IONA ISLAND WASTEWATER TREATMENT PLANT
PROJECT DEFITION UPDATE
BIRDERS & NATURALISTS MEETING SUMMARY
OCTOBER 18, 2021

This is a summary of the Iona Island Wastewater Treatment Plant (IIWWTP) Project Definition Update (Meeting) Birders & Naturalists meeting held October 18, 2021 via videoconference.

The list of Meeting participants is included in Appendix A.

Meeting Overview

- Review of the July 2020 concept design and subsequent challenges identified
- How Metro Vancouver is addressing the challenges
- Proposed treatment plant options being evaluated
- Priority delivery activities currently underway:
    - Early works including biosolids stockpile removals, remediation investigations, geotechnical drilling and ground improvements
    - Ecological restoration projects
- Next steps for engagement and Project Definition Report finalization

The following issues, comments and questions were raised in discussion.

Birders & Naturalists Issue, Comment, Question	Metro Vancouver (MV) Response
IIWWTP Treatment Plant	
Are there plans to use eco-friendly alternative concrete that uses less energy to produce and produces less CO2?	Options for lower carbon intensive concrete will be considered for this project and are included in the Project Definition Report. Metro Vancouver (MV) hasn't determined what types of concrete will be used for this plant, as design has not progressed to that level. However, MV has identified different options that are available within the marketplace for eco-friendlier and low carbon concretes. As a separate initiative, MV is looking to revise our specifications and procurement procedures around concrete to focus on promoting eco-friendly and low carbon alternatives.

How much of the $400-500 household costs goes to capital costs and how much is operational?	The annual household cost estimate is an average based on both capital costs, and operating/ maintenance costs. Ratepayers will see a gradual increase as costs are spent on the project and actual costs will vary for different properties.
What happens to the methane gas?	The renewable natural gas (RNG) is primarily methane gas, generated in the digesters that are a part of the treatment plant. The gas generated in the digesters is upgraded onsite and subsequently the clean gas stream is connected into the Fortis BC grid for distribution to households across the lower mainland. This gas would be connected into the wider supply of natural gas in the lower mainland area.
Does the water, that is currently ejected into the Salish Sea, still make its way there with all of the options you have mentioned? if not, is the pipe decommissioned?	Yes, the location of the existing deep sea outfall will not change as a result of any proposed treatment options being considered. MV intent is to reuse the existing outfall pipe as part of the upgraded treatment plant.
Can MV please provide the consequence table developed as part of the structured decisions making process?	The results of the structured decision making will be summarized in the MV Committee and Board reports. Following the PDR presentation to Board (scheduled in early 2022), this information will be publicly available in the summary report posted on MV's website.
As we see the cost go up at this site, do other alternative sites become feasible or is Iona Island the only option on the table?	In 2009, MV completed a study to determine whether there were other feasible locations to construct the upgraded treatment plant. After evaluating alternative sites in Richmond's Sea island and in Vancouver, it was determined that the island was the preferred location. MV revisited this evaluation in 2015/16 and confirmed that the same conclusions applied. Again just recently, in 2021, MV revisited the previous evaluation criteria and considerations to reconfirm that Iona island is the most cost-effective location for the treatment plant upgrade.
What mitigation is proposed for encroachment in the park lands?	All the proposed technology treatment options include parkland encroachment to some extent. MV has developed a set of guiding principles, one of which will ensure a net gain in park land on the island. MV guiding principles will inform the development of an agreement that will be brought forward to the GVS & DD Board for approval in early 2022.

Since the proposed treatment plant footprint encroachment could result in the loss of parkland, and understanding any loss of parkland would be traded for parkland somewhere else, shouldn't any mitigation for lost land, due to encroachment, be added to the budget?	Much of the island is designated as either MV Parks or GVS & DD. Any loss of parkland would be transferred to other locations on the island. Therefore, this land swap wouldn't necessarily require a monetary transfer. This land swap would also result in no net loss of parkland.
Considering that the proposed higher level of treatment will decrease the level of nutrient discharged in the outfall, what kind of studies can we anticipate on these impact changes to the receiving waters near the outfall?	The existing treatment plant operates under an operational certificate which is issued by the Province. This certificate allows MV to discharge treated wastewater into the marine environment. When any treatment plant undergoes an upgrade, the Province requires a robust environmental impact study be completed prior to issuing the revised operational certificate. MV expects to complete the environmental impact study sometime in 2024/2025.
Ecological Restoration Projects	
Based on the budget and the pie chart, there is $312,000,000 for community amenities and ecological restoration. Is this all planned for this site (or around it)?	The budget proposed for the community amenities and the ecological restoration projects is all planned for Iona Island or in the adjacent foreshore around Iona Island.
How are offsets being calculated and where will those offsets be invested? And is there a no net loss approach being utilized in this project?	Offset calculations and investments have not yet been determined at this early project definition phase. However, MV intends to integrate a no net loss guiding principle into these offset methodologies following board approval of the PDR. MV intent is to ensure a net gain parkland.
Will the ponds be independent of the sewage operation?	The sludge lagoons will be transitioned to wetland habitat and become part of Iona Beach Regional Park. The IIWWTP project definition report and design concept includes the use of reclaimed water, treated effluent from the IIWWTP that meets the required standards, to potentially recharge the freshwater wetlands.
With regards to the foreshore work, has MV included a requirement to explore shorebird use and biofilm productivity on the foreshore mudflats?	MV will soon be undertaking hydrodynamic modelling and sediment transport evaluation, and biophysical data collection to evaluate the effect of the proposed foreshore ecological projects on the surrounding ecosystems, to inform the design of restoration areas, and to establish baseline conditions. Assessing biofilm extent and productivity and shorebird use is a component of the data collection and analysis.

With dewatering of the lagoon being imminent, is there a baseline report being prepared on bird use of the lagoons that will be available for review and comment prior to dewatering?	Metro Vancouver staff are currently assessing baseline survey and study needs for the IIWWTP projects as a whole to support restoration and construction assessment, restoration design development, permitting, and adaptive management. This will include baseline studies for birds, and other wildlife, and many other taxa in and around the island. Once the needs are determined, field work could begin as early as 2022. Lagoon cleanout, which involves sludge dewatering, is a priority delivery activity that must begin prior to the construction of the treatment plant. The lagoon cleanout is scheduled to start in spring of 2022 and finish in 2026. Lagoon sludge dewatering doesn't involve dewatering the lagoons but rather the sludge is removed from the lagoons for dewatering.
Will there be fenced off areas for semi public access and more importantly quiet areas for birds?	There will be quiet areas for birds. Work plans are still high level in this concept design stage. MV needs to determine where paths will be placed in the park. Some of the bird surveys and early work MV is conducting will help to determine where any protected ecological areas (no people or dog access) will be located. In future the pond areas will not be fenced off the way the sewage lagoons are now, where some members of the public have access and some don't. The park is a public space so any areas of the park that are publicly accessible will be accessible to all members of the public. Park areas that are off limits due to sensitive ecological needs will not be accessible to the public. Areas that are accessible to the public will need to be assessed for on or off dog access along with public education on this topic.
Has any consideration been given to incorporating Bird Friendly Building Design as outlined in the Standards Council of Canada?	Yes, MV has included the Bird Friendly Design into the architectural design considerations.
Given the areas rich avian diversity, MV should consider incorporating bird friendly glass and lighting into future building designs. There is some recent research out of UBC across the river on rather significant numbers of birth deaths resulting from window/building collisions.	MV will include bird friendly glass and lighting into the design. MV is also considering dark sky compliance and sound reduction measures to be incorporated into the design where possible. Robyn Worcester (MV) is an avian expert, who worked on the City of Vancouver Bird Strategy, is

	supporting MV on these bird design considerations.
What has the response from Vancouver Airport Authority (YVR) been regarding creating bird habitat near the airport? How will their concerns affect the restoration plans?	MV has engaged with YVR and MV will continue to work with YVR staff throughout the IIWWTP projects. YVR has noted their concern of increasing habitats attractive to large flocking birds and the associated aviation risk. MV will continue to work with YVR to address bird habitat concerns, as well as evaluate aviation risk associated with restoration designs, and develop alternatives or mitigation measures as needed.
With different ecological values of those losses versus proposed swaps for parkland to have this net gain and no net-loss approach (appreciating that is one of MV's guiding principles), can MV indicate where that land swap might occur to understand the differences between those kinds of ecological integrities? Intent is to understand the net gain.	At this stage MV hasn't yet determined the final plant footprint. This is now being determined as part of finalizing the project definition.
Comment acknowledging that the IIWWTP projects is a great project and the related restoration projects will be wonderful.	Comment noted.
When MV opens up the causeway it will change the flow of the water in the North Arm. Have you looked at the upstream effects?	Hydrodynamic modelling and sediment evaluation will be undertaken to look at the effect of the causeway on surrounding ecosystems, including fluvial dynamics. The study area for the modelling has not yet been fully defined, but we expect it to include Iona Island and the surrounding area, such as the North Arm, McDonald Slough, the North Arm Jetty, inter jetty area, Sturgeon Bank, Musqueam Marsh, and UBC Point Grey cliffs.
Considering that sea level rise, in the next century, could rise as much as one metre, how does that affect all the ecological restoration? Since the Iona Island vegetation is very sensitive to tidal flows, how does MV keep ahead of all that work within the plans?	MV intent is to incorporate expected sea level rise into the ecological restoration designs. For example, MV is looking at piloting sediment augmentation as a nature-based strategy to help ecosystems keep pace with sea level rise and protect the island , however there is more work that needs to be done to understand the potential impacts and benefits.
Could MV look at the ponds and the upland areas in the long-term, thinking about allowing the salt marsh to move up into those areas?	Comment noted.

What surveys have been done so far and which ones are you're planning on doing in the near future?	MV is following the BC Coastal Water Bird survey methodology and has mainly tracked winter bird activity in the park ponds and the sewage lagoons. MV intent is to conduct surveys and collect data this fall through the winter.
Will MV be looking at other metrics beyond exploring the number of birds and species? Noted that current research using 10-year banding data sets have been showing interesting results. The patterns of fat gain for migratory birds is an important source for migratory birds to migrate long distances. Research shows that Iona Island is acting as a very important stopover site for these migratory birds. Expressed interest in understanding future metrics related to whether the restoration projects maintain its importance in terms of fueling migratory birds.	Metro Vancouver is currently assessing baseline biophysical survey and study needs for the IIWWTP projects and next steps to develop a long-term monitoring plan. This will include baseline studies for birds, and other wildlife, vegetation, marine species and many other taxa in and around the island.
Is it possible to get a map showing the areas that will be lost in the proposed areas for land swaps, to increase the net gain of parkland at some point?	This information isn't fully developed at this time, but MV can provide a map to show these areas when the information becomes available.
Is there any discussion of looking at increasing park size elsewhere, as opposed to Iona Island itself? Expressed concern about MV increasing park size and incorporating more mundane land that's perhaps more covered in invasive species compared with quality habitat that could perhaps be acquired elsewhere.	This information isn't known at this time. MV is still in the early phases of assessing the footprints for each of the proposed options. Once MV has direction on a selected treatment option, land investigations on the island can proceed.
Has any consideration been given to the living dykes project at Boundary Bay and possibly incorporating some of those methods into this project?	MV aspires to learn from the living dykes project through information sharing, noting that the Boundary Bay project is slightly ahead of these Iona Island restoration projects. MV intent is to pilot similar methods along the inter-jetty side of the North Arm Jetty.
These proposed design concepts will undoubtedly have some pretty substantial ramifications WildResearch's programs. At what point in time will there be opportunities for more discussion?	MV continues to refine the conceptual design for the Iona Island Wastewater Treatment Plant Projects to ensure the best possible projects are presented to committees and Board for consideration. The project team is targeting early 2022 for presentation of the project definition report and conceptual design to MV committees and Board.

	There will be further engagement opportunities during the design phase that will follow project definition, including chances to provide input into the freshwater, foreshore, and terrestrial ecological restoration projects as Metro Vancouver continues to refine the design. Upcoming engagement opportunities will be shared on the project webpage as well as in our quarterly email newsletters and we look forward to your participation.

The meeting concluded at 2:35 p.m.

Birders and Naturalists Input (Emailed)

The following input, in reference to the Metro Vancouver online public engagement comment IIWWTP Project Definition Update panels, was shared amongst the birders and naturalists group prior to the Birding and Naturalists meeting on October 18, 2021.

Birding and Naturalists Input (Emailed)	MV Response
IIWWTP Treatment Plant	
Under panel 1 *Project Overview,* one of the bullets about the design states: "Withstand an earthquake and sea level rise". Early during the initial public meeting phase, the question was raised as to whether it makes economic sense to locate the plant on Iona Island, given that location's elevation is so very close to current sea level, as well as earthquake stability issues. I recall the response was that other sites had been considered, but none would work. How thorough was this consideration of other possible locations? What portion of the current cost estimate is to cover earthquake stability and sea level rise, given this location on a floodplain island of the Fraser River estuary?	In 2008-2009, MV conducted a study on potential alternate locations for the treatment plant. This study also looked at distributed locations involving smaller treatment plants over the Vancouver Sewerage Area instead of in one single location. Results from that study determined that the best option, on both financial and non-financial criteria, was to upgrade the existing treatment plant and proceed with the upgrade at Iona. Given the cost challenges identified and in particular, the high cost of ground improvements, the findings of the 2009 report were reviewed again by the PDR Design Team, and have concluded that Iona Island remains the recommended location for the wastewater treatment plant. Approximately one-quarter of the total cost of the project is related to ground improvements that are due to ground conditions and seismic design requirements.

On panel 7 *July 2020 Design Concept – Project Schedule*, regarding the statement on schedule constraints and that the project would not be completed until about four years after the federal government's regulatory deadline – should this not be immediately discussed with the responsible federal government staff? There is not much that the public can comment on this scheduling issue and how to resolve.	Metro Vancouver is communicating closely with Environment and Climate Change Canada and is providing regular updates on the project schedule, including the anticipated completion date. MV will continue to review the progress of the Project with the federal and provincial government as well as work to advance the schedule as quickly as possible.
Regarding the panel 8 *July 2020 Design Concept – Project Cost Estimate* (that have been developed and updated to take into consideration the challenges mentioned in the previous two panels), I am saddened that the expert engineers who worked on this project design over the past three years, did not already take these factors into account. I am saddened that "constructability" (access challenges and construction in a limited workspace) and "ground improvements" were not fully recognized earlier on in the design phase.	Comment noted.
Regarding panel 9 *July 2020 Design Concept – Project Cost Estimate*, the total estimated project costs in 2021 dollars of $6.7 million and what this amounts to for the Vancouver Sewerage Area households does appear high compared to other Metro Vancouver sewerage areas. How much of the additional cost is due to necessary earthquake proofing and building to withstand sea level rise? Have other locations for the treatment plant been considered?	Approximately one-quarter of the total cost of the project is related to ground improvements that are due to ground conditions and seismic design requirements. In 2008-2009, MV conducted a study on potential alternate locations for the treatment plant. This study also looked at distributed locations involving smaller treatment plants over the Vancouver Sewerage Area instead of in one single location. Results from that study determined that the best option, on both financial and non-financial criteria, was to upgrade the existing treatment plant and proceed with the upgrade at Iona. Given the cost challenges identified and in particular, the high cost of ground improvements, the findings of the 2009 report were reviewed again by the PDR Design Team, and have concluded that Iona Island remains the recommended location for the WWTP.
In considering overall costs, it should be appreciated that when we discharge our human waste into the ocean, it must be done to full tertiary treatment standard. In accounting dollars, we should calculate the debt owing to	The current proposed treatment concepts include secondary and tertiary level treatment with the flexibility to migrate to more advanced technologies in the future. MV is aligned with the Provincial and Federal requirements that are

nature over the many previous decades of discharging sewerage that had received only basic treatment into the Salish Sea. Has anyone calculated that long term debt to nature?	mandated for this project. As potentially more stringent requirements are established in the future, the plant will be able to adapt to those requirements with the subsequent expansions scheduled for 2051. Any consideration for how the plant effluent has historically impacted the Salish Sea would have been considered by the Provincial and Federal regulators when establishing discharge requirements for the new plant.
On slide 11, *What we're doing to address the challenges*, regarding the external panel of subject matter experts who have reviewed the three revised design options presented in subsequent panels, what is the basis for choosing a redesign? Will it be the cheapest cost, measured only in immediate construction costs and not including debt to nature and/or loss of long-term park benefits to nature, including humans? Will the recommendation/decision be made only on which option can be completed by 2030? Those factors are not always included in the Pros and Cons. That is for the panel on Option 1: Base Case, it does not mention under Cons, the high cost and expected completion date of 2034.	MV developed a structured decision-making (SDM) process to evaluate the options, including financial, technical, social, environmental criteria, that are used to determine the preferred option and remaining trade-offs. The SDM incorporated criteria that affect the selection of the plant over lifecycle of the project, through 2071.
Regarding Design Option 1a: Modified Base Case (July 2020 Board-endorsed design concept with use of additional land), it states, "Footprint encroaches onto Metro Vancouver Parks Land". This does not fit with the statement in an earlier panel that the design options under consideration have "no change to ecological enhancement plan". If more parkland will be used, this surely will impact the park visitor experience and/or the ability to sustain and enhance the natural habitats of the park	Staff are working closely to develop an agreement that ensures a net gain in park land on the island. The limited use of park land to facilitate the layout changes will be more than offset by land use/tenure changes that would result in a larger area being transferred to the regional park, including conversion of existing lagoons to wetland habitat and other proposed ecological restoration projects.
Regarding Option 2 (Membrane Biological Reactor) and Option 3 (Aerobic Granular Sludge), I do not have the required knowledge in sewerage treatment to provide to comment. I assume this is why Metro Vancouver enlisted the help of the external panel. Will the details of their report be public, together with the names of the panel members?	The results of the key recommendations from the external panel will be summarized in the MV Board report. Following the PDR presentation to Board (scheduled in early 2022), information will be publicly available in the summary report posted on MV's website.

Ecological Restoration Projects	
On panel 2, *What success looks like*, the list is excellent, but one important point is missing. The point that is missing is the aim to: Enhance and sustain the varied natural habitats of Iona Beach Regional Park. These natural habitats include its upland sand dune, shrub and deciduous trees, its intertidal wetlands, and its freshwater ponds and marshes. Yes, there is a bullet which states, to enhance the visitor experience, but what is missing is a statement about the natural habitat. Yes, there is mention of other important nature considerations, such as water quality, salmon, killer whales and marine environment, but there should be a specific statement about the natural habitats of Iona Island Regional Park.	Agreed; objectives for the IIWWTP projects will include: 1. Restore estuary health and fish habitat. 2. Enhance terrestrial and freshwater habitats. 3. Improve water quality 4. Foster resilience to sea-level rise. 5. Connect people to nature. 6. Integrate Musqueam cultural values and interests.
The terrestrial ecosystems and bird habitat are mentioned in panel 5 *About the July 2020 Board-Endorsed Design Concept – Ecological Restoration Projects*. However, enhancement and sustaining the varied natural habitats of the park should be mentioned in the proceeding panel ("What Success looks like"). As a side note, on the topic of natural habitats of the park and consideration of visitor experience and overall environmental wellbeing, it is worth noting that this constitutes only a very small portion of the overall cost of the project – the budget estimate is only 3% for "Ecological Restoration & Community Amenities".	Agreed; objectives for the IIWWTP projects will include: 1. Restore estuary health and fish habitat. 2. Enhance terrestrial and freshwater habitats. 3. Improve water quality 4. Foster resilience to sea-level rise. 5. Connect people to nature. 6. Integrate Musqueam cultural values and interests.
The last statement of panel 5 *About the July 2020 Board-Endorsed Design Concept – Ecological Restoration Projects* is misleading. That statement reads: *"*No modifications to the ecological restoration projects are being considered or evaluated as part of a revised design concept*."* Surely this statement is misleading when Design Concept 1a (Modified Base Case) states that more parkland will be used for construction of the facility. If parkland is reduced in size, then this surely will impact the park visitor experience and/or the ability to sustain and enhance the natural habitats of the park.	Staff are working closely to develop an agreement that ensures a net gain in park land on the island. The limited use of park land to facilitate the layout changes will be more than offset by land use/tenure changes that would result in a larger area being transferred to the regional park, including conversion of existing lagoons to wetland habitat and other proposed ecological restoration projects.

APPENDIX A – PARTICIPANT LIST

Participants:

Staff and Resources:

Marek Ratajczak	Metro Vancouver
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