# OPTION 4 - Hybrid: Install shallow gravity stormwater system. Localized areas serviced by new municipally owned pump stations for roadway runoff. Existing system to carry sanitary sewage.

## LEGEND

- EXISTING SANITARY SEWER
- EXISTING STORM DRAIN
- COMBINED SANITARY/STORM DRAIN SYSTEMS
- PROPOSED GRAVITY STORM DRAIN
- PROPOSED LOW PRESSURE STORM DRAIN
- P — PROPOSED LOW PRESSURE STORM DRAIN PUMP
- P — EXISTING STORM DRAIN PUMP
- PS — PROPOSED COMMUNITY STORM DRAIN PUMP STATION

| Catchment | Humber |
|---|---|
| Proposed Stormwater Pumps | 65 |
| Existing Stormwater Pumps | 7 |
| Number of Properties | 150 |

| Option 4: Cost Estimate | |
|---|---|
| Total Project cost | $14.4 M |
| District of Oak Bay cost | $10.1 M |
| Range of costs to homeowners with new pump system | $17K* to $20K* |
| Range of costs to homeowners not requiring new pump system | $5 K* to $8 K* |

Note that 13 existing pumped connections and 40 of 80 existing gravity connections are expected to be re-used.

*Homeowner cost estimates are based on a general assessment of the work required on private property and will vary depending on the specific circumstances and actual work required on each property. Costs associated with the archaeological discoveries on private or public property and compliance with the *Heritage Conservation Act* are not included in the cost estimates.

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**Note**: This drawing illustrates known information as of October 5, 2015 based on District of Oak Bay records, and is intended to determine overall options differentiation, not to assess detailed individual property servicing needs.

## Option 4: Key Considerations

- Up to three metres has been established as the maximum depth for shallow trench construction.
- This option requires more properties to have stormwater pumps than Option 2. Costs for pumps will be the responsibility of the homeowner.
- Power outages are a greater risk for stormwater pump systems due to the potential volume of stormwater during wet weather months. Backup power generators would be required.
- Capital costs are higher for homeowners to pump stormwater than sanitary sewage.
- Two new municipal stormwater pump stations would be installed with the costs carried by the District of Oak Bay.
- Shallow trench excavation is less disruptive to neighbourhoods as it will have a shorter construction timeframe than deep trench construction.
- Trench excavation is invasive and may negatively impact mature trees and landscaping on public and private property.
- Shallow trench excavation is less costly than deep trench excavation.
- Existing pipe is old and leaks. Using this pipe to carry sanitary sewage minimizes the project's environmental benefits, and would accelerate the need to rehabilitate the existing pipe.
- Existing pipe is larger than required for sanitary sewage conveyance. Due to lack of flow and adequate volume to flush the pipe, odor and solids accumulation may occur requiring more frequent maintenance.