

Coastal Flood Adaptation Strategy Implementation

For: Surrey Heritage Advisory Commission
Presented by: Matt Osler
May 13, 2020

surrey.ca/CoastalTakingAction

Surrey **Coastal Flood
Adaptation
Strategy**
Taking Action



Coastal Flood Adaptation Strategy (CFAS)



- Proactive process started in 2016 to reduce climate change-driven coastal flood risk now and into the future
- Range of strategic actions were developed to help the City's coastal communities become more resilient to the challenges
- Council endorsed final strategy on November 4, 2019 (Corporate Report No. R212)



Community Values Incorporated



RESIDENTS:

Are people permanently displaced?



AGRICULTURE:

Is there permanent loss of agriculture land?



ENVIRONMENT:

Are there impacts (positive & negative) to wetland habitats, freshwater fish habitat & riparian areas?



INFRASTRUCTURE:

Is service/transportation infrastructure made vulnerable?



ECONOMY:

Is there a permanent loss of business?



RECREATION:

Is there a diversity of recreational activities (positive & negative)?

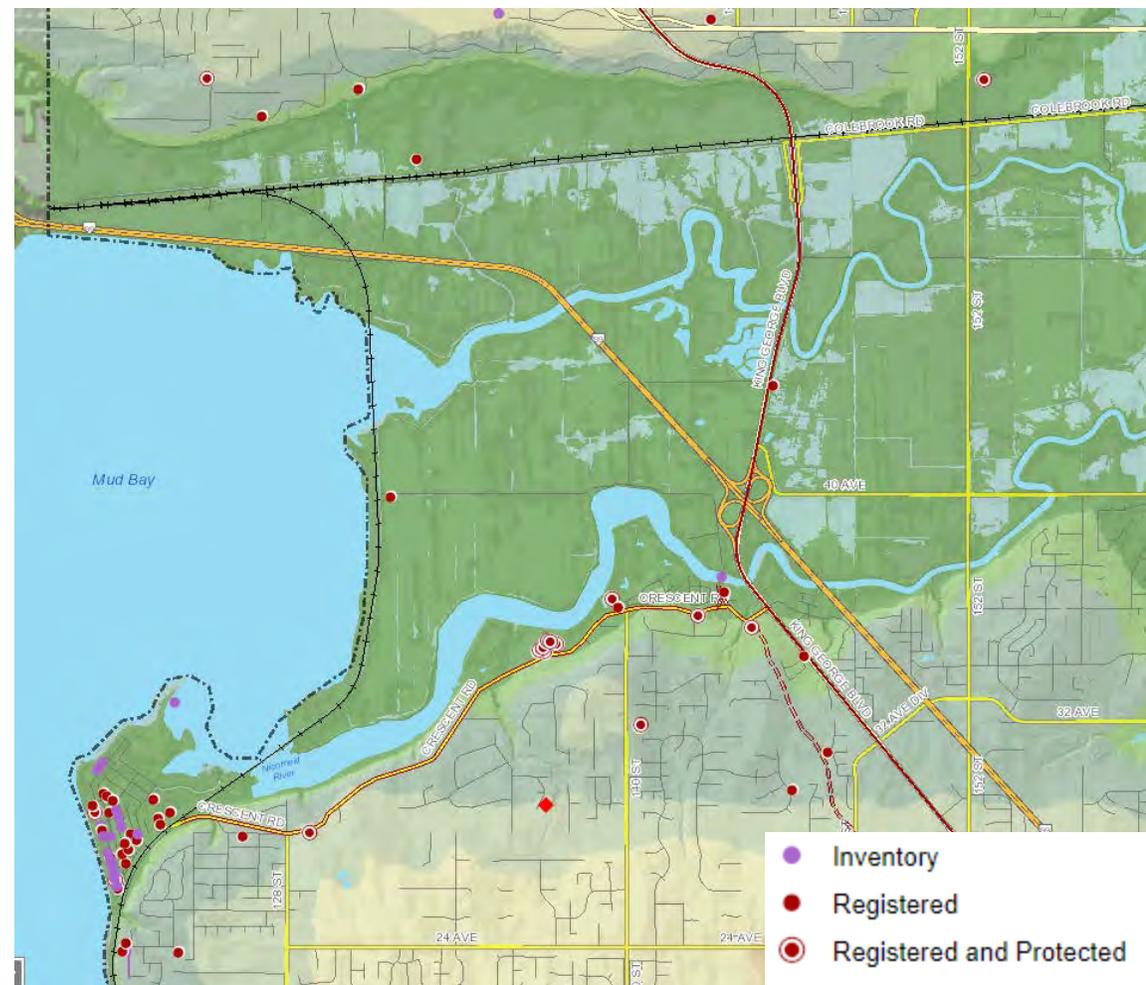


CULTURE:

Are there Semiahmoo First Nation cultural impacts that could be expected?

Cultural Values Incorporated

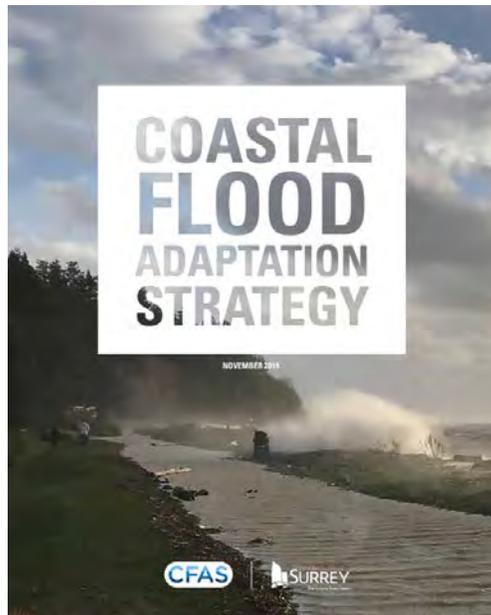
- First Nation's history and minimize disturbance of archaeological sites
- Preservation of Farmland
- Preservation of Heritage Sites
- Public Art for climate adaptation education and awareness



Heritage Sites in Crescent Beach and Mud Bay

Strategy Outcomes

- Laid strong foundation of public, Indigenous, and stakeholder engagement necessary for implementation of coastal adaptation
- Funding approved for initial actions focused on “no-regret”
- Council directed Planning & Development Department to consult with Crescent Beach Property Owners about elevated home construction April 6, 2020 (Corporate Report No. R60)



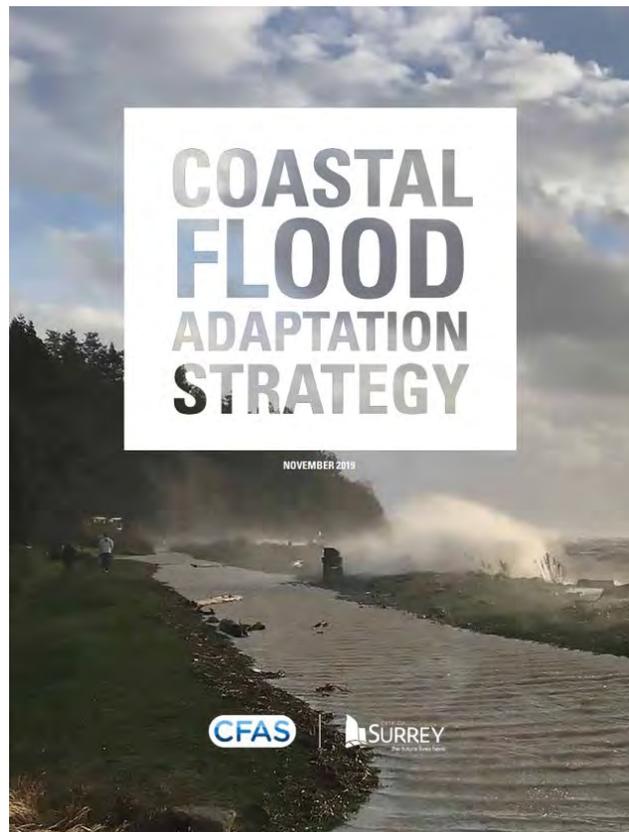
CFAS PROGRAM AND POLICY ACTIONS

2020-30

Ongoing Education, Communications, and Advocacy Initiatives	
1	CFAS Steering Committee
2	Internal Updates
3	CFAS Advisory Group
4	CFAS Website
5	Advocacy Partners Workshop
6	Communications and Media
Detailed Planning, Studies, and Data Collection	
7	Update hazard bibliography
8	Update coastal flood hazard assessment
9	Detailed studies - Strategic Actions
Regulatory Controls, Design Standards, and Guidelines	
10	Review Development Variance practices
11	Support flood resilient design and construction
12	Explore Sea Level Rise Planning Area
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Extreme Flood Management	
14	Hazard review
15	Training and readiness
16	Improve flood warning systems and communications
17	Temporary protection measures assessment
18	Build Back Better program

Strategy Outcomes

- Positioned the City to receive it's largest federal grant
- \$76.6 M in federal funding awarded under the Disaster Mitigation and Adaptation Fund (DMAF)



MAP: CFAS PLANNING AREA-SPECIFIC ACTIONS



CFAS PLANNING AREA-SPECIFIC ACTIONS

2020-30	
MUD BAY	
Mud Bay Foreshore	
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Mud Bay Foreshore Enhancements

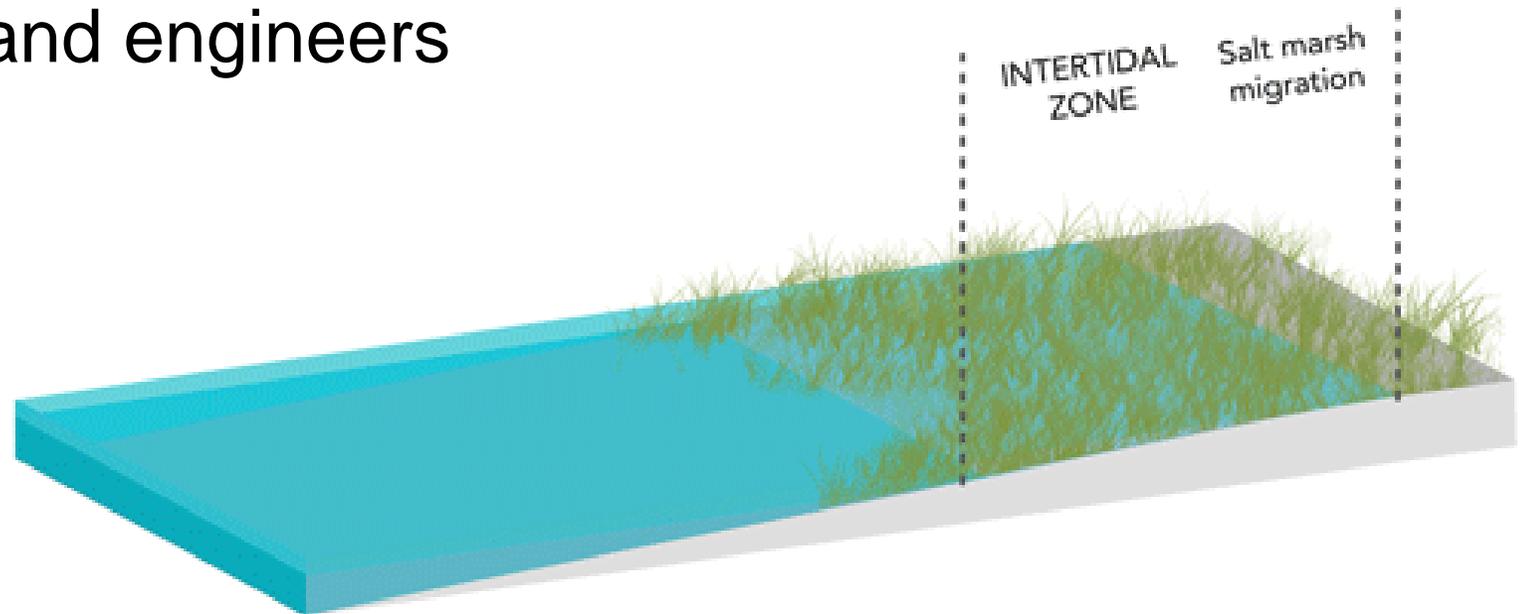
Mud Bay Foreshore Enhancements



- 1 of 13 Coastal Flood Adaptation Strategy projects to receive federal funds in 2019
- Required to pass through an Environmental Assessment (EA)
- First time City of Surrey has triggered an EA
- City of Surrey is seeking an EA exemption

Mud Bay Foreshore Enhancements

- Nature-based solutions for “coastal squeeze”
- Approach developed with support from broad group of rightsholders, stakeholders, regulators, scientists and engineers



Mud Bay Foreshore Enhancements

- Developing a nature-based solution for reducing coastal squeeze and coastal flooding
- Foreshore protection along 1km of Mud Bay Park
- Establishes salt marsh habitat over a wider distance
- Able to adapt to sea level rise
- Preserves the natural look of the shoreline
- Will take an adaptive management approach:
 - Design and implementation will improve throughout the available construction period
 - Aiming for seasonal construction 2021-2027

Existing salt marsh at risk from coastal squeeze in Boundary Bay

Environmental Assessment

EA Required for Mud Bay Foreshore Enhancements



- Major projects must meet provisions of BC's *Environmental Assessment Act*, managed through the Environmental Assessment Office (EAO) for potential environmental, social, economic, health and cultural effects
- EAO requires projects to “seek consensus” with participating Indigenous governments

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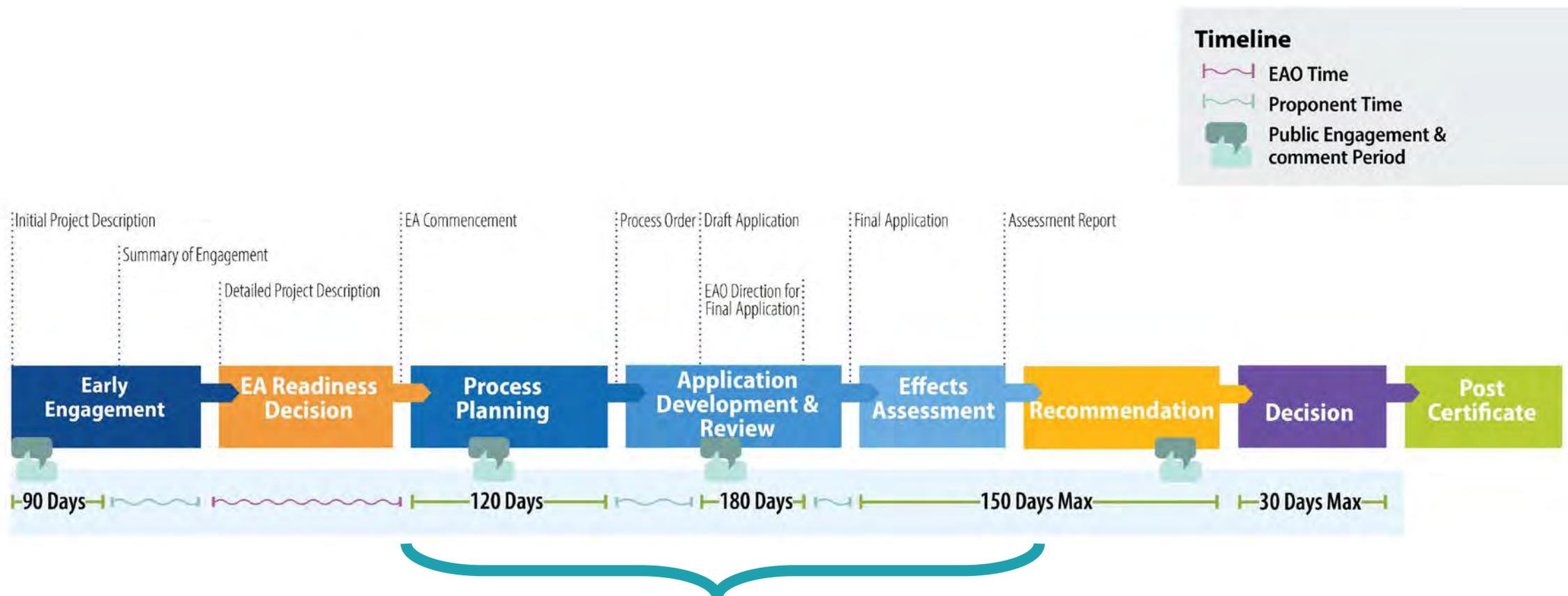


- Experts have been retained to design the work to mitigate environmental impact and provide environmental enhancement
- Migratory bird and biofilm studies are currently underway
- Archeological protocols with Indigenous nations are being developed as part of the permitting process

EA Exemption

- EA Exemption process because Project focuses on habitat enhancement and consensus is being sought with Indigenous governments
- EA Exemption would save considerable time and cost and allow project to better fit within DMAF funding window
- All provincial and federal permits still required upon receipt of EA Certificate of Exemption

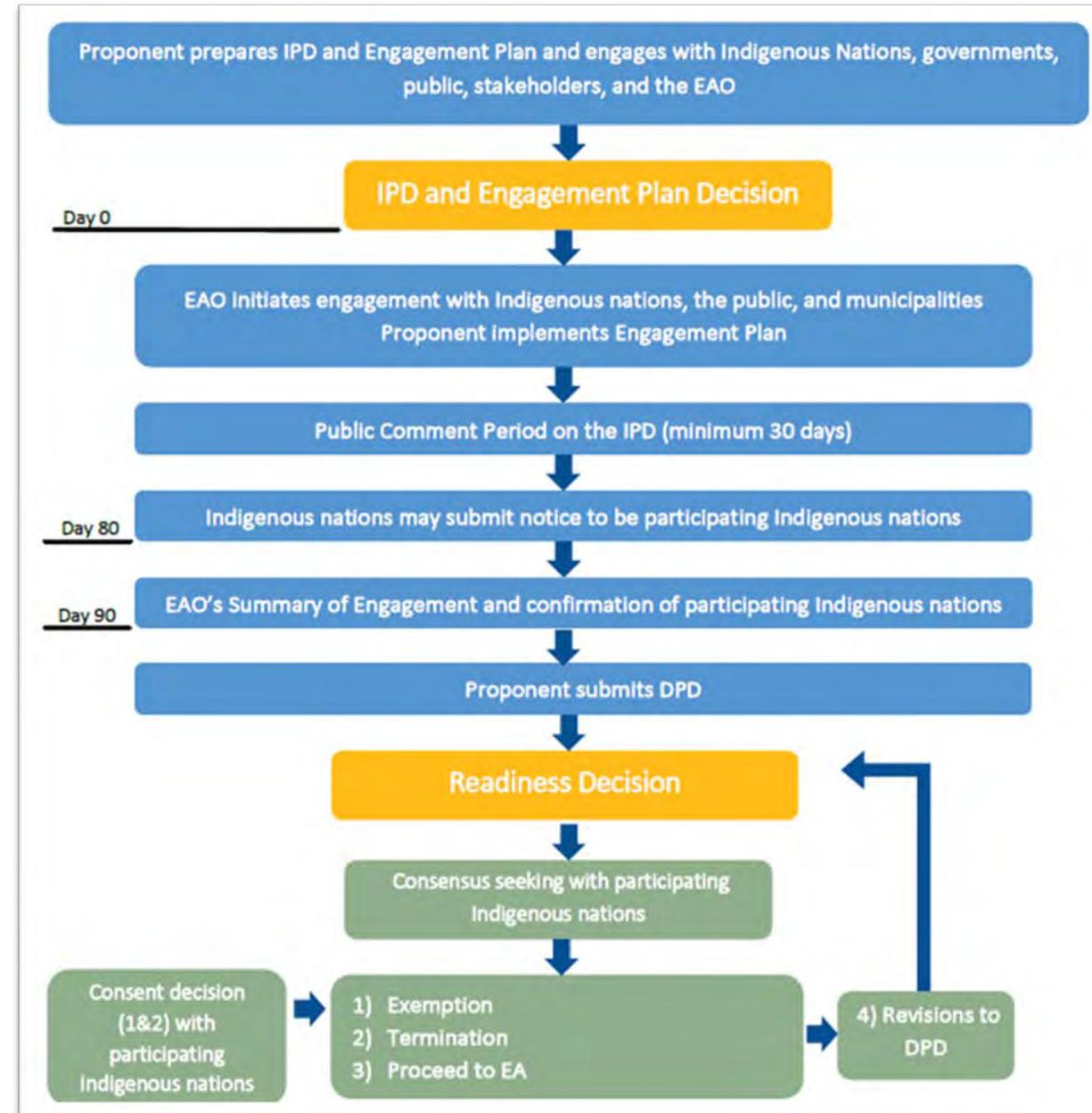
Environmental Assessment Process



Seeking exemption from several steps to expedite by 1 or more years

EA Exemption Process

- Engage early and often
- Seek consensus with participating Indigenous nations
- Build on prior engagement and relationships



Keys to EA Exemption Success

- Seek to achieve consensus with participating Indigenous governments
- Demonstrate that the project(s) will not have significant adverse environmental, economic, social, cultural or health effects, or, serious effects on an Indigenous nation or their rights
- Demonstrate the promotion of sustainability by protecting the environment and fostering a sound economy and the well-being of British Columbians and their communities
- Support reconciliation with Indigenous groups (UNDRIP)
- Stakeholder endorsement



Provincial staff
decision for
referral to the
Minister



Minister's
decision

EA Exemption Timeline



Schedule is subject to change

Next Steps for Mud Bay Foreshore Enhancements

Next Steps

- Seek endorsement of City's Mud Bay Foreshore Enhancement Project
- Initiate detailed design of Foreshore Enhancement
- Ongoing consultation and stakeholder engagement
- Obtain permits and approvals
- Initiate construction in phases
- Updates to Council on overall CFAS implementation



Q&A

surrey.ca/CoastalTakingAction

Surrey **Coastal Flood
Adaptation
Strategy**
Taking Action



Coastal Flood Adaptation Strategy Implementation

For: Surrey Agriculture & Food Policy Committee

Presented by: Matt Osler

June 2, 2020

www.surrey.ca/CoastalTakingAction

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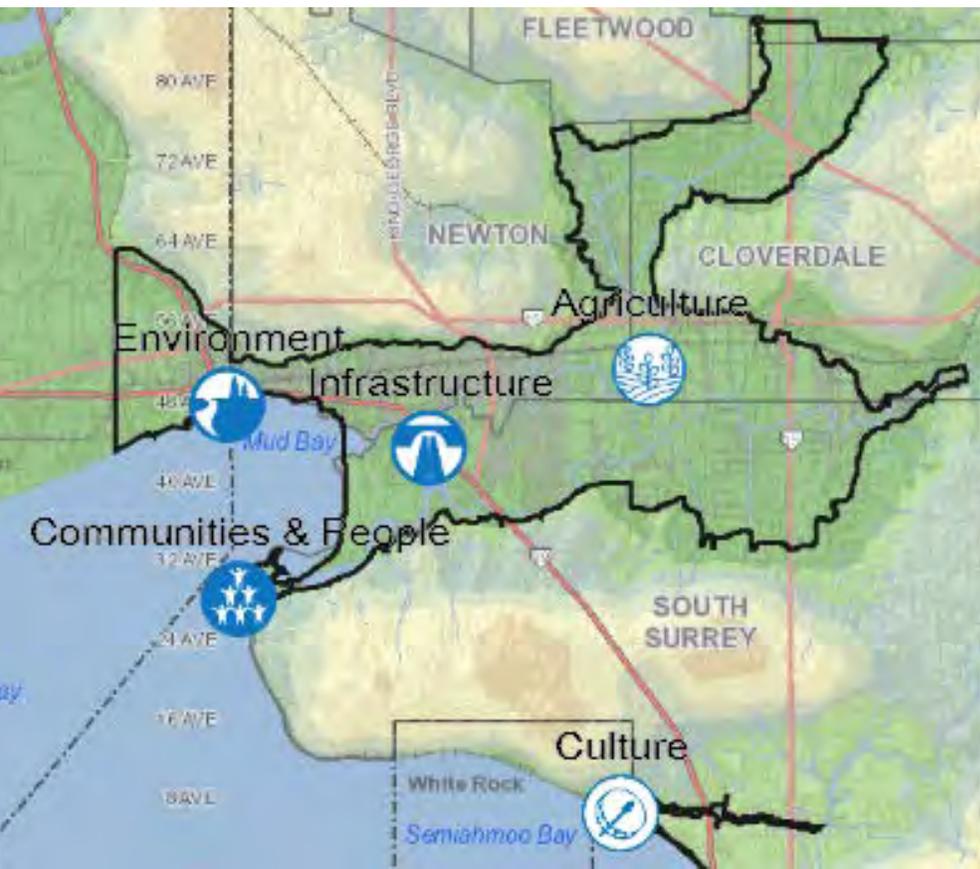
Agricultural Values Incorporated

- Saltwater intrusion concerns
- Irrigation and water scarcity
- Living with water
- Resilience
- Food Security
- Economy and Jobs
- Preservation of farmland



Interactive Story Maps

- From Salt Marsh to Farmland: <https://arcg.is/1fHqmu>



From Salt Marsh to Farmland
How Flood Control Supports Surrey's Agricultural Heart

Coastal Flood Adaptation Strategy

CITY OF SURREY

Introduction | Farming the Floodplain | A Rich Landscape | Evolution of Agriculture | Floods | Climate Change | Contact Us

Surrey's Agricultural Heart

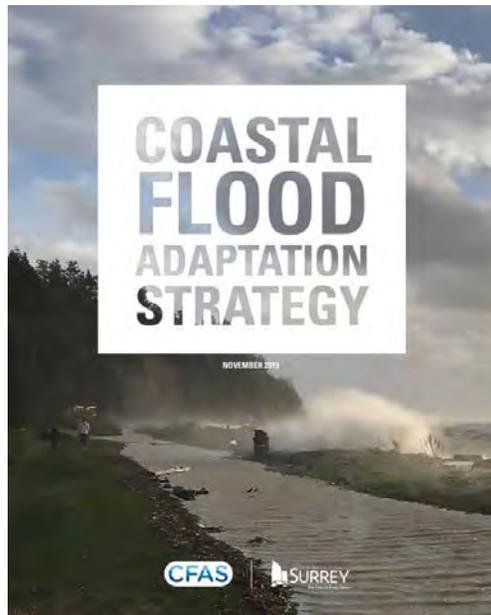
An Economic Engine

The agriculture and farming sector plays a significant role in Surrey's economy. This sector generates about a quarter of total gross annual farm receipts in Metro Vancouver, or about \$170 million in 2010 – all from only 15% of Metro Vancouver's Agricultural Land Reserve (ALR) area. The sector also employs hundreds, including farm families and seasonal workers.



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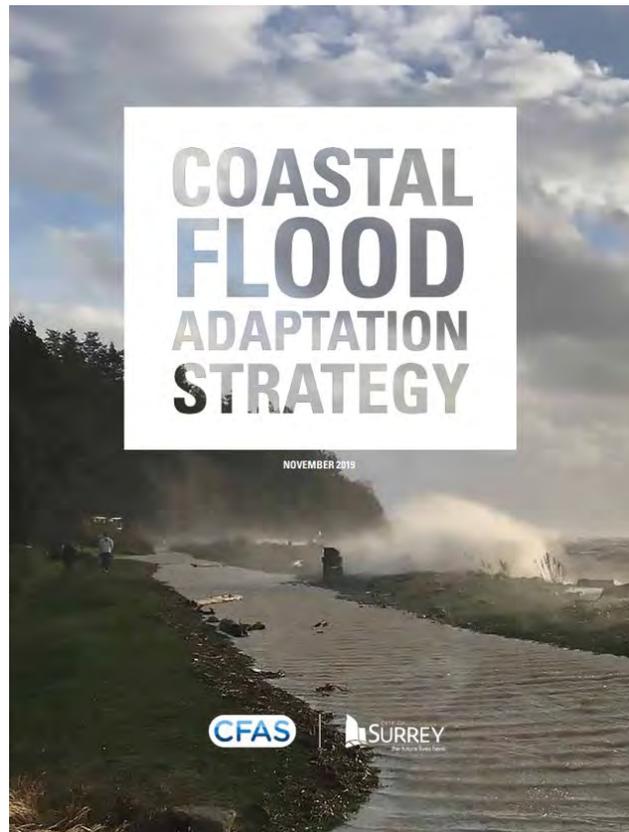
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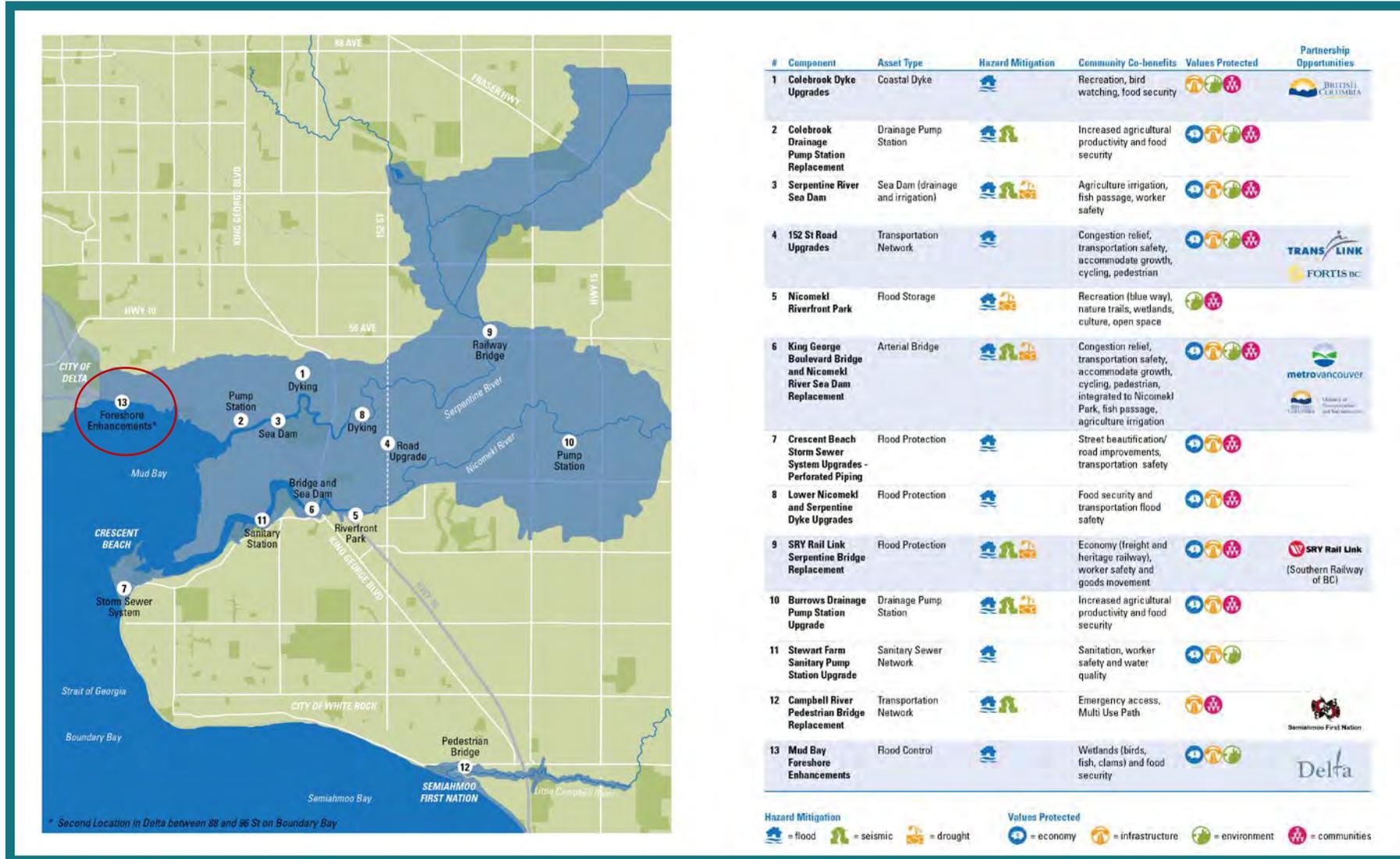
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Strategy Implementation with federal and provincial funding



Time is of the essence

Federal completion deadline March 31, 2028

Mud Bay Foreshore Enhancements

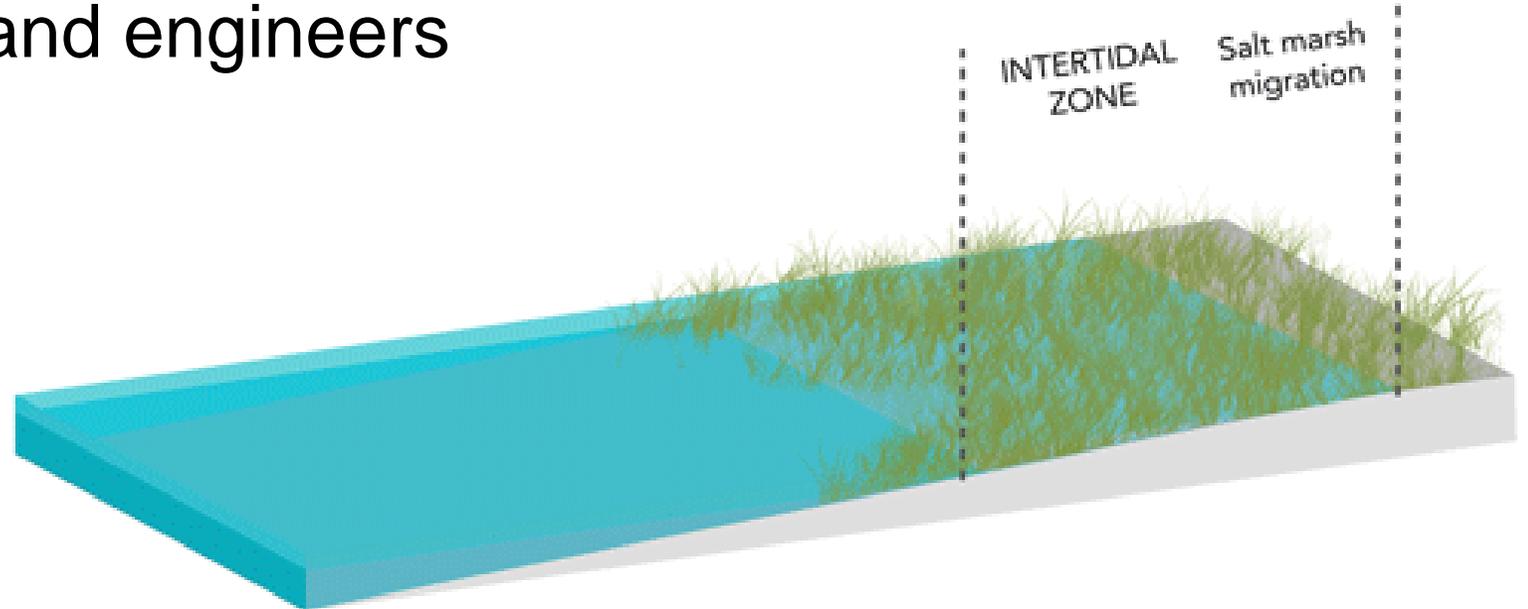
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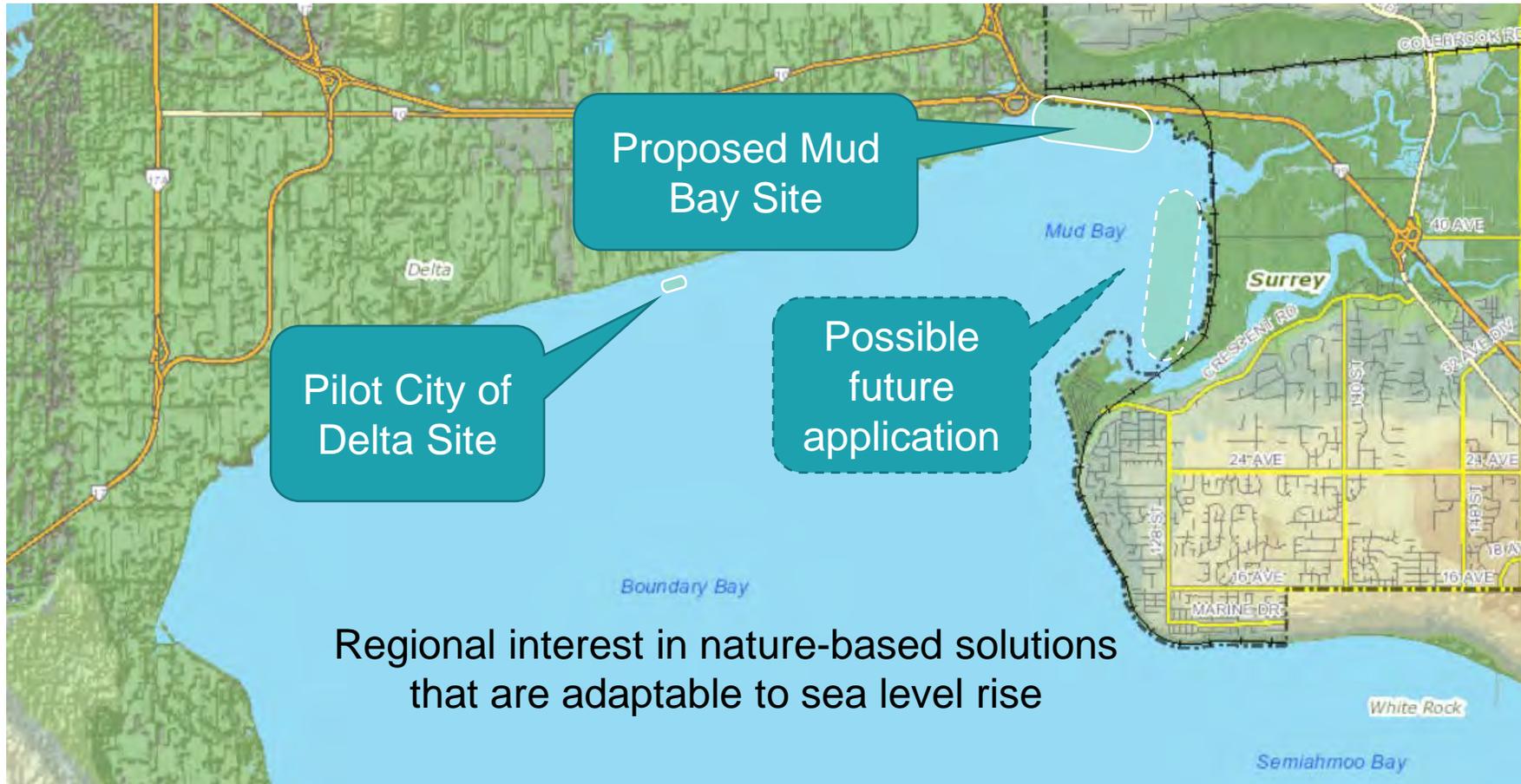


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Existing salt marsh at risk from coastal squeeze in Boundary Bay

Broader Applicability



Environmental Assessment

EA Required for Mud Bay Foreshore Enhancements



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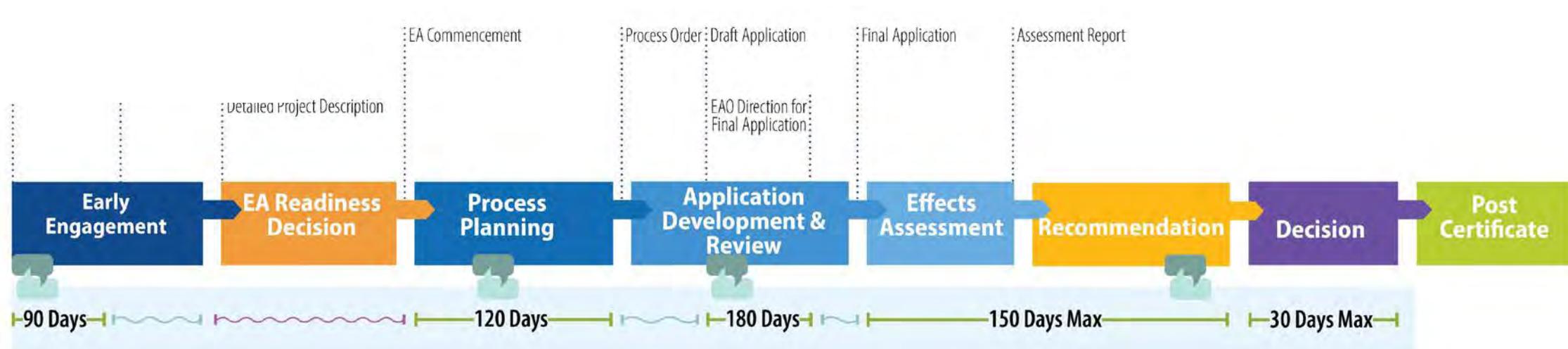


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Environmental Assessment Process



- Engage early and often
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- Build on prior engagement and relationships

Seeking exemption from several steps to expedite by 1 year

Keys to EA Exemption Success

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- Demonstrate the promotion of sustainability by protecting the environment and fostering a sound economy and the well-being of British Columbians and their communities
- Support reconciliation with Indigenous groups (UNDRIP)
- Stakeholder endorsement



Minister's
decision

EA Exemption Timeline



Schedule is subject to change

Next Steps for Mud Bay Foreshore Enhancements

Next Steps

- **Seek input and endorsement of City's Mud Bay Foreshore Enhancement Project from AFPAC**
 - Accelerate implementation to protect farmland
- Initiate detailed design of Foreshore Enhancement
- Ongoing consultation and stakeholder engagement
- Obtain permits and approvals
- Initiate construction in phases
- Updates to Council on overall CFAS implementation



Q&A

surrey.ca/CoastalTakingAction

Surrey **Coastal Flood
Adaptation
Strategy**
Taking Action



Coastal Flood Adaptation Strategy Implementation

For: Environmental Sustainability Committee
Presented by: Matt Osler
June 24, 2020



surrey.ca/CoastalTakingAction

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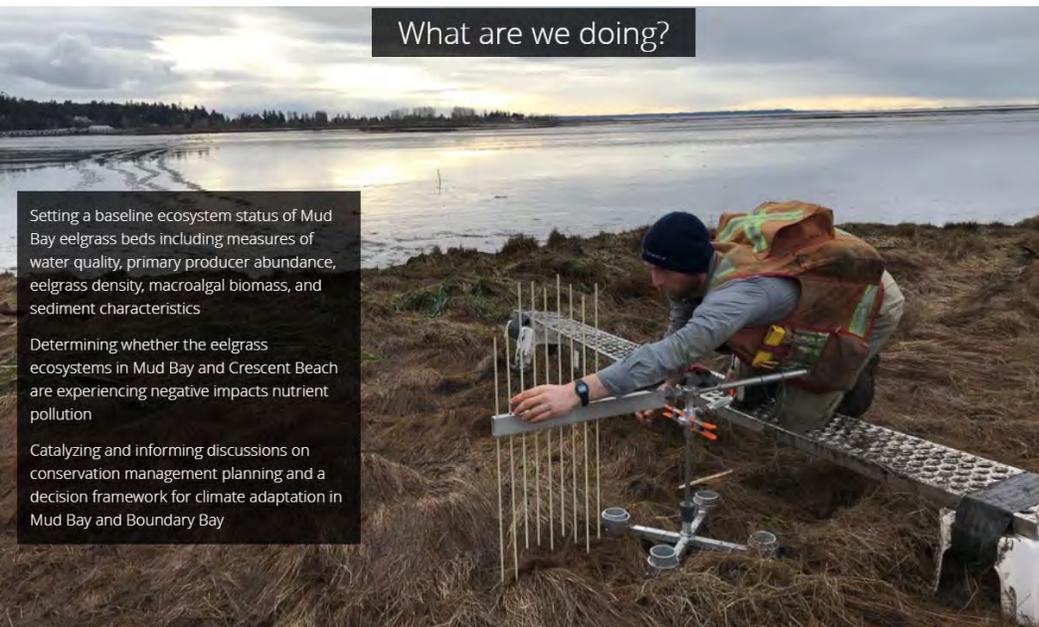
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Environmental Values



What are we doing?

Setting a baseline ecosystem status of Mud Bay eelgrass beds including measures of water quality, primary producer abundance, eelgrass density, macroalgal biomass, and sediment characteristics

Determining whether the eelgrass ecosystems in Mud Bay and Crescent Beach are experiencing negative impacts nutrient pollution

Catalyzing and informing discussions on conservation management planning and a decision framework for climate adaptation in Mud Bay and Boundary Bay

- During early engagement stakeholders raised concerns that there were information gaps of coastal ecosystem
- Partnered with Friends of Semiahmoo Bay and Ducks Unlimited Canada to apply for grant funding
- City obtained \$171,400 grant in 2017 to assess ecosystem and infrastructure risks from the Federation of Canadian Municipalities

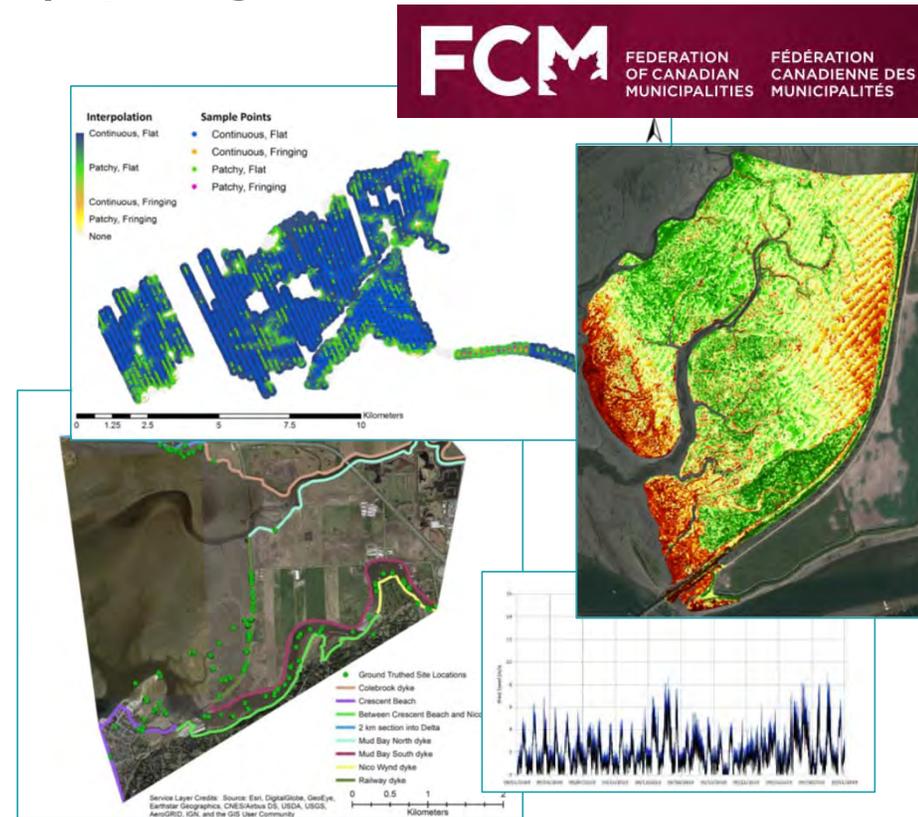
Mud Bay Ecosystem and Infrastructure Risk Prioritization (PIER) project

- August 2017 to February 2020
- Literature review; desktop geomorphology and sediment transport analyses
- High-level environmental risk assessment workshop with expert stakeholders



Mud Bay Ecosystem and Infrastructure Risk Prioritization (PIER) project

- Priority estuary monitoring:
 - Wind and wave data
 - 4 sites for salt marsh accretion\erosion and subsidence measurements
 - Water quality and water salinity
 - Remote sensing (near-shore vegetation mapping/classification; marsh erosion assessment; video, image and LiDAR collection by drone)
 - Eelgrass mapping and nutrient loading effects
 - Shoreline classification
- Builds on work of Friends of Semiahmoo Bay Society and Ducks Unlimited of Canada



PIER Interactive Story Map

<https://arcg.is/0a5Ga4>



Full project reports available online:

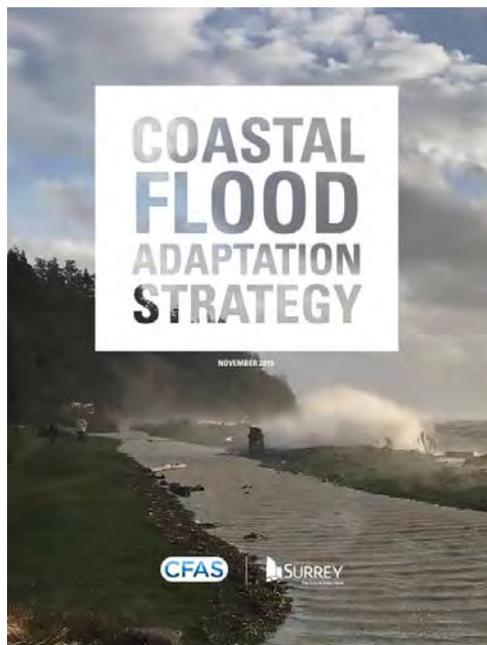
- Phase 1: <https://www.surrey.ca/files/CFASPIERPhase1Report31Mar2018.pdf>
- Phase 2: <https://www.surrey.ca/files/CFASPIERPhase2Report%2031Mar2019.pdf>
- Phase 3: <https://www.surrey.ca/files/CFASPIERPhase3Report15Feb2020.pdf>

Environmental Outcomes

- Awarded the Community Energy Association's inaugural Climate Adaptation Award
- City of Surrey selected as a municipal example of Sustainable Development.
 - Engineers Canada Sustainability in Practice Course through Polytechnique Montréal
<https://catalogue.edulib.org/en/courses/polymtl-sdes101/>
- Over 1 million dollars of national research is being directed in Boundary Bay over 3 years by National Resources Canada and National Research Council of Canada
 - Nature-Based Infrastructure for Coastal Resilience and Risk Reduction

Strategy Outcomes

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Regulatory Controls, Design Standards, and Guidelines

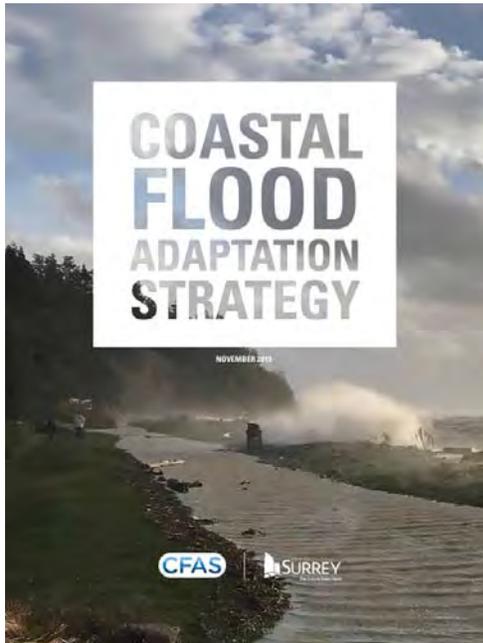
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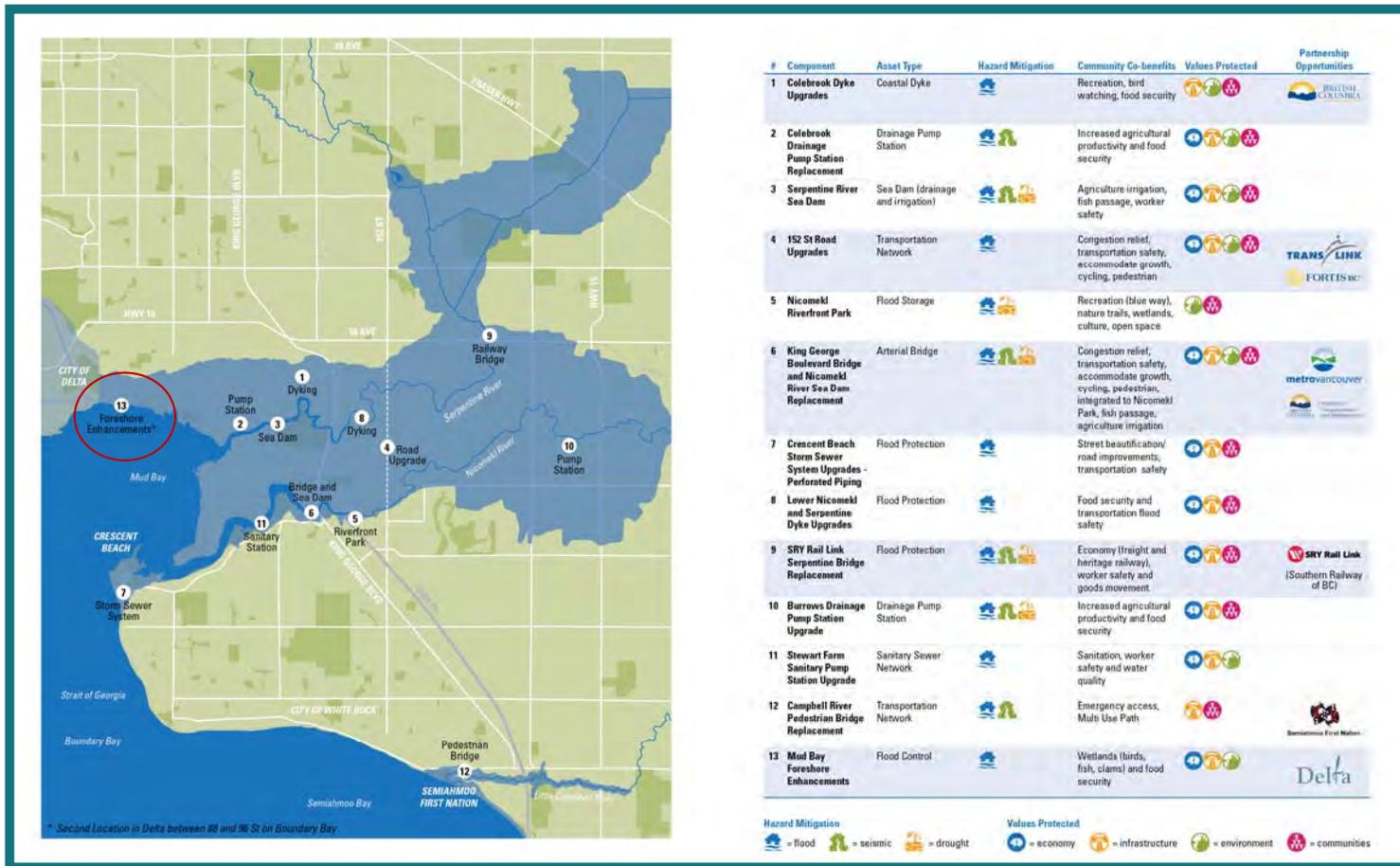
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Strategy Implementation with federal and provincial funding



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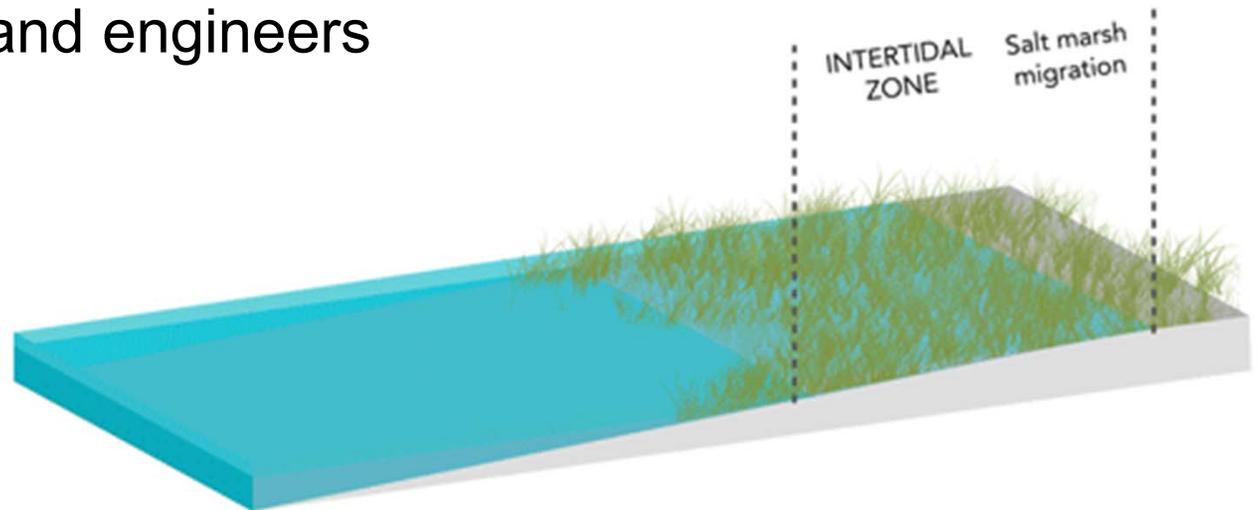
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EA Required for Mud Bay Foreshore Enhancements



- Major projects must meet provisions of BC's *Environmental Assessment Act*, managed through the Environmental Assessment Office (EAO) for potential environmental, social, economic, health and cultural effects
- EAO requires projects to “seek consensus” with participating Indigenous governments

EA Required for Mud Bay Foreshore Enhancements

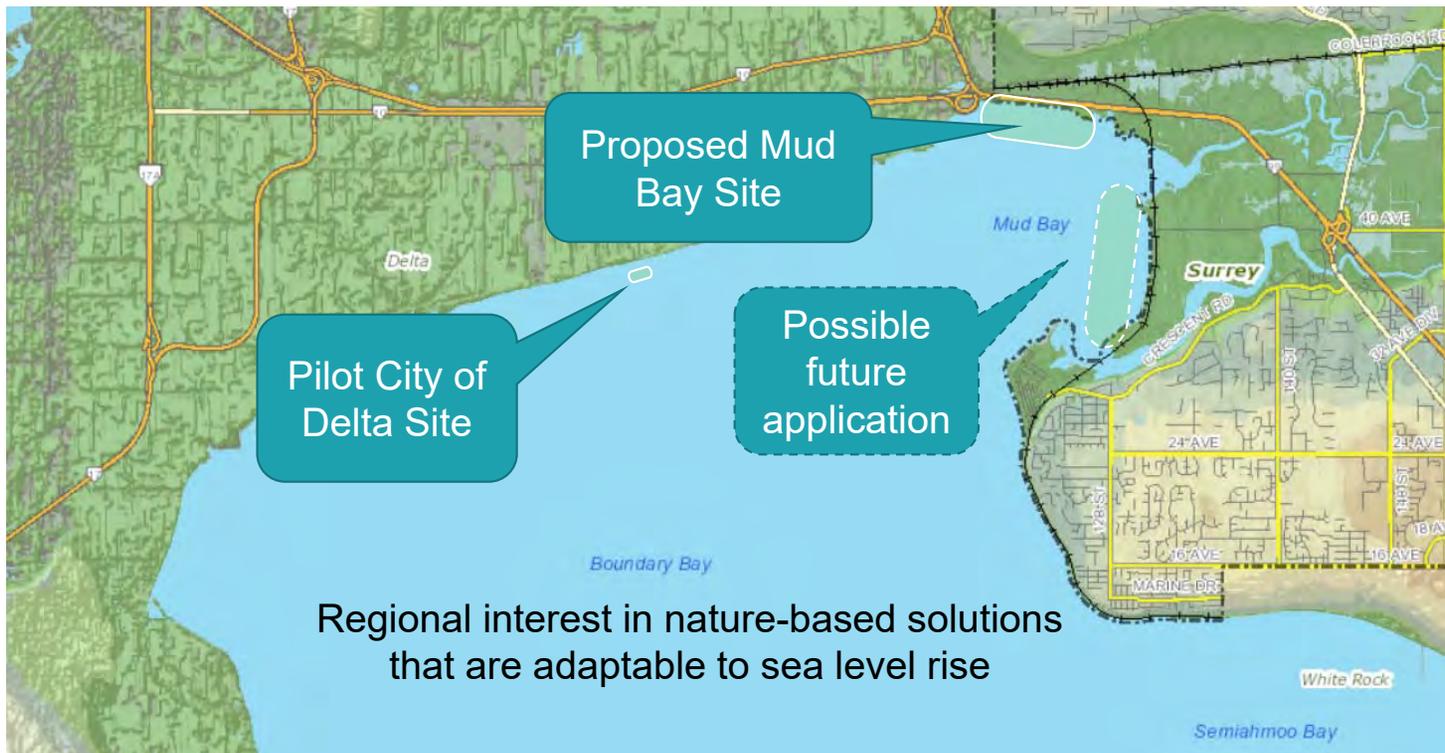


- Experts have been retained to design the work to mitigate environmental impact and provide environmental enhancement
- Migratory bird and biofilm studies are currently underway
- Archeological protocols with Indigenous nations are being developed as part of the permitting process

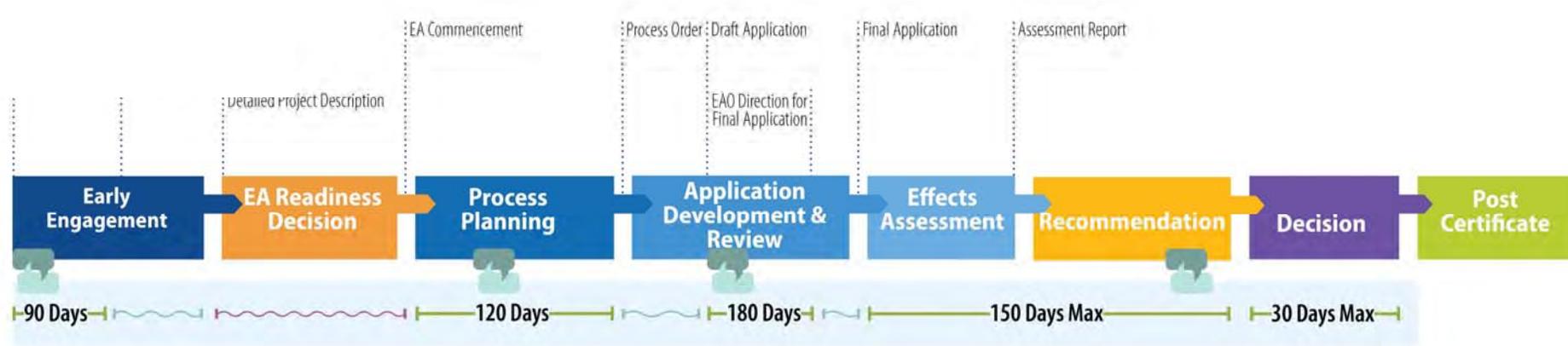
EA Exemption

- EA Exemption process because Project focuses on habitat enhancement and consensus is being sought with Indigenous governments
- EA Exemption would save considerable time and cost and allow project to better fit within DMAF funding window
- All provincial and federal permits still required upon receipt of EA Certificate of Exemption

Broader Applicability



Environmental Assessment Process



Seeking exemption from several steps to expedite by 1 year

- Engage early and often
- Seek consensus with participating Indigenous nations
- Build on prior engagement and relationships

Keys to EA Exemption Success

- Seek to achieve consensus with participating Indigenous governments
- Demonstrate that the project(s) will not have significant adverse environmental, economic, social, cultural or health effects, or, serious effects on an Indigenous nation or their rights



Provincial staff
decision for
referral to the
Minister

- Demonstrate the promotion of sustainability by protecting the environment and fostering a sound economy and the well-being of British Columbians and their communities
- Support reconciliation with Indigenous groups (UNDRIP)
- Stakeholder endorsement



Minister's
decision

EA Exemption Timeline



Schedule is subject to change

Next Steps for Mud Bay Foreshore Enhancements

Next Steps

- **Seek endorsement of City's Mud Bay Foreshore Enhancement Project from ESAC**
 - Accelerate implementation of nature-based solutions
- Initiate detailed design of Foreshore Enhancement
- Ongoing consultation and stakeholder engagement
- Obtain permits and approvals
- Initiate construction in phases
- Updates to Council on overall CFAS implementation

1) Requesting that ESAC receives this presentation for information about the PIER Project.

2) Requesting that in support of the Environmental Assessment process that ESAC endorse the Proposed Foreshore Enhancements in Mud Bay Park as presented.

Q&A

surrey.ca/CoastalTakingAction

Surrey **Coastal Flood
Adaptation
Strategy**
Taking Action

