

**Iona Island Wastewater Treatment Plant Project  
Online Stakeholder Meeting (Birders & Naturalists)**

**Thursday, September 10, 2020**



**metrovancouver**  
SERVICES AND SOLUTIONS FOR A LIVABLE REGION



# Iona Island Wastewater Treatment Plant Project Update Meeting with Birding & Naturalist Groups

MV Project Team

September 10, 2020

Stakeholder meeting (Birders and Naturalists)



**metrovancouver**  
SERVICES AND SOLUTIONS FOR A LIVABLE REGION

# Zoom Housekeeping

Zoom Participant ID: 25 Meeting ID: 569-

Meeting Topic: [REDACTED]  
Host: [REDACTED]  
Invitation URL: [REDACTED]  
[Copy URL](#)

Participant ID: 25

**1. Mute or unmute your microphone**  
**2. Start or stop your video feed**

Join Audio  
Computer Audio Connected

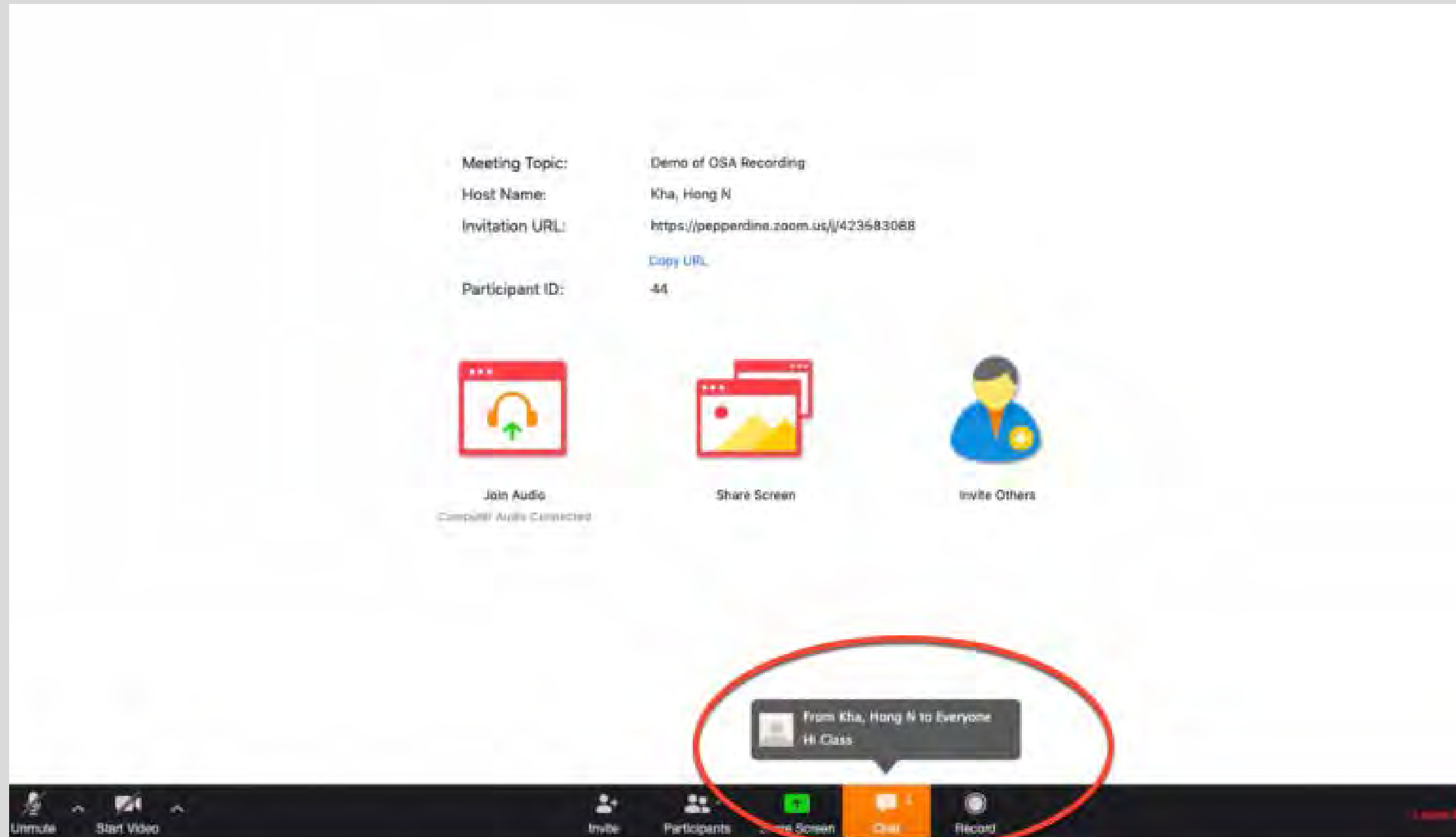
Share Screen

Invite Others

Unmute Start Video Invite Manage Participants Share Screen Chat Record End Meeting

1 2

# Zoom Housekeeping



# Presentations

## 1. IIWWTP update and timeline

Michelle Candido, Sr. Engagement Lead, Community Engagement, ERL, MV

## 2. Treatment plant design updates, construction schedule development & lagoon decommissioning update

Rick Bitcon, Senior Engineer, AECOM

## 3. Island-scale design and ecology projects, project phasing and multi-use building

Sarah Primeau, Landscape Architect & Ecologist, space2place

## 4. Interpretive Concept

Anna Wilkinson, Content Developer, AldrichPears

## 5. Next steps - detailed design and park management plan

Lea Elliott, Senior Policy Analyst, LWS, MV & Sylvia Pendl, Park Planner, MV Parks

## 6. Discussion and feedback from participants

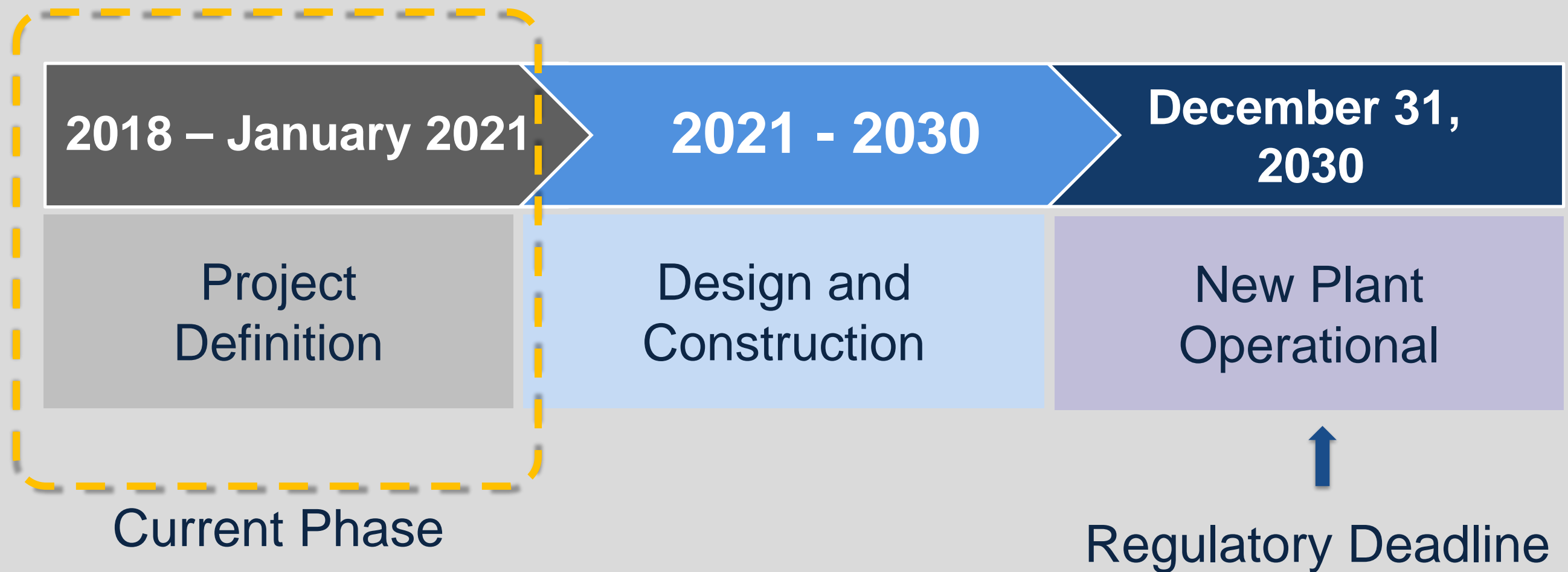
## 7. Closing Comments

Tom Sadleir, Program Manager, Community Engagement, ERL, MV

# 1. IWWTP update and timeline



# IWWTP Project Timeline



# Project Definition Goals

Wastewater  
Treatment

Resource  
Recovery

Community and  
Park Integration



# Community Engagement

- **October 15, 2020:** Input Deadline
- **January 2021:** Present Indicative Design and Project Definition Report to Liquid Waste Committee and GVS&DD Board



*Technical Workshop 4, Musqueam Indian Band, July 24, 2019*

# Discussion Topics Proposed By Participants

1. Park management plan
2. North Pond conversion to tidal wetland
3. Opportunity for design input
4. Considerations for a visitor centre
5. Future of bird banding hut
6. Lagoon decommissioning
7. Future of Port Lands on North Jetty
8. Adaptation to sea level rise
9. Level of treatment and marine bird health considerations
10. Adaptive management
11. Wetland restoration
12. Next steps: detailed design + implementation
13. People and dogs
14. Partnerships for restoration/enhancement work

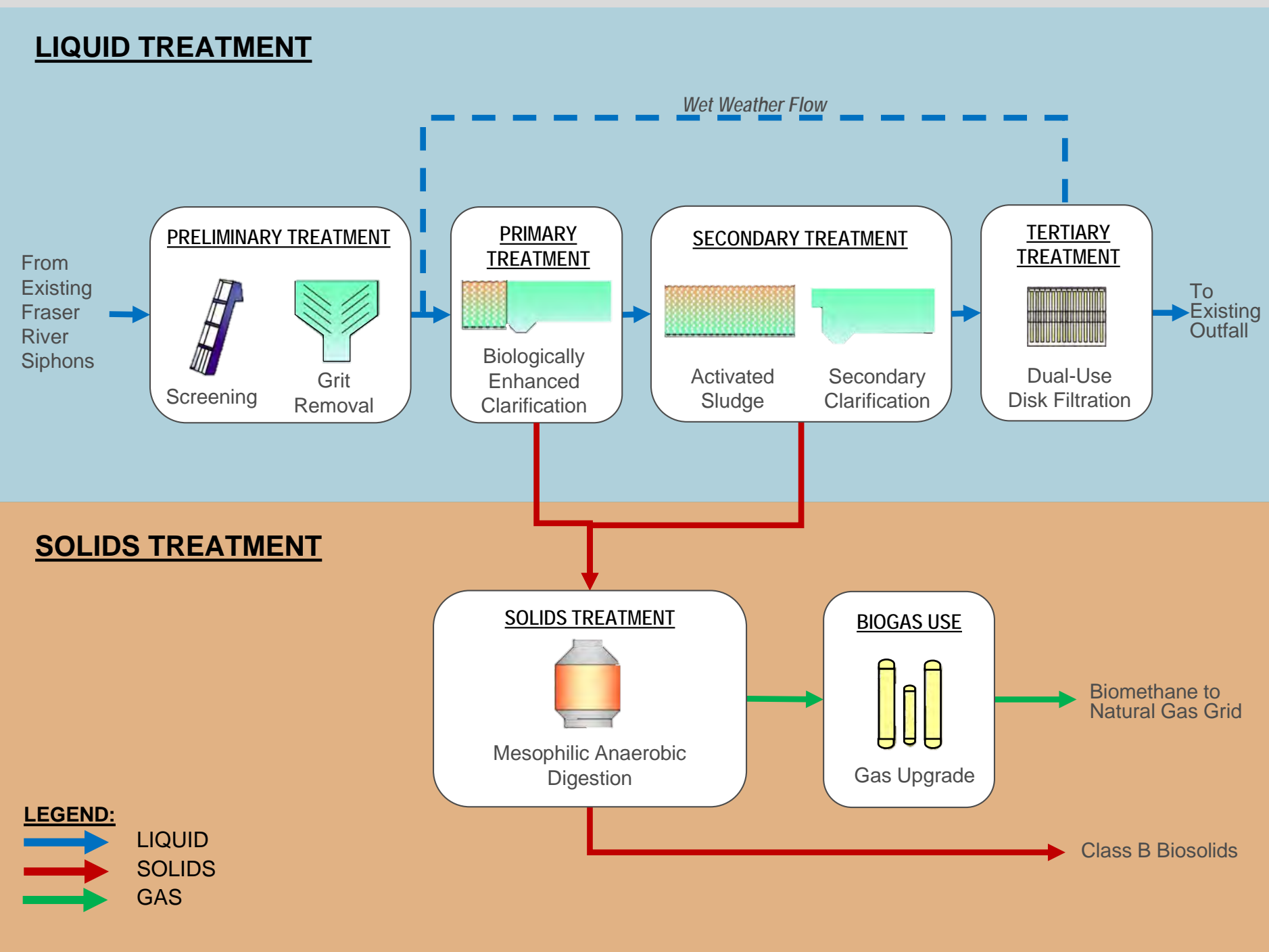
# Recent Work

- Refinements to treatment facility, multi-use / operations & maintenance building and island-scale concept design
- Interpretive concept development
- Construction schedule development
- Permitting strategy development
- Procurement options advancement

## 2. Treatment plant design updates, construction schedule development & lagoon decommissioning update



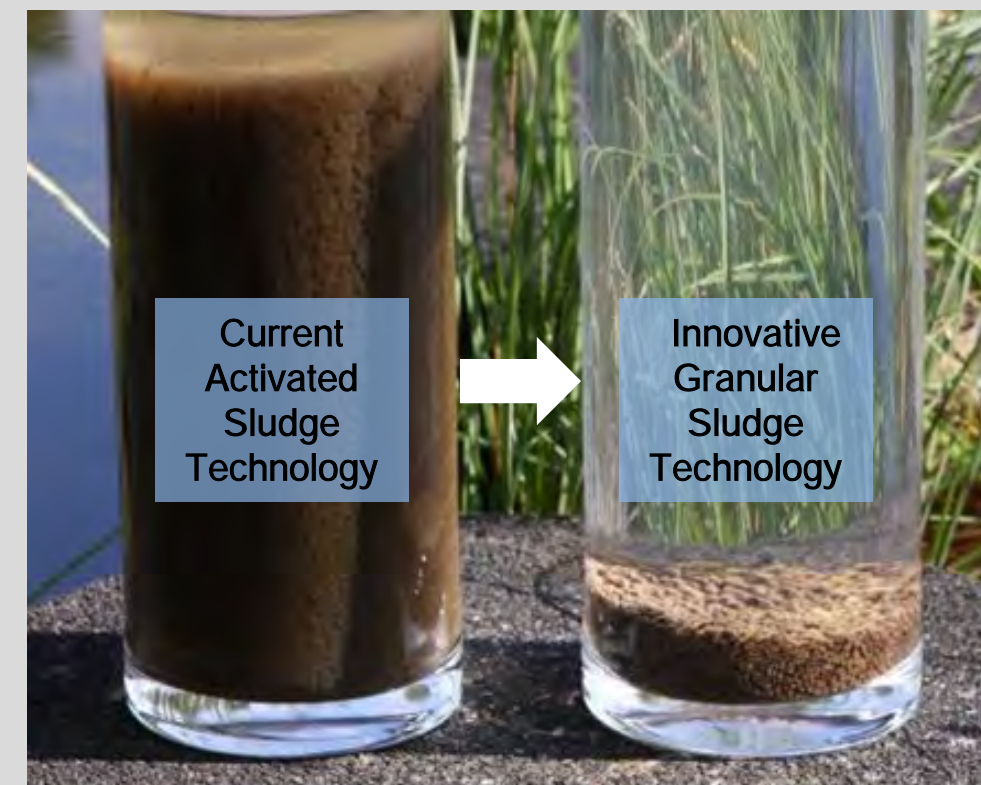
# Wastewater Treatment Plant Design Concept



- **Enhanced primary treatment** for carbon capture and energy recovery
- **Activated sludge process** (secondary treatment) for removal of organic matters, suspended solids, and some contaminants of concern
- **Effluent filtration** (tertiary treatment) for additional removal of small particles, including microplastics

# Advanced Treatment and Pilot Testing

- Pilot testing of advanced treatment for micropollutants
  - Ozone, biological activated carbon, granular activated carbon
  - Reverse osmosis
- Flexibility in design to adapt future technologies and innovations
  - Biological nutrient removal
  - Granular sludge
  - UV disinfection
  - Hydrothermal liquefaction



# Resource Recovery Opportunities

## Inputs



Wastewater



Trucked Liquid Waste



Iona Island  
Wastewater Treatment  
Plant



## Recovered Resources



**Reclaimed Water**  
(Onsite and Offsite use)



**Effluent Heat Recovery**  
(Onsite heating needs and  
export to District Energy System)



**Renewable Natural Gas**  
(Export to grid)



**Biosolids**  
(Land application)

# Odour Control



## Key Features

- All new tankage will be covered
- Odours will be collected and treated using biotrickling filters and activated carbon units
- Improvements will be made to odours from existing infrastructure



# Existing Plant Layout



**EXISTING PLANT (RED)**

# New Plant Layout



**NEW PLANT (GREEN)**

# New Plant + Existing Plant Reuse Layout



**EXISTING PLANT REUSED  
IN 2030 (YELLOW)**

**NEW PLANT (GREEN)**

# View of Wastewater Treatment Plant & Multi-Use Building



# Lagoon Decommissioning

- Schedule is flexible and still being refined
- Goal is to not have 'gap years' in freshwater habitat in this area
- Current proposal: SW lagoon is decommissioned first and new freshwater habitat created in its place while work in other lagoons is done



# Construction Schedule Development

## **Phase 1: ~ 2021 to 2025**

- Site preparation for IWWTP
- Early ecology projects

## **Phase 2: ~ 2026 to 2030**

- Main construction of IWWTP
- Some ecology projects built at same time as IWWTP

## **Phase 3: ~ 2031+**

- Some ecology projects completed after IWWTP

## **Post Phase 3:**

- Projects with uncertain timeline – e.g. outfall jetty breach



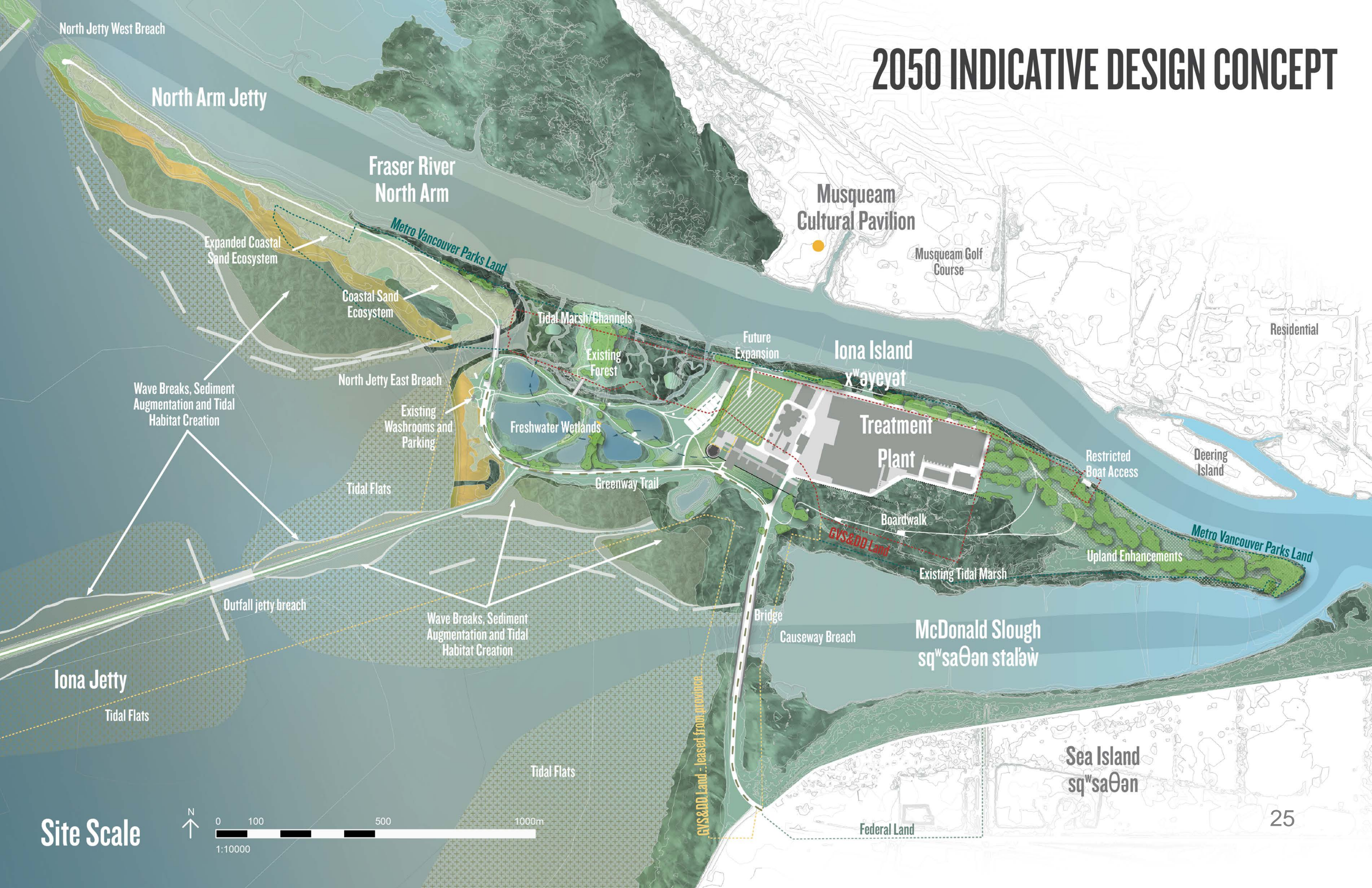
Questions?

### 3. Island-scale design and ecology projects, project phasing and multi-use building





# 2050 INDICATIVE DESIGN CONCEPT



Site Scale



# 2050 INDICATIVE DESIGN CONCEPT



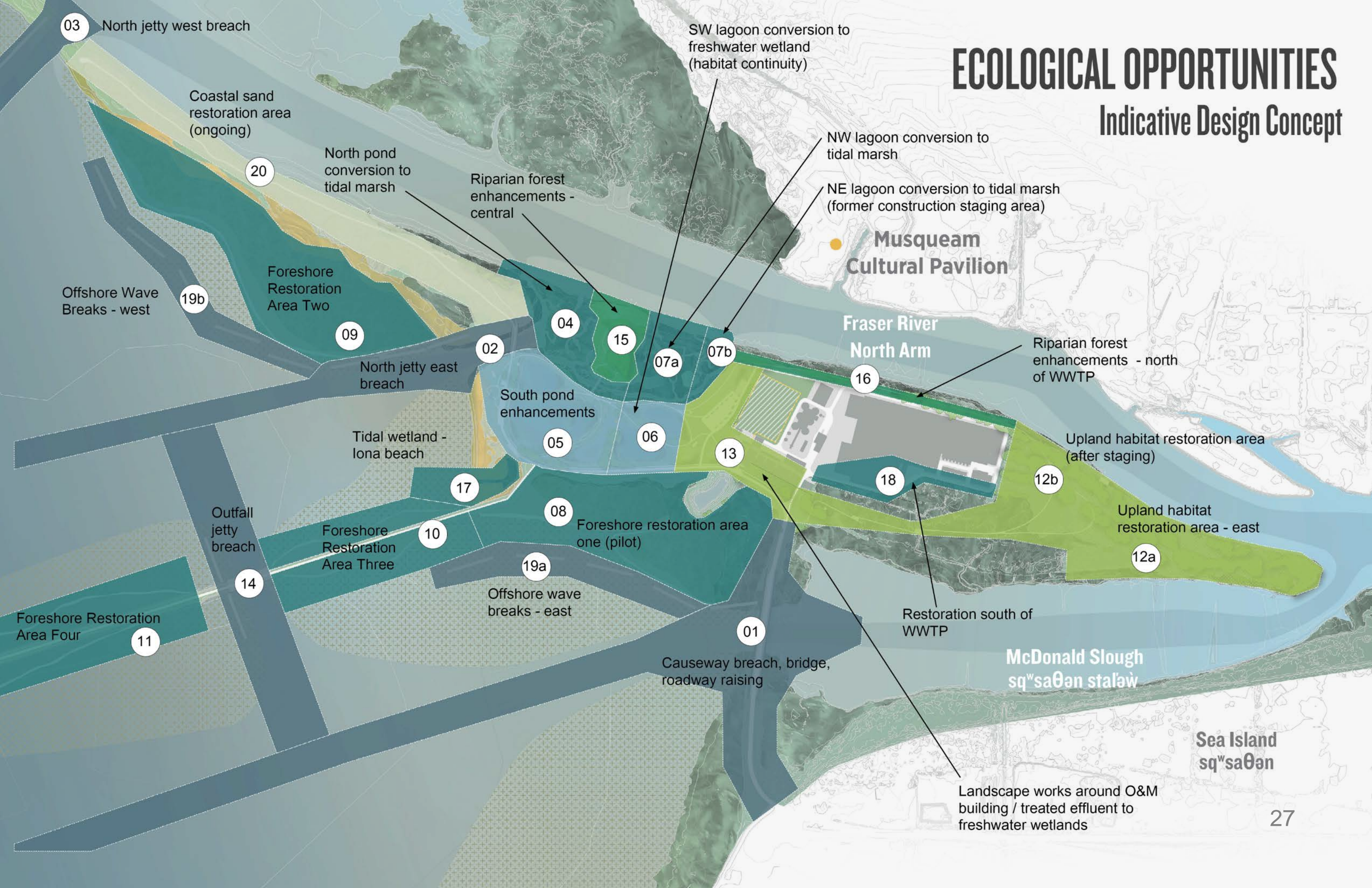
Plant Scale



McDonald Slough  
sq<sup>w</sup>saθan staləw

# ECOLOGICAL OPPORTUNITIES

## Indicative Design Concept



03 North jetty west breach

Coastal sand restoration area (ongoing)

20

North pond conversion to tidal marsh

Riparian forest enhancements - central

SW lagoon conversion to freshwater wetland (habitat continuity)

NW lagoon conversion to tidal marsh

NE lagoon conversion to tidal marsh (former construction staging area)

Musqueam Cultural Pavilion

Offshore Wave Breaks - west

19b

Foreshore Restoration Area Two

09

North jetty east breach

02

04

15

07a

07b

Fraser River North Arm

Riparian forest enhancements - north of WWTP

16

South pond enhancements

05

06

13

Tidal wetland - Iona beach

Upland habitat restoration area (after staging)

17

18

12b

Outfall jetty breach

Foreshore Restoration Area Three

10

08

Foreshore restoration area one (pilot)

Upland habitat restoration area - east

12a

Foreshore Restoration Area Four

11

Offshore wave breaks - east

19a

Causeway breach, bridge, roadway raising

01

Restoration south of WWTP

McDonald Slough  
sq<sup>w</sup>saθan stalaw

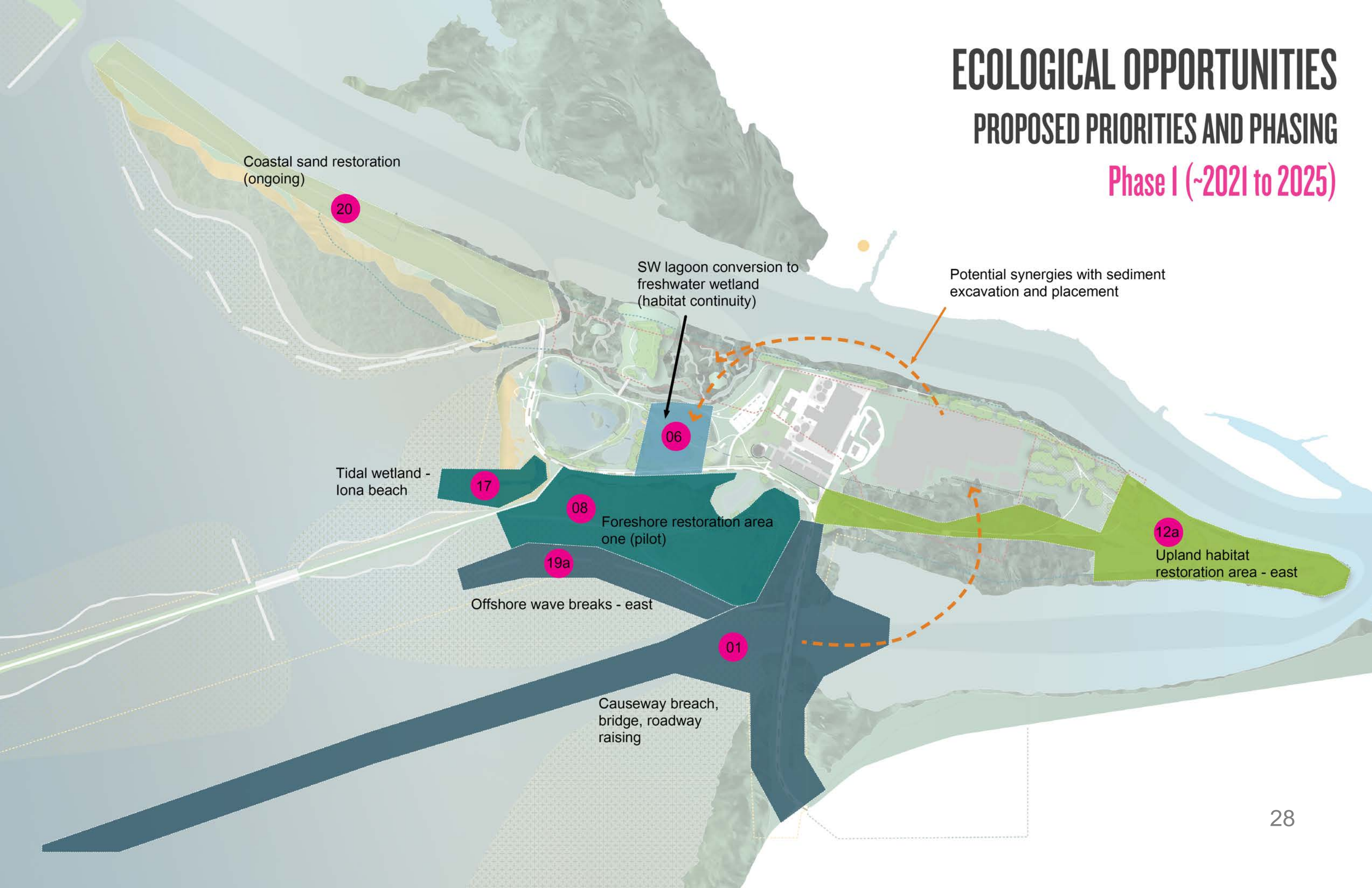
Sea Island  
sq<sup>w</sup>saθan

Landscape works around O&M building / treated effluent to freshwater wetlands

# ECOLOGICAL OPPORTUNITIES

## PROPOSED PRIORITIES AND PHASING

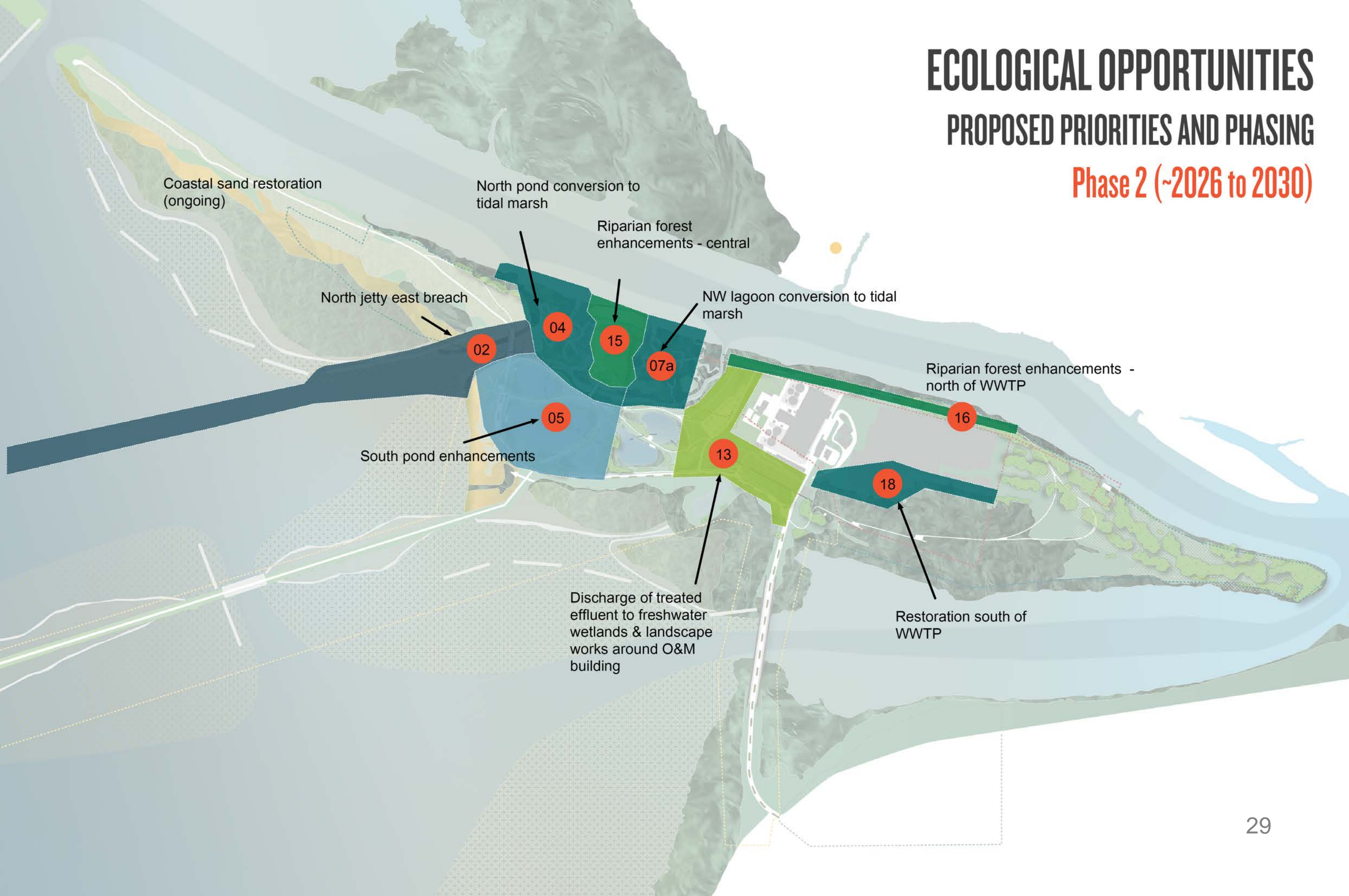
Phase I (~2021 to 2025)



# ECOLOGICAL OPPORTUNITIES

## PROPOSED PRIORITIES AND PHASING

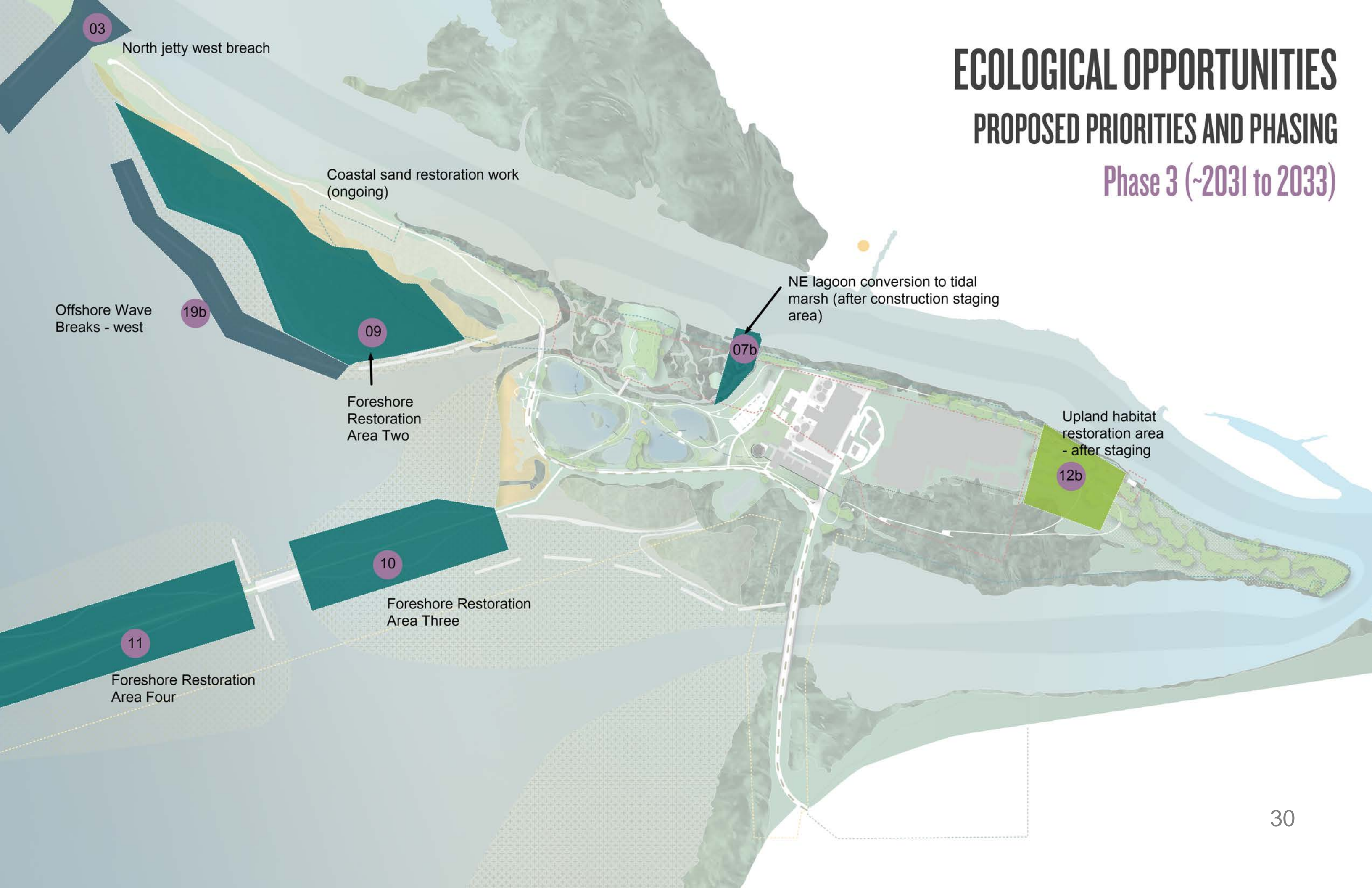
Phase 2 (~2026 to 2030)



# ECOLOGICAL OPPORTUNITIES

## PROPOSED PRIORITIES AND PHASING

Phase 3 (~2031 to 2033)



# ECOLOGICAL OPPORTUNITIES PROPOSED PRIORITIES AND PHASING

Post Phase 3



14

Outfall Jetty Breach

# SOUTHERN INTERTIDAL WETLANDS

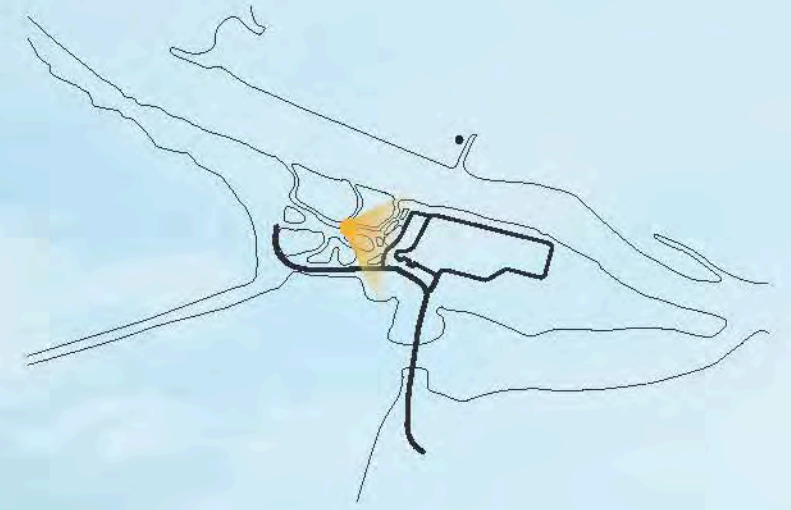




# KNOLLS AND FRESHWATER WETLANDS



# 2032 TIDAL CHANNELS, FRESHWATER WETLANDS AND THE PLANT



# Multi-Use Building

WEST VIEW



# MULTI-USE BUILDING

## EAST VIEW





Questions?

# 4. Interpretive Concept



# Interpretation – Approach



Iona Island  
xʷəyeyət

McDonald Slough  
sqʷsaθən stal'əw

Sea Island  
sqʷsaθən

# Interpretation – Zones





# Interpretation – Zones



# Island Overview

## Messages

- This is a meeting place for people, wildlife and plants with a deep history. Stewardship efforts are helping this site and interconnected communities throughout Metro Vancouver thrive.
- Over time, a diverse mosaic of human-impacted and natural ecosystems have developed on the island, supporting diverse life.

## Visitor Experience

- Viewing tower
- Topographic map
- Geology sculpture



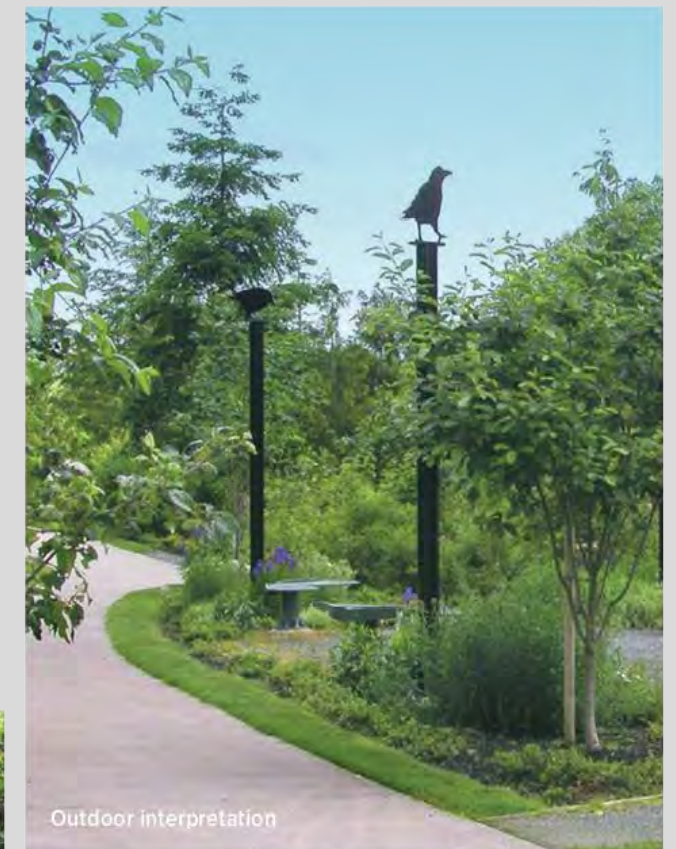
# Stopover Spot

## Messages

- These freshwater wetlands are human-made ecosystems on the island that have become important feeding spots for birds and other wildlife.
- The Fraser River estuary provides resting areas for birds travelling along a major migration route called the Pacific Flyway.

## Visitor Experience

- Bird sculpture series
- Interpretive node
- Viewscopes
- Interactive bird migration panel



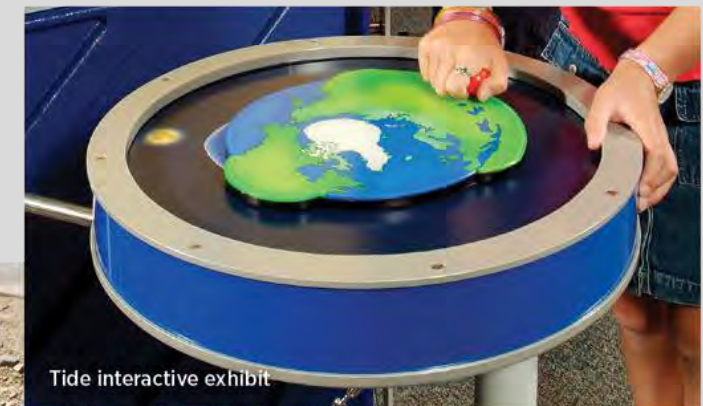
# Change with the Tides

## Messages

- Mudflats change with the tides and produce important food sources that migratory birds and other species depend on.

## Visitor Experience

- Interpretive node
- Interactive tide panel
- Tide/high water markers



# Shelter on Higher Ground

## Messages

- Cottonwood forests on upland areas of the island provide protection and nesting spots for songbirds, eagles, osprey and other bird species.

## Visitor Experience

- Interpretive node
- Plant species sculptural elements



Habitat interpretation & tactile model



Interpretive graphic panel



View interpretation



View interpretation

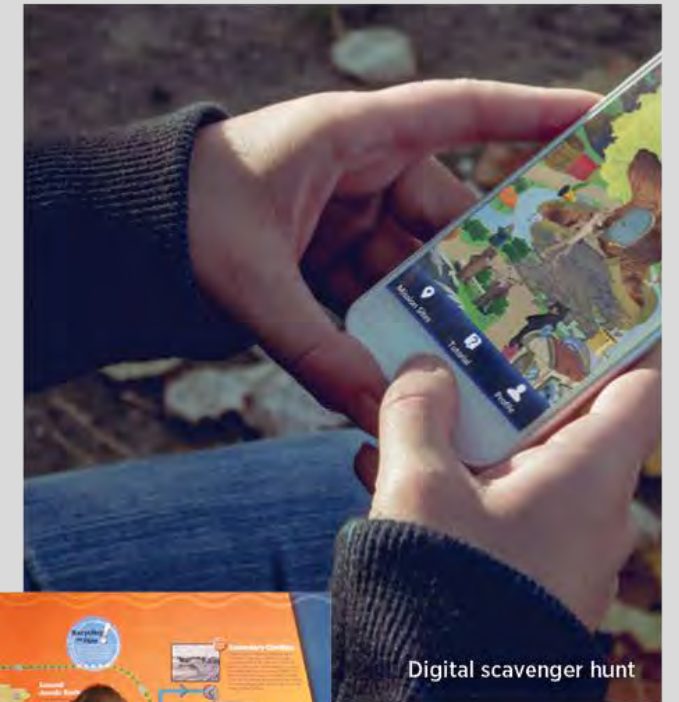
# Research HQ

## Programming Opportunities

- Interpretation to support species spotting activities
- Bird call station
- Acoustic fish camera live feed
- Microscopes



Temporary exhibits on featured topics



Digital scavenger hunt



Indoor interpretation



Treatment process interpretation



Indoor bird call audio station



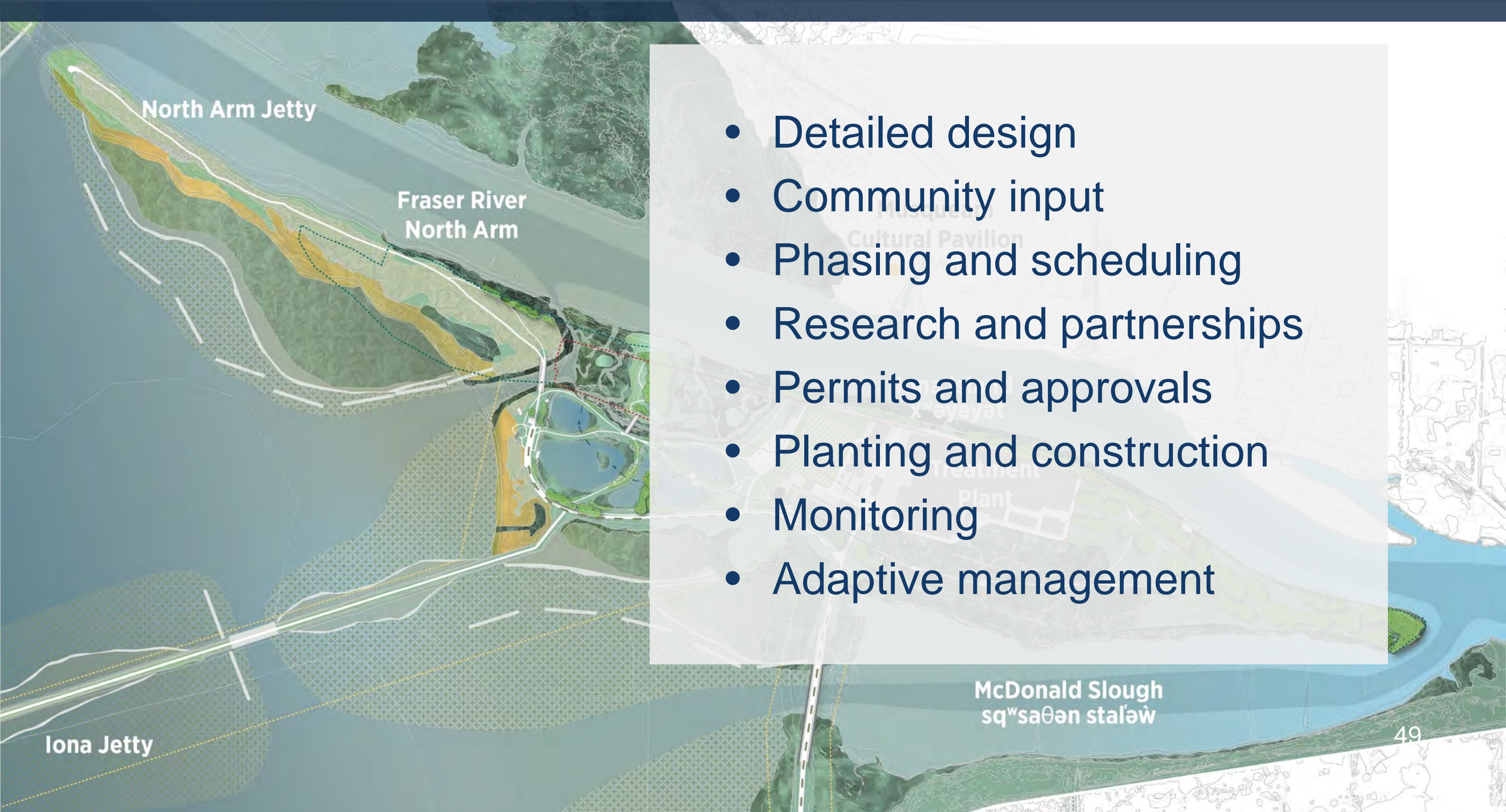
Questions?

# 5. Next steps: detailed design and park management plan



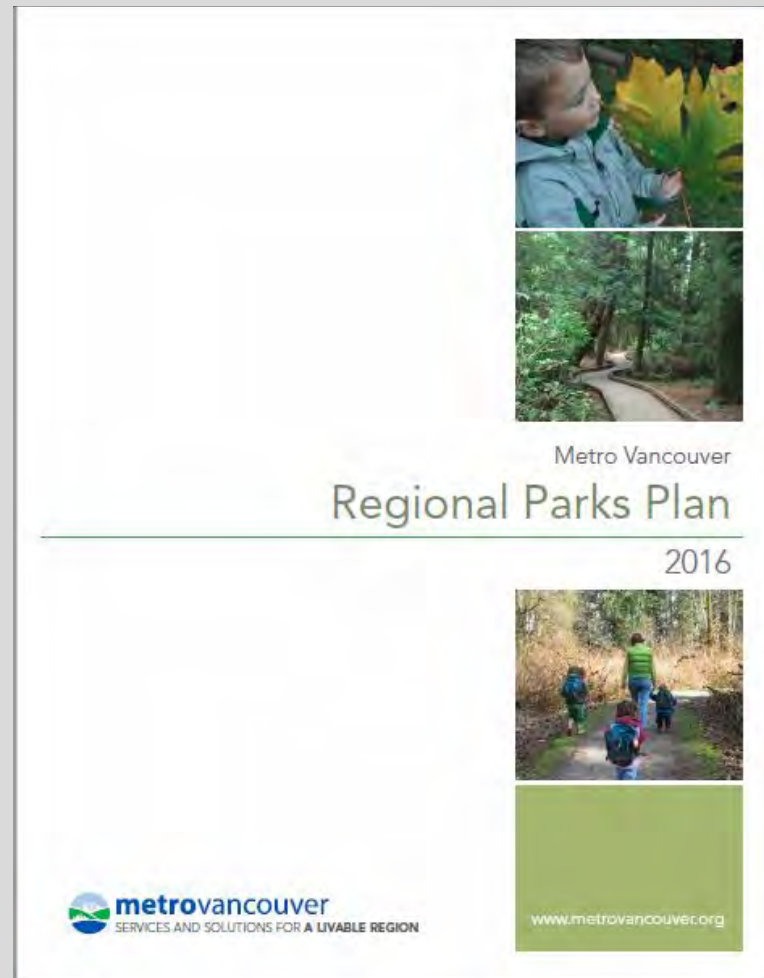


# Next Phase – project design and implementation



- Detailed design
- Community input
- Phasing and scheduling
- Research and partnerships
- Permits and approvals
- Planting and construction
- Monitoring
- Adaptive management

# Development of a Park Management Plan: Policy Context

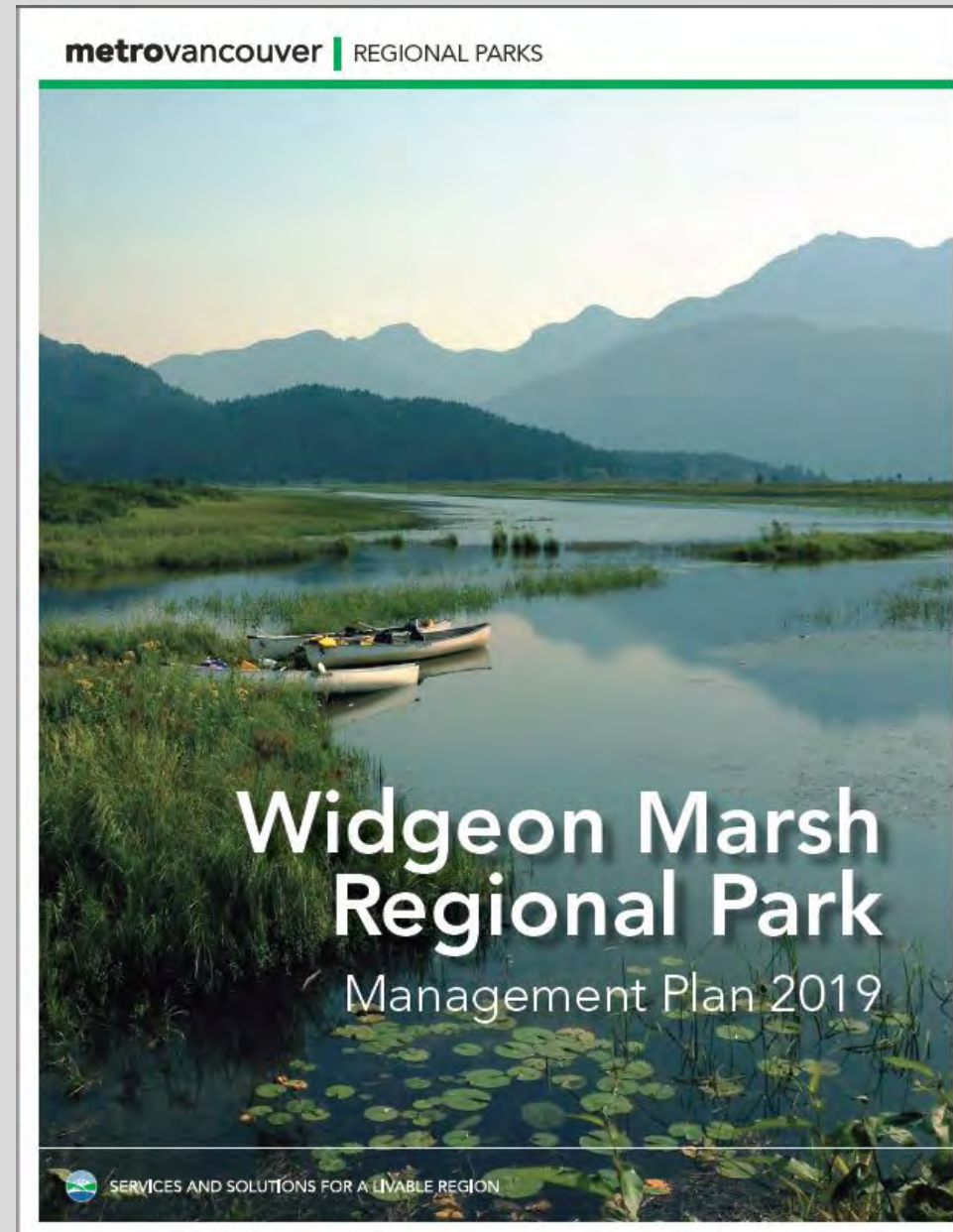


<http://www.metrovancouver.org/services/parks/ParksPublications/RegionalParksPlan.pdf>



<http://www.metrovancouver.org/services/parks/ParksPublications/RegionalParks-NaturalResourceManagementFramework2020.pdf>

# Development of a Park Management Plan: Example



<http://www.metrovancover.org/services/parks/ParksPublications/WidgeonMarshRP-MgmtPlan.pdf>



Questions?

# 7. Closing Comments



# Next Steps

- We will continue to meet with Musqueam Indian Band
- We will continue to meet with interested stakeholders
- Input deadline is October 15, 2020  
Email input to [lonaWWTP@metrovancover.org](mailto:lonaWWTP@metrovancover.org)
- Present Indicative Design and Project Definition Report to Liquid Waste Committee and GVS&DD Board in January 2021



Questions?