

EASTSIDE OPTION SETS

WASTEWATER TREATMENT OPTIONS - Eastside Select Committee



EASTSIDE SELECT COMMITTEE

The Eastside Select Committee is an official sub-committee of the Capital Regional District. The participants (Oak Bay, Saanich and Victoria) are working to identify solutions for wastewater treatment and resource recovery that meet the unique needs of the eastside in a proactive and timely way.

The Eastside Select Committee will develop a plan for the eastside that, in combination with the plan from the Westside Select Committee, could form the basis for an amendment to the Core Area Liquid Waste Management Plan (CALWMP).



TABLE OF CONTENTS

| | |
|----------------------|--------|
| Introduction | pg. 4 |
| Reference Guide..... | pg. 5 |
| Option 1..... | pg. 6 |
| Option 2 | pg. 8 |
| Option 3 | pg. 10 |
| Option 4 | pg. 12 |
| Option 5 | pg. 14 |
| Option 6 | pg. 16 |

EASTSIDE OPTION SETS

INTRODUCTION

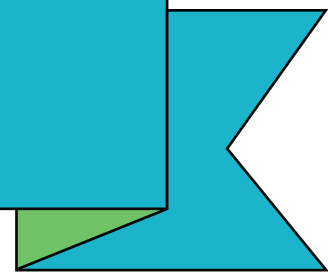
This document presents the Eastside Select Committee's Option Sets for wastewater treatment in the eastside of the Capital Regional District: Oak Bay, Saanich and Victoria.

Earlier this spring, each participating municipality, the City of Victoria, District of Oak Bay and the District of Saanich, brought forward "technically feasible" sites that could potentially host a wastewater treatment plant. These sites were introduced to the public for feedback through numerous public consultation events, several surveys and ongoing dialogue with the public. Based on public priorities and emerging technical, social, economic and environmental considerations, the number of potential sites were reduced.

Using only the "publicly acceptable" and "possibly acceptable site with conditions" sites, these Option Sets have been developed based on a functional approach to the treatment of liquids and residuals. The Option Set considerations include site size, treatment of liquids and residuals, treatment level, resource recovery opportunities (including future growth areas), cost components and engineering standards. Based on public feedback, both centralized and distributed models have been developed.

To continue to inform the development of wastewater treatment in the Capital Regional District, the public is asked to participate by reviewing the sites at eastside.ethelodecisions.com – a digital civic engagement platform. Your input will help to identify preferred Option Sets to be chosen for more detailed technical and financial analyses.

REFERENCE GUIDE






| | | | |
|---|--|--|--|
| <h2>SITING CONSIDERATIONS</h2> | | | <h2>COST CONSIDERATIONS</h2> |
| <h3>Access & Infrastructure</h3> <p>Summary of proximal distances to sanitary trunk mains, truck routes, and arterial roads</p> | <h3>Land & Amenities</h3> <p>Summary of land use considerations that affect siting, including current and future use</p> | <h3>Resource Recovery</h3> <p>Summary of current heat recovery and water reuse potential</p> | <p>Number of:</p> <ul style="list-style-type: none"> ● Treatment Plants ● New Pump Stations ● Metres of New Piping |
| <h2>COMMUNITY FACTORS</h2> | | | |
| <h3>Site Support</h3> <ul style="list-style-type: none"> ▪ Number of sites in the Option Set that have public support or are possibly acceptable with conditions, based on public feedback ▪ Climate change considerations | | <h3>OCP Factors and Land Use</h3> <ul style="list-style-type: none"> ▪ Current land use based on present use of the site ▪ Future land use based on Official Community Plan designation ▪ Growth areas based on Official Community Plans | |
| <h2>OPTION SET CONSIDERATIONS</h2> | | | |
| <h3>Conveyance</h3> <ul style="list-style-type: none"> ▪ Inventory of: <ul style="list-style-type: none"> ○ Wet weather facility ○ Treatment plants ○ Capacity measured in cubic metres/day ○ Level of treatment (primary, secondary, tertiary) ○ Associated outfalls (current and proposed) | | <h3>Resource Recovery</h3> <ul style="list-style-type: none"> ▪ District energy systems based on current and future heating demands primarily in growth centers as well as policies by select municipalities ▪ Reclaimed water opportunities based on current potential users in the area including irrigation and industrial reclamation ▪ Residual solids treatment volumes generated from primary and secondary treatment of all Eastside flows ▪ Location of residual solids plant based on site size and an industrial/commercial land use ▪ Transport options for residual solids have been identified from each plant to the residuals plant | |
| <h3>Wastewater Service Areas</h3> <ul style="list-style-type: none"> ▪ Number of service areas to manage all Eastside flows | | | |
| <h3>Neighbourhood Siting</h3> <ul style="list-style-type: none"> ▪ Location based on current neighbourhoods and future growth areas as identified in Official Community Plans | | | |

EASTSIDE OPTION SETS

OPTION 1. CENTRALIZED PLANT

Victoria Outer Harbour

ONE PLANT - OPTION A

| SITING CONSIDERATIONS | | | COST CONSIDERATIONS |
|---|--|---|--|
| Access & Infrastructure  | Land & Amenities  | Resource Recovery  | Treatment Plants x 1 Pump Stations x 3 New Piping x 10,600 metres (Includes 1,300 m for new outfall) |

COMMUNITY FACTORS

Site Support

- 2 of 3 sites have public support; 1 of 3 sites are possibly acceptable with conditions
- Consideration to sea level rise, and sensitive coastal bluff area along Ogden Pt foreshore

OCP Factors and Land Use

- Current land uses of the sites are transportation, industrial and park
- Future land uses are institutional, industrial and park
- Opportunities for recreation and educational activities at all sites
- Opportunities for enhanced public use including foreshore amenities

OPTION SET CONSIDERATIONS

Conveyance

- Wet weather facility at Clover Pt to accommodate 151,800 cubic metres/day for primary treatment; outfall at Clover Pt. New parallel outfall required to handle all Eastside flows. Alternately all primary treatment could occur at Ogden Pt.
- Treatment plant at Ogden Pt to accommodate 109,000 cubic metres/day for primary treatment (from west Saanich and Vic West flows) and 156,000 cubic metres/day for secondary and tertiary treatment

Wastewater Service Areas

- Two wastewater service areas to manage all Eastside flows

Neighbourhood Siting

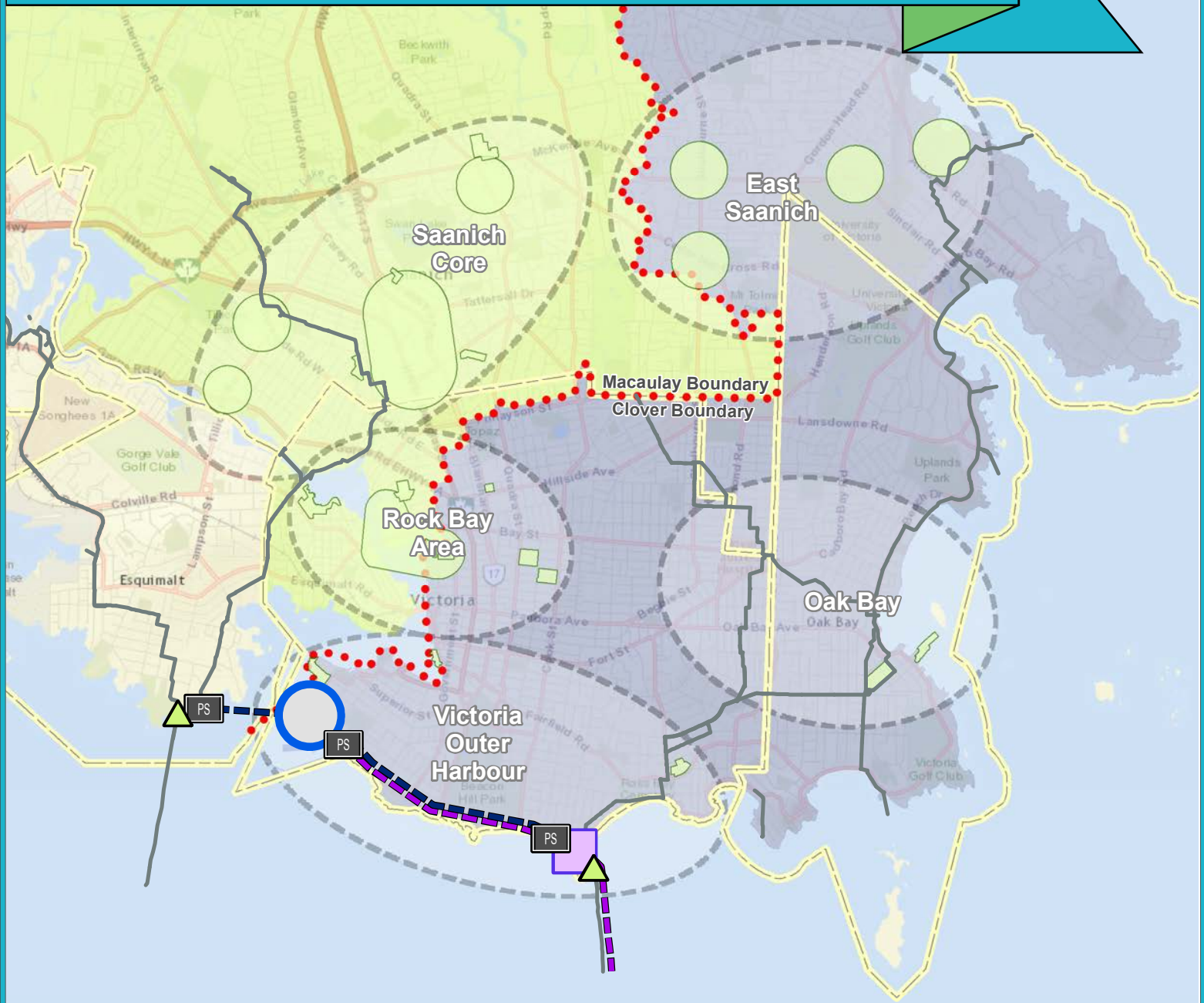
- 2 of 3 sites are not directly adjacent to single family residential neighbourhoods
- No sites are associated with future growth areas













Resource Recovery

- District energy systems possible in one location
- Reclaimed water opportunities exist for nearby parks
- Residuals solids treatment (approximately 36 dry tonnes/day) at Ogden Pt will target maximizing resource recovery and minimizing the quantity of residuals for disposal
- Primary residuals from Clover Pt could be barged, piped, or trucked to Ogden Pt (maximum 7 trucks/day)
- Residuals from Ogden Pt could be barged away

OPTION 1. CONCEPT MAP CENTRALIZED PLANT

Victoria Outer Harbour






-  Site Nodes
-  Existing CRD Sanitary Trunk
-  Proposed Pump Station
-  Proposed Sanitary Pipe - Raw / Primary
-  Proposed Sanitary Pipe - Treated
-  Sewage Catchment Breakpoint
-  Eastside Sites
-  Municipal Boundaries
-  Existing Outfall
-  Local
-  Eastside Sub-Regional
-  Wet Weather Facility

EASTSIDE OPTION SETS

OPTION 2. CENTRALIZED PLANT

Rock Bay Area

ONE PLANT - OPTION B

| SITING CONSIDERATIONS | | | COST CONSIDERATIONS |
|---|--|---|--|
| Access & Infrastructure  | Land & Amenities  | Resource Recovery  | Treatment Plants x 1 Pump Stations x 3 New Piping x 14,800 metres (Includes 1,300 m for new outfall) |

COMMUNITY FACTORS

Site Support

- 4 of 4 sites have public support
- Consideration to sea level rise, and sensitive coastal bluff area along Clover Pt foreshore

OCP Factors and Land Use

- Current land uses are industrial and park
- Future land uses are institutional, industrial and park
- Opportunities for recreation and educational activities at all sites
- Opportunities for enhanced public use including foreshore and Rock Bay neighbourhood amenities
- Rock Bay area identified as future growth area

OPTION SET CONSIDERATIONS

Conveyance

- Wet weather facility at Clover Pt to accommodate 151,800 cubic metres/day for primary treatment; outfall at Clover Pt. New parallel outfall required to handle all Eastside flows.
- Treatment plant in Rock Bay area to accommodate 109,000 cubic metres/day for primary treatment (from west Saanich and Vic West flows) and 156,000 cubic metres/day for secondary and tertiary treatment

Wastewater Service Areas

- Two wastewater service areas to manage all Eastside flows

Neighbourhood Siting

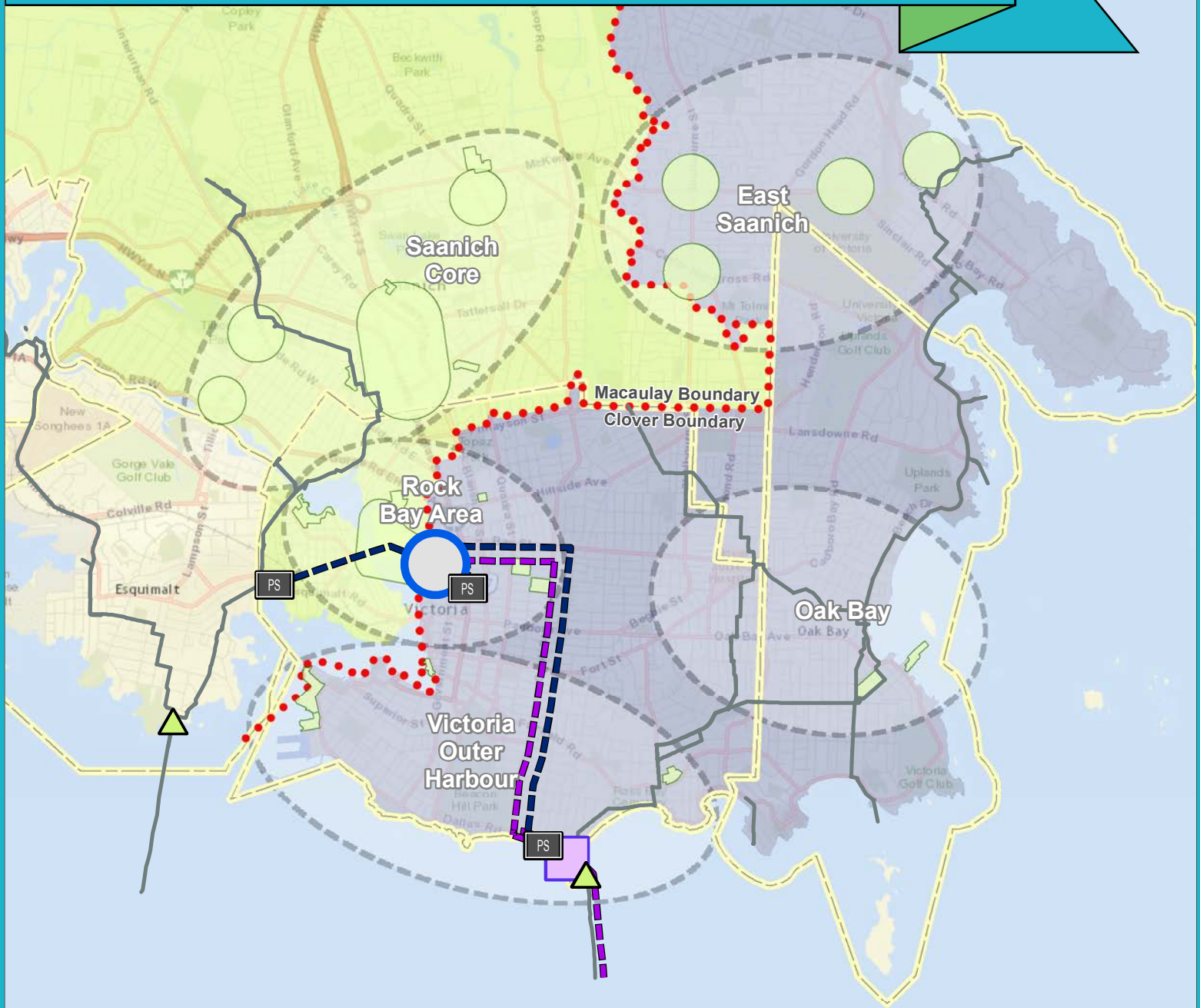
- 3 of 4 sites are not directly adjacent to single family residential neighbourhoods
- 1 of 4 sites associated with future growth areas













Resource Recovery

- District energy systems possible in one location
- Reclaimed water opportunities exist for nearby parks and suitable industrial uses
- Residuals treatment (approximately 36 dry tonnes/day) in Rock Bay area will target maximizing resource recovery and minimizing the quantity of residuals for disposal
- Primary residuals from Clover Pt could be barged, pumped or trucked to Rock Bay area (maximum 7 trucks/day)
- Residuals from Rock Bay area could be barged away

OPTION 2. CONCEPT MAP CENTRALIZED PLANT

Rock Bay Area






- | | | |
|--|---|---|
|  Site Nodes |  Sewage Catchment Breakpoint | Proposed WWTP |
|  Existing CRD Sanitary Trunk |  Eastside Sites |  Local |
|  Proposed Pump Station |  Municipal Boundaries |  Eastside Sub-Regional |
|  Proposed Sanitary Pipe - Raw / Primary |  Existing Outfall |  Wet Weather Facility |
|  Proposed Sanitary Pipe - Treated | | |

EASTSIDE OPTION SETS

OPTION 3. TWO PLANT

Victoria Outer Harbour, Rock Bay Area

TWO PLANT

| SITING CONSIDERATIONS | | | COST CONSIDERATIONS |
|---|--|---|--|
| Access & Infrastructure  | Land & Amenities  | Resource Recovery  | Treatment Plants x 2 Pump Stations x 4 New Piping x 16,500 metres (Includes 1,300 m for new outfall) |

COMMUNITY FACTORS

Site Support

- 6 of 7 sites have public support; 1 of 7 sites possibly acceptable with conditions
- Consideration to sea level rise, and sensitive coastal bluff area along Ogden foreshore

OCP Factors and Land Use

- Current land uses are transportation, commercial, industrial and park
- Future land uses are institutional, commercial, industrial and park
- Opportunities for recreation and educational activities at all sites
- Opportunities for enhanced public use including foreshore and Rock Bay neighbourhood amenities
- Rock Bay area identified as a future growth area

OPTION SET CONSIDERATIONS

Conveyance

- Wet weather facility at Clover Pt to accommodate 151,800 cubic metres/day for primary treatment; outfall at Clover Pt. New parallel outfall required to handle all Eastside flows.
- Treatment plant at Ogden Pt to accommodate 101,000 cubic metres/day for secondary and tertiary treatment; outfall at Clover Pt
- Treatment plant in Rock Bay area to accommodate 109,000 cubic metres/day for primary treatment (from west Saanich and Vic West flows) and 54,000 cubic metres/day for secondary and tertiary treatment; outfall at Clover Pt

Wastewater Service Areas

- Two wastewater service areas to manage all Eastside flows

Neighbourhood Siting

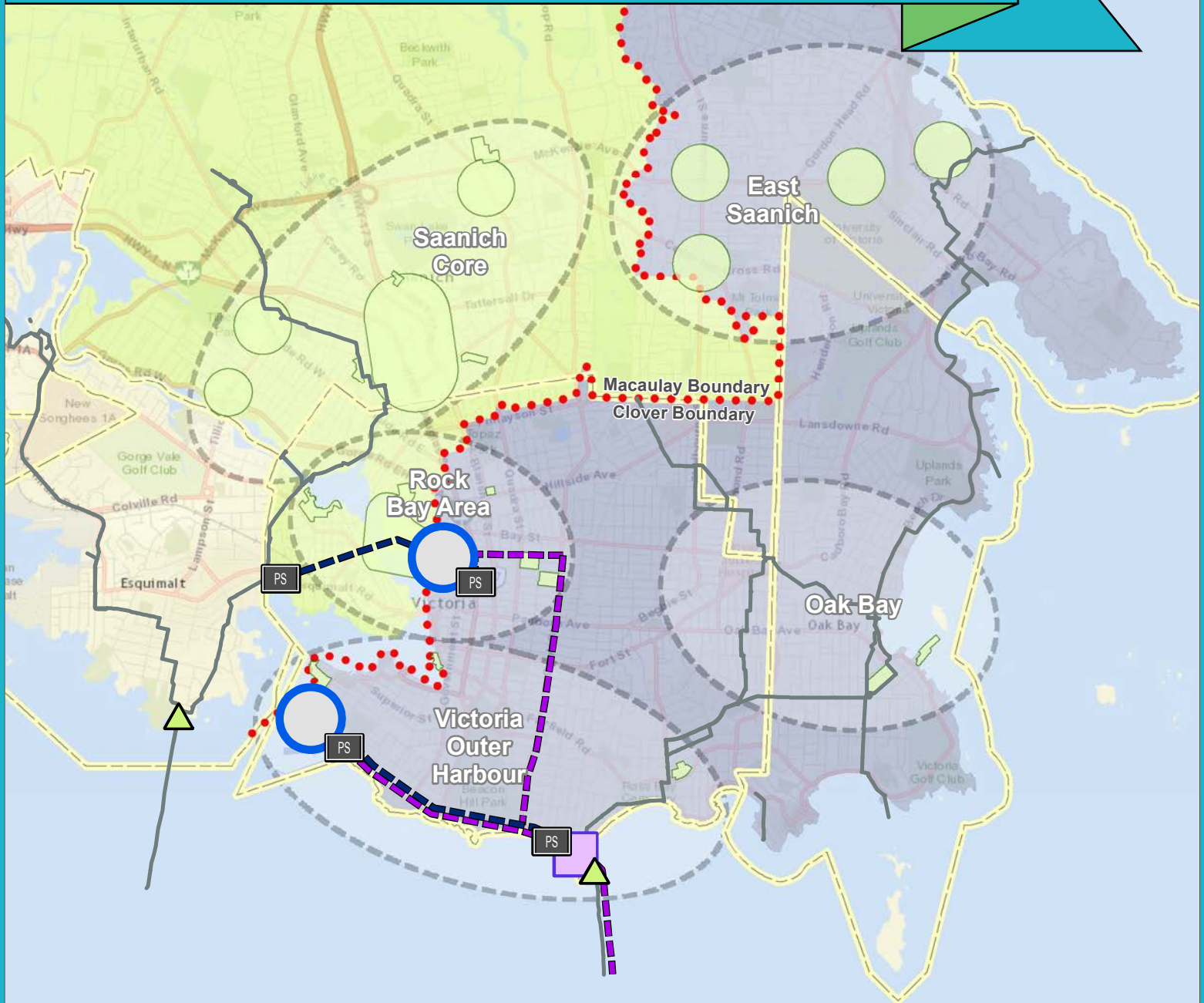
- 3 of 6 sites are not directly adjacent to single family residential neighbourhoods
- 3 of 6 sites are associated with future growth area

Resource Recovery

- District energy systems possible in one location
- Reclaimed water opportunities exist for nearby parks and suitable industrial uses
- Residuals solids treatment (approximately 36 dry tonnes/day) in Rock Bay area will target maximizing resource recovery and minimizing the quantity of residuals for disposal
- Primary residuals from Clover Pt could be barged, piped or trucked to Rock Bay area (maximum 7 trucks/day)
- Residuals from Ogden Pt could be barged, piped or trucked to Rock Bay area (maximum 5 trucks/day)

OPTION 3. CONCEPT MAP TWO PLANT

Victoria Outer Harbour, Rock Bay Area



- | | | | | | |
|--|--|--|-----------------------------|--|-------------------------------------|
| | Site Nodes | | Sewage Catchment Breakpoint | | Proposed WWTP Local |
| | Existing CRD Sanitary Trunk | | Eastside Sites | | Proposed WWTP Eastside Sub-Regional |
| | Proposed Pump Station | | Municipal Boundaries | | Wet Weather Facility |
| | Proposed Sanitary Pipe - Raw / Primary | | Existing Outfall | | |
| | Proposed Sanitary Pipe - Treated | | | | |

EASTSIDE OPTION SETS

OPTION 4. THREE PLANT

Victoria Outer Harbour / Rock Bay Area, East Saanich

THREE PLANT

SITING CONSIDERATIONS

Access & Infrastructure



Land & Amenities



Resource Recovery



COST CONSIDERATIONS

Treatment Plants x 3
Pump Stations x 6
New Piping x 21,300 metres
 (Includes 1,300 m for new outfall)

COMMUNITY FACTORS

Site Support

- 7 of 8 sites have public support; 1 of 8 sites possibly acceptable with conditions
- Consideration to sea level rise, and sensitive coastal bluff area along Ogden foreshore

OCP Factors and Land Use

- Current land uses are transportation, commercial, industrial and park
- Future land uses are institutional, commercial, industrial and park
- Opportunities for recreation and educational activities at all sites
- Opportunities for enhanced public use including foreshore and Rock Bay neighbourhood amenities
- Rock Bay area identified as a future growth area

OPTION SET CONSIDERATIONS

Conveyance

- Wet weather facility at Clover Pt to accommodate 132,800 cubic metres/day for primary treatment; outfall at Clover Pt. New parallel outfall required to handle all Eastside flows.
- Treatment plant at Ogden Pt to accommodate 82,000 cubic metres/day for secondary and tertiary treatment; outfall at Clover Pt
- Treatment plant in Rock Bay area to accommodate 109,000 cubic metres/day for primary treatment (from west Saanich and Vic West flows) and 54,000 cubic metres/day for secondary and tertiary treatment; outfall at Clover Pt
- Treatment plant in the Shelbourne-Cadboro area to accommodate 19,000 cubic metres/day for primary, secondary and tertiary treatment; existing outfall at Finnerty Cove

Wastewater Service Areas

- Three wastewater service areas to manage all Eastside flows

Neighbourhood Siting

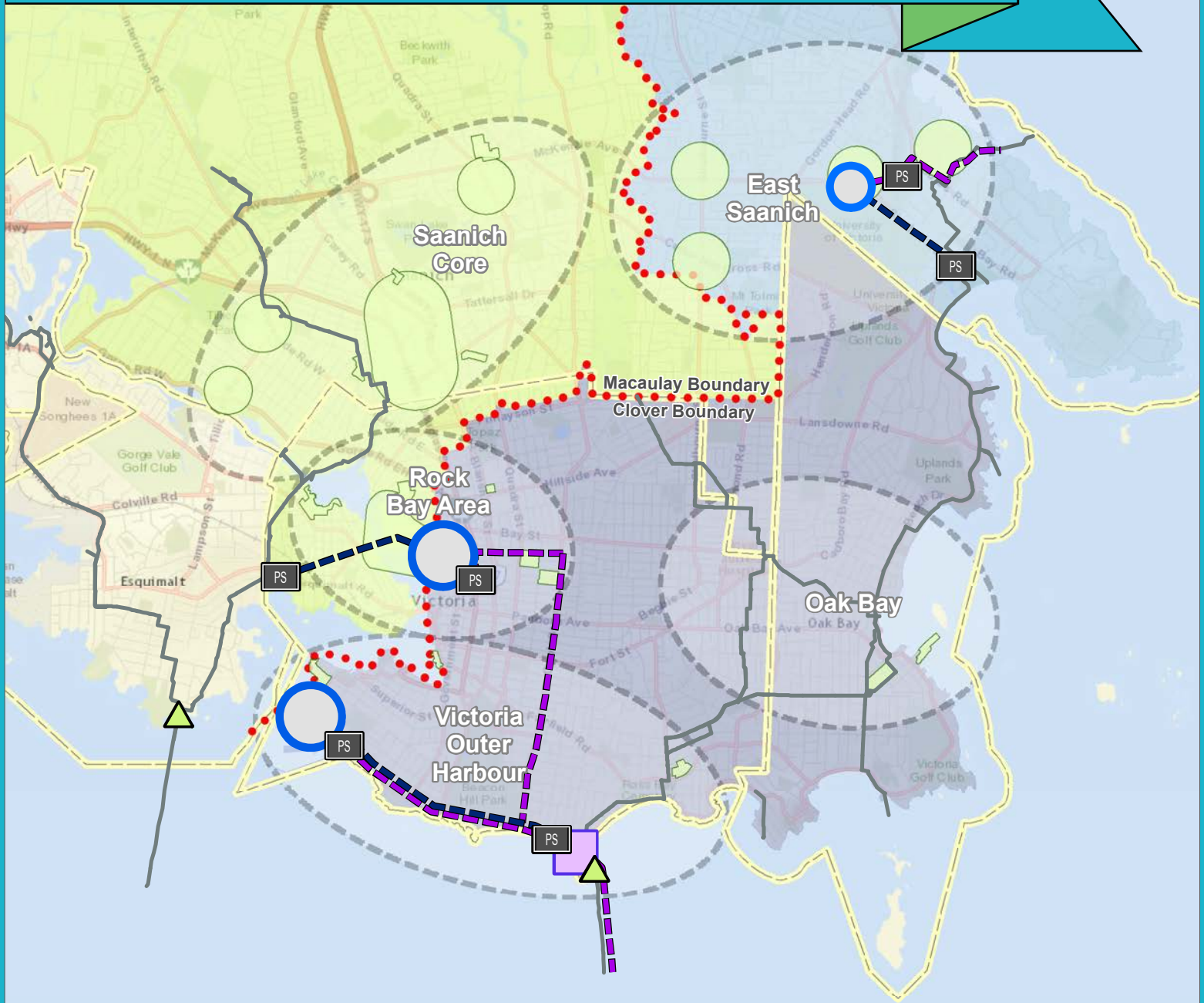
- 6 of 8 sites are not directly adjacent to single family residential neighbourhoods
- 2 of 8 sites associated with future growth areas













Resource Recovery

- District energy systems possible in one location
- Reclaimed water opportunities are increased with three plants (can construct dedicated tertiary treatment and conveyance systems to meet market demands)
- Residuals solids treatment (approximately 36 dry tonnes/day) in Rock Bay area will target maximizing resource recovery and minimizing the quantity of residuals for disposal
- Primary residuals from Clover Pt could be barged, piped or trucked to Rock Bay area (maximum 6 trucks/day)
- Residuals from Ogden Pt could be barged, pumped, or trucked to Rock Bay area (maximum 4 trucks/day)
- Residuals from Shelbourne-Cadboro area could be trucked to Rock Bay area (maximum 2 trucks/day)

OPTION 4. CONCEPT MAP THREE PLANT

Victoria Outer Harbour / Rock Bay Area, East Saanich






-  Site Nodes
-  Existing CRD Sanitary Trunk
-  Proposed Pump Station
-  Proposed Sanitary Pipe - Raw / Primary
-  Proposed Sanitary Pipe - Treated
-  Sewage Catchment Breakpoint
-  Eastside Sites
-  Municipal Boundaries
-  Existing Outfall
-  Local
-  Eastside Sub-Regional
-  Wet Weather Facility

EASTSIDE OPTION SETS

OPTION 5. FOUR PLANT

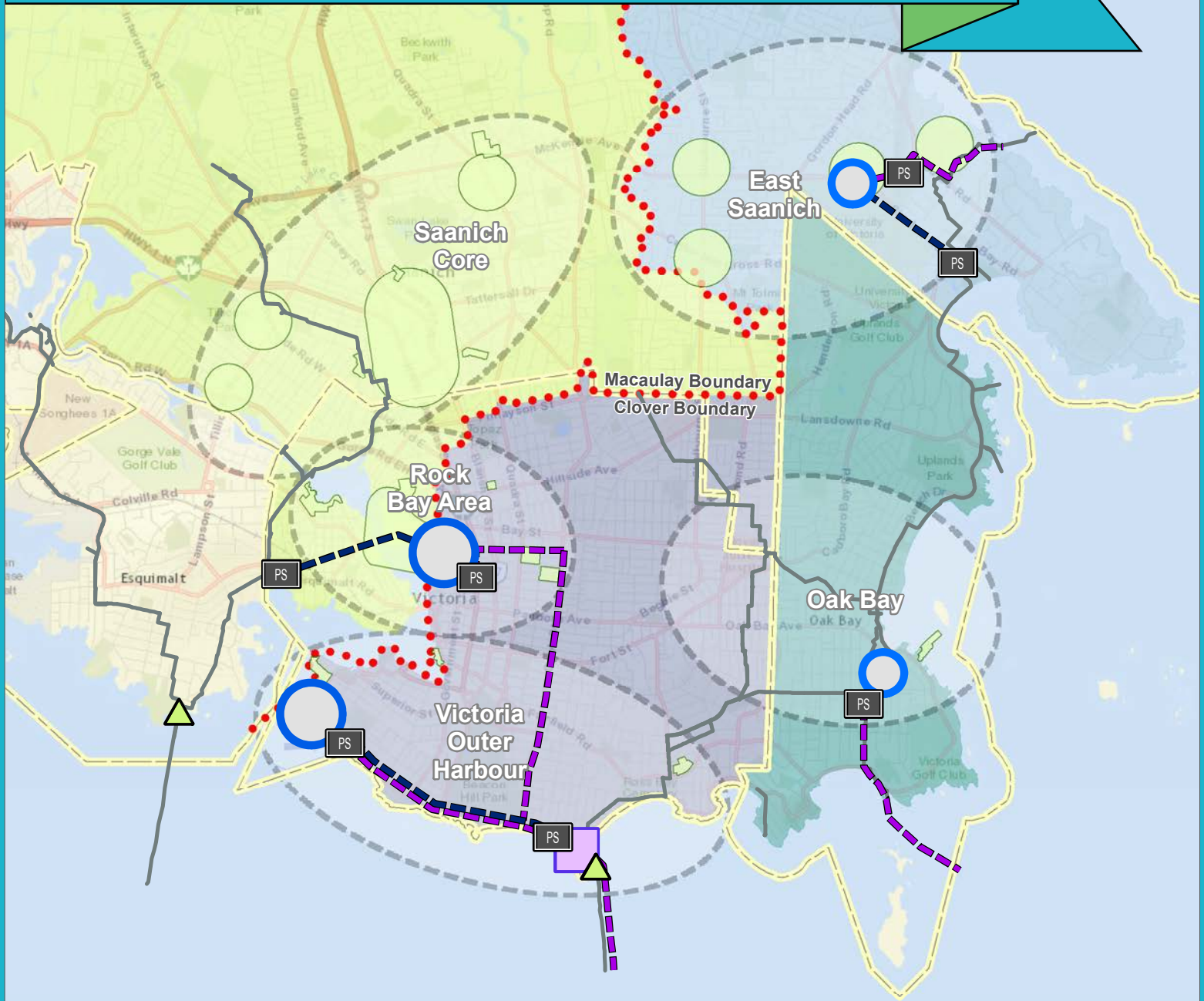
Victoria Outer Harbour / Rock Bay Area, East Saanich, Oak Bay

FOUR PLANT

| | | | |
|--|--|--|--|
| <h3>SITING CONSIDERATIONS</h3> | | | <h3>COST CONSIDERATIONS</h3> |
| <p>Access & Infrastructure</p>  | <p>Land & Amenities</p>  | <p>Resource Recovery</p>  | <p>Treatment Plants x 4 Pump Stations x 8 New Piping x 24,700 metres (Includes 2,800 m for two new outfalls)</p> |
| <h3>COMMUNITY FACTORS</h3> | | | |
| <p>Site Support</p> <ul style="list-style-type: none"> 7 of 9 sites have public support; 2 of 9 sites possibly acceptable with conditions Consideration to sea level rise, and sensitive coastal bluff area along Ogden foreshore | | <p>OCP Factors and Land Use</p> <ul style="list-style-type: none"> Current land uses are transportation, commercial, industrial and park Future land uses are institutional, commercial, industrial and park Opportunities for recreation and educational activities at all sites Opportunities for enhanced public use including foreshore and Rock Bay neighbourhood amenities Rock Bay area identified as a future growth area | |
| <h3>CONCEPT CONSIDERATIONS</h3> | | | |
| <p>Conveyance</p> <ul style="list-style-type: none"> Wet weather facility at Clover Pt to accommodate 116,800 cubic metres/day for primary treatment; outfall at Clover Pt. New parallel outfall required to handle all Eastside flows. Treatment plant at Ogden Pt to accommodate 67,000 cubic metres/day for secondary and tertiary treatment Treatment plant in Rock Bay area to accommodate 109,000 cubic metres/day for primary treatment (from west Saanich and Vic West flows) and 54,000 cubic metres/day for secondary and tertiary treatment; outfall at Clover Pt Treatment plant in Shelbourne-Cadboro area to accommodate 19,000 cubic metres/day for primary, secondary and tertiary treatment; existing outfall at Finnerty Cove Treatment plant in Windsor Park area to accommodate 16,000 cubic metres/day for primary, secondary and tertiary treatment; new outfall at McMicking Pt | | <p>Neighbourhood Siting</p> <ul style="list-style-type: none"> 6 of 9 sites are not directly adjacent to single family residential neighbourhoods 1 of 9 sites associated with future growth areas | |
| <p>Wastewater Service Areas</p> <ul style="list-style-type: none"> Four wastewater service areas to manage all Eastside flows | | <p>Resource Recovery</p> <ul style="list-style-type: none"> District energy systems possible in four locations Reclaimed water opportunities are increased with four plants (can construct dedicated tertiary treatment and conveyance systems to meet market demands) Residuals solids treatment (approximately 36 dry tonnes/day) in Rock Bay area will target maximizing resource recovery and minimizing the quantity of residuals for disposal Primary residuals from Clover Pt could be barged, piped or trucked to Rock Bay area (maximum 5 trucks/day) Residuals from Ogden Pt could be barged, piped or trucked to Rock Bay area (maximum 3 trucks/day) Residuals from Shelbourne-Cadboro area could be trucked to Rock Bay area (maximum 2 trucks/day) Residuals from Windsor Park area could be trucked to Rock Bay area (maximum 2 trucks/day) | |

OPTION 5. CONCEPT MAP FOUR PLANT

Victoria Outer Harbour / Rock Bay Area, East Saanich, Oak Bay






- | | | | | | |
|--|--|--|-----------------------------|--|-----------------------|
| | Site Nodes | | Sewage Catchment Breakpoint | | Proposed WWTP |
| | Existing CRD Sanitary Trunk | | Eastside Sites | | Local |
| | Proposed Pump Station | | Municipal Boundaries | | Eastside Sub-Regional |
| | Proposed Sanitary Pipe - Raw / Primary | | Existing Outfall | | Wet Weather Facility |
| | Proposed Sanitary Pipe - Treated | | | | |

EASTSIDE OPTION SETS

OPTION 6. FIVE PLANT

Victoria Outer Harbour / Rock Bay Area, East Saanich, Oak Bay, Saanich Core

FIVE PLANT

| SITING CONSIDERATIONS | | | COST CONSIDERATIONS |
|---|--|---|--|
| Access & Infrastructure  | Land & Amenities  | Resource Recovery  | Treatment Plants x 5 Pump Stations x 10 New Piping x 28,200 metres (Includes 2,800 m for two new outfalls) |

COMMUNITY FACTORS

Site Support

- 7 of 10 sites have public support; 3 of 10 sites possibly acceptable with conditions
- Consideration to sea level rise, and sensitive coastal bluff area along Ogden foreshore

OCP Factors and Land Use

- Current land uses are transportation, commercial, industrial and park
- Future land uses are institutional, commercial, industrial and park
- Opportunities for recreation and educational activities at all sites
- Opportunities for enhanced public use including foreshore and Rock Bay neighbourhood amenities
- Rock Bay area and Saanich Core area identified as future growth areas

OPTION SET CONSIDERATIONS

Conveyance

- Wet weather facility at Clover Pt to accommodate 116,800 cubic metres/day for primary treatment; outfall at Clover Pt. New parallel outfall required to handle all Eastside flows.
- Treatment plant at Ogden Pt to accommodate 67,000 cubic metres/day for secondary and tertiary treatment
- Treatment plant in Rock Bay area to accommodate 81,000 cubic metres/day for primary treatment (from west Saanich and Vic West flows) and 26,000 cubic metres/day for secondary and tertiary treatment; outfall at Clover Pt
- Treatment plant at Shelbourne-Cadboro area to accommodate 19,000 cubic metres/day for primary, secondary and tertiary treatment; existing outfall at Finnerty Cove
- Treatment plant at Windsor Park area to accommodate 16,000 cubic metres/day for primary, secondary and tertiary treatment; new outfall at McMicking Pt
- Treatment plant at Saanich Core area to accommodate 28,000 cubic metres/day for primary, secondary and tertiary treatment; outfall at Clover Pt

Wastewater Service Areas

- Five wastewater service areas to manage all Eastside flows

Neighbourhood Siting

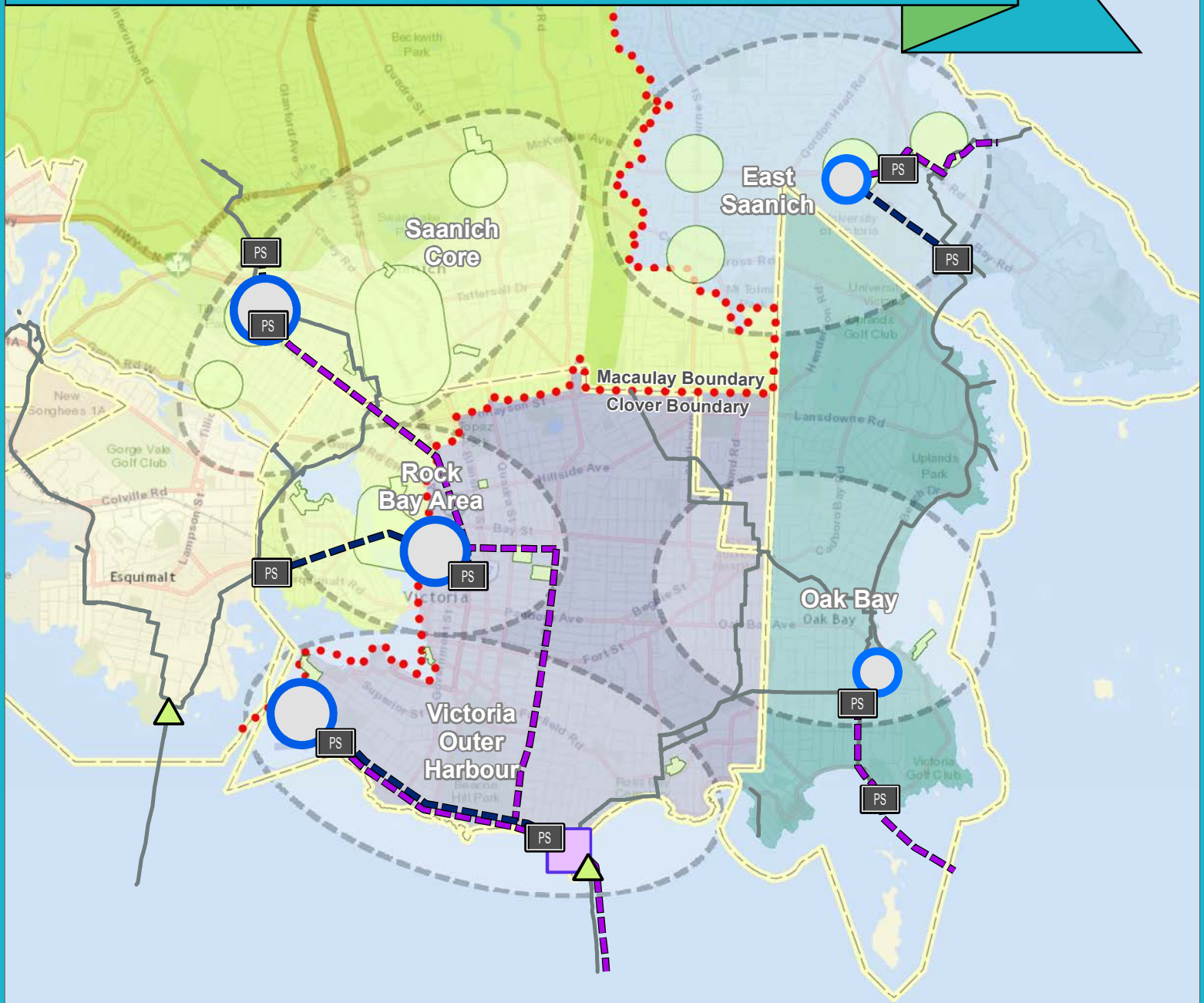
- 7 of 10 sites are not directly adjacent to single family residential neighbourhoods
- 2 of the 10 sites are associated with future growth areas













Resource Recovery

- District energy systems possible in five locations
- Reclaimed water opportunities are increased with five plants (can construct dedicated tertiary treatment and conveyance systems to meet market demands)
- Residuals solids treatment (approximately 36 dry tonnes/day) in Rock Bay area will target maximizing resource recovery and minimizing the quantity of residuals for disposal
- Primary residuals from Clover Pt could be barged, piped or trucked to Rock Bay area (maximum 4 trucks/day)
- Residuals from Ogden Pt could be pumped, barged, or trucked to Rock Bay area (maximum 3 trucks/day)
- Residuals from Shelbourne-Cadboro area could be trucked to Rock Bay area (maximum 2 trucks/day)
- Residuals from Windsor Park area could be trucked to Rock Bay area (maximum 2 trucks/day)
- Residuals from Saanich Core area could be trucked to Rock Bay area (maximum 3 trucks/day)

OPTION 6. CONCEPT MAP FIVE PLANT

Victoria Outer Harbour / Rock Bay Area, East Saanich, Oak Bay, Saanich Core



- | | | |
|--|---|---|
|  Site Nodes |  Sewage Catchment Breakpoint | Proposed WWTP |
|  Existing CRD Sanitary Trunk |  Eastside Sites |  Local |
|  Proposed Pump Station |  Municipal Boundaries |  Eastside Sub-Regional |
|  Proposed Sanitary Pipe - Raw / Primary |  Existing Outfall |  Wet Weather Facility |
|  Proposed Sanitary Pipe - Treated | | |



EASTSIDE COMMUNITY
DIALOGUE
wastewater treatment + resource recovery