

June 14, 2017

Job No.: 17-018

Halifax Regional Municipality

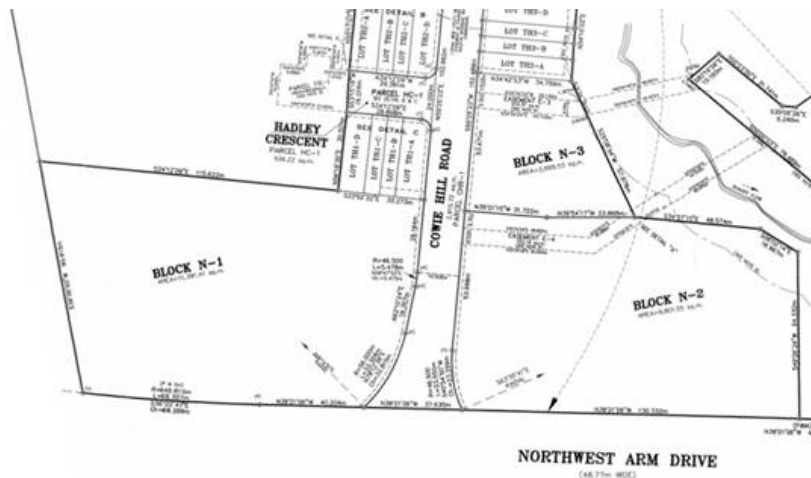
PO Box 1749

Halifax, Nova Scotia B3J 3A5

Attention: Maggie Holm

RE: Long Lake Village – Commercial and Residential Sewage Flows

Plycorp has requested that DesignPoint review the incremental sewage flows for additional commercial development on Blocks N1, N2, and N3 as shown on the approved survey plan dated December 10, 2012 (see image below). As is typical, development plans are fluid and the positioning and orientation of the space developed for commercial use will need to respond to market demands. The current concept involves an additional 10,000 square feet of commercial space from the original Development Agreement on Blocks N1, N2, and N3. This makes a total of 14,000 square feet when added to the 4,000 square feet of commercial space currently allowed in the Development Agreement.



The estimated peak domestic dry weather flows for the additional commercial space (assuming general commercial uses, such as stores, shopping centres, offices) are shown in the following table:

Additional Commercial Area (square feet)	Additional Commercial Area (square metres)	Average Daily Flow (L/d/square metre)	Peaking Factor	Peak Dry Weather Flow (L/d)
10,000	929	6*	3.0**	16,722

* see Atlantic Canada Wastewater Guidelines Table 2.1 (stores, shopping centres, offices)

** Section 2.3.4.4 of the Atlantic Canada Wastewater Guidelines was reviewed; however, we note that peaking factors for commercial uses are difficult to determine as the type of use affects the ratio of average to peak flows. Also, the timing of the peak flows from commercial uses are often not aligned with residential peaks, so this would affect how commercial peak flows would interact with residential peak flows. A peaking factor of 3.0 is assumed to be reasonable for this comparison exercise.

The estimated peak dry weather flows for the equivalent residential flows are shown in the following table:

Equivalent Peak Dry Weather Flow (L/d)	Average Daily Flow (L/d/person)	Peaking Factor	Approximate Population
16,722	300*	4.0**	14

*Based on Halifax Water Guidelines.

**Based on Harmon Peaking Factor for 220 multi-units for comparison purposes.

Based on the calculations above (14 persons per 10,000 square feet), commercial space is approximately equivalent to 0.14 people per hundred square feet of commercial space. We note that this is an estimate only and is subject to change based on the actual residential and commercial flows as well as peaking factors.

This equivalent conversion allows the commercial space to potentially be used in the place of residential units for the overall existing sewage density allocation for the project. The intent is to maintain the approved overall wastewater allowance for the full development of Long Lake Village.

The developer has requested that the residential/commercial sewage capacity equivalent be specified based on a rate per hundred square feet to allow flexibility in the sewage density allocation, rather than an absolute value based on a predetermined amount of commercial square feet. If acceptable, HRM and Halifax Water Development Approvals staff will be able to reconcile a sewage density above the original 4,000 square feet by reducing residential units using the overall sewage density tracking chart for the overall development and the commercial area to residential population conversion above.

We trust this is satisfactory. If you have any questions, please feel free to contact us.

Thank you,
DesignPoint Engineering & Surveying Ltd.

Original Signed

Andrew Forsythe, P.Eng.
Senior Engineer & Principal

Cc: Peter Polley, Polycorp Developments Inc.
David Graham, Atlantic Developments Inc.