



## FINAL - TECHNICAL MEMO

**TO:** Bruce DeMaere, Manager of Engineering, Town of Sidney  
**FROM:** Lily Baines, E.I.T., Simon Kras, P.Eng., Jeff Somerville, P.Eng.  
**SUBJECT:** Harbour Road Wastewater Pumpstation Replacement Cost Estimate  
**DATE:** August 08, 2025

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## BACKGROUND

The Town of Sidney (the Town) have retained WSP to provide a Class “C”<sup>1</sup> cost estimate to support a grant application for the Harbour Road wastewater pumpstation replacement. The existing pumpstation located at 2202 Harbour Road is at capacity and requires replacement. The concept option the Town chose from the WSP’s October 2020 Sanitary Pumpstation Condition Assessments report has the new pumpstation situated on the opposite side of the road, requiring reconfiguration of the intersection and realignment of existing utilities.

## OBJECTIVE

The purpose of this technical memo is to document the basis of the cost estimate for the new pumpstation, detailing the methodologies and assumptions.

## METHODOLOGY

To develop our Class “C” estimate, WSP assumed a turnkey pre-engineered station with a fibreglass wet well. WSP completed the following work to develop the estimate:

1. Background information review including WSP’s October 2020 Sanitary Pumpstation Condition Assessments report, 2024 Town of Sidney Sanitary Pump Stations Review by WSP and 2025 Sewer Model Memo by Kerr Wood Leidal. Our pump selection was based on WSP’s 2024 review. WSP confirmed that the basis of pump selection is still current based on Kerr Wood Leidal’s 2025 Sewer Model Memo.
2. Coordination with pump station and generator supplier to obtain high-level layout, wet well sizing and quotation.
3. Development of buried utility layout showing alterations to existing sanitary, water, storm and electrical infrastructure to accommodate the new station, as well as a conceptual layout for the station, generator and electrical kiosk.
4. Development of a surface works layout showing alterations to curb-and-gutters, sidewalks and roadways.

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<sup>1</sup> Per Association of Consulting Engineers of Canada guidelines

## 5. Itemization of upgrade works.

For Harbour Road wastewater pumpstation to remain in service bypass pumping will be required for the duration of construction. The work will begin with the installation of two new sanitary manholes, followed by the re-alignment of the new sanitary pipes, watermain, and electrical conduit. Once these underground utilities are in place, the boulevard will be widened to accommodate the new pumpstation. After the new pumpstation is installed, the tie-ins to the utilities can occur to commission the new pumpstation, followed by decommissioning the old pumpstation and re-paving the sidewalks and road.

## PUMP SIZING

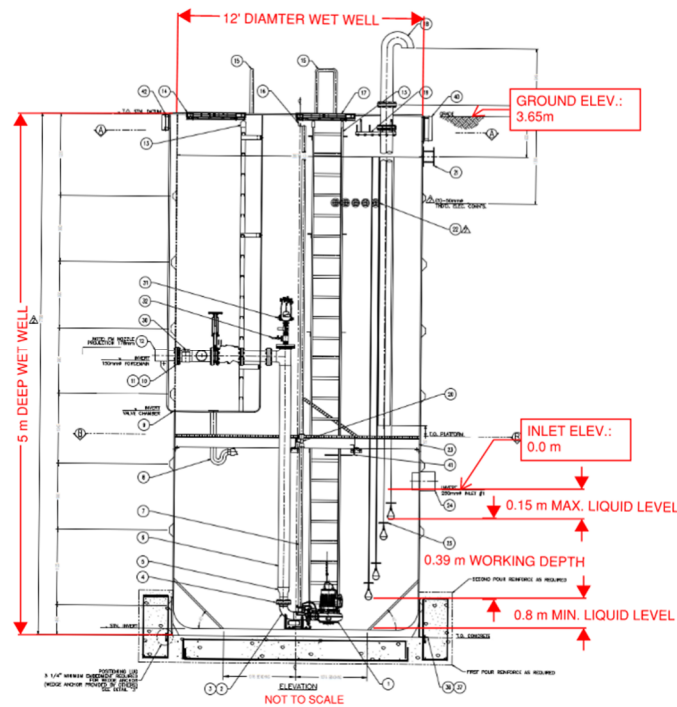
Pump sizing was assumed based on the 2024 Town of Sidney Sanitary Pump Stations Review Report by WSP. The required future peak flow is 54.57 L/s. Pump model NP 3153 MT 3~434 provides a flow of 57.9 L/s with 1 pump operating assuming a Hazen-Williams coefficient of  $C=130$ .

## WET WELL SIZING

To estimate the required wet well size, WSP calculated the worst-case scenario for the frequency of pump cycling which assumes a flowrate of half the pump flow. WSP assumed that Variable Frequency Drive (VFD) motors would be used for pumping, with an allowable turndown to 70% of the pump's maximum flow. Based on a single pump maximum flowrate of 57.9 L/s (as described above), WSP assumed a turndown flowrate of 40.5 L/s using VFDs. Based on a worst-case scenario inflow of 20.3 L/s (50% of the pump flowrate) and a pump flowrate of 40.5 L/s, the minimum volume required to provide 5 minutes between pump cycles would be 3,040 L (3.04 m<sup>3</sup>).

WSP assumed a 12-foot (3.65 m) diameter fibreglass wet well, with a cross-sectional area of 10.5 m<sup>2</sup>. The required working volume of 3.04 m<sup>3</sup> would require a working depth of 0.29 m in the wet well.

Based on the record drawings, the existing wet well inlet elevation is 0.0 m and the existing ground elevation is approximately 3.65 m. The proposed wet well is 5 m deep. Assuming a minimum liquid level of 0.8 m above the base of wet well, and a maximum liquid level 0.15 m below the inlet invert, the available working depth is 0.39 m, which provides adequate time between pump cycles. A schematic of the proposed wet well can be seen in Figure 1 below.



**Figure 1: Schematic of proposed wet well**

## H<sub>2</sub>S AND ODOUR

The proposed fibreglass wet well is highly resistant against attack by Hydrogen Sulphide (H<sub>2</sub>S) gas. However, any piping and metal components inside the wet well may be susceptible to H<sub>2</sub>S attack. Also, high concentrations of H<sub>2</sub>S may be undesirable from an odour perspective.

Typically, H<sub>2</sub>S levels are relatively low in gravity sewer systems due to reasonably aerobic conditions in the sewer. H<sub>2</sub>S is typically a greater concern at forcemain outlets. One approach that could be considered is the addition of aeration in the wet well, which reduces H<sub>2</sub>S generation within the forcemain. Aeration measures have not been assumed in WSP's cost estimate but are a relatively inexpensive addition that could be considered during detailed design.

Given the sensitivity of the pump station location, WSP has included odour control provisions in the cost estimate. During detailed design the requirement for odour control can be evaluated along with other provisions such as using a high vent stack (similar to the current pump station).

## SEA LEVEL RISING

Table 5 in WSP's October 2020 Sanitary Pumpstation Condition Assessments report outlines the approximate elevations of the existing access hatches of the pumpstations in relation to the estimated tide levels taking in account climate change and sea level rising. The new Harbour Road pumpstation is anticipated to be at a ground elevation of 3.65m (to be confirmed by field survey). Using the new Harbour Road pumpstation ground elevation at year 2100 and beyond the predicted Extreme High Tide (EHT) event exceeds the Harbour Road flood level.

To mitigate flood risk at the Harbour Road pumpstation, it is recommended to use watertight access hatches, extend the vent pipe above the 200-year flood level, and elevate the control kiosk and generator on concrete bases/ pedestals to protect electrical components. While a 200-year flood would inundate surrounding areas, designing to exceed the 100-year flood level offers a practical balance between resilience and cost, given the station's expected lifespan.

## BASIS OF THE COST ESTIMATE

Our cost estimate for the Harbour Road pumpstation replacement are based on quotes provided by suppliers for the pump station wet well, mechanical works, electrical kiosk and generator. Our estimate for associated civil works is based on tender results from similar projects in Greater Victoria.

Our estimate includes a 25% contingency and an allowance for engineering during detailed design and construction. The estimate is intended for planning purposes only and is subject to change with detailed design development.

## ASSUMPTIONS

In developing the cost estimate, certain assumptions have been made:

- Quantities are based on Harbour Road Pumpstation conceptual drawings and will vary as the design progresses.
- Costs are based on similar recent projects with consideration given to inflation. The accuracy of this estimate is not guaranteed, and actual costs may vary.
- The estimate does not include costs for legal survey, landscape services, municipal fees, environmental monitoring, arborist, Fortis Gas charges, or telecom charges.
- Assumed the size and layout of the new pumpstation to be the same as the existing Harbour Road Pumpstation, just relocated to the other side of the road.
- Assumed the pumpstation will be a packaged system from a single supplier (Xylem).
- Operational assumption that the Town is accepting of single-phase conversion to maintain power for the proposed 3-phase VFD pumps.
- Ground elevation of the proposed new pumpstation location is based on record drawings and cross-checked by the closest survey monument, not confirmed by field survey.
- Assumed two Cobra head lights for street lighting. One to replace existing and one in the new pumpstation location.
- Permitting and land acquisition costs, if required, are not included.
- Does not account for taxes.

## CLOSURE

We trust you will find the above memorandum suitable for your purposes.

Yours truly,



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