyance piping plans. Anticipate delivery of bulk chemicals up to twice per month. <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> Site is located approximately 500 meters from nearest residential property. Access road to the site is a residential street with some commercial property near the plant site. <p><u>East Saanich</u></p> <ul style="list-style-type: none"> Site is located approximately 100 meters from nearest residential property. Access to the site is a residential street. <p>Conclusion: Average</p>

Criteria and Description	Considerations	Evidence
<p>SO-02 Operations Impacts on local community Potential for operational noise and vibration which can be heard and felt by the neighbouring residents during operation of the treatment facility.</p>	<ul style="list-style-type: none"> Impact of noise and vibration on local community Classification of local community (e.g., residential or industrial) Distance of nearest neighbour to source of noise and vibration (e.g., 25 m) 	<p>Evidence:</p> <ul style="list-style-type: none"> All mechanical equipment designed to minimize vibration and noise. All mechanical equipment contained inside buildings. Plant designed for limited vibration and noise levels. <p>McLoughlin Point</p> <ul style="list-style-type: none"> There is a buffer comprised of the military base and vacant bare land between the treatment site and the residents. Nearest residential property is 500 metres. <p>East Saanich</p> <ul style="list-style-type: none"> The adjacent property is residential. Nearest residential property is ~100 metres. <p>Conclusion: Good</p>
<p>SO-03 Odour Impacts on local community Impact of nuisance odours on residents or business in close proximity to the plant. This covers nuisance odour related to opening tank covers during maintenance. Locations closer to residents would have a higher probability of nuisance odours. It is assumed all plants would have odour control facilities for normal operations.</p>	<ul style="list-style-type: none"> Proximity to local community (e.g., 25 m) and classification of local community (e.g., commercial, industrial, residential) Potential odour due to fugitive emission Degree of omission containment Degree of odour control equipment Dispersion specs and impact nearest residences 	<p>Evidence:</p> <ul style="list-style-type: none"> All processes tankage covered. Plant designed to stringent odour control requirements. Odour scrubbers will be installed. Emission modeling will confirm low odour numbers at property boundaries. <p>McLoughlin Point</p> <ul style="list-style-type: none"> Due to the distance between the treatment site and nearby residences, the probability of odour complaints due to fugitive nuisance emissions expected to be low. <p>East Saanich</p> <ul style="list-style-type: none"> Site is adjacent to residential property within 100 meters. Due to the odour control systems, there is a low probability of odour complaints from fugitive nuisance emissions. <p>Conclusion: Good</p>

Criteria and Description	Considerations	Evidence
<p>SO-04 Visual Aesthetics Aesthetic visual impact for neighbouring residents and visual impact from adjacent roadways.</p>	<ul style="list-style-type: none"> • Impact of views from both land side and water side • Buffer zones of lawns and landscaping • Care and attention to architecture of buildings required 	<p>Evidence:</p> <ul style="list-style-type: none"> • All process units covered or inside building. • Architecture and site landscaping can be designed to high standards. <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> • The Development Permit process which will ensure that the facility blends with the community through architectural finishes, landscaping and site amenities. • View from the water will be a low rise industrial building which may distract from the natural bare land setting. • Buildings can be designed to achieve a high degree of architectural treatment. • Tsunami wall can be given architectural treatment to blend with natural landscape. <p><u>East Saanich</u></p> <ul style="list-style-type: none"> • Treatment plant will be completely buried with park restored on top deck. • View from residential neighbours and roadway will be open parkland vs. woodlot. • The Development Permit process which will ensure that the facility blends with the community through architectural finishes, landscaping and site amenities. <p>Conclusion: Average</p>

Criteria and Description	Considerations	Evidence
<p>SO-05 Amenities Potential How the option can impact consideration of community integration opportunities.</p>	<ul style="list-style-type: none"> • CRD has capped amenities package at \$20 million which will be prorated based on capacity of the option • The opportunities for amenity enhancements such as public access, mixed use zoning, public art, waterfront access • The ability to facilitate (encourage) additional public amenities • Size of site to accommodate walking trails, etc. • Space to accommodate complimentary opportunities (e.g., educational facilities, research from UVic, learning centres for public on wastewater treatment) • Opportunity for job creation, consider both construction and operations 	<p>Evidence:</p> <ul style="list-style-type: none"> • Two plant options will provide more job opportunities. • Since the amenity package (\$20 million) will be distributed between two sites, the extent of improvements at each site will be less favourable. <p>McLoughlin Point</p> <ul style="list-style-type: none"> • The following amenity provisions were included in the Township of Esquimalt 2013 rezoning of the McLoughlin Point site to Special Use (Wastewater Treatment) based on the 108 MLD single treatment plant option. With a two plant option the \$20 million amenity package will be prorated between sites proportional to flow. The zoning bylaw has requested the following amenities. <ul style="list-style-type: none"> ○ The provision of public open space improvements of a value no less than \$75,000, including picnic benches and “tot” park play lot with appropriately themed play equipment and safety features given proximity to open water. ○ Pier or dock, of sufficient size to fulfill previous condition, including with provision of harbour tugboat pedestrian ferry service. ○ Public Walkway: Design of building and development of site to incorporate public accessible trails, and off-site. ○ Construction of trail connection to West Bay Neighbourhood. ○ Additional traffic integration amenities, in the form of additional traffic calming and bike lanes on all remaining. ○ Streets between Lampson Road and Esquimalt Road. ○ Education and Interpretive Centre – additional 25 square metres of floor area for total of 75 square metres, including portion for a “Center of Excellence” to educate, promote and facilitate energy technology or other industries focussed on utilizing the wind and wave energy at the subject property. ○ High efficiency air filters systems to improve air quality and odour reduction for schools within the Extended Community. ○ Extension of Green Building and Design Features to additional portions of development. ○ Integration of reclaimed water into the design of the buildings, including a rooftop wetland and landscaped feature. ○ Heritage Interpretative Signage, recognizing the historic uses on the subject property and process to transition to current uses. ○ Annual contribution of \$55,000 to McLoughlin Point Amenity Reserve Fund. <p>East Saanich</p> <ul style="list-style-type: none"> • Since a rezoning application has not been submitted, the amenity provisions for East Saanich are unknown. <p>Conclusion: Average</p>

Criteria and Description	Considerations	Evidence
<p>SO-06 Construction Impacts (Conveyance) Impacts to the local community of the plant and along the conveyance route alignments during construction, including the alignments that pass through more environmentally sensitive areas.</p>	<ul style="list-style-type: none"> Consider the impacts (noise, dust and vibration) of conveyance construction to the local community (focusing on residential and commercial) Interruption of “quiet enjoyment” of private property owners Impacts to vegetation and property, including any costs of remediation Possible damage to property(consider causes, e.g., blasting or vibration) 	<p>Evidence:</p> <ul style="list-style-type: none"> Construction planning will somewhat mitigate disruption to neighbouring properties. <p>McLoughlin Point</p> <ul style="list-style-type: none"> Laydown area in James Bay needed for the conveyance pipe, required for Harbour crossing boring operation, will impact up to 1 km of Dallas Road for 6 months. Launch shaft for Harbour crossing horizontal drilling will impact Ogden Point area for up to 6 months. There will be 10-15 trucks per day access the shaft area to haul away excavated material. Installation of the conveyance piping from Clover Point Pump Station to Harbour Crossing will be along Dallas Road but in the boulevard south of travelled roadway, which will impact traffic along that route for 3 months. <p>East Saanich</p> <ul style="list-style-type: none"> Construction of conveyance piping from treatment plant to outfall may cause disruption on residential streets for up to 6 months. Due to the close proximity of the conveyance pipe route to residences (< 20m), noise, dust and vibration impacts may be experienced by homeowners. <p>Conclusion: Average</p>
<p>SO-07 Construction Impacts (Plant) Impacts to the local community of the plant during construction.</p>	<ul style="list-style-type: none"> Consider the impacts (noise, dust and vibration) of plant construction to the local community (focusing on residential and commercial) Impacts to environmentally sensitive areas Interruption of “quiet enjoyment” of private property owners Impacts to vegetation and property, including any costs of remediation Possible damage to property (consider causes, e.g., blasting or vibration) 	<p>Evidence:</p> <p>McLoughlin Point</p> <ul style="list-style-type: none"> Due to the remoteness of the treatment site (e.g., 500 m from residences), the impacts on nearby properties are minimal. Due to the remoteness of the treatment site, there is a low risk of significant dust, vibration, and noise impacts to the neighbours. The contractor may be required to barge that material and equipment to/from site and minimize construction traffic through residential neighbourhoods during construction. <p>East Saanich</p> <ul style="list-style-type: none"> The East Saanich site is located in woodlot. The expected duration of construction is 24 months. There is a low risk of significant dust, vibration, and noise impacts to the residential neighbours. Material and equipment will be delivered to the site on residential street with adjacent residential properties. Impact will be managed through a Traffic Management Plan which will be included in the Contract. <p>Conclusion: Average</p>

Criteria and Description	Considerations	Evidence
<p>SO-08</p> <p>Impacts to existing public amenities</p> <p>Options' impact the community's ability to enjoy existing public amenities such as park land, either existing or future.</p>	<ul style="list-style-type: none"> • Impacts on existing public amenities (e.g., parks, playgrounds, or access) during the construction and operations of the facility • Impacts on municipality's revenue opportunities associated with the public amenities 	<p>Evidence:</p> <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> • No impact to the community's enjoyment of existing public amenities because the treatment site is surrounded by the DND vacant lands <p><u>East Saanich</u></p> <ul style="list-style-type: none"> • Significant impact to the community's enjoyment of existing public amenities because the treatment site is used extensively for dog walking and trail hiking. <p>Conclusion: Fair</p>

Criteria and Description	Considerations	Evidence
<p>SO-09</p> <p>Compatibility with Official Community Plan</p> <p>Does the option fit within the approved Official Community Plan or existing zoning?</p>	<ul style="list-style-type: none"> • Compatibility with existing Official Community Plan • Requirement for rezoning or variance on zoning, including risk of receiving variance in a timely manner • Development permitting process, including risk of achieving DP in a timely manner • Anticipated opposition to rezoning by host municipality or impacted property owners 	<p>Evidence:</p> <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> • Zoning in place for 108 MLD Wastewater Treatment Plant (Township of Esquimalt Zoning Bylaw 1992 (Consolidated), Bylaw No. 2050, Amendment No. 209 (McLoughlin Point – Special Use) (Bylaw 2806). • OCP has been amended for Special Use – Waste Water Treatment. • Existing design for treatment site meets current height and shoreline encroachment restrictions. • Development Permit process with Township of Esquimalt may cause some schedule delays due to single treatment plant option. <ul style="list-style-type: none"> ○ Development consistent with conditions identified in the document entitled “Design Guidelines – McLoughlin Point Wastewater Treatment Plant” prepared by CitySpaces Consulting Ltd. Revised May 2013, copy of which is attached to the Official Community Plan <p><u>East Saanich</u></p> <ul style="list-style-type: none"> • Existing zoning is P-2WL – Utility Woodland Zone. <ul style="list-style-type: none"> ○ Uses Permitted <ul style="list-style-type: none"> a. Underground Holding Tank b. Underground Pump Station c. Accessory Parking • Rezoning would be required. <ul style="list-style-type: none"> ○ Estimated time to complete is 18 months. ○ The zoning for this site has been previously considered. There is strong public opposition to rezoning for a wastewater treatment plant. Probability of a successful outcome is low. • EIS will need to be completed. • Development Permit will be required. • OCP amendment would be required but would not impact schedule since this process follows the rezoning process. <p>Conclusion: Fair</p>

Criteria and Description	Considerations	Evidence
<p>SO-10 Archeological Findings Risk of discovering archeological items during construction.</p>	<ul style="list-style-type: none"> Greenfield (undisturbed) vs. Brownfield (disturbed) Consider archeological studies completed to date 	<p>Evidence:</p> <ul style="list-style-type: none"> Previous EIS studies gathered information about and assessed the traditional and cultural use of marine resources in this area, as well as the traditional transportation routes and marine resource harvesting. McLoughlin was identified as a traditional gathering area. <ul style="list-style-type: none"> CRD Core Area Wastewater Treatment Program - Stage 2 Environmental Impact Study – 18 Feb 2013- p. 34 (Worley Parsons) Effects on archaeological features are expected to be less than significant at all CAWTP facility sites. <ul style="list-style-type: none"> Environmental Impact Study of Core Area Wastewater Treatment Program Facilities – Terrestrial Environment - March 2014- p. 34 (Tera). Risk of discovering archaeological findings along the conveyance pipe routes are unknown and would have to be assessed by a qualified archaeologist. <p>Conclusion: Good</p>
<p>SO-11 Impact to local First Nations How the option impacts local First Nations, either by providing benefits, or lack of consultation.</p>	<ul style="list-style-type: none"> Has the local First Nations been consulted on the proposed sites? Are there opportunities for the local First Nations to benefit through the development of the option? 	<p>Evidence:</p> <ul style="list-style-type: none"> CRD has consulted impacted First Nations extensively for all of the options under review and there is no material difference in how the options meet the criterion. <p>McLoughlin Point</p> <ul style="list-style-type: none"> Local First Nations will not benefit financially or otherwise from this option. <p>East Saanich</p> <ul style="list-style-type: none"> Local First Nations will not benefit financially or otherwise from this option. <p>Conclusion: Average</p>
<p>SO-12 Leading Development Opportunity to be a catalyst for future development or improvements in existing development.</p>	<ul style="list-style-type: none"> Opportunity to enable further development or beautification of an area (e.g., project could bring in roads and utilities, which will encourage future development). Opportunities to improve existing communities (e.g., through upgrades to off-site services) 	<p>Evidence:</p> <ul style="list-style-type: none"> Surrounding area for both sites have access to gas, hydro, water, and sewer mains; which are in good condition. Upgrades are not required. <p>Conclusion: Average</p>

Criteria and Description	Considerations	Evidence
<p>SO-13 Cultural and Heritage impacts Ability to use and/or respect culture and heritage. This would include consideration of existing structures or features on the proposed sites.</p>	<ul style="list-style-type: none"> How the option respects and incorporates existing cultural or heritage structures, site, or artifacts 	<p>Evidence:</p> <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> The site does not contain any existing structures with historical significance that could be used in the design. The design of the building exterior and site landscaping will reflect and honor history, culture, and heritage. <p><u>East Saanich</u></p> <ul style="list-style-type: none"> The site does not contain any existing structures with historical significance that could be used in the design. Site landscaping will reflect and honor history, culture, and heritage. <p>Conclusion: Average</p>

OPTION SCREENING SUMMARY SHEET

Option Name: Two Plants: McLoughlin 60 MLD, Rock Bay 48 MLD Tertiary Plant (Tertiary Treatment)

Option Description: Two Plants: McLoughlin 60 MLD MBR / Rock Bay 48 MLD MBR (Tertiary Treatment)

Rating System Proposed:

Very Good (5)	Good (4)	Average (3)	Fair (2)	Poor (1)
The impact of the option is very favourable and far exceeds minimum expectations.	The impact of the option is favourable and clearly exceeds minimum expectations.	The impact of the option is acceptable and meets or somewhat exceeds minimum expectations.	The impact of the option barely meets minimum expectations.	Option fails to meet basic requirements of the criterion.

Criteria and Description	Considerations	Evidence
Economic Criteria		
EC-01 Capital Costs Construction costs including both direct and indirect costs in 2016 dollars.		Capital Cost of Option: \$ 1,030 million
EC-02 Whole Life Cycle Costs Operating and maintenance costs, expressed as a net present value cost using a 25 year life cycle cost and a 4% discount rate, added to capital costs.		Whole Life Cycle Cost of Option: \$1,386 million
EC-03 CRD Capital Cost Contribution	<ul style="list-style-type: none"> The current approved project capital budget is \$788 million. The draft Federal/Provincial funding agreements total \$502 million. The CRD share of the capital cost is calculated as the Option Capital Cost (EC-01) minus \$502 million. 	CRD Capital Cost Contribution: \$528 million

Criteria and Description	Considerations	Evidence
<p>EC-04 Schedule of Completion</p>	<p>Estimated Service Commencement Date</p> <p>Impacts included in the Schedule assumption:</p> <ul style="list-style-type: none"> • Timing needed for rezoning and permitting requirements (e.g., development permit) • Environmental permitting requirements • Commissioning Schedule • Site conditions that may extend construction(i.e., piling, shoring) • Construction Schedule 	<p>Evidence:</p> <ul style="list-style-type: none"> • Estimated Service Commencement Date: March 31, 2023 <p>McLoughlin Point</p> <ul style="list-style-type: none"> • Zoning completed for 108 MLD Waste Water Plant at this site (Township of Esquimalt Zoning Bylaw 1992 (Consolidated), Bylaw No. 2050, Amendment No. 209 (McLoughlin Point – Special Use) (Bylaw 2806) • Environmental Impact Study (“EIS”) completed • Development Permit (“DP”) will be required <ul style="list-style-type: none"> ○ Development consistent with conditions identified in the document entitled “Design Guidelines – McLoughlin Point Wastewater Treatment Plant” prepared by CitySpaces Consulting Ltd. Revised May 2013, copy of which is attached to the Official Community Plan <p>Rock Bay</p> <ul style="list-style-type: none"> • Existing zoning is M3 Industrial, which would trigger the need for a rezoning. The estimated time to complete is 18 months. • EIS will need to be completed. • DP will be required. • Preliminary site geotechnical report indicate that piling may be required which may lengthen the construction schedule.
Environmental Criteria		
<p>EN-01 Carbon Footprint Net carbon dioxide equivalent (eCO₂) during the construction and operation of the treatment plant (tonnes/year). Excludes consideration of the biosolids treatment</p>	<ul style="list-style-type: none"> • Technology impacts to carbon footprint; • Pumping and other conveyance impacts to carbon footprint 	<p>Evidence:</p> <ul style="list-style-type: none"> • Estimated carbon footprint Construction (One Time) – 22,419 tonnes. • Estimated carbon footprint Operations (Annual) – 3,763 tonnes/year. <ul style="list-style-type: none"> ○ MBR technology has a higher carbon footprint when compared to secondary treatment. • The need to pump from Rock Bay to Clover to outfall will increase carbon footprint by 178 tonnes/year. <p>Conclusion: Fair</p>

Criteria and Description	Considerations	Evidence
<p>EN-02</p> <p>Heat Recovery Potential</p> <p>Heat recovered from the liquid stream treatment results in a low grade heat. This criterion is defined as the options' estimated opportunity to earn revenue, or save operating costs, from heat recovery.</p>	<ul style="list-style-type: none"> Proximity of plant to potential existing customers Proximity of plant to potential future customers 	<p>Evidence:</p> <ul style="list-style-type: none"> Energy offset gained through the use of heat recovered from the plant's final effluent. Energy use can be both internal to the treatment plant and external via a district energy scheme. Market studies conducted by Stantec in 2009 concluded that there is limited demand from existing Industrial/Commercial/Institutional (ICI) customers to purchase reclaimed heat due to the high cost of conversion of existing Heating Ventilation Air Conditioning (HVAC) systems. <p>McLoughlin Point</p> <ul style="list-style-type: none"> A small district heating system could be installed to service downtown redevelopment of Esquimalt & Upper Harbour customers / military base. <p>Rock Bay</p> <ul style="list-style-type: none"> A district heating system could be incorporated into the community plan. <ul style="list-style-type: none"> The City of Victoria concept for development of the site includes mixed used commercial and public uses. The new facilities could be served more cost effectively. <p>Conclusion: Average</p>
<p>EN-03</p> <p>Water Reuse Potential</p> <p>The options' estimated opportunity to earn revenue, or save operating costs, from water reuse.</p> <p>Effluent reuse can be both internal to the treatment plant and external via an end product user. The use of treated water is based on provincial regulations that require tertiary treatment and disinfection.</p>	<ul style="list-style-type: none"> Proximity of option to potential existing customers Proximity of option to potential future customers Potential of option to produce water for reuse opportunities 	<p>Evidence:</p> <ul style="list-style-type: none"> Market studies conducted by Stantec in 2009 concluded that there is limited interest from existing Industrial/Commercial/Institutional (ICI) customers to purchase reclaimed water. Water reuse is typical in semi-arid regions where water supplies are limited. CRD has an abundant water supply and the irrigation season in the Region is relatively short (4 months). The largest users of reclaimed water are agricultural and golf courses. There is potential for use in public parks. The costs to retrofit existing residential properties (~\$2,500/dwelling) make the economics of conversion of existing residences unfavourable. MBR treatment technology will yield tertiary effluent quality which is suitable for water reuse. <p>McLoughlin Point</p> <ul style="list-style-type: none"> Option is located in a remote area and the cost of retrofitting existing systems is high. <p>Rock Bay</p> <ul style="list-style-type: none"> Option is located in an existing industrial/commercial area that is planned for redevelopment. The potential for adding reuse water customers is more favourable for this site because it is more cost effective in new construction. <p>Conclusion: Good</p>

Criteria and Description	Considerations	Evidence
<p>EN-04 Environmental Considerations for Site Impacts to the local environment during construction of the treatment plant.</p>	<ul style="list-style-type: none"> Degree of remediation required to prepare site for construction Disturbance of natural environment Natural or Disturbed site Requirement for blasting Extend of shoring and piling required Disturbance of natural habitat and vegetation Elevation of the proposed sites (e.g., need to build tsunami walls) 	<p>Evidence:</p> <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> Site was previously a bulk petroleum storage facility that has been fully remediated. Elevation of site mainly favourable to storm surge although a tsunami wall is required. Minimal vegetation on the site exists. <p><u>Rock Bay</u></p> <ul style="list-style-type: none"> Site was previously a BC Hydro gasification facility that has been fully remediated. Geotechnical conditions and rock excavation requirements preliminary at this time. Due to the site's elevation, an extensive tsunami wall will be required; in addition, the site will require filling. Based on preliminary geotechnical information, there may be a need for ground densification or piles to meet post-disaster foundation requirements. Minimal vegetation on the site exists. <p>Conclusion: Average</p>
<p>EN-05 Flexibility for Integrated Resource Management and Resource Recovery Suitability of the products produced from the liquid stream treatment for IRM with biosolids, organic waste and solid waste streams.</p>	<ul style="list-style-type: none"> The potential for Integrated Resource Management resides principally with the Biosolids Management Strategy rather than the liquid treatment portion of the project The ability of the option to accommodate an IRM planning process either now or in the future (e.g., future retrofits to accommodate different uses for waste products). 	<p>Evidence:</p> <ul style="list-style-type: none"> Estimated biosolids production at 108 MLD is 10,877 Dry Tonnes (DT)/year. MBR technology will recover an additional 2,160 kg/day of biosolids. Effluent water will be reused for plant process water Internal heat recovery system will be included in plant heating design. <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> Option is located in a remote isolated area and the potential for reuse water systems and reclaimed heat systems is low (Reference EN-02 and EN-03). <p><u>Rock Bay</u></p> <ul style="list-style-type: none"> Option is located in near existing industrial and commercial properties and the potential for reuse water systems and reclaimed heat systems is more favourable low (Reference EN-02 and EN-03). <p>Conclusion: Good</p>

Criteria and Description	Considerations	Evidence
<p>EN-06 Wet Weather Treatment Resiliency Ability to modify the treatment plant's operating procedures to adjust to varying wet weather flow conditions.</p>	<ul style="list-style-type: none"> Ability of technology to ramp up/down during wet weather flow events experienced in the CRD while maintaining effluent regulatory requirements. 	<p>Evidence:</p> <ul style="list-style-type: none"> Primary plant capacity with multiple units and ability to turn on & off Chemically Enhanced Primary Treatment (CEPT); excellent for range of flow up to 4 x ADWF. MBR is slightly less robust for varying flow conditions. Capacity is sized for 2 X ADWF. <p>Conclusion: Good</p>
<p>EN-07 Flexibility for More Stringent Treatment Regulations in Future The flexibility to expand or readily modify the treatment process to meet future permits requirements.</p>	<ul style="list-style-type: none"> Ability of treatment process to be modified or expanded to meet higher treatment standards. Cost impacts of future modifications Schedule impacts of future modifications How does the future retrofit impact plant operations? 	<p>Evidence:</p> <ul style="list-style-type: none"> MBR is the best available technology and effluent will exceed future regulatory standards for the foreseeable future. The anticipated layout of the plants can readily accommodate a future retrofit if an upgrade to technology is needed. <p>McLoughlin Point</p> <ul style="list-style-type: none"> 60 MLD MBR treatment plant can be accommodated on existing site, which means that there is space on the site for expansion, if needed in the future. Future expansion could be undertaken with minimal impact on plant operations. <p>Rock Bay</p> <ul style="list-style-type: none"> 48 MLD MBR treatment plant can be accommodated on existing site, which means that there is space on the site for expansion, if needed in the future. Future expansion could be undertaken with minimal impact on plant operations <p>Conclusion: Very Good</p>

Criteria and Description	Considerations	Evidence
<p>EN-08 Terrestrial Vegetation and Inter-Tidal Impacts Impact that a given site would have on existing terrestrial and inter-tidal habitat, and the degree of mitigation that may be required.</p>	<ul style="list-style-type: none"> Impact on the vegetation and habitat for terrestrial areas of the site during construction Degree of mitigation required for terrestrial and marine environment 	<p>Evidence:</p> <p>McLoughlin Point</p> <ul style="list-style-type: none"> McLoughlin Point is a disturbed site which has been remediated. There is limited terrestrial vegetation on site. There is limited vegetation along the conveyance route, which would follow Dallas Road. <p>Rock Bay</p> <ul style="list-style-type: none"> Rock Bay is a disturbed site which has been remediated. There is limited terrestrial vegetation on site. There is vegetation on the streets along the first conveyance route, which is between Clover Point and Rock Bay. There has not been an impact assessment study completed for this route. There is vegetation on the streets along the second conveyance route, which is between Rock Bay and McLoughlin Point. There has not been an impact assessment study completed for this route. This Option assumes the reuse of existing outfall at Clover Point. There would be no disturbance of the intertidal zone and no mitigation measures would be required. <p>Conclusion: Good</p>
<p>EN-09 Environmental Performance Whether and extent to which regulatory requirements meet or exceed regulatory requirements.</p>	<ul style="list-style-type: none"> Degree that the option's treatment technology exceeds current regulatory requirements. 	<p>Evidence:</p> <ul style="list-style-type: none"> MBR design will achieve 2/2 mg/L BOD/TSS effluent which far exceed the WSER regulatory requirements. <p>Conclusion: Very Good</p>

Criteria and Description	Considerations	Evidence
Social Criteria (Including Health and Safety)		
<p>SO-01 Operations Traffic Amount of traffic nuisance caused to neighbouring residents post-construction.</p>	<ul style="list-style-type: none"> • Classification of local community, e.g., residential, industrial, or commercial properties • Number, and types, of schools along the access route • Types of roads; for example, residential, arterial 	<p>Evidence:</p> <ul style="list-style-type: none"> • Daily traffic for staff access estimated at 8 to 10 vehicle movements per day/each site. • No biosolids related traffic due to solids pumping to Hartland plans. • Anticipate delivery of bulk chemicals up to twice per month. <p>McLoughlin Point</p> <ul style="list-style-type: none"> • Site is located approximately 500 meters from nearest residential property. • Access road to the site is a residential street with some commercial property near the plant site. • Route to and from the site needs to go through a residential. <p>Rock Bay</p> <ul style="list-style-type: none"> • Site is adjacent to existing arterial roads which experience daily truck traffic from other commercial/industrial activities in the area. These roads have been designed for industrial use. <p>Conclusion: Average</p>
<p>SO-02 Operations Impacts on Local Community Potential for operational noise and vibration which can be heard and felt by the neighbouring residents during operation of the treatment facility.</p>	<ul style="list-style-type: none"> • Impact of noise and vibration on local community • Classification of local community (e.g., residential or industrial) • Distance of nearest neighbour to source of noise and vibration (e.g., 25 m) 	<p>Evidence:</p> <ul style="list-style-type: none"> • All mechanical equipment designed to minimize vibration and noise. • All mechanical equipment contained inside buildings. • Plant designed for limited vibration and noise levels. <p>McLoughlin Point</p> <ul style="list-style-type: none"> • There is a buffer comprised of the military base and vacant bare land between the treatment site and the residents. • Nearest residential property is 500 metres. <p>Rock Bay</p> <ul style="list-style-type: none"> • The adjacent property is commercial/industrial. • Nearest residential property is >250 metres. <p>Conclusion: Good</p>

Criteria and Description	Considerations	Evidence
<p>SO-03 Odour Impacts on Local Community Impact of nuisance odours on residents or business in close proximity to the plant. This covers nuisance odour related to opening tank covers during maintenance. Locations closer to residents would have a higher probability of nuisance odours. It is assumed all plants would have odour control facilities for normal operations.</p>	<ul style="list-style-type: none"> Proximity to local community (e.g., 25 m) and classification of local community (e.g., commercial, industrial, residential) Potential odour due to fugitive emission Degree of omission containment Degree of odour control equipment Dispersion specs and impact nearest residences 	<p>Evidence:</p> <ul style="list-style-type: none"> All unit processes contained in buildings. Plant designed to stringent odour control requirements. Odour control will include scrubbers. Emission modeling has ensured low odour numbers at property boundaries. <p>McLoughlin Point</p> <ul style="list-style-type: none"> Due to the distance between the treatment site and nearby residences, there is a low probability of odour complaints from fugitive odour emissions. <p>Rock Bay</p> <ul style="list-style-type: none"> Site is adjacent to commercial/industrial property with 250 metre radius. Due to the distance between the treatment site and nearest residences, there are minimal fugitive emissions expected. <p>Conclusion: Good</p>
<p>SO-04 Visual Aesthetics Aesthetic visual impact for neighbouring residents and visual impact from adjacent roadways.</p>	<ul style="list-style-type: none"> Impact of views from both land side and water side Buffer zones of lawns and landscaping Care and attention to architecture of buildings required Care and attention to architectural treatment of tsunami walls 	<p>Evidence:</p> <ul style="list-style-type: none"> All process units covered or inside building. Architecture and site landscaping are designed to high standards. <p>McLoughlin Point</p> <ul style="list-style-type: none"> The Development Permit process which will ensure that the facility blends with the community through architectural finishes, landscaping and site amenities. View from the water will be a low rise industrial building which may distract from the natural bare land setting. Buildings and tsunami wall can be designed to be aesthetically pleasing. <p>Rock Bay</p> <ul style="list-style-type: none"> Treatment site is an improvement over the prior use, which was a gasification plant. The DP process which will ensure that the facility blends with the community through architectural finishes, landscaping and site amenities. View from the water will be a low rise industrial building which will blend well with existing nearby waterfront buildings. Buildings and tsunami wall can be designed to be aesthetically pleasing. <p>Conclusion: Average</p>

Criteria and Description	Considerations	Evidence
<p>SO-05 Amenities Potential How the option can impact consideration of community integration opportunities.</p>	<ul style="list-style-type: none"> • CRD has capped amenities package at \$20 million which will be prorated based on capacity of the option • The opportunities for amenity enhancements such as public access, mixed use zoning, public art, waterfront access • The ability to facilitate (encourage) additional public amenities • Size of site to accommodate walking trails, etc. • Space to accommodate complimentary opportunities (e.g., educational facilities, research from UVic, learning centres for public on wastewater treatment) • Opportunity for job creation, consider both construction and operations 	<p>Evidence:</p> <ul style="list-style-type: none"> • Two plants Option will provide more local job opportunities both during construction and operations. • Since the amenity package (\$20 million) will be distributed between two sites, the extent of improvements at each site will be less favourable. <p>McLoughlin Point</p> <ul style="list-style-type: none"> • With a two plant option the \$20 million amenity package will be prorated between sites, which means there may not be sufficient funds for all of the requested amenities from the zoning bylaw. The following amenities have been requested in the zoning bylaw. <ul style="list-style-type: none"> ○ The provision of public open space improvements of a value no less than \$75,000, including picnic benches and “tot” park play lot with appropriately themed play equipment and safety features given proximity to open water. ○ Pier or dock, of sufficient size to fulfill previous condition, including with provision of harbour tugboat pedestrian ferry service. ○ Public Walkway: Design of building and development of site to incorporate public accessible trails, and off-site. ○ Construction of trail connection to West Bay Neighbourhood. ○ Additional traffic integration amenities, in the form of additional traffic calming and bike lanes on all remaining. ○ Streets between Lampson Road and Esquimalt Road. ○ Education and Interpretive Centre – additional 25 square metres of floor area for total of 75 square metres, including portion for a “Center of Excellence” to educate, promote and facilitate energy technology or other industries focussed on utilizing the wind and wave energy at the subject property. ○ High efficiency air filters systems to improve air quality and odour reduction for schools within the Extended Community. ○ Extension of Green Building and Design Features to additional portions of development. ○ Integration of reclaimed water into the design of the buildings, including a rooftop wetland and landscaped feature. ○ Heritage Interpretative Signage, recognizing the historic uses on the subject property and process to transition to current uses. ○ Annual contribution of \$55,000 to McLoughlin Point Amenity Reserve Fund. <p>Rock Bay</p> <ul style="list-style-type: none"> • Since a rezoning application has not been submitted, the amenity provisions for Rock Bay are unknown. <p>Conclusion: Average</p>

Criteria and Description	Considerations	Evidence
<p>SO-06 Construction Impacts (Conveyance) Impacts to the local community of the plant and along the conveyance route alignments during construction, including the alignments that pass through more environmentally sensitive areas.</p>	<ul style="list-style-type: none"> • Consider the impacts (noise, dust and vibration) of conveyance construction to the local community (focusing on residential and commercial) • Interruption of “quiet enjoyment” of private property owners • Impacts to vegetation and property, including any costs of remediation • Possible damage to property(consider causes, e.g., blasting or vibration) 	<p>Evidence:</p> <ul style="list-style-type: none"> • Construction planning will mitigate disruption to neighbouring properties. <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> • Laydown area in James Bay needed for the conveyance pipe, required for Harbour crossing boring operation, will impact up to 1 km of Dallas Road for 6 months. • Launch shaft for Harbour crossing horizontal drilling will impact Ogden Point area for up to 6 months. There will be 10-15 trucks per day which access the shaft area to haul away excavated material. • Installation of the conveyance piping from Clover Point Pump Station to Harbour Crossing will be along Dallas Road but in the boulevard south of travelled roadway, which will impact traffic along that route for 3 months. <p><u>Rock Bay</u></p> <ul style="list-style-type: none"> • Construction of conveyance piping from both Clover Point and Macaulay Point will cause major disruption on residential and arterial streets for up to 2 years. • The conveyance piping is large diameter and will be installed below existing utilities (i.e. 4 to 5 metres). Replacement of existing infrastructure is expected. • Blasting may be required along portions of the conveyance route. • Due to the close proximity of the conveyance pipe route to residences (< 20m), noise dust and vibration impacts is expected to be experienced by homeowners. • Some of the pipeline construction will be adjacent to commercial properties. <p>Conclusion: Poor</p>

Criteria and Description	Considerations	Evidence
<p>SO-07 Construction Impacts (Plant) Impacts to the local community of the plant during construction.</p>	<ul style="list-style-type: none"> Consider the impacts (noise, dust and vibration) of plant construction to the local community (focusing on residential and commercial) Impacts to environmentally sensitive areas Impacts to vegetation and property, including any costs of remediation Impacts damage to property (consider causes, e.g., blasting or vibration) 	<p>Evidence:</p> <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> Due to the remoteness of the treatment site (e.g., 500 m from residences), the impacts on nearby properties are minimal. Due to the remoteness of the treatment site, there is a low risk of significant dust, vibration, and noise impacts to the neighbours. The contractor may be required to barge that material and equipment to/from site and minimize construction traffic through residential neighbourhoods during construction. <p><u>Rock Bay</u></p> <ul style="list-style-type: none"> The Rock Bay site is located in an industrial site, therefore there is a low expectation that there will be dust, vibration, and noise impacts to the residential neighbours. It is expected that commercial neighbours will be impacted by the dust, noise and vibration. The expected need for piling may extend construction noise for approximately 2 months. Traffic along arterial roads will be impacted for the duration of construction due to the delivery of materials and equipment to the site. This impact could be mitigated through a Traffic Management Plan under management by the contractor. <p>Conclusion: Average</p>
<p>SO-08 Impacts to existing public amenities Options' impact the community's ability to enjoy existing public amenities such as park land, either existing or future.</p>	<ul style="list-style-type: none"> Impacts on existing public amenities (e.g., parks, playgrounds, or access) during the construction and operations of the facility Impacts on municipality's revenue opportunities associated with the public amenities. 	<p>Evidence:</p> <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> No impact to the community's enjoyment of existing public amenities because the treatment site is surrounded by the DND vacant lands. <p><u>Rock Bay</u></p> <ul style="list-style-type: none"> No impact to the community's enjoyment of existing public amenities because the treatment site is surrounded by industrial zoning. There are no public spaces adjacent or near the site. <p>Conclusion: Very Good</p>

Criteria and Description	Considerations	Evidence
<p>SO-09</p> <p>Compatibility with Official Community Plan</p> <p>Does the option fit within the approved Official Community Plan or existing zoning?</p>	<ul style="list-style-type: none"> • Compatibility with existing Official Community Plan • Requirement for rezoning or variance on zoning, including risk of receiving variance in a timely manner • Development permitting process, including risk of achieving DP in a timely manner • Anticipated opposition to rezoning by host municipality or impacted property owners 	<p>Evidence:</p> <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> • Zoning in place for 108 MLD Wastewater Treatment Plant (Township of Esquimalt Zoning Bylaw 1992 (Consolidated), Bylaw No. 2050, Amendment No. 209 (McLoughlin Point – Special Use) (Bylaw 2806). • OCP has been amended for Special Use – Waste Water Treatment. • Existing design for treatment site meets current height and shoreline encroachment restrictions. <p><u>Rock Bay</u></p> <ul style="list-style-type: none"> • Rezoning from existing M3 Industrial to Public Utility will be required, which is expected to take 18 months to complete. • Public opposition from property owners adjacent to conveyance pipe routes could add time and complexity to the rezoning application process. • OCP amendment would be required but would not impact schedule since this process follows the rezoning process. • Conceptual design will satisfy typical height and setback requirements for utility zoning. • Development Permit process with City of Victoria will be required. <p>Conclusion: Average</p>
<p>SO-10</p> <p>Archeological Findings</p> <p>Risk of discovering archeological items during construction.</p>	<ul style="list-style-type: none"> • Greenfield (undisturbed) vs. Brownfield (disturbed) • Consider archeological studies completed to date 	<p>Evidence:</p> <ul style="list-style-type: none"> • Previous EIS studies gathered information about and assessed the traditional and cultural use of marine resources in this area, as well as the traditional transportation routes and marine resource harvesting. • McLoughlin was identified as a traditional gathering area. <ul style="list-style-type: none"> ○ CRD Core Area Wastewater Treatment Program - Stage 2 Environmental Impact Study – 18 Feb 2013- p. 34 (Worley Parsons) • Effects on archaeological features are expected to be less than significant at all CAWTP facility sites. <ul style="list-style-type: none"> ○ Environmental Impact Study of Core Area Wastewater Treatment Program Facilities – Terrestrial Environment - March 2014- p. 34 (Tera) • Risk of discovering archeological findings along the conveyance pipe routes are unknown and would have to be assessed by a qualified archaeologist. <p>Conclusion: Good</p>

Criteria and Description	Considerations	Evidence
<p>SO-11 Impact to local First Nations How the option impacts local First Nations, either by providing benefits, or lack of consultation.</p>	<ul style="list-style-type: none"> • Has the local First Nations been consulted on the proposed sites? • Are there opportunities for the local First Nations to benefit through the development of the option? 	<p>Evidence:</p> <ul style="list-style-type: none"> • CRD has consulted impacted First Nations extensively for all of the options under review and there is no material difference in how the options meet the criterion. <p>McLoughlin Point</p> <ul style="list-style-type: none"> • Local First Nations will not benefit financially or otherwise from this option. <p>Rock Bay</p> <ul style="list-style-type: none"> • Local First Nations will financially benefit from this option through the sale of land. <p>Conclusion: Good</p>
<p>SO-12 Leading Development Opportunity to be a catalyst for future development or improvements in existing development.</p>	<ul style="list-style-type: none"> • Opportunity to enable further development or beautification of an area (e.g., project could bring in roads and utilities, which will encourage future development). • Opportunities to improve existing communities (e.g., through upgrades to off-site services) 	<p>Evidence:</p> <ul style="list-style-type: none"> • Surrounding area for both sites have access to gas, hydro, water, and sewer lines; which are in good condition. • CRD staff has advised that the City of Victoria staff consider the redevelopment of the Rock Bay (BCHydro/Transport Canada) lands for wastewater treatment as a catalyst for economic development of the BCHydro/Transport Canada residual land not required for wastewater treatment as well as other surrounding properties. <p>Conclusion: Good</p>
<p>SO-13 Cultural and Heritage impacts Ability to use and/or respect culture and heritage. This would include consideration of existing structures or features on the proposed sites.</p>	<ul style="list-style-type: none"> • How the option respects and incorporates existing cultural or heritage structures, site, or artifacts 	<p>Evidence:</p> <p>McLoughlin Point</p> <ul style="list-style-type: none"> • The site does not contain any existing structures with historical significance that could be used in the design. • The design of the building exterior and site landscaping will reflect and honor history, culture, and heritage. <p>Rock Bay</p> <ul style="list-style-type: none"> • The site contains two existing structures with historical significance that could be incorporated into the plant design. • The design of the administration building exterior and site landscaping will reflect and honor history, culture, and heritage. <p>Conclusion: Good</p>

OPTION SCREENING SUMMARY SHEET

Option Name: Two Plants: McLoughlin 60 MLD, Rock Bay 48 MLD Secondary Plant (Secondary Treatment)

Option Description: Two Plants: McLoughlin 60 MLD BAF / Rock Bay 48 MLD BAF (Secondary Treatment)

Rating System Proposed:

Very Good (5)	Good (4)	Average (3)	Fair (2)	Poor (1)
The impact of the option is very favourable and far exceeds minimum expectations.	The impact of the option is favourable and clearly exceeds minimum expectations.	The impact of the option is acceptable and meets or somewhat exceeds minimum expectations.	The impact of the option barely meets minimum expectations.	Option fails to meet basic requirements of the criterion.

Criteria and Description	Considerations	Evidence
Economic Criteria		
EC-01 Capital Costs Construction costs including both direct and indirect costs in 2016 dollars.		Capital Cost of Option: \$ 980 million
EC-02 Whole Life Cycle Costs Operating and maintenance costs, expressed as a net present value cost using a 25 year life cycle cost and a 4% discount rate, added to capital costs.		Whole Life Cycle Cost of Option: \$1,288 million
EC-03 CRD Capital Cost Contribution	<ul style="list-style-type: none"> The current approved project capital budget is \$788 million. The draft Federal/Provincial funding agreements total \$502 million. The CRD share of the capital cost is calculated as the Option Capital Cost (EC-01) minus \$502 million. 	CRD Capital Cost Contribution: \$478 million

Criteria and Description	Considerations	Evidence
<p>EC-04 Schedule of Completion</p>	<p>Estimated Service Commencement Date</p> <p>Impacts included in the Schedule assumption:</p> <ul style="list-style-type: none"> • Timing needed for rezoning and permitting requirements (e.g. development permit) • Environmental permitting requirements • Commissioning Schedule • Site conditions that may extend construction(i.e. piling, shoring) • Construction Schedule 	<p>Evidence:</p> <ul style="list-style-type: none"> • Estimated Service Commencement Date: March 31st, 2023 <p>McLoughlin Point</p> <ul style="list-style-type: none"> • Zoning completed for 108 MLD Waste Water Plant at this site (Township of Esquimalt Zoning Bylaw 1992 (Consolidated), Bylaw No. 2050, Amendment No. 209 (McLoughlin Point – Special Use) (Bylaw 2806) • EIS completed • Development Permit will be required <ul style="list-style-type: none"> ○ Development consistent with conditions identified in the document entitled “Design Guidelines – McLoughlin Point Wastewater Treatment Plant” prepared by CitySpaces Consulting Ltd. Revised May 2013, copy of which is attached to the Official Community Plan <p>Rock Bay</p> <ul style="list-style-type: none"> • Existing zoning is M3 Industrial, which would trigger the need for a rezoning. The estimated time to complete is 18 months. • Environmental Impact Study (EIS) will need to be completed. • Development Permit (DP) will be required. • Preliminary site geotechnical report indicate that piling may be required which will add time to the construction schedule.
<p>Environmental Criteria</p>		<p>Conclusion</p>
<p>EN-01 Carbon Footprint Net carbon dioxide equivalent (eCO₂) during the construction and operation of the treatment plant (tonnes/year). Excludes consideration of the biosolids treatment</p>	<ul style="list-style-type: none"> • Technology impacts to carbon footprint; • Pumping and other conveyance impacts to carbon footprint 	<p>Evidence:</p> <ul style="list-style-type: none"> • Estimated carbon footprint Construction (One Time) – 21,747 tonnes. • Estimated carbon footprint Operations (Annual) – 3,250 tonnes/year. • Pumping of effluent from Rock Bay to Clover will increase the Operations (Annual) carbon footprint by 178 tonnes/year. <p>Conclusion: Average</p>

Criteria and Description	Considerations	Evidence
<p>EN-02</p> <p>Heat Recovery Potential</p> <p>Heat recovered from the liquid stream treatment results in a low grade heat. This criterion is defined as the options' estimated opportunity to earn revenue, or save operating costs, from heat recovery.</p>	<ul style="list-style-type: none"> Proximity of plant to potential existing customers Proximity of plant to potential future customers 	<p>Evidence:</p> <ul style="list-style-type: none"> Energy offset gained through the use of heat recovered from the plant's final effluent. Energy use can be both internal to the treatment plant and external via a district energy scheme. Market studies conducted by Stantec in 2009 concluded that there is limited interest from existing Industrial/Commercial/Institutional (ICI) customers to purchase reclaimed heat due to the high cost of conversion of existing Heating Ventilation Air Conditioning (HVAC) systems. <p>McLoughlin Point</p> <ul style="list-style-type: none"> A small district heating system could be installed to service downtown redevelopment of Esquimalt & Upper Harbour customers / military base. <p>Rock Bay</p> <ul style="list-style-type: none"> A district heating system could be incorporated into the community plan. <ul style="list-style-type: none"> The City of Victoria concept for development of the site includes mixed used commercial and public uses. These future residents could be users of recovered heat as new construction would be more cost effective. <p>Conclusion: Average</p>
<p>EN-03</p> <p>Water Reuse Potential</p> <p>The options' estimated opportunity to earn revenue, or save operating costs, from water reuse.</p> <p>Effluent reuse can be both internal to the treatment plant and external via an end product user. The use of treated water is based on provincial regulations that requires tertiary treatment and disinfection.</p>	<ul style="list-style-type: none"> Proximity of option to potential existing customers Proximity of option to potential future customers Potential of option to produce water for reuse opportunities 	<p>Evidence:</p> <ul style="list-style-type: none"> Market studies conducted by Stantec in 2009 concluded that there is limited interest from existing Industrial/Commercial/Institutional (ICI) customers to purchase reclaimed water. Water reuse is typical in semi-arid regions where water supplies are limited. CRD has an abundant water supply and the irrigation season in the Region is relatively short (4 months). The largest users of reclaimed water are agricultural and golf courses. There is potential for use in public parks. The costs to retrofit existing residential properties (~\$2500/dwelling) make the economics of conversion of existing residences unfavourable. BAF treatment technology will yield secondary effluent quality which is unsuitable for water reuse. <p>McLoughlin Point</p> <ul style="list-style-type: none"> Option is located in a remote area and the cost of retrofitting existing systems and constructing purple pipe distribution system is high. <p>Rock Bay</p> <ul style="list-style-type: none"> Option is located in an existing industrial/commercial area so the potential for adding future reuse water customers is more favourable if tertiary facilities are added. Secondary effluent is not suitable for reuse. <p>Conclusion: Poor</p>

Criteria and Description	Considerations	Evidence
<p>EN-04 Environmental Considerations for Site Impacts to the local environment during construction of the treatment plant.</p>	<ul style="list-style-type: none"> Degree of remediation required to prepare site for construction Disturbance of natural environment Natural or Disturbed site Requirement for blasting Extend of shoring and piling required Disturbance of natural habitat and vegetation Elevation of the proposed sites (e.g. need to build tsunami walls) 	<p>Evidence:</p> <p>McLoughlin Point</p> <ul style="list-style-type: none"> Site was previously a bulk petroleum storage facility that has been remediated. Elevation of site mainly favourable to storm surge although a tsunami wall is required. Minimal vegetation exists on the site. <p>Rock Bay</p> <ul style="list-style-type: none"> Site was previously a BC Hydro gasification facility that has been remediated. Geotechnical conditions and rock excavation requirement uncertain. Extensive tsunami wall required. Site is low and will require filling. Likely a requirement for ground densification or piles to meet post-disaster foundation requirements. Minimal vegetation exists on the site. <p>Conclusion: Average</p>
<p>EN-05 Flexibility for Integrated Resource Management and Resource Recovery Suitability of the products produced from the liquid stream treatment for IRM with biosolids, organic waste and solid waste streams.</p>	<ul style="list-style-type: none"> The potential for Integrated Resource Management resides principally with the Biosolids Management Strategy rather than the liquid treatment portion of the project The ability of the option to accommodate an IRM planning process either now or in the future (e.g. future retrofits to accommodate different uses for waste products). 	<p>Evidence:</p> <ul style="list-style-type: none"> Estimated biosolids production at 108 MLD is 10,877 Dry Tonnes (DT)/year. Effluent water will be reused for plant process water. Internal heat recovery system will be included in plant heating design. <p>McLoughlin Point</p> <ul style="list-style-type: none"> Option is located in a remote isolated area and the potential for reuse water systems and reclaimed heat systems is low. <p>Rock Bay</p> <ul style="list-style-type: none"> Option is located in near existing industrial and commercial properties and the potential for reclaimed heat systems is somewhat favourable (Reference EN-02). <p>Conclusion: Average</p>
<p>EN-06 Wet weather treatment resiliency Ability to modify the treatment plant's operating procedures to adjust to varying wet weather flow conditions.</p>	<ul style="list-style-type: none"> Ability of technology to ramp up/down during wet weather flow events experienced in the CRD while maintaining effluent regulatory requirements. 	<p>Evidence:</p> <ul style="list-style-type: none"> Primary plant capacity with multiple units and ability to turn on & off Chemically Enhanced Primary Treatment (CEPT); excellent for range of flow up to 4 x ADWF. BAF secondary treatment is robust for varying flow conditions. Capacity is sized for 2 X ADWF. <p>Conclusion: Good</p>

Criteria and Description	Considerations	Evidence
<p>EN-07 Flexibility for more stringent treatment regulations in future The flexibility to expand or readily modify the treatment process to meet future permits requirements.</p>	<ul style="list-style-type: none"> Ability of treatment process to be modified or expanded to meet higher treatment standards. Cost impacts of future modifications Schedule impacts of future modifications How does the future retrofit impact plant operations? 	<p>Evidence:</p> <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> The site is suitable for a 60 MLD BAF Secondary plant. Tertiary disc filters could be added in the future. The adjacent site is vacant not used Department of Defence (DND) land that could be utilized in the future for significant expansion needs. <p><u>Rock Bay</u></p> <ul style="list-style-type: none"> 75% of site will be utilized by BAF Secondary plant, but tertiary disc filters could be added in the future. <p>Conclusion: Average</p>
<p>EN-08 Terrestrial vegetation and Inter-tidal impacts Impact that a given site would have on existing terrestrial and inter-tidal habitat, and the degree of mitigation that may be required.</p>	<ul style="list-style-type: none"> Impact on the vegetation and habitat for terrestrial areas of the site during construction Degree of mitigation required for terrestrial and marine environment 	<p>Evidence:</p> <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> McLoughlin Point is a disturbed site which has been remediated. There is limited terrestrial vegetation on site. There is vegetation on the streets along the (Macaulay Point to McLoughlin Point) conveyance route. There has not been an impact assessment study completed for this route. The marine outfall would be the existing Macaulay Point outfall. There would be no disturbance of the intertidal zone and no mitigation measures would be required. <p><u>Rock Bay</u></p> <ul style="list-style-type: none"> Rock Bay is a disturbed site which has been remediated. There is limited terrestrial vegetation on site. There is vegetation on the streets along the (Clover Point to Rock Bay) conveyance route. There has not been an impact assessment study completed for this route. This Option assumes the reuse of existing outfall at Clover Point. There would be no disturbance of the intertidal zone and no mitigation measures would be required. <p>Conclusion: Average</p>

Criteria and Description	Considerations	Evidence
<p>EN-09 Environmental Performance Whether and extent to which regulatory requirements meet or exceed regulatory requirements.</p>	<ul style="list-style-type: none"> Degree that the option's treatment technology exceeds current regulatory requirements. 	<p>Evidence:</p> <p><u>McLoughlin Point and Rock Bay</u></p> <ul style="list-style-type: none"> BAF design will achieve 25 mg/L BOD/TSS effluent which meets the WSER regulatory requirements. Dispersion modelling of effluent plume has shown that bacterial levels will be less than 14 coliform /100 ml at the perimeter of the Initial Dilution Zone which meets the regulatory requirement for marine discharges. <p>Conclusion: Average</p>
<p>Social Criteria (Including Health and Safety)</p>		
<p>SO-01 Operations Traffic Amount of traffic nuisance caused to neighbouring residents post-construction.</p>	<ul style="list-style-type: none"> Classification of local community, e.g. residential, industrial, or commercial properties Number, and types, of schools along the access route Types of roads; for example, residential, arterial 	<p>Evidence:</p> <ul style="list-style-type: none"> Daily traffic for staff access estimated at 8 to 10 vehicle movements per day/each site. No biosolids related traffic due to solids pumping to Hartland. Anticipate delivery of bulk chemicals up to twice per month. <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> Daily traffic for staff access estimated at 8 to 10 vehicle movements per day. Site is located approximately 500 meters from nearest residential property. Access road to the site is a residential street with some commercial property near the plant site. Route to and from site needs to go through residential. <p><u>Rock Bay</u></p> <ul style="list-style-type: none"> Daily traffic for staff access estimated at 8 to 10 vehicle movements per day. Site is adjacent to existing arterial roads which experience significant daily truck traffic. No biosolids related traffic due to solids pumping to Hartland. <p>Conclusion: Average</p>
<p>SO-02 Operations Impacts on local community Potential for operational noise and vibration which can be heard and felt by the neighbouring residents during operation of the treatment facility.</p>	<ul style="list-style-type: none"> Impact of noise and vibration on local community Classification of local community (e.g. residential or industrial) Distance of nearest neighbour to source of noise and vibration (e.g. 25 m) 	<p>Evidence:</p> <ul style="list-style-type: none"> All mechanical equipment designed to minimize vibration and noise. All mechanical equipment contained inside buildings. Plant designed for limited vibration and noise levels. <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> There is a buffer comprised of the military base and vacant bare land between the treatment site and the residents. Nearest residential property is 500 metres.

Criteria and Description	Considerations	Evidence
		<p>Rock Bay</p> <ul style="list-style-type: none"> The adjacent property is commercial/industrial. Nearest residential property is >400 metres. <p>Conclusion: Good</p>
<p>SO-03 Odour Impacts on local community Impact of nuisance odours on residents or business in close proximity to the plant. This covers nuisance odour related to opening tank covers during maintenance. Locations closer to residents would have a higher probability of nuisance odours. It is assumed all plants would have odour control facilities for normal operations.</p>	<ul style="list-style-type: none"> Proximity to local community (e.g. 25m) and classification of local community (e.g. commercial, industrial, residential) Potential odour due to fugitive emission Degree of omission containment Degree of odour control equipment Dispersion specs and impact nearest residences 	<p>Evidence:</p> <ul style="list-style-type: none"> All unit processes contained in buildings. Plant designed to stringent odour control requirements. Odour control will include odour scrubbing. Emission modeling has ensured low odour numbers at property boundaries. <p>McLoughlin Point</p> <ul style="list-style-type: none"> Due to the distance between the treatment site and nearby residences, there is a low probability of complaints relating to fugitive odour emissions. <p>Rock Bay</p> <ul style="list-style-type: none"> Site is adjacent to commercial/industrial property. Due to the distance between the treatment site and nearest residences, there is a low probability of odour complaints from fugitive emissions. <p>Conclusion: Good</p>
<p>SO-04 Visual Aesthetics Aesthetic visual impact for neighbouring residents and visual impact from adjacent roadways.</p>	<ul style="list-style-type: none"> Impact of views from both land side and water side Buffer zones of lawns and landscaping Care and attention to architecture of buildings required Care and attention to architectural treatment of tsunami walls 	<p>Evidence:</p> <ul style="list-style-type: none"> All process units covered or inside building. Architecture and site landscaping are designed to high standards. <p>McLoughlin Point</p> <ul style="list-style-type: none"> Treatment site is an improvement over the prior use, which was a bulk petroleum storage facility. The Development Permit process which will ensure that the facility blends with the community through architectural finishes, landscaping and site amenities. View from the water will be a low rise industrial building which may distract from the natural bare land setting. Buildings and tsunami wall can be designed to be aesthetically pleasing. <p>Rock Bay</p> <ul style="list-style-type: none"> Treatment site is an improvement over the prior use, which was a gasification plant. The Development Permit process which will ensure that the facility blends with the community through architectural finishes, landscaping and site amenities. View from the water will be a low rise industrial building which will blend well with other nearby waterfront buildings. Buildings and tsunami wall can be designed to be aesthetically pleasing. <p>Conclusion: Average</p>

Criteria and Description	Considerations	Evidence
<p>SO-05 Amenities Potential How the option can impact consideration of community integration opportunities.</p>	<ul style="list-style-type: none"> • CRD has capped amenities package at \$20 million which will be prorated based on capacity of the option • The opportunities for amenity enhancements such as public access, mixed use zoning, public art, waterfront access • The ability to facilitate (encourage) additional public amenities • Size of site to accommodate walking trails, etc. • Space to accommodate complimentary opportunities (e.g. educational facilities, research from UVic, learning centres for public on wastewater treatment) • Opportunity for job creation, consider both construction and operations 	<p>Evidence:</p> <ul style="list-style-type: none"> • Two plant Option will provide more job opportunities. • Since the amenity package (\$20 million) will be distributed between two sites, the extent of improvements at each site will be less favourable. <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> • The following amenity provisions were included in the Township of Esquimalt 2013 rezoning of the McLoughlin Point site to Special Use (Wastewater Treatment) based on the 108 MLD single treatment plant option. With a two plant option the \$20 million amenity package will be prorated between sites proportional to flow. The following amenities have been requested in the zoning bylaw. <ul style="list-style-type: none"> ○ The provision of public open space improvements of a value no less than \$75,000, including picnic benches and “tot” park play lot with appropriately themed play equipment and safety features given proximity to open water. ○ Pier or dock, of sufficient size to fulfill previous condition, including with provision of harbour tugboat pedestrian ferry service. ○ Public Walkway: Design of building and development of site to incorporate public accessible trails, and off-site. ○ Construction of trail connection to West Bay Neighbourhood. ○ Additional traffic integration amenities, in the form of additional traffic calming and bike lanes on all remaining. ○ Streets between Lampson Road and Esquimalt Road. ○ Education and Interpretive Centre – additional 25 square metres of floor area for total of 75 square metres, including portion for a “Center of Excellence” to educate, promote and facilitate energy technology or other industries focussed on utilizing the wind and wave energy at the subject property. ○ High efficiency air filters systems to improve air quality and odour reduction for schools within the Extended Community. ○ Extension of Green Building and Design Features to additional portions of development. ○ Integration of reclaimed water into the design of the buildings, including a rooftop wetland and landscaped feature. ○ Heritage Interpretative Signage, recognizing the historic uses on the subject property and process to transition to current uses. ○ Annual contribution of \$55,000 to McLoughlin Point Amenity Reserve Fund. <p><u>Rock Bay</u></p> <ul style="list-style-type: none"> • Since a rezoning application has not been submitted, the amenity provisions for Rock Bay are unknown. <p>Conclusion: Average</p>

Criteria and Description	Considerations	Evidence
<p>SO-06 Construction Impacts (Conveyance) Impacts to the local community of the plant and along the conveyance route alignments during construction, including the alignments that pass through more environmentally sensitive areas.</p>	<ul style="list-style-type: none"> Consider the impacts (noise, dust and vibration) of conveyance construction to the local community (focusing on residential and commercial) Interruption of “quiet enjoyment” of private property owners Impacts to vegetation and property, including any costs of remediation Possible damage to property(consider causes, e.g. blasting or vibration) 	<p>Evidence:</p> <ul style="list-style-type: none"> Construction planning will somewhat mitigate disruption to neighbouring properties. <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> Installation of the conveyance piping from Macaulay Point to McLoughlin Point will impact residential properties along route for approximately 4 months. <p><u>Rock Bay</u></p> <ul style="list-style-type: none"> Construction of conveyance piping from both Clover Point to Rock Bay will cause disruption on residential and arterial streets for up to 2 years. The conveyance piping is large diameter and will be installed below existing utilities (i.e.4 to 5 metres). Replacement of existing infrastructure is expected. Blasting may be required along portions of the conveyance route. Due to the close proximity of the conveyance pipe route to residences (< 20m), noise dust and vibration impacts may be experienced by homeowners. Some of the pipeline construction will be adjacent to commercial properties. Construction planning will mitigate disruption to neighbouring properties. <p>Conclusion: Poor</p>
<p>SO-07 Construction Impacts (Plant) Impacts to the local community of the plant during construction.</p>	<ul style="list-style-type: none"> Consider the impacts (noise, dust and vibration) of plant construction to the local community (focusing on residential and commercial) Impacts to environmentally sensitive areas Impacts to vegetation and property, including any costs of remediation Impacts to property (consider causes, e.g., blasting or vibration) 	<p>Evidence:</p> <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> Due to the remoteness of the treatment site (e.g. 500 m from residences), the impacts on nearby properties are minimal. The expected duration of construction is 36 months. Due to the remoteness of the treatment site, there is a low risk of significant dust, vibration, and noise impacts to the neighbours. The contractor may be required to barge material and equipment to/from site and minimize construction traffic through residential neighbourhoods during construction. <p><u>Rock Bay</u></p> <ul style="list-style-type: none"> The Rock Bay site is located in an industrial site; therefore there is a low probability that there will be dust, vibration, and noise impacts to the residential neighbours. The expected duration of construction is 36 months. It is expected that commercial neighbours will be impacted by the dust, noise and vibration. The expected need for piling will be required at the site which will create additional may extend construction noise for approximately 2 months. The expected need for shoring/sheet piling will be required due to high water table conditions. Nuisance noise may extent construction noise for approximately 2 months. Traffic along arterial roads will be impacted for the duration of construction due to the delivery of materials and equipment to the site. This impact could be mitigated through a

Criteria and Description	Considerations	Evidence
		<p>Traffic Management Plan under management by the contractor.</p> <p>Conclusion: Average</p>
<p>SO-08 Impacts to existing public amenities Options' impact the community's ability to enjoy existing public amenities such as park land, either existing or future.</p>	<ul style="list-style-type: none"> • Impacts on existing public amenities (e.g. parks, playgrounds, or access) during the construction and operations of the facility • Impacts on municipality's revenue opportunities associated with the public amenities 	<p>Evidence:</p> <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> • No impact to the community's enjoyment of existing public amenities because the treatment site is surrounded by the DND vacant lands. <p><u>Rock Bay</u></p> <ul style="list-style-type: none"> • No impact to the community's enjoyment of existing public amenities because the treatment site is surrounded by industrial zoning. There are no public spaces adjacent or near the site. <p>Conclusion: Very Good</p>
<p>SO-09 Compatibility with Official Community Plan Does the option fit within the approved Official Community Plan or existing zoning?</p>	<ul style="list-style-type: none"> • Compatibility with existing Official Community Plan • Requirement for rezoning or variance on zoning, including risk of receiving variance in a timely manner • Development permitting process, including risk of achieving DP in a timely manner • Anticipated opposition to rezoning by host municipality or impacted property owners 	<p>Evidence:</p> <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> • Zoning in place for 108 MLD Wastewater Treatment Plant (Township of Esquimalt Zoning Bylaw 1992 (Consolidated), Bylaw No. 2050, Amendment No. 209 (McLoughlin Point – Special Use) (Bylaw 2806). • OCP has been amended for Special Use – Waste Water Treatment. • Existing design for treatment site meets current height and shoreline encroachment restrictions. • Development Permit process with Township of Esquimalt may cause some schedule delays due to single treatment plant option. <ul style="list-style-type: none"> ◦ Development consistent with conditions identified in the document entitled "Design Guidelines – McLoughlin Point Wastewater Treatment Plant" prepared by CitySpaces Consulting Ltd. Revised May 2013, copy of which is attached to the Official Community Plan. <p><u>Rock Bay</u></p> <ul style="list-style-type: none"> • Rezoning from existing M3 Heavy Industrial to public use will be required. City of Victoria rezoning process is estimated to take 18 months to complete. • Public opposition from property owners adjacent to conveyance pipe routes could add time and complexity to the rezoning application process. • OCP amendment would be required but would not impact schedule since this process follows the rezoning process. • Conceptual design will satisfy typical height and setback requirements for typical public utility zoning. • City of Victoria Development Permit will be required. <p>Conclusion: Average</p>

Criteria and Description	Considerations	Evidence
<p>SO-10 Archeological Findings Risk of discovering archeological items during construction.</p>	<ul style="list-style-type: none"> Greenfield (undisturbed) vs. Brownfield (disturbed) Consider archeological studies completed to date 	<p>Evidence:</p> <ul style="list-style-type: none"> Previous EIS studies gathered information about and assessed the traditional and cultural use of marine resources in this area, as well as the traditional transportation routes and marine resource harvesting. McLoughlin was identified as a traditional gathering area. <ul style="list-style-type: none"> CRD Core Area Wastewater Treatment Program - Stage 2 Environmental Impact Study – 18 Feb 2013- p. 34 (Worley Parsons). Effects on archaeological features are expected to be less than significant at all CAWTP facility sites. <ul style="list-style-type: none"> Environmental Impact Study of Core Area Wastewater Treatment Program Facilities – Terrestrial Environment - March 2014- p. 34 (Tera). Risk of discovering archeological findings along the conveyance pipe routes are unknown and would have to be assessed by a qualified archaeologist. <p>Conclusion: Good</p>
<p>SO-11 Impact to local First Nations How the option impacts local First Nations, either by providing benefits, or lack of consultation.</p>	<ul style="list-style-type: none"> Has the local First Nations been consulted on the proposed sites? Are there opportunities for the local First Nations to benefit through the development of the option? 	<p>Evidence:</p> <ul style="list-style-type: none"> CRD has consulted impacted First Nations extensively for all of the options under review and there is no material difference in how the options meet the criterion. <p>McLoughlin Point</p> <ul style="list-style-type: none"> Local First Nations will not benefit financially or otherwise from this option. <p>Rock Bay</p> <ul style="list-style-type: none"> Local First Nations will financially benefit from this option through the sale of land. <p>Conclusion: Good</p>
<p>SO-12 Leading Development Opportunity to be a catalyst for future development or improvements in existing development.</p>	<ul style="list-style-type: none"> Opportunity to enable further development or beautification of an area (e.g. project could bring in roads and utilities, which will encourage future development). Opportunities to improve existing communities (e.g. through upgrades to off-site services) 	<p>Evidence:</p> <ul style="list-style-type: none"> Surrounding area for both sites have access to gas, hydro, water, and sewer lines; which are in good condition. Upgrades are not required. <p>Rock Bay</p> <ul style="list-style-type: none"> This option could be a catalyst for the development of residual surplus land at the BC Hydro/Transport Canada site as well as the existing industrial/commercial land around the site. <p>Conclusion: Good</p>

Criteria and Description	Considerations	Evidence
<p>SO-13 Cultural and Heritage impacts Ability to use and/or respect culture and heritage. This would include consideration of existing structures or features on the proposed sites.</p>	<ul style="list-style-type: none"> How the option respects and incorporates existing cultural or heritage structures, site, or artifacts 	<p>Evidence:</p> <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> The site does not contain any existing structures with historical significance that could be used in the design. The design of the building exterior and site landscaping will reflect and honor history, culture, and heritage. <p><u>Rock Bay</u></p> <ul style="list-style-type: none"> The site contains two existing structures with historical significance that could be incorporated into the plant design. The design of the administration building exterior and site landscaping will reflect and honor history, culture, and heritage. <p>Conclusion: Good</p>

OPTION SCREENING SUMMARY SHEET

Option Name: Two Plants: McLoughlin 60 MLD, Rock Bay 48 MLD Tertiary Plants (Tertiary Treatment)

Option Description: Two Plants: McLoughlin 60 MLD BAF + Tertiary Disc Filters / Rock Bay 48 MLD BAF + Tertiary Disc Filters (Tertiary Treatment)

Rating System Proposed:

Very Good (5)	Good (4)	Average (3)	Fair (2)	Poor (1)
The impact of the option is very favourable and far exceeds minimum expectations.	The impact of the option is favourable and clearly exceeds minimum expectations.	The impact of the option is acceptable and meets or somewhat exceeds minimum expectations.	The impact of the option barely meets minimum expectations.	Option fails to meet basic requirements of the criterion.

Criteria and Description	Considerations	Evidence
Economic Criteria		
EC-01 Capital Costs Construction costs including both direct and indirect costs in 2016 dollars.		Capital Cost of Option: \$ 1,000 million
EC-02 Whole Life Cycle Costs Operating and maintenance costs, expressed as a net present value cost using a 25 year life cycle cost and a 4% discount rate, added to capital costs.		Whole Life Cycle Cost of Option: \$1,308 million
EC-03 CRD Capital Cost Contribution	<ul style="list-style-type: none"> The current approved project capital budget is \$788 million. The draft Federal/Provincial funding agreements total \$502 million. The CRD share of the capital cost is calculated as the Option Capital Cost (EC-01) minus \$502 million. 	CRD Capital Cost Contribution: \$498 million
EC-04 Schedule of Completion	<ul style="list-style-type: none"> Estimated Service Commencement Date Impacts included in the Schedule assumption: Timing needed for rezoning and permitting requirements (e.g. development permit) Environmental permitting requirements Commissioning Schedule Site conditions that may extend construction(i.e. piling, shoring) Construction Schedule 	Evidence: <ul style="list-style-type: none"> Estimated Service Commencement Date: March 31st, 2023 McLoughlin Point <ul style="list-style-type: none"> Zoning completed for 108 MLD Waste Water Plant at this site (Township of Esquimalt Zoning Bylaw 1992 (Consolidated), Bylaw No. 2050, Amendment No. 209 (McLoughlin Point – Special Use) (Bylaw 2806) EIS completed Development Permit will be required <ul style="list-style-type: none"> Development consistent with conditions identified in the document entitled “Design

Criteria and Description	Considerations	Evidence
		<p>Guidelines – McLoughlin Point Wastewater Treatment Plant” prepared by CitySpaces Consulting Ltd. Revised May 2013, copy of which is attached to the Official Community Plan.</p> <p>Rock Bay</p> <ul style="list-style-type: none"> Existing zoning is M3 Industrial, which would trigger the need for a rezoning. The estimated time to complete is 18 months. Environmental Impact Study (EIS) will need to be completed. Development Permit (DP) will be required. Preliminary site geotechnical report indicate that piling may be required which will add time to the construction schedule.
Environmental Criteria		
<p>EN-01 Carbon Footprint Net carbon dioxide equivalent (eCO₂) during the construction and operation of the treatment plant (tonnes/year). Excludes consideration of the biosolids treatment</p>	<ul style="list-style-type: none"> Technology impacts to carbon footprint; Pumping and other conveyance impacts to carbon footprint 	<p>Evidence:</p> <ul style="list-style-type: none"> Estimated carbon footprint Construction (One Time) 22,862 tonnes. Estimated carbon footprint Operations (Annual) – 3,300 tonnes/year. Pumping of effluent from Rock Bay to Clover Point outfall will increase the Operations (Annual) carbon footprint by 178 tonnes/year. <p>Conclusion: Fair</p>
<p>EN-02 Heat Recovery Potential Heat recovered from the liquid stream treatment results in a low grade heat. This criterion is defined as the options’ estimated opportunity to earn revenue, or save operating costs, from heat recovery.</p>	<ul style="list-style-type: none"> Proximity of plant to potential existing customers Proximity of plant to potential future customers 	<p>Evidence:</p> <ul style="list-style-type: none"> Energy offset gained through the use of heat recovered from the plant’s final effluent. Energy use can be both internal to the treatment plant and external via a district energy scheme. Market studies conducted by Stantec in 2009 concluded that there is limited demand from existing Industrial/Commercial/Institutional (ICI) customers to purchase reclaimed heat due to the high cost of conversion of existing Heating Ventilation Air Conditioning (HVAC) systems. <p>McLoughlin Point</p> <ul style="list-style-type: none"> A small district heating system could be installed to service downtown redevelopment of Esquimalt & Upper Harbour customers / military base. <p>Rock Bay</p> <ul style="list-style-type: none"> A district heating system could be incorporated into the community plan. <ul style="list-style-type: none"> The City of Victoria concept for development of the site includes mixed used commercial and public uses. These future residents could be users of recovered heat as new construction can be served more cost effectively. <p>Conclusion: Average</p>

Criteria and Description	Considerations	Evidence
<p>EN-03</p> <p>Water Reuse Potential</p> <p>The options' estimated opportunity to earn revenue, or save operating costs, from water reuse.</p> <p>Effluent reuse can be both internal to the treatment plant and external via an end product user. The use of treated water is based on provincial regulations that requires tertiary treatment and disinfection.</p>	<ul style="list-style-type: none"> Proximity of option to potential existing customers Proximity of option to potential future customers Potential of option to produce water for reuse opportunities 	<p>Evidence:</p> <ul style="list-style-type: none"> Market studies conducted by Stantec in 2009 concluded that there is limited demand from existing Industrial/Commercial/Institutional (ICI) customers to purchase reclaimed water. Water reuse is typical in semi-arid regions where water supplies are limited. CRD has an abundant water supply and the irrigation season in the Region is relatively short (4 months). The largest users of reclaimed water are agricultural and golf courses. There is potential for use in public parks. The costs to retrofit existing residential properties (~\$2500/dwelling) make the economics of conversion of existing residences unfavourable. BAF treatment technology will yield secondary effluent quality which is unsuitable for water reuse. <p>McLoughlin Point</p> <ul style="list-style-type: none"> Option is located in a remote area and the cost of retrofitting existing systems is high. <p>Rock Bay</p> <ul style="list-style-type: none"> Option is located in an existing industrial/commercial area so the potential for adding future reuse water customers is somewhat favourable. <p>Conclusion: Average</p>
<p>EN-04</p> <p>Environmental Considerations for Site</p> <p>Impacts to the local environment during construction of the treatment plant.</p>	<ul style="list-style-type: none"> Degree of remediation required to prepare site for construction Disturbance of natural environment Natural or Disturbed site Requirement for blasting Extend of shoring and piling required Disturbance of natural habitat and vegetation Elevation of the proposed sites (e.g. need to build tsunami walls) 	<p>Evidence:</p> <p>McLoughlin Point</p> <ul style="list-style-type: none"> Site was previously a bulk petroleum storage facility that has been fully remediated. Elevation of site mainly favourable to storm surge although a tsunami wall is required Minimal vegetation exists on the site. <p>Rock Bay</p> <ul style="list-style-type: none"> Site was previously a BC Hydro gasification facility that has been fully remediated. Geotechnical conditions and rock excavation requirement uncertain. Extensive tsunami wall required. Site is low and will require filling. Likely a requirement for ground densification or piles to meet post-disaster foundation requirements. Minimal vegetation exists on the site. <p>Conclusion: Average</p>
<p>EN-05</p> <p>Flexibility for Integrated Resource Management and Resource Recovery</p> <p>Suitability of the products produced from the liquid stream</p>	<ul style="list-style-type: none"> The potential for Integrated Resource Management resides principally with the Biosolids Management Strategy rather than the liquid treatment portion of the project The ability of the option to accommodate an IRM planning process either now or in 	<p>Evidence:</p> <ul style="list-style-type: none"> Estimated biosolids production at 108 MLD is 10,877 Dry Tonnes (DT)/year. Tertiary Disc Filters will recover an additional 2,160 kg/day of biosolids.

Criteria and Description	Considerations	Evidence
treatment for IRM with biosolids, organic waste and solid waste streams.	the future (e.g. future retrofits to accommodate different uses for waste products).	<ul style="list-style-type: none"> Effluent water will be reused for plant process water. Internal heat recovery system will be included in plant heating design. <p>McLoughlin Point</p> <ul style="list-style-type: none"> Option is located in a remote isolated area and the potential for reuse water systems and reclaimed heat systems is low. <p>Rock Bay</p> <ul style="list-style-type: none"> Option is located in near existing industrial and commercial properties and the potential for reuse water systems and reclaimed heat systems is somewhat favourable (Reference EN-02 and EN-03). <p>Conclusion: Good</p>
EN-06 Wet weather treatment resiliency Ability to modify the treatment plant's operating procedures to adjust to varying wet weather flow conditions.	<ul style="list-style-type: none"> Ability of technology to ramp up/down during wet weather flow events experienced in the CRD while maintaining effluent regulatory requirements. 	<p>Evidence:</p> <ul style="list-style-type: none"> Primary plant capacity with multiple units and ability to turn on & off Chemically Enhanced Primary Treatment (CEPT); excellent for range of flow up to 4 x ADWF. <p>Conclusion: Good</p>
EN-07 Flexibility for more stringent treatment regulations in future The flexibility to expand or readily modify the treatment process to meet future permits requirements.	<ul style="list-style-type: none"> Ability of treatment process to be modified or expanded to meet higher treatment standards. Cost impacts of future modifications Schedule impacts of future modifications How does the future retrofit impact plant operations? 	<p>Evidence:</p> <p>McLoughlin Point</p> <ul style="list-style-type: none"> The site is suitable for a 60 MLD BAF Secondary plant with disc filters. Advanced oxidation can be added in future. The adjacent site is vacant not used Department of Defence (DND) land that could be utilized in the future for significant expansion needs. <p>Rock Bay</p> <ul style="list-style-type: none"> The site is suitable for a 48 MLD BAF + Tertiary Disc Filters plant. Advanced oxidation can be added in future. <p>Conclusion: Average</p>
EN-08 Terrestrial vegetation and Inter-tidal impacts Impact that a given site would have on existing terrestrial and inter-tidal habitat, and the degree of mitigation that may be required.	<ul style="list-style-type: none"> Impact on the vegetation and habitat for terrestrial areas of the site during construction Degree of mitigation required for terrestrial and marine environment 	<p>Evidence:</p> <p>McLoughlin Point</p> <ul style="list-style-type: none"> McLoughlin Point is a disturbed site which has been remediated. There is limited terrestrial vegetation on site. There is vegetation on the streets along the (Macaulay Point to McLoughlin Point) conveyance route. There has not been an impact assessment study completed for this route. The marine outfall would be the existing Macaulay Point outfall. There would be no

Criteria and Description	Considerations	Evidence
		<p>disturbance of the intertidal zone and no mitigation measures would be required.</p> <p>Rock Bay</p> <ul style="list-style-type: none"> • Rock Bay is a disturbed site which has been remediated. • There is limited terrestrial vegetation on site. • There is vegetation on the streets along the (Clover Point to Rock Bay) conveyance route. There has not been an impact assessment study completed for this route. • This Option assumes the reuse of existing outfall at Clover Point. There would be no disturbance of the intertidal zone and no mitigation measures would be required. <p>Conclusion: Average</p>
<p>EN-09 Environmental Performance Whether and extent to which regulatory requirements meet or exceed regulatory requirements.</p>	<ul style="list-style-type: none"> • Degree that the option's treatment technology exceeds current regulatory requirements. 	<p>Evidence:</p> <p>McLoughlin Point and Rock Bay</p> <ul style="list-style-type: none"> • BAF design with disc filters will achieve 5/5 mg/L BOD/TSS effluent which exceeds the WSER regulatory requirements. <p>Conclusion: Good</p>
Social Criteria (Including Health and Safety)		
<p>SO-01 Operations Traffic Amount of traffic nuisance caused to neighbouring residents post-construction.</p>	<ul style="list-style-type: none"> • Classification of local community, e.g. residential, industrial, or commercial properties • Number, and types, of schools along the access route • Types of roads; for example, residential, arterial 	<p>Evidence:</p> <ul style="list-style-type: none"> • Daily traffic for staff access estimated at 8 to 10 vehicle movements per day/each site. • No biosolids related traffic due to solids pumping to Hartland. • Anticipate delivery of bulk chemicals up to twice per month. <p>McLoughlin Point</p> <ul style="list-style-type: none"> • Daily traffic for staff access estimated at 8 to 10 vehicle movements per day. • Site is located approximately 500 meters from nearest residential property. • Access road to the site is a residential street with some commercial property near the plant site. <p>Rock Bay</p> <ul style="list-style-type: none"> • Daily traffic for staff access estimated at 8 to 10 vehicle movements per day. • Site is adjacent to existing arterial roads which experience significant daily truck traffic. <p>Conclusion: Average</p>
<p>SO-02 Operations Impacts on local community Potential for operational noise and vibration which can be heard and felt by the neighbouring residents during operation of the treatment facility.</p>	<ul style="list-style-type: none"> • Impact of noise and vibration on local community • Classification of local community (e.g. residential or industrial) • Distance of nearest neighbour to source of noise and vibration (e.g. 25 m) 	<p>Evidence:</p> <ul style="list-style-type: none"> • All mechanical equipment designed to minimize vibration and noise. • All mechanical equipment contained inside buildings. • Plant designed for limited vibration and noise levels.

Criteria and Description	Considerations	Evidence
		<p>McLoughlin Point</p> <ul style="list-style-type: none"> • There is a buffer comprised of the military base and vacant bare land between the treatment site and the residents. • Nearest residential property is 500 metres. <p>Rock Bay</p> <ul style="list-style-type: none"> • The adjacent property is commercial/industrial. • Nearest residential property is >250 metres. <p>Conclusion: Good</p>
<p>SO-03 Odour Impacts on local community Impact of nuisance odours on residents or business in close proximity to the plant. This covers nuisance odour related to opening tank covers during maintenance. Locations closer to residents would have a higher probability of nuisance odours. It is assumed all plants would have odour control facilities for normal operations.</p>	<ul style="list-style-type: none"> • Proximity to local community (e.g. 25m) and classification of local community (e.g. commercial, industrial, residential) • Potential odour due to fugitive emission • Degree of omission containment • Degree of odour control equipment • Dispersion specs and impact nearest residences 	<p>Evidence:</p> <ul style="list-style-type: none"> • All unit processes tankage is covered. • Plant designed to stringent odour control requirements. Odour control systems will include odour scrubbers. • Emission modeling will confirm low odour numbers at property boundaries. <p>McLoughlin Point</p> <ul style="list-style-type: none"> • Due to the distance between the treatment site and nearby residences, there is a low probability of complaints relating to fugitive odour emissions. <p>Rock Bay</p> <ul style="list-style-type: none"> • Site is adjacent to commercial/industrial property with 250 metre radius. • Due to the distance between the treatment site and nearest residences, there is a higher probability of odour complaints from fugitive emissions. <p>Conclusion: Good</p>
<p>SO-04 Visual Aesthetics Aesthetic visual impact for neighbouring residents and visual impact from adjacent roadways.</p>	<ul style="list-style-type: none"> • Impact of views from both land side and water side • Buffer zones of lawns and landscaping • Care and attention to architecture of buildings required • Care and attention to architectural treatment of tsunami walls 	<p>Evidence:</p> <ul style="list-style-type: none"> • All process units covered or inside building. • Architecture and site landscaping are designed to high standards. <p>McLoughlin Point</p> <ul style="list-style-type: none"> • The Development Permit process which will ensure that the facility blends with the community through architectural finishes, landscaping and site amenities. • View from the water will be a low rise industrial building which may distract from the natural bare land setting. • Buildings and tsunami wall can be designed to be aesthetically pleasing. • Tsunami wall can be given architectural treatment to blend with natural landscape. <p>Rock Bay</p> <ul style="list-style-type: none"> • Treatment site is an improvement over the prior use, which was a gasification plant.

Criteria and Description	Considerations	Evidence
		<ul style="list-style-type: none"> The Development Permit process which will ensure that the facility blends with the community through architectural finishes, landscaping and site amenities. View from the water will be a low rise industrial building which will blend well with other nearby waterfront buildings. <p>Conclusion: Average</p>
<p>SO-05 Amenities Potential How the option can impact consideration of community integration opportunities.</p>	<ul style="list-style-type: none"> CRD has capped amenities package at \$20 million which will be prorated based on capacity of the option The opportunities for amenity enhancements such as public access, mixed use zoning, public art, waterfront access The ability to facilitate (encourage) additional public amenities Size of site to accommodate walking trails, etc. Space to accommodate complimentary opportunities (e.g. educational facilities, research from UVic, learning centres for public on wastewater treatment) Opportunity for job creation, consider both construction and operations 	<p>Evidence:</p> <ul style="list-style-type: none"> Two plant Option will provide more job opportunities. Since the amenity package (\$20 million) will be distributed between two sites, the extent of improvements at each site will be less favourable. <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> The following amenity provisions were included in the Township of Esquimalt 2013 rezoning of the McLoughlin Point site to Special Use (Wastewater Treatment) based on the 108 MLD single treatment plant option. The following amenities have been requested in the zoning bylaw. <ul style="list-style-type: none"> The provision of public open space improvements of a value no less than \$75,000, including picnic benches and “tot” park play lot with appropriately themed play equipment and safety features given proximity to open water. Pier or dock, of sufficient size to fulfill previous condition, including with provision of harbour tugboat pedestrian ferry service. Public Walkway: Design of building and development of site to incorporate public accessible trails, and off-site. Construction of trail connection to West Bay Neighbourhood. Additional traffic integration amenities, in the form of additional traffic calming and bike lanes on all remaining. Streets between Lampson Road and Esquimalt Road. Education and Interpretive Centre – additional 25 square metres of floor area for total of 75 square metres, including portion for a “Center of Excellence” to educate, promote and facilitate energy technology or other industries focussed on utilizing the wind and wave energy at the subject property. High efficiency air filters systems to improve air quality and odour reduction for schools within the Extended Community. Extension of Green Building and Design Features to additional portions of development. Integration of reclaimed water into the design of the buildings, including a rooftop wetland and landscaped feature. Heritage Interpretative Signage, recognizing the historic uses on the subject property and process to transition to current uses. Annual contribution of \$55,000 to McLoughlin Point Amenity Reserve Fund.

Criteria and Description	Considerations	Evidence
		<p>Rock Bay</p> <ul style="list-style-type: none"> Since a rezoning application has not been submitted, the amenity provisions for Rock Bay are unknown. <p>Conclusion: Average</p>
<p>SO-06 Construction Impacts (Conveyance) Impacts to the local community of the plant and along the conveyance route alignments during construction, including the alignments that pass through more environmentally sensitive areas.</p>	<ul style="list-style-type: none"> Consider the impacts (noise, dust and vibration) of conveyance construction to the local community (focusing on residential and commercial) Interruption of “quiet enjoyment” of private property owners Impacts to vegetation and property, including any costs of remediation Possible damage to property(consider causes, e.g. blasting or vibration) 	<p>Evidence:</p> <ul style="list-style-type: none"> Construction planning will somewhat mitigate disruption to neighbouring properties. <p>McLoughlin Point</p> <ul style="list-style-type: none"> Installation of the conveyance piping from Macaulay Point to McLoughlin Point will impact residential properties along route for approximately 4 months. <p>Rock Bay</p> <ul style="list-style-type: none"> Construction of conveyance piping from both Clover Point to Rock Bay will cause disruption on residential and arterial streets for up to 2 years. The conveyance piping is large diameter and will be installed below existing utilities (i.e.4 to 5 metres). Replacement of existing infrastructure is expected. Blasting may be required along portions of the conveyance route. Due to the close proximity of the conveyance pipe route to residences (< 20m), noise dust and vibration impacts may be experienced by homeowners. Some of the pipeline construction will be adjacent to commercial properties. Construction planning will mitigate disruption to neighbouring properties. <p>Conclusion: Poor</p>
<p>SO-07 Construction Impacts (Plant) Impacts to the local community of the plant during construction.</p>	<ul style="list-style-type: none"> Consider the impacts (noise, dust and vibration) of plant construction to the local community (focusing on residential and commercial) Impacts to environmentally sensitive areas Impacts to vegetation and property, including any costs of remediation Impacts to property (consider causes, e.g., blasting or vibration) 	<p>Evidence:</p> <p>McLoughlin Point</p> <ul style="list-style-type: none"> Due to the remoteness of the treatment site (e.g. 500-600 m), the impacts on nearby properties are minimal. The expected duration of construction is 36 months. Due to the remoteness of the treatment site (e.g. 500-600 m), there is a low risk of significant dust, vibration, and noise impacts to the neighbours. The contractor may be required to barge that material and equipment to/from site and minimize construction traffic through residential neighbourhoods during construction. <p>Rock Bay</p> <ul style="list-style-type: none"> The Rock Bay site is located in an industrial site; therefore there is a low probability that there will be dust, vibration, and noise impacts to the residential neighbours. The expected duration of construction is 36 months.

Criteria and Description	Considerations	Evidence
		<ul style="list-style-type: none"> It is expected that commercial neighbours will be impacted by the dust, noise and vibration. The expected need for piling will be required at the site which will create additional may extend construction noise for approximately 2 months. The expected need for shoring/sheet piling will be required due to high water table conditions. Nuisance noise may extent construction noise for approximately 2 months. Traffic along arterial roads will be impacted for the duration of construction due to the delivery of materials and equipment to the site. This impact could be mitigated through a Traffic Management Plan under management by the contractor. <p>Conclusion: Average</p>
<p>SO-08 Impacts to existing public amenities Options' impact the community's ability to enjoy existing public amenities such as park land, either existing or future.</p>	<ul style="list-style-type: none"> Impacts on existing public amenities (e.g. parks, playgrounds, or access) during the construction and operations of the facility Impacts on municipality's revenue opportunities associated with the public amenities 	<p>Evidence:</p> <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> No impact to the community's enjoyment of existing public amenities because the treatment site is surrounded by the DND vacant lands. <p><u>Rock Bay</u></p> <ul style="list-style-type: none"> No impact to the community's enjoyment of existing public amenities because the treatment site is surrounded by industrial zoning. There are no public spaces adjacent or near the site. <p>Conclusion: Very Good</p>
<p>SO-09 Compatibility with Official Community Plan Does the option fit within the approved Official Community Plan or existing zoning?</p>	<ul style="list-style-type: none"> Compatibility with existing Official Community Plan Requirement for rezoning or variance on zoning, including risk of receiving variance in a timely manner Development permitting process, including risk of achieving DP in a timely manner Anticipated opposition to rezoning by host municipality or impacted property owners 	<p>Evidence:</p> <p><u>McLoughlin Point</u></p> <ul style="list-style-type: none"> Zoning in place for 108 MLD Wastewater Treatment Plant (Township of Esquimalt Zoning Bylaw 1992 (Consolidated), Bylaw No. 2050, Amendment No. 209 (McLoughlin Point – Special Use) (Bylaw 2806). OCP has been amended for Special Use – Waste Water Treatment. Existing design for treatment site meets current height and shoreline encroachment restrictions. Development Permit process with Township of Esquimalt may cause some schedule delays due to single treatment plant option. <ul style="list-style-type: none"> Development consistent with conditions identified in the document entitled "Design Guidelines – McLoughlin Point Wastewater Treatment Plant" prepared by CitySpaces Consulting Ltd. Revised May 2013, copy of which is attached to the Official Community Plan. <p><u>Rock Bay</u></p> <ul style="list-style-type: none"> Rezoning from existing M3 Heavy Industrial to public use will be required. City of Victoria rezoning process is estimated to take 18 months to complete.

Criteria and Description	Considerations	Evidence
		<ul style="list-style-type: none"> Public opposition from property owners adjacent to conveyance pipe routes could add time and complexity to the rezoning application process. OCP amendment would be required but would not impact schedule since this process follows the rezoning process. Conceptual design will satisfy typical height and setback requirements for typical public utility zoning. City of Victoria Development Permit will be required. <p>Conclusion: Average</p>
<p>SO-10 Archeological Findings Risk of discovering archeological items during construction.</p>	<ul style="list-style-type: none"> Greenfield (undisturbed) vs. Brownfield (disturbed) Consider archeological studies completed to date 	<p>Evidence:</p> <ul style="list-style-type: none"> Previous EIS studies gathered information about and assessed the traditional and cultural use of marine resources in this area, as well as the traditional transportation routes and marine resource harvesting. McLoughlin was identified as a traditional gathering area. <ul style="list-style-type: none"> CRD Core Area Wastewater Treatment Program - Stage 2 Environmental Impact Study – 18 Feb 2013- p. 34 (Worley Parsons) Effects on archaeological features are expected to be less than significant at all CAWTP facility sites. <ul style="list-style-type: none"> Environmental Impact Study of Core Area Wastewater Treatment Program Facilities – Terrestrial Environment - March 2014- p. 34 (Tera). Risk of discovering archeological findings along the conveyance pipe routes are unknown and would have to be assessed by a qualified archaeologist. <p>Conclusion: Good</p>
<p>SO-11 Impact to local First Nations How the option impacts local First Nations, either by providing benefits, or lack of consultation.</p>	<ul style="list-style-type: none"> Has the local First Nations been consulted on the proposed sites? Are there opportunities for the local First Nations to benefit through the development of the option? 	<p>Evidence:</p> <ul style="list-style-type: none"> CRD has consulted impacted First Nations extensively for all of the options under review and there is no material difference in how the options meet the criterion. <p>McLoughlin Point</p> <ul style="list-style-type: none"> Local First Nations will not benefit financially or otherwise from this option. <p>Rock Bay</p> <ul style="list-style-type: none"> Local First Nations will financially benefit from this option through the sale of land. <p>Conclusion: Good</p>
<p>SO-12 Leading Development Opportunity to be a catalyst for future development or</p>	<ul style="list-style-type: none"> Opportunity to enable further development or beautification of an area (e.g. project could bring in roads and utilities, which will encourage future development). Opportunities to improve existing communities (e.g. through upgrades to off-site 	<p>Evidence:</p> <ul style="list-style-type: none"> Surrounding area for both sites have access to gas, hydro, water, and sewer lines; which are in good condition. Upgrades are not required.

Criteria and Description	Considerations	Evidence
<p>improvements in existing development.</p>	<p>services)</p>	<p>Rock Bay</p> <ul style="list-style-type: none"> CRD Staff have advised that the City of Victoria staff believe that this option would be a catalyst for the development of residual surplus land at the BC Hydro/Transport Canada site as well as the existing industrial/commercial land around the site. <p>Conclusion: Good</p>
<p>SO-13 Cultural and Heritage impacts Ability to use and/or respect culture and heritage. This would include consideration of existing structures or features on the proposed sites.</p>	<ul style="list-style-type: none"> How the option respects and incorporates existing cultural or heritage structures, site, or artifacts 	<p>Evidence:</p> <p>McLoughlin Point</p> <ul style="list-style-type: none"> The site does not contain any existing structures with historical significance that could be used in the design. The design of the building exterior and site landscaping will reflect and honor history, culture, and heritage. <p>Rock Bay</p> <ul style="list-style-type: none"> The site contains two existing structures with historical significance that could be incorporated into the plant design. The design of the administration building exterior and site landscaping will reflect and honor history, culture, and heritage. <p>Conclusion: Good</p>



Design with community in mind