

## Project Information

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|--------------------------------------------|-------------------------------------------------------------------------------------|
| <b>GMF number</b>                          | 16576                                                                               |
| <b>Name of funding recipient</b>           | Capital Regional District                                                           |
| <b>Project title</b>                       | Construction of First-Ever Tertiary Wastewater Treatment Plant for Vancouver Island |
| <b>Date of Project Completion Report</b>   | March 3, 2021                                                                       |
| <b>Project Construction Start Date</b>     | June 5, 2017                                                                        |
| <b>Project Substantial Completion Date</b> | January 12, 2021                                                                    |
| <b>Total Project Cost (Actual)</b>         | \$331,404,000                                                                       |

## Project Implementation

### 1. The Project was implemented as outlined in the agreement.

#### Wastewater Treatment Project

The Wastewater Treatment Project provides tertiary treatment of wastewater from the core area municipalities of Victoria, Esquimalt, Saanich, Oak Bay, View Royal, Langford and Colwood, and the Esquimalt and Songhees Nations. The Capital Regional District built the Wastewater Treatment Project in order to meet the provincial and federal regulations for treatment of the core area's wastewater.

The Wastewater Treatment Project consists of three main components:

- **McLoughlin Point Wastewater Treatment Plant, Marine Outfall and Harbour Crossing:** located at McLoughlin Point in Esquimalt, the treatment plant provides tertiary treatment to the core area's wastewater – some of which is delivered through the Harbour Crossing - prior to discharge out of a Marine Outfall.
- **Residuals Treatment Facility:** residual solids from the McLoughlin Point Wastewater Treatment Plant are piped to a Residuals Treatment Facility at Hartland Landfill, where they are turned into what are known as Class A biosolids. These biosolids are a high-quality byproduct treated such that it is safe for further use.
- **Conveyance System:** the conveyance system refers to the 'pumps and pipes' of the Wastewater Treatment Project. This system carries wastewater from across the core area to the McLoughlin Point Wastewater Treatment Plant, and residual solids to the Residuals Treatment Facility at Hartland Landfill.

The McLoughlin Point Wastewater Treatment Plant, Marine Outfall and Harbour Crossing were funded in part by the Green Municipal Fund, and are the subject of this report.

#### McLoughlin Point Wastewater Treatment Plant

The McLoughlin Point Wastewater Treatment Plant can treat up to 108 megalitres of wastewater per day, providing capacity to accommodate future population growth. Wastewater

undergoes primary, secondary and tertiary treatment before being discharged into the ocean through a new outfall approximately 2km from shore and 60m deep (the Marine Outfall).

Primary treatment is the physical separation of solids from wastewater. Secondary treatment is a biological process that removes dissolved and suspended organic compounds in the wastewater. Tertiary treatment is a physical process that reduces solids that remain after the secondary treatment process. The McLoughlin Point Wastewater Treatment Plant has been built to post disaster standards so it will remain operational following a major earthquake.

Situated at the entrance of Victoria harbour, the design of the McLoughlin Point Wastewater Treatment Plant respects the setting and incorporates the highest standards of design, materials and aesthetics. The design includes a multi-level green roof, mature landscaping, observation deck, and education space. The McLoughlin Point Wastewater Treatment Plant is also designed to increase capacity to accommodate future population growth and to have the ability to add disinfection.

The McLoughlin Point Wastewater Treatment Plant includes state-of-the-art odour control with a 24-hour odour control monitoring system so that there will be no detectable odour by residents.

The McLoughlin Point Wastewater Treatment Plant also includes a cross-harbour undersea pipe from Ogden Point to McLoughlin Point (the Harbour Crossing), that transports wastewater from the Clover Point Pump Station to the McLoughlin Point Wastewater Treatment Plant for tertiary treatment. This pipe was installed in a tunnel drilled under the seabed, and it is therefore protected from damage from any ships or anchors in the harbour.

The McLoughlin Point Wastewater Treatment Plant was constructed by Harbour Resource Partners (“HRP”) as the Design-Build contractor for the McLoughlin Point Wastewater Treatment Plant.

## Lessons Learned

### **2. Describe what worked well and what did not work well, and why, for the project elements below, include a description of any solutions implemented to address challenges.**

#### **a. Design, procurement and contracting:**

Given the risk profile, overall scale and diverse scope, the Wastewater Treatment Project was delivered through a number of contracts with a variety of contracting strategies. The Project selected each contractor through a competitive selection process which was open for any interested party to participate in and followed CRD’s purchasing policy.

Three components (McLoughlin Point Wastewater Treatment Plant, Marine Outfall and Harbour Crossing) were included in a design-build contract to allow a single contractor to manage the physical and schedule interfaces between these components with critical interfaces. The Project Team also used a single Owner’s engineer to develop the indicative design for all key project components with significant interfaces, including those that interface with the components funded by the Green Municipal Fund.

In addition, as the construction of the Project was achieved through multiple contracts and each required the delivery of waste streams to achieve completion, the Project Team developed a master project schedule that allowed for a logical sequence of commissioning activities.

**b. Consultation and community engagement (prior to and during construction):**

The delivery of a major infrastructure project in an urban setting with construction in three different municipalities presented multiple challenges, including how to manage stakeholder impacts. Significant efforts were made to build and maintain positive relationships with First Nations, local governments, communities, and other stakeholders, and these undoubtedly contributed to addressing the challenges of building such significant infrastructure in an urban environment.

The Project facilitated ongoing two-way community and stakeholder communications to ensure the public and stakeholders were well-informed; responded to inquiries; and ensured that Project managers were mindful of community interests and concerns. The communications and engagement team communicated with stakeholders, community groups, businesses and the public regarding Project schedules, progress, developments and construction information.

In advance of commencing construction in a new area, community information open houses were a valuable communication tool to provide information about the different components of the Project to the public. Twenty open houses in Esquimalt, Victoria and Saanich were held for this purpose. Over 1,200 people attended these meetings, which were publicized widely through mailed notices to residents, email, newspaper advertisements, social media, and on the Project website.

Newsletter-style Project updates were produced on a regular basis and at key Project milestones to provide information about the Project. In addition, 19 information sheets were developed to provide more details regarding the different Project elements.

To share specific and targeted information about upcoming construction impacts, 143 construction notices were developed. Each construction notice was hand delivered to residents near the work site, posted online and circulated to stakeholders via email as appropriate. Approximately 9,800 construction notices were hand delivered for this Project.

The Project communications and engagement team worked with the CRD's Senior Manager of Corporate Communications to brief journalists to ensure the media and public were informed about key Project milestones, and to provide information for timely media responses. The Deputy Project Director was the public Project spokesperson and was available to speak to media upon request.

An inquiry response program was established to track, record and provide accurate and timely responses to questions or concerns from the public and stakeholders. It comprised an email address ([wastewater@crd.bc.ca](mailto:wastewater@crd.bc.ca)) which is checked regularly and a 24/7 Project information telephone line. Since September 2016, the Project Team responded to 1,162 phone line inquiries and 839 email inquiries.

**c. Construction of the project:**

The McLoughlin Point Wastewater Treatment Plant was built on a relatively small site. The Project Team had the indicative design developed sufficiently during the procurement process to ensure that the design was technically-feasible and could be constructed on such a constrained site.

As part of this project a new 2 km long, and 2 m wide ocean outfall needed to be constructed. It was constructed in two sections. The first was a 120 m long steel pipe which was installed by microtunnelling through bedrock. This limited the disruption to the environment in the sensitive intertidal and subtidal zones. The second segment was a 1,800 m long segment which was assembled in Nanoose Bay, barged to Victoria, and sunk into place on the ocean floor. It includes 350 concrete ballast weights spaced 4-6 metres apart, each weighing approximately 11,400 kg. There are also a number bridges across the pipe to allow for migration of sea life across the pipe. Additionally, artificial reefs were constructed near the shoreline to create habitat for a variety of marine species, including salmon.

**d. Completing the project on time and on budget:**

The Project schedule was ambitious in order to meet the federal regulations for treatment of the Core Area's wastewater by December 31, 2020. To plan, procure, construct and commission the Project within five years required the co-operation of multiple parties and governance bodies.

In order to meet this challenge the CRD Board delegated authority to a Project Board which allowed for oversight and governance by a body that could focus solely on deliver of the Project and included the CRD's Chief Administrative Officer on the Project Board to facilitate CRD integration and support.

The input and engagement of the Project's First Nations partners as well as the collaboration and cooperation of host municipalities were also key in meeting the timelines for the project.

Also of significance in meeting the challenge was the Project Team's approach to schedule management, which included the following steps:

- the establishment and maintenance of the master project schedule, which was the primary planning and coordination tool for schedule management;
- the development and maintenance of a permit register to identify and monitor the status of permits, approvals, authorizations, licences and agreements that may be required for the Project; and
- the inclusion of relevant milestones, schedule incentives and acceleration clauses in each construction contract.

The Project faced significant cost pressures as a result of several factors including escalation, greater than anticipated contamination, and the global health pandemic. In order to meet this challenge the Project Leadership developed a strong risk management approach which involved the identification, analysis, oversight, treatment and monitoring of the Project risks. This approach also applied to the procurement process and the Project Team put careful consideration into risk transfer when structuring contracts.

In addition, the CRD implemented a financing strategy to manage cashflow to meet the Project financial commitments. The financing strategy that was developed, combined with low interest rates resulted in cost savings in the project's forecast financing costs, helping to offset budget pressures.

**3. Describe your experience (e.g. trade-offs, surprises) when choosing a particular approach, technology or solution for this project. What would you do differently?**

Following a review of past technical work and research into the key themes noted above, the Project Board and its advisors developed a methodology to assess 29 options to treat wastewater and recommend a preferred option. The options involved various sites and technologies. The Project Board developed a set of screening criteria based on the Project goals and applied the criteria to arrive at a short list of options. They developed cost estimates for those options and used a triple bottom line approach to rate the options based on timing, economic, social and environmental considerations. The methodology, evaluation worksheets, and results are included in the business case.

The recommended option was a 108 megalitre/day tertiary wastewater treatment plant at McLoughlin Point in Esquimalt. A review of the public commentary, media reports and discussions with staff at the Township of Esquimalt confirmed that Esquimalt did not support the McLoughlin site. Moreover, they did not like the proposed design of the facility. They thought it was the “wrong plan” for the site, and that due consideration had not been given to the impact of the facility on the Township. McLoughlin Point is at the entrance to the harbour and is highly valued by Esquimalt residents.

The new facility was redesigned and better aligns with the existing zoning requirements and design guidelines. It has a smaller footprint, is set back from the foreshore, and includes a multilevel green roof and landscaping.

**4. Has the business case associated with the project changed since the planning stage (e.g. change in the level of service delivered by the project, expected revenues, capital or operating costs or payback, etc.)? Could anything have been done to better understand the business case at the application stage?**

In order to meet federal and provincial wastewater regulations the CRD Board established the Wastewater Treatment Project Board (for the purposes of administering the Project).

The Project Board was thorough in reviewing option before deciding on the best approach to Wastewater Treatment for the CRD's core area. Upon establishment, the Project Board heard delegations and presentations from the public, industry professionals, and a CRD Director. The Project Board Chair and Vice Chair also met with staff from the CRD and all of the Core Area municipalities, and with Esquimalt and Songhees Nations representatives.

The Project Board reviewed previous technical work and extensive public commentary and developed a methodology to review and evaluate all options. This methodology included evaluation of a large number of options to identify a short list that best addressed the Project goals.

The Project Board developed detailed cost estimates for the short-listed options, ranked the short list using triple bottom line (economic, social and environmental) criteria, and identified the best option. This option was the basis of the final report of the Project Board with respect to its recommendation for the WTP, dated September 7, 2016 (the “Final Report”).

On September 14, 2016 the CRD Board received the Final Report and approved the business case which defined the Project and established the control budget of \$765 million.

The Business Case set out the delivery scope and associated treatment facility performance requirements for the WTP as well as the expected funding sources.

The Project components funded in part by the Green Municipal Fund have not changed. However, the overall capital budget for the Wastewater Treatment Project was increased to \$775 million. The primary reason for the overage being escalation in the BC construction market which exceeded expectations with a significant increase in the cost of both labour and materials, including high-density polyethylene piping, steel and aluminum.

**5. Did you use any approach(es), that are not business as usual over the course of the Project (e.g. decision making approach, consultation methodology, non-typical procurement, full-cost accounting)? Were there any benefits or drawbacks of this approach?**

One of the unique pieces of this project was the cross-harbour undersea pipe which connects the McLoughlin Point Wastewater Treatment Plant to the Clover Forcemain, one of the conveyance pipes for the Wastewater Treatment Project. It took nine months to drill a 1 km tunnel under the harbour and six weeks to assemble the pipe.

This effort showcases one of the challenges of delivering a major infrastructure project in an urban setting.

For six weeks, Niagara Street, a small, residential street, was used to assemble a 940-metre pipe above ground before it was pulled into a cross-harbour undersea tunnel from Ogden Point to McLoughlin Point.

Beginning the first week of March 2018, 78 pipe sections were welded together and the pipe was moved into place on rollers on Niagara Street across eight city blocks from South Turner Street to St. Lawrence Street. Over three days, cranes and sidebooms lifted the pipe in the 100 block of Niagara Street where the pipe was threaded into the tunnel at Ogden Point and pulled from the McLoughlin Point side.

Managing the significant impacts that this work had on the neighbourhood involved comprehensive planning to coordinate with the contractor, local authorities and service providers; and extensive communications and engagement with local residents. Some of the community outreach included:

- A door-to-door survey which was conducted with Niagara Street residents to provide updated information and a resident needs assessment in December 2017;

- Two community meetings with residents to answer questions which were held on February 21 and February 24, 2018;
- A Help Tent that was located in the 200 block of Niagara Street and staffed by a Project representative to provide information and answer questions about the Project;
- The 24/7 phone line and project email address were provided to residents so that they could request information or report a concern; and
- A community BBQ was held on May 1, 2018 as a thank you to the residents for their patience.

## Sustainable Design and Construction

6. The table below provides the following information:

- Did the project implement the measures as described?
- Describe the effectiveness of the measures?
- Please provide reasons for any changes to the measures?
- Please include any measures that were taken beyond what you committed to in the application from.

| A<br>Sustainable Design and Construction Element            | B<br>As described in your GMF Application                                                                                                                                                                                                                                                                                                                        | C<br>Describe the Implementation of the Measure (one paragraph)                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Sustainable Design and procurement</b>                   |                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Environmental considerations integrated at the design stage | The WWTP component of the Project will meet LEED v4 requirements for energy efficiency and has been registered for certification. This component is targeting energy consumption of a minimum of 18% below the relevant baseline established under LEED. The facility energy model confirms that energy performance is anticipated to be 19%+ below the baseline | The McLoughlin Point Wastewater Treatment Plant's Operation and Maintenance (O&M) building is designed to LEED Gold standards and over 80% (1600 m <sup>2</sup> ) of its roof is planted to increase onsite habitat and provide storm water management. A heat recovery system has also been incorporated. Prior to discharge to the ocean, the effluent passes through heat exchangers which remove heat from the wastewater and use it to heat the administrative building at the facility. |
| Green procurement                                           | Green procurement strategies that will be used include the following: Lamps                                                                                                                                                                                                                                                                                      | Green procurement strategies were followed, including low-mercury lamps,                                                                                                                                                                                                                                                                                                                                                                                                                      |

| A                                                                                 | B                                                                                                                                                                                                                                                                                                                                                                                                              | C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Sustainable Design and Construction Element</b>                                | <b>As described in your GMF Application</b>                                                                                                                                                                                                                                                                                                                                                                    | <b>Describe the Implementation of the Measure (one paragraph)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                                                                   | <p>purchased will be low-mercury, ongoing landscape maintenance will be conducted through Integrated Pest Management strategies that minimize the use of chemical pesticides/herbicides, and green cleaning requirements will be established for custodial maintenance.</p>                                                                                                                                    | <p>no use of chemical pesticides/herbicides in landscape maintenance, and green cleaning requirements incorporated into the janitorial contract for the new facility.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Site Characteristics</b>                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <p>A remediated brownfield or underutilized site (i.e. is not a green field).</p> | <p>The McLoughlin Point WWTP is being constructed on a former Imperial Oil property and is undergoing soil and groundwater remediation as a part of the scope of the Project. Two previous FCM grants were received for the Project which partially funded additional delineation and risk management work for on-site soils, bedrock, and groundwater. Refer to GMF applications GMF#15822 and GMF#16342.</p> | <p>During construction it was found that the McLoughlin Point site had greater than anticipated contamination. This resulted in an unexpectedly-significant environmental benefit of the Project with the remediation of McLoughlin Point. The McLoughlin Point site was contaminated as a result of its previous use as an oil tank farm. As part of the Project a significant amount of contaminated materials were removed from the site (and disposed of in regulated landfills), and the site was remediated to meet the applicable standards set by the Environmental Management Act and the Contaminated Sites Regulation.</p> |
| <p>Existing buildings/ infrastructure / equipment is used</p>                     | <p>N/A</p>                                                                                                                                                                                                                                                                                                                                                                                                     | <p>N/A</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <p>Avoids, protects or enhances sensitive environmental areas</p>                 | <p>The Project will significantly reduce the discharge of untreated raw sewage into the marine environment of the Juan de Fuca Strait. The remediation of soil and groundwater at the</p>                                                                                                                                                                                                                      | <p>Before the McLoughlin Point Wastewater Treatment Plant was constructed, wastewater from the seven municipalities that make up the Capital Regional District's core area was screened and</p>                                                                                                                                                                                                                                                                                                                                                                                                                                       |



| A                                                                                                   | B                                                                                                                                                                                                                                                                                                                                                                                                  | C                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sustainable Design and Construction Element                                                         | As described in your GMF Application                                                                                                                                                                                                                                                                                                                                                               | Describe the Implementation of the Measure (one paragraph)                                                                                                                                                                                                                                                                                                                                                 |
|                                                                                                     | <p>McLoughlin Point WWTP site will also contribute to a healthier local environment for terrestrial and marine species.</p>                                                                                                                                                                                                                                                                        | <p>discharged into the Strait of Juan de Fuca without treatment. The core area’s wastewater is now treated before being discharged into the Strait of Juan de Fuca, with flows up to 216 megalitres/day receiving tertiary treatment and flows up to 408 megalitres/day receiving primary treatment.</p> <p>The McLoughlin Point WWTP site was also remediated as part of this Project as noted above.</p> |
| <p>Utilize natural systems to provide environmental benefits within the project (e.g. wetlands)</p> | <p>N/A</p>                                                                                                                                                                                                                                                                                                                                                                                         | <p>N/A</p>                                                                                                                                                                                                                                                                                                                                                                                                 |
| <p>Does not contribute to urban sprawl</p>                                                          | <p>The McLoughlin Point WWTP site was intentionally selected due to its proximity to heavily urbanized areas. As a former brownfield site, the beneficial reuse of this site prevents impact to greenfield land while limiting the need for additional infrastructure that would contribute to urban sprawl.</p>                                                                                   | <p>The McLoughlin Point WWTP was constructed on a relatively small site at McLoughlin Point, a former brownfield site which was remediated as part of the Project.</p>                                                                                                                                                                                                                                     |
| <p>Part of the urban transport network and encourages the use of sustainable transportation</p>     | <p>The McLoughlin Point WWTP site and the Clover and Macaulay pump stations are located within the urban boundary of the Capital Regional District. Bus transportation to McLoughlin Point is accessible to employees and visitors via BC Transit Route 25, with the closest stop at the intersection of Gore Street and Lyall Street, an approximate 10-minute walk from the future facility.</p> | <p>The McLoughlin Point WWTP as well as the Clover Point and Macaulay Point Pump Stations are accessible through the regional transportation network via BC Transit Route 25. Several bicycle pathways and routes are located in close proximity to the sites, most notably the Humpback connector which is a component of the region-wide Galloping Goose Regional Trail.</p>                             |

| A                                                                                                                             | B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Sustainable Design and Construction Element</b>                                                                            | <b>As described in your GMF Application</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>Describe the Implementation of the Measure (one paragraph)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                                                                                               | Several bicycle pathways and routes are located in close proximity to the sites, most notably the Humpback connector which is a component of the region-wide Galloping Goose Regional Trail.                                                                                                                                                                                                                                                                                                                                                                                            | In addition, as part of the Project, infrastructure improvements were made along the alignment of the Clover Forcemain which includes the addition of a cycle path between Ogden Point and Clover Point.                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Construction activities</b>                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Reuse of available construction material onsite                                                                               | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Use of construction materials with recycled content                                                                           | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Construction Waste management including diverting construction waste from the landfill through recycling and reuse (off-site) | Construction at the McLoughlin Point WWTP site is targeting a minimum 75% reduction in construction and demolition waste and is currently achieving diversion rates greater than 90%.                                                                                                                                                                                                                                                                                                                                                                                                   | Construction achieved a diversion rate of greater than 90%.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Minimize expected impacts of construction activities (e.g. dust minimization, minimise soil erosion)                          | Waste management, spill prevention, and erosion and sediment control measures have been implemented as part of construction environmental management planning for all components of the Project. Additionally, traffic management plans have been prepared to minimize disturbance to local residents and businesses. As the McLoughlin Point site is a contaminated brownfield, construction activities can also in effect be considered to improve site conditions. All Project components will meet construction noise reduction and working hour restrictions per municipal bylaws. | <p>The Project Included robust environmental management, monitoring and reporting requirements in construction contracts which include waste management, spill prevention, and erosion and sediment control measures. Contractors environmental performance was regularly reviewed to ensure contractors are following their environmental protection plans.</p> <p>All Project components met construction noise reduction and working hour restrictions per municipal bylaws.</p> <p>Traffic management plans were prepared and followed minimizing disturbance to local residents.</p> |

| A                                                         | B                                                                                                                                                                                                                                                                                                                                                                                                                                                             | C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
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| <p><b>Sustainable Design and Construction Element</b></p> | <p><b>As described in your GMF Application</b></p>                                                                                                                                                                                                                                                                                                                                                                                                            | <p><b>Describe the Implementation of the Measure (one paragraph)</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <p>In addition the Project facilitated ongoing two-way community and stakeholder communications which that Project managers were mindful of community interests and were able to respond to concerns</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <p><b>Biodiversity and ecosystem protection</b></p>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <p>Restore land for wildlife habitat</p>                  | <p>The Project will significantly reduce the discharge of untreated raw sewage into the marine environment of the Juan de Fuca Strait. The remediation of soil and groundwater at the WWTP site will also contribute to a healthier local environment for terrestrial and marine species. The landscaping plan includes the restoration of the site using native species and a green roof that will provide additional habitat opportunities to wildlife.</p> | <p>The core area’s wastewater is now treated before being discharged into the Strait of Juan de Fuca, with flows up to 216 megalitres/day receiving tertiary treatment and flows up to 408 megalitres/day receiving primary treatment.</p> <p>The brownfield site has been remediated.</p> <p>Over 80% (1600 m2) of the Operating and Maintenance building’s roof is planted to increase onsite habitat and provide storm water management.</p> <p>The outfall pipe includes bridges across the pipe to allow for migration of sea life. Additionally, artificial reefs were constructed near the shoreline to create habitat for a variety of marine species, including salmon.</p> |

## Environmental, Social and Economic Outcomes

### 7. Additional environmental, social and economic outcomes our Project has achieved during the design, procurement and construction phases:

One of the project goals was to deliver a solution that adds value to the surrounding community and enhances the livability of neighbourhoods.

The Wastewater Treatment Project met this goal through working with the Township of Esquimalt, the City of Victoria, the District of Saanich, the Esquimalt and Songhees Nations, the Greater Victoria Harbour Authority and the Department of National Defence to identify amenities and/or infrastructure improvements that were either funded by the Project, or funded and delivered by the Project.

As part of the Host Community Impact 5-year Agreement the CRD will provide \$17 million to the Township of Esquimalt, with:

- \$7 million to be used for the improvement of waterfront parks;
- \$5 million to be used for the improvement of public space within recreational facilities; and
- \$5 million to be used for the construction, addition or improvement of emergency services and public safety facilities within the Township.

Some of the other commitments that the Project Team made as part of this agreement included providing high efficiency air filter systems to four schools in the area, providing fire hydrants and appurtenances as requested to coincide with upgrades to the water system for the operation of the Wastewater Treatment Plant, and providing a cash contribution for public art and historical interpretive signage.

The project scope also included improvements to the appearance of CRD wastewater facilities as well as the addition of neighbourhood amenities and public space improvements:

- Situated at the entrance of Victoria harbour, the design of the McLoughlin Point Wastewater Treatment Plant respects the setting and incorporates the highest standards of design, materials and aesthetics. The design includes a multi-level green roof, mature landscaping, observation deck, and education space.

## Project Champion

### 8. A Project Champion who has been instrumental to the Project:

- Jacqueline M Weston, Wastewater Treatment Plant Project Manager (2017-2021), and Core Area Wastewater Treatment and Conveyance Operations Manager (2021-present), McLoughlin Point Wastewater Treatment Plant, 337 Victoria View Road, Esquimalt BC V9A 3Z3

## Next Steps

### 9. Steps taken to ensure that the stakeholders important to the operation of the project adopt the necessary behaviours and other practices to ensure successful performance:

Integrated Water Services (IWS) are responsible for operating and maintaining the McLoughlin Point Wastewater Treatment Plant. In order to integrate this facility into the existing operating system IWS representatives were included in the review of design and construction submittals and contract requirements included providing training to CRD operating staff.

In addition the contract for the McLoughlin Point Wastewater Treatment Plant includes a two-year performance period. Over the performance period the CRD will operate and maintain the Plant, and HRP are responsible for:

- monitoring operations;
- consulting with and providing advice to the CRD and the CRD's plant manager with respect to the operation of the Facility;
- assisting with environmental and regulatory compliance;
- preparing and updating the operations manual and operations and maintenance plans;
- assisting with the evaluation of the performance of the WTP and the implementation of plans to achieve continued compliance with the process performance guarantees;
- assisting with the development and implementation of plans that will minimize use of power, chemicals, water and labour; and
- responding to warranty claims.

## Publicity

### 10. Recognition, media coverage, awards and public support received by the Project:

#### Media:

**New sewage plant gets \$23M from Green Municipal Fund** (Times Colonist, December 14, 2020) <https://www.timescolonist.com/news/local/new-sewage-plant-gets-23m-from-green-municipal-fund-1.24255205>

**'I was wondering why the water looked so clean': CRD's sewage treatment plant up and running** (Times Colonist, December 15, 2020) [https://www.timescolonist.com/news/local/i-was-wondering-why-the-water-looked-so-clean-crd-s-sewage-treatment-plant-up-and-running-1.24255805?utm\\_source=dvr.it&utm\\_medium=twitter](https://www.timescolonist.com/news/local/i-was-wondering-why-the-water-looked-so-clean-crd-s-sewage-treatment-plant-up-and-running-1.24255805?utm_source=dvr.it&utm_medium=twitter) (Also posted on Vancouver Sun)

**Greater Victoria's new wastewater treatment plant now operating** (CTV News Vancouver Island, December 15, 2020) <https://vancouverisland.ctvnews.ca/greater-victoria-s-new-wastewater-treatment-plant-now-operating-1.5232326> (Also posted to CFX 1070)

**New Greater Victoria wastewater treatment project goes online** (Victoria Buzz, December 15, 2020) <https://www.victoriabuzz.com/2020/12/new-greater-victoria-wastewater-treatment-project-goes-online/?fbclid=IwAR0Be07tZDNTDY9yK-lhsIDWjn4GfWp3PSIF37jO0F4En2vrr9b3v8wQgv8>

**CRD says wastewater treatment plant for Greater Victoria now in operation** (CHEK News, December 15, 2020) <https://www.cheknews.ca/crd-says-wastewater-treatment-plant-for-greater-victoria-now-in-operation-725977/>

**Greater Victoria's wastewater treatment system up and running** (CHEK News, December 15, 2020) <https://www.cheknews.ca/greater-victorias-wastewater-treatment-system-up-and-running-726018/>

**Greater Victoria wastewater treatment project up and running in Esquimalt** (Victoria News, December 15, 2020) [https://www.vicnews.com/news/greater-victoria-wastewater-treatment-project-up-and-running-in-esquimalt/?utm\\_source=dlvr.it&utm\\_medium=twitter](https://www.vicnews.com/news/greater-victoria-wastewater-treatment-project-up-and-running-in-esquimalt/?utm_source=dlvr.it&utm_medium=twitter) (Also posted on other Black Press Websites)

**BC begins treating sewage before releasing it into Strait** (Peninsula Daily News, December 18, 2020) <https://www.peninsuladailynews.com/news/bc-begins-treating-sewage-before-releasing-it-into-strait/>

**\$775-million solution: Victoria's raw sewage is no longer flowing into BC waters** (The Daily Hive, December 17, 2020) <https://dailyhive.com/vancouver/mcloughlin-point-wastewater-treatment-plant-victoria>

**Victoria stops dumping untreated sewage into ocean** (KGMI 790, December 17, 2020) <https://kgmi.com/news/007700-victoria-stops-dumping-untreated-sewage-into-ocean/>

**Vaughn Palmer: No more straight poop from Victoria** (Vancouver Sun, December 17, 2020) <https://vancouver.sun.com/opinion/columnists/vaughn-palmer-no-more-straight-poop-from-victoria>

**Long-awaited, long-debated new wastewater plant ends Victoria's dumping of untreated sewage** (CBC BC, December 17, 2020) <https://www.cbc.ca/news/canada/british-columbia/victoria-crd-wastewater-treatment-ends-untreated-sewage-dumping-1.5844830>

**McLoughlin Point WWTP HDPE Outfall** (Canadian Consulting Engineer, October / November 2020) <https://www.canadianconsultingengineer.com/digital-archives/october-november-2020/> (Page 42)

**Largest diameter solid wall HDPE pressure pipe project in North America completed** (Water World, July 17, 2020) <https://www.waterworld.com/wastewater/article/14179862/largest-diameter-solid-wall-hdpe-pressure-pipe-project-in-north-america-completed>

**\$775M Greater Victoria sewage treatment plant nears completion** (Salish Sea News and Weather, July 20, 2020) <https://salishseanews.blogspot.com/2020/07/720-ravens-victoria-sewage-harassed.html> - Story links to the CTV report from July 16

**A first look inside the McLoughlin Point Sewage Treatment Plant** (CHEK News, June 29, 2020) <https://cheknews.ca/a-first-look-inside-the-mcloughlin-point-sewage-treatment-plant-679434/>

**Giant HDPE pipe replaces steel for outfall project** (Plastics News, August 23, 2019) <https://www.plasticsnews.com/news/giant-hdpe-pipe-replaces-steel-outfall-project>

**Object of curiosity: Section of pipe for CRD's sewage-treatment project arrives in Victoria by barge** (CHEK, July 25, 2019) <https://www.cheknews.ca/object-of-curiositysection-of-pipe-for-crds-sewage-treatment-project-arrives-in-victoria-by-barge-588701/>

**Crews prepare to sink massive outflow pipe in \$775M sewage project** (CTV News, July 25, 2019) <https://vancouverisland.ctvnews.ca/crews-prepare-to-sink-massive-outflow-pipe-in-775m-sewage-project-1.4524210>

#### Awards:

AECOM receives the Canadian Consulting Engineering 2020 Award of Excellence for the McLoughlin Point wastewater treatment plant's record-setting high-density polyethylene (HDPE) outfall - <https://www.acec.ca/2020-awards/index.html>

## Photos and Materials

**11. Attached are the following materials resulting from the Project that would be useful to share with other communities:**

CRD's Wastewater Treatment Project begins treating wastewater (December 15, 2020): <https://www.crd.bc.ca/about/news/article/2020/12/15/crd-s-wastewater-treatment-project-begins-treating-wastewater>

About the Wastewater Treatment Process: [https://www.crd.bc.ca/docs/default-source/wastewater-planning-2014/2018-05-15-infosheet-wastewater-treatment-process.pdf?sfvrsn=e0a1fca\\_14](https://www.crd.bc.ca/docs/default-source/wastewater-planning-2014/2018-05-15-infosheet-wastewater-treatment-process.pdf?sfvrsn=e0a1fca_14)

Wastewater Treatment Project Schedule [https://www.crd.bc.ca/docs/default-source/wastewater-planning-2014/crd-wtp-infosheet-project-schedule-v09-20180921.pdf?sfvrsn=8e63f1ca\\_24](https://www.crd.bc.ca/docs/default-source/wastewater-planning-2014/crd-wtp-infosheet-project-schedule-v09-20180921.pdf?sfvrsn=8e63f1ca_24)

Operational Noise: [https://www.crd.bc.ca/docs/default-source/wastewater-planning-2014/crd\\_wtp\\_infosheet\\_operational-noise\\_v01\\_20170403.pdf?sfvrsn=62283dca\\_8](https://www.crd.bc.ca/docs/default-source/wastewater-planning-2014/crd_wtp_infosheet_operational-noise_v01_20170403.pdf?sfvrsn=62283dca_8)

Odour [https://www.crd.bc.ca/docs/default-source/wastewater-planning-2014/crd\\_wtp\\_infosheet\\_odour\\_20170404.pdf?sfvrsn=9e283dca\\_10](https://www.crd.bc.ca/docs/default-source/wastewater-planning-2014/crd_wtp_infosheet_odour_20170404.pdf?sfvrsn=9e283dca_10)

McLoughlin Point Wastewater Treatment Plant: [https://www.crd.bc.ca/docs/default-source/wastewater-planning-2014/mcloughlinpointinformationsheetmay2019.pdf?sfvrsn=7737cbca\\_4](https://www.crd.bc.ca/docs/default-source/wastewater-planning-2014/mcloughlinpointinformationsheetmay2019.pdf?sfvrsn=7737cbca_4)

Esquimalt Traffic Management Plan: [https://www.crd.bc.ca/docs/default-source/wastewater-planning-2014/crd\\_wtp\\_infosheet\\_esquimalttrafficmgmt\\_20170608.pdf?sfvrsn=837d3bca\\_4](https://www.crd.bc.ca/docs/default-source/wastewater-planning-2014/crd_wtp_infosheet_esquimalttrafficmgmt_20170608.pdf?sfvrsn=837d3bca_4)

Niagara Street Community meeting information boards: [https://www.crd.bc.ca/docs/default-source/wastewater-planning-2014/niagara-street-community-meeting-boards-\(february-2017\).pdf?sfvrsn=f12314ca\\_6](https://www.crd.bc.ca/docs/default-source/wastewater-planning-2014/niagara-street-community-meeting-boards-(february-2017).pdf?sfvrsn=f12314ca_6)

**12. Attached are five high-quality photographs of the Project.**