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ORANGEVILLE • FERGUS • HARRISTON

March 28, 2022

Township of Southgate  
R.R. #1  
185667 Grey Road 9  
Dundalk, Ontario  
N0C 1B0

ATTENTION: Jim Ellis,  
Public Works Manager

RE: Township of Southgate  
Dundalk Water Supply and  
Sewage Treatment Systems  
2022 Reserve Capacity Calculations  
Our File: A4160(22)-R04

Dear Sir:

The attached tables outline the 2022 reserve capacity calculations for the water supply and sewage treatment systems in Dundalk. The reserve capacities have been calculated in accordance with Ministry of Environment and Conservation and Parks (MECP) guidelines. 251 new residential units were connected to and 232 occupied within the municipal systems of Dundalk in 2021.

Table 3 provides a summary of Committed Developments which include White Rose Phases 1 and 2, Flato Phases 2-8 and 10, Flato Glenelg Development Phase 1 and the Flato West Apartment Building, totalling 534 equivalent residential units (ERUs). As Committed Units, these ERUs will not come out of the Uncommitted Reserve Capacity figures indicated on Tables 1 and Table 2. Table 3 further outlines the various potential developments that have been granted Draft Plan Approval, or are being considered, however have not been granted allocation.

#### **Water System:**

The three (3) year average maximum day demand of the water system increased from 918m<sup>3</sup>/d to 941m<sup>3</sup>/d over the past year. The 2022 uncommitted reserve capacity of the water system is 1,999 ERU. This is based on the Townships' amount of water taking permitted by the Permit to Take Water and committed developments as outlined in Table 3. The Permit to Take Water, indicates an allowable water taking of 2,817m<sup>3</sup>/day.

Refer to Table 1 for additional information regarding water system reserve capacity calculations.



### **Sewage Treatment Facility:**

Table 2 summarizes the sewage treatment reserve capacity calculations for 2022. The three-year annual average day flow increased from 1,127 m<sup>3</sup>/d to **1,165m<sup>3</sup>/d**. Despite an increase in the serviced population in 2021, the 2021 uncommitted reserve capacity for the sewage treatment facility has increased from 127 ERUs to **182** new development ERUs.

Refer to Table 2 for additional information regarding sewage treatment system reserve capacity calculations.

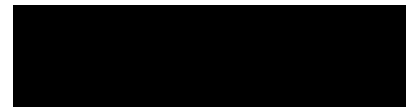
### **Extraneous Flow:**

In conjunction with the reserve capacity calculations, we have completed a high-level assessment of the extraneous flows within the Dundalk sewage collection system. This assessment compares the precipitation, temperature, average day demand of water and the average day sewage flow measured at the WWTP on a monthly basis. The results indicate that the extraneous flows over and above the expected amount within a typical system is, on average, **367m<sup>3</sup>/day**, which equates to an estimated **395 ERUs**. The relationship between the wastewater flows, precipitation and temperature is indicative of a system that is subject to both groundwater infiltration, and direct inflow. This is based on peaking of wastewater flows noted during the spring melt (i.e., March) and correlation noted to times of high precipitation but lower groundwater levels (i.e., July). Sump pump connections are likely a significant contributor.

### **Recommendation:**

Following Council's review and adoption of the attached report, we would recommend that a copy of the report be forwarded to the MECP District Office in Owen Sound and the Grey County Planning Department. We trust you will find the enclosed to be in order. Should you have any questions, please do not hesitate to contact this office.

Respectfully,  
Triton Engineering Services Limited



Dustin Lyttle, P. Eng.

cc: Dave Milliner, Township of Southgate  
Clinton Stredwick, Township of Southgate  
Bev Fisher, Township of Southgate

**TABLE 1**  
**TOWNSHIP OF SOUTHGATE**  
**2022 RESERVE CAPACITY**  
**DUNDALK WATER SYSTEM**

DESCRIPTION	2021
1 Available Capacity <sup>1</sup>	2,817
2 Max Day Flow (m <sup>3</sup> /d) <sup>2</sup>	941
3 Reserve Capacity (m <sup>3</sup> /d) (1) - (2)	1,876
4 Serviced Occupied Households <sup>3</sup>	1,299
5 Persons Per Existing Residential Unit (2016 Census Data)	2.60
6 Population Served (4) x (5)	3,377
7 Maximum Day Per Capita Flow (m <sup>3</sup> /d) (2) ÷ (6)	0.279
8 Additional Population that can be Served (3) ÷ (7)	6,737
9 Person Per New Equivalent Residential Unit (2017 DC Background Study)	2.66
10 Additional ERUs that can be served. (8) ÷ (9)	2,533
11 Committed Development ERUs (Table 3)	534
<b>12 Uncommitted Reserve Capacity (ERUs) (10) - (11)</b>	<b>1,999</b>
<sup>1</sup> Available Capacity is based on lesser of Firm Capacity or Permit to Take Water. Firm capacity is 2,819m <sup>3</sup> /day, PTTW is 2,817m <sup>3</sup> /d. Well Production is 4,780m <sup>3</sup> /day.	
<sup>2</sup> Max day flow is the average of the maximum day flows from 2019, 2020 and 2021 (913, 905 and 1,004m <sup>3</sup> /d respectively). 2020 and 2019 Maximum day flows have been adjusted to account for high demands during various infrastructure works.	
<sup>3</sup> Serviced occupied households is 1,067 (2020) + 232 units occupied in 2021.	

**TABLE 2**  
**TOWNSHIP OF SOUTHGATE**  
**2022 RESERVE CAPACITY**  
**DUNDALK SEWAGE TREATMENT FACILITY**

DESCRIPTION	2021
1 Design Capacity of Sewage Treatment Facility (m <sup>3</sup> /d)	1,832
2 Average Day Flow <sup>1</sup> (m <sup>3</sup> /d) (Average of 2019, 2020 and 2021 Average Day Flows)	1,165
3 Reserve Capacity (m <sup>3</sup> /d) (1) - (2)	667
4 Average New Development Per Capita Flow <sup>2</sup> (m <sup>3</sup> /d)	0.350
5 Additional Population that can be Served (3) ÷ (4)	1,906
6 Person Per Equivalent Residential Unit (2017 DC Background Study)	2.66
7 ERU Flow Rate (m <sup>3</sup> /d) (4) x (6)	0.931
8 Additional ERUs that can be Served (5) ÷ (6)	716
9 Committed Development ERUs (Table 3)	534
<b>10 Uncommitted Reserve Capacity (ERUs)</b> <b>(7) - (8)</b>	<b>182</b>
<sup>1</sup> Average of the average day flows in 2019, 2020 and 2021 (1,114m <sup>3</sup> /day, 1,161m <sup>3</sup> /day and 1,220m <sup>3</sup> /day respectively).	
<sup>2</sup> As determined by new development flow analysis supported by flow monitoring program.	

**TABLE 3**  
**TOWNSHIP OF SOUTHGATE**  
**2022 RESERVE CAPACITY**  
**SUMMARY OF DUNDALK DEVELOPMENTS**

COMMITTED DEVELOPMENTS	TOTAL UNITS	UNITS OCCUPIED IN 2021	REMAINING UNITS AT END OF 2021
White Rose (Phase 1 & 2)	66	63	3
Flato North (Phase 2A)	72	72	0
Flato North (Phase 3)	46	42	4
Flato North (Phase 4)	22	22	0
Flato North (Phase 5)	59	10	49
Flato North (Phase 6)	68	20	48
Flato Glenelg (Phase 1)	183	0	183
Flato West Block 75 (Phase 2) Apartment Building <sup>1</sup>	56	0	56
Flato East (7, 8 & 10)	188	0	188
INFILL LOTS <sup>2</sup>		3	3
SUB-TOTAL		232	534
TOTAL COMMITTED UNITS			534
UNCOMMITTED DEVELOPMENT (DRAFT PLAN APPROVED)	TOTAL UNITS		
White Rose (Phase 3)	88		
Flato East (Phase 9)	47		
Flato East (11)	193		
Glenelg (Phase 2)	155		
Dundalk Commercial	24		
SUB-TOTAL	507		
<sup>1</sup> Apartment units based on assumption that each unit is 0.7 ERU.			
<sup>2</sup> 3 Infill Lots allocated annually.			

**TABLE 4  
TOWNSHIP OF SOUTHGATE  
2022 RESERVE CAPACITY  
DUNDALK EXTRANEEOUS FLOWS**

MONTH	PRECIPITATION (mm) <sup>4</sup>	AMBIENT TEMP. (C°) <sup>4</sup>	WASTEWATER ADF (m <sup>3</sup> /day)	WATER ADD (m <sup>3</sup> /day)	EXTRANEEOUS FLOW (m <sup>3</sup> /day) <sup>1</sup>
January-2021	21.6	-4.9	1,038	643	395
February-2021	46.6	-7.8	747	620	127
March-2021	54.6	1.4	1,860	633	1,227
April-2021	50.9	6.7	1,209	598	611
May-2021	39.5	11.2	1,050	643	407
June-2021	77.9	19.4	685	745	0
July-2021	137.2	18.7	1,306	632	674
August-2021	90.7	20.8	827	674	153
September-2021	196.9	14.7	1,320	609	711
October-2021	72.6	12.2	1,316	644	672
November-2021	77.9	1.9	1,501	657	844
December-2021	75.4	-0.7	1,776	722	1,054
<b>AVERAGE</b>			<b>1,220</b>	<b>652</b>	<b>573</b>
<b>REASONABLE EXTRANEEOUS FLOW BASED ON POPULATION(m<sup>3</sup>/day)<sup>2</sup></b>					<b>203</b>
<b>EXTRANEEOUS FLOW OVER AND ABOVE REASONABLE AMOUNT(m<sup>3</sup>/day)</b>					<b>370</b>
<b>EQUIVALENT RESIDENTIAL UNITS USED BY EXTRANEEOUS FLOWS (ERU)<sup>3</sup></b>					<b>398</b>

<sup>1</sup> This is the Wastewater ADF minus the Water ADD, used to determine Sanitary Flow over and above expected.

<sup>2</sup> Expected infiltration is 60 Litres per person per day based on modified historic MOE Standard.

<sup>3</sup> Based on New Development Equivalent Residential Unit Sanitary Flow Rate

<sup>4</sup> As recorded at Mount Forest Station.

