

Public Information Centre for the Lisgar Pumping Station(s) Environmental Assessment and Lisgar Town Hall Q&A

The City of Mississauga held a Public Information Centre (PIC) for the Lisgar Pumping Station(s) Environmental Assessment (EA) and Town Hall on Wednesday, November 17, 2021. This meeting provided an update on ongoing monitoring works in the Lisgar District, shared information related to the EA study and allowed an opportunity for residents and stakeholders to ask questions.

Please find below, the questions received during the PIC and Town Hall and corresponding answers. To jump to a question, hold the Ctrl key and select the question from the list below.

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Cactus Gate Pumping Station

1. Why was the Cactus Gate Pumping Station not built with a greater capacity?

The capacity of the Cactus Gate Pumping Station was determined based on hydraulic modelling of the Foundation Drain Collector (FDC) sewer system, which used data from several observed storm events. This modelling indicated that the expected inflow would be approximately 70 Litres/second (L/s) and as such, the pumping station was designed to this capacity (single pump). These analyses were documented in the previously completed 2018 Class EA Report. The pumping station has a second pump that can be activated to provide additional capacity if needed.

2. Could the Cactus Gate Pumping Station have been built with greater capacity to avoid the construction of another pumping station on Black Walnut Trail?

No, greater pumping capacity at the Cactus Gate Pumping Station would not be expected to sufficiently address issues further downstream or eliminate the need for additional pumping stations. Further downstream, the FDC sewer continues to collect flows from adjacent areas (side streets). Based on the available monitoring data, these areas also experience issues with excess flows in the FDC system. Additionally, there is a limit to how far pumps can draw water from, and a single pumping station, regardless of the location in the Black Walnut Trail area or the capacity, would have been insufficient to reduce all of the FDC inflows. As such, there is still a need for additional pumping stations.

3. Does the water that bypasses the Cactus Gate Pumping Station create issues downstream?

The Cactus Gate Pumping Station does not capture all of the inflow in the FDC sewer. Flow within the FDC sewer is diverted to the pumping station once it reaches a level above the “spring line” (50% pipe full). The flow diversion pipe is much larger than the FDC sewer pipe on Black Walnut Trail and as such, a large portion of the flow above this threshold is diverted to the pumping station. The remaining water in the FDC sewer system continues to drain downstream; however, at a much reduced flow rate and volume than without the pumping station in place.

4. Does the water that is pumped at the Cactus Gate Pumping Station flow to the site of the next proposed pump? Where does the water from the pumping station end up?

No. Water that is pumped from the FDC at the Cactus Gate Pumping Station discharges to the surface and then flows towards the Sixteen Mile Creek tributary via a stone lined channel. Future proposed pumping stations would similarly discharge the FDC pumped flows to the creek.

5. What is the Litres Per Minute (LPM) capacity of the permanent pumping station vs. the temporary pumps?

The Cactus Gate Pumping Station has a single pump capacity of 4,200 L/min, and dual pump capacity of approximately 7,200 L/min. The 6 inch (6”) temporary pumps currently used as part of the High Water Protocol (HWP) have a capacity of approximately 10,583 L/min; however, these require human intervention to activate.

6. Where is the Cactus Gate pumping station located and what is the size of its footprint?

The Cactus Gate Pumping Station is located in the Cactus Gate parkette immediately west of the intersection of Black Walnut Trail and Cactus Gate. The primary above-ground works on the site (wet well, valve chamber, control systems) occupy approximately 20 metres (m) x 6 m, or 120m². Other subsurface features (piping connections) require more area.

7. Has the City received a federal grant for the construction of a pumping station? If so, how much?

The City received \$1,000,000 in Federal funding and \$500,000 in Provincial funding as part of the Clean Water and Wastewater Fund program for the design and construction of the Cactus Gate Pumping Station.

8. Why did homes still experience basement water infiltration on August 28 even with the Cactus Gate Pumping Station being fully operational?

As noted in the response to Question #2, a single pumping station is not sufficient to fully address FDC system surcharging. Additional permanent pumping stations (location, type and capacity) are being assessed as part of the current Class EA study.

9. Does each pumping station only service the residences downstream from its physical location? If so, what is being done for the dwellings north of Cactus Gate?

Each pumping station removes water from the FDC system (and potentially the utility trench, if a low flow component is included as was done for the Cactus Gate site) in the immediate vicinity of the pumping station. This does benefit upstream areas (since the water is being removed as it enters the FDC system which limits water levels in the FDC upstream) as well as downstream areas (by reducing flows to the downstream areas from that portion of the FDC sewer system).

Dwellings north of Cactus Gate benefit from the Cactus Gate Pumping Station. Further measures are being considered, including disconnections of unauthorized private connections to the FDC sewer system, which would further reduce the risk of FDC sewer surcharging. The FDC Sump Pump Subsidy Program is also available to residents serviced by the FDC, which covers up to 100% of the cost of installing a sump pump, to a maximum of \$6,000.

10. What is the general extent of the service area for each pumping station?

Please refer to the response to Question #9. In general, the pumping station benefits both upstream and downstream areas. The exact limits would vary depending on the location, the capacity of the pumps, and the nature of the storm event, as each is unique.

Future Pumping Stations

11. What is the total number of future pumping stations that the City will build in Lisgar?

There are three new pumping stations proposed based on the 10-Year Capital Program identified in the 2022 to 2025 Business Plan.

12. Why is Black Walnut Trail being considered for another pumping station given that the first pumping station is constructed on this street? Aren't they too close to each other?

Excessive inflows to the FDC sewer system in the Black Walnut Trail area continue to occur and an additional pumping station is required further south of the Cactus Gate Pumping Station. As presented at the November 17, 2021 public meeting, the FDC system in that area responds rapidly to rainfall events which makes the area a priority for another automated permanent pumping station which can respond to these conditions.

13. If a pumping station is built in the parkette at Black Walnut Trail and Smoke Tree Road, what will be done to provide safe access to the pedestrian bridge in the parkette, which is used to access a park and 2 schools?

Providing for a safe access through the parkette with the pumping station in place will be reviewed and determined as part of the subsequent detailed design phase. During construction, efforts would be made to keep the pedestrian bridge open; however, temporary closure may be necessary to construct some works, such as the pumping station outlet.

14. In the Public Information Centre presentation, there was mention that the stations further downstream would need greater power (capacity) to handle the increased flows. Why wasn't the first station built with more power?

Areas further downstream would serve a greater drainage area than the Cactus Gate system and therefore have greater flows. As such, higher capacity pumps with greater power demands may be required. The actual capacity of pumps used will be determined during the detailed design phase. With respect to the question regarding the Cactus Gate pumping station, please refer to the response to Question #1.

15. How large of an area is required for a pumping station? How much area will be occupied in Priority Area 7?

The exact area for the pumping station would vary with each location, as it would depend on the specific site constraints (locations of services, topography, location of trees and the creek, etcetera). Space would be required for sub-surface features which would not be visible following construction, as well as above ground features. Please also refer to the response to Question #6 for the approximate size of the above-ground features for the Cactus Gate Pumping Station (approximately 120 m²).

16. How has the expected increase in extreme weather due to climate change been factored into the pumping station plans?

It is challenging to directly assess the impacts of climate change into the design of the FDC pumping stations. Furthermore, there is no accepted industry practice in place for addressing climate change impacts for foundation drainage as there is for surface drainage. However, this will be considered further as part of the Class EA and measures may be incorporated into the subsequent detailed design phase to the extent possible, as part of the analysis and sizing of the pumps. Where climate change impacts cannot be directly incorporated or analyzed, it is likely that alternatives will be considered, including potentially allocating additional pumping capacity.

17. Can future FDC pumping structures, excluding the control panel and generator, be constructed below ground level for aesthetic purposes?

Surface access to the future pumping station features (the wet well and valve chamber primarily) is important and needs to be maintained to ensure they are accessible for operations and maintenance purposes. Where feasible, it may be possible to modify the site grading to limit the amount of visible features to improve the overall aesthetics. This would be considered further as part of the subsequent detailed design phase.

18. Will the pumping station capacity be sufficient to remove FDC flow in a 100-year storm?

A 100-year storm event inflow to the FDC sewer system is challenging to simulate as there is no accepted industry practice or methodology for assessing foundation drainage during storm events. The inflows to the FDC sewer system vary by location and is difficult to replicate for larger storm events. The currently developed hydraulic modelling tools are based on replicating the observed water levels in the FDC storm sewer system for actual monitored storm events. As such, it is difficult to reasonably predict how much inflow the FDC sewer system would potentially receive for a 100-year storm event and what the associated pumping capacity would be. Additional pumping capacity would be considered further as part of the detailed design phase.

19. What is the noise level of these pumping stations? Will it be disruptive to nearby residents?

The pumps are located well below ground in the wet well (approximately 7 m below ground for the current Cactus Gate site), which is an enclosed concrete chamber. As such, there is very little noise during the typical pumping station operation. To date, the City has not received any noise complaints from the operation of the Cactus Gate Pumping Station. In the unlikely event of a power outage, the backup generator would operate which does generate some noise but is within the acceptable regulatory limits set by the Ministry of the Environment, Conservation and Parks. There would be some noise from the required testing of the backup generator for operations and maintenance purposes; however, this is for a short period only, typically an hour or less, once a month during the day.

20. If all four pumping stations are constructed, what will the total combined pumping capacity be? How does this compare to the current state of one pumping station and the High Water Protocol pumps?

The total combined capacity of four pumping stations is yet to be determined. The capacity of each pumping station will be calculated through modelling in the design phase. As such, it is unknown how having the current one pumping station and High Water Protocol pumps setup would compare to the pumping capacity of four pumping stations.

21. Has the budget for future pumping stations been approved?

As noted in the answer to Question #11, there are three new pumping stations proposed based on the 10-Year Capital Program identified in the 2022 to 2025 Business Plan. Given that budgets are approved by Council on an annual basis, the construction budget for the second pumping station and the design budget for the third pumping station were approved for 2022. Budget approval for the design and/or construction of the remaining pumping stations will be considered in subsequent years.

- 22. The recommendation in the EA is for three additional pumping stations. If this is approved and three stations are built and there is reason to consider additional stations after that, would a new EA process be required? If so, would it be beneficial to identify the Priority Locations 4 and 5 now even if we don't need them, rather than spend the money and time on another EA in five or more years?**

As presented at the November 17, 2021 public meeting, a total of 6 locations were short-listed for further review. Out of these 6 locations, 3 locations were recommended as high priority locations for implementation. However, it was noted that the drainage system in the Lisgar District should continue to be monitored and if necessary, additional pumping stations be considered for the other 3 short-listed locations. This will be clearly stated in the current Class EA, such that another EA would not be required, provided that the additional works are considered within the typical 10-year validity period for Class EAs.

High Water Protocol (HWP)

- 23. A paved access at Pintail Circle is currently used by HWP pumping vehicles during rain events. Is this paved access permanent? If not, when will it be removed?**

The paved area will remain in place as long as the HWP utilizes this maintenance hole location. If and when the HWP is no longer required, the paved area may be reduced in size or removed.

- 24. Why do I always see a pump truck on the pathway at Derry Road and Black Walnut Trail?**

This vehicle and 6" pump are part of the HWP and are dispatched to the Black Walnut Trail maintenance hole location, as well as two other maintenance hole locations in the Lisgar area (near Pintail Circle and along the Lisgar Meadowbrook Trail, south of Osprey Blvd.), when the criteria for deployment of the 6" pumps have been met. The operator of the pump will monitor water levels inside the FDC maintenance hole every 15 minutes and if required, due to rising water levels in the FDC sewer, activate the pump.

- 25. Could the HWP be modified so that the contractor begins pumping when the pipe is 25% full rather than 50%?**

Having the pumps activated at 25% would not be effective. With the size of the pumps and the intakes that are used, they will not be able to pull water out effectively at the 25% capacity level. Having it set at 50% capacity, allows the pumps to run as intended and efficiently discharge water from the FDC system.

- 26. On previous occasions, the truck at Derry Road was not operational/pumping water. Why does this happen? Is there debris in the FDC? What action does the contractor take to address this situation? What action is being taken by the City to ensure this truck is operational?**

We are aware of one instance where the 6" pump appeared as though it was not pumping water. This instance was reviewed by staff and determined that the discharge varied over a short period of time; however, the pump was operating as intended. It is noted that during this time, the water levels within the FDC sewer were below full pipe capacity, which likely contributed to the varied discharge. The 6" pumps draw and discharge a large amount of water and if there are low water levels within the FDC sewer, the pump may have a varied discharge, as experienced during this instance.

Debris may find its way into the FDC sewer system through unauthorized connections into the system such as downspout connections or sanitary cross connections, which were discussed at the November 17, 2021 public meeting. The 6" pumps are designed to draw in and discharge debris up to 3" in size; however, there may be instances where the debris can cover the intake screens of the pumps. In this rare case, the contractor would turn off the pump and attempt to remove the debris, prior to reinstalling the intake and starting the pump up again. In the event that the large 6" pumps are not operating as intended, each HWP truck at the three High Water Protocol locations have an additional three 4" trash pumps that can be activated. Additionally, when the HWP pumps are activated and begin pumping, a City Duty Supervisor is called in to review all three HWP maintenance hole locations to ensure that the HWP is being conducted in accordance with the Standard Operating Procedure.

27. Is HWP only activated due to forecasted conditions or is it also reactive when unexpected high water conditions occur? What is the reaction time?

The HWP is activated due to forecasted conditions that meet the HWP criteria as well as reactively in response to current conditions. The criteria for deployment of the HWP is based on conditions that could possibly cause high water conditions in the FDC sewer. The reaction time from dispatch to full setup is typically between 1-2 hours.

Maintenance

28. What maintenance is being conducted on the FDC to ensure that debris will not impact the pumping hoses?

The FDC sewer system in Lisgar is flushed and inspected utilizing a Closed Circuit Television camera every 3 years to ensure that there are no blockages or debris within the system. Debris may enter the system through unauthorized connections, such as downspout connections or sanitary cross connections.

29. Will the area north of the Osprey bridge be cleared of grass/weeds to prevent winter snow and ice build-up?

The City's creek corridors are managed as naturalized areas and this approach offers numerous environmental benefits such as improved stream health and water quality for aquatic life. The potential for vegetation and/or woody debris to block flow and prevent drainage of the creek is considered in the City's regular watercourse inspection and maintenance programs. Sixteen Mile Creek tributary, north of Osprey Boulevard, was last inspected in September 2021 and no concerns with the vegetation were identified at that time. Through City inspections, staff has not found there to be an issue with winter conditions preventing drainage of the creek. If the creek is blocked at any time, residents are encouraged to contact 311 so that the appropriate staff can inspect and respond accordingly.

Smoke Testing

30. If a homeowner has an unauthorized direct connection (i.e. downspouts, sanitary connections) into the FDC, will they be asked to disconnect?

Yes, they will be asked to disconnect. The City will be exploring options on downspout disconnections as noted in the answer to Question #31.

31. Can the City mandate that homeowners have to disconnect downspouts from the FDC within a specified period of time or the homeowner will be billed?

The City is undertaking investigations to better understand the extent of downspouts that are connected into the FDC system. The City will then explore options and determine an action plan once the investigation is complete.

32. If there are sanitary vents connected to the FDC, the assumption is that these would have been connected by the builders. Is this an accurate assumption? What action will the City take against the builders?

This assumption may not be appropriate.

33. Given the small percentage of homes that might have unauthorized connections to the FDC, does the City feel that this is a beneficial use of resources?

The City is undertaking investigations to identify and determine the number of unauthorized private sources of flow into the FDC. As investigations are ongoing, it is considered premature to characterize the percentage of homes with unauthorized connections as “small”.

The FDC system is not designed to accommodate inflows from downspouts or sanitary discharge. Roof downspouts that are connected to the FDC can be a significant source of inflow during a storm event. Additionally, the City’s Storm Sewer Use By-law sets strict limits on what can be discharged into a stormwater drainage system.

Creek

34. Why is the creek overflowing?

It is not clear what location within the Lisgar Creek (tributary of Sixteen Mile Creek) is being referred to or a specific area that has experienced overflowing. In general, creeks are naturally or by design intended to exceed their low flow channel and flow in the adjacent floodplain/overbank areas during a sufficiently large storm event.

35. The creek overflowing appears to be an indication that flooding will occur. What is being done to ensure the creek does not cause water to be pushed back towards homes?

Based on previous monitoring work within the drainage systems in the Lisgar District, it has been demonstrated that the creek is not the source of water flowing into the FDC. There have been no known issues with riverine (creek based) flooding of homes in the Lisgar District to date.

External Lands

36. Does the City know where the water table is on the land west of Ninth Line?

The water table was not delineated as part of the Scoped Subwatershed Study that was completed for the Ninth Line lands. However, available well data indicates that the water table is generally between 1 and 2 metres below ground surface.

37. Does the City know where the floodplain is west of Ninth Line?

The Regulatory floodplain (greater of the 100-year storm or Hurricane Hazel) was delineated for Sixteen Mile Creek within the Ninth Line lands as part of the Scoped Subwatershed Study. The draft Scoped Subwatershed Study is available online at the following link:

<https://www.peelregion.ca/planning/officialplan/pdfs/ropa/SWS-Phase1-Jan-2015.pdf>

38. What is the impact of the proposed development to the west?

There is no expected impact of the proposed development to the west on the Lisgar District foundation drainage system. This is a separate subwatershed/catchment area and the water (surface and ground) drains to the west.

39. Is there a chance that the proposed development on the west side of Ninth Line may back up water to the east side of Lisgar?

No. As noted in the response to Question #38, this is a separate drainage system.

40. What action is being taken to research where the water is coming from particularly in the Black Walnut Trail area? Could it be coming from underground waterways or under the railway tracks? Have these been ruled out?

The source of additional water and associated causes of basement water infiltration were summarized as part of a summary report released as part of a public meeting in March 2015. That report summarized the assessment of potential sources and ultimately identified that the buildup of water in the utility trench is the primary cause. The GO station to the north of the railway tracks was considered as a potential contributing cause and ultimately ruled out as a primary cause or factor based on field monitoring data. Likewise, groundwater was ruled out as a primary cause or factor through further field monitoring. Monitoring data have clearly shown that the FDC system in the Black Walnut Trail area in particular responds very rapidly to rainfall events. This, as well as other monitoring data (such as water temperature) has clearly indicated that the water is sourced from local stormwater rather than groundwater sources.

Since that time, the City has undertaken numerous additional investigations and monitoring work to identify the sources of stormwater to the FDC sewer system and utility trench. This includes smoke testing to identify cross-connections. The City has also previously undertaken works to attempt to limit the inflow of excess stormwater to the FDC, including storm sewer lining and catchbasin subdrain plugs. As noted in the November 17, 2021 public meeting, it is considered that a contributing source of this water relates to unauthorized direct connections, namely rooftop downspouts which discharge below ground and likely into the residential foundation drain (weeping tile) system.

41. How many other Mississauga communities other than Lisgar experienced flooding during the August 28, 2021 event?

Reported incidents came in from other communities in Wards 3, 8, 9 and 11 around the same period.

Additional Measures

42. What measures can residents take to help limit the impact of water on their properties?

A resident should consider the following to limit the impact of water on their property:

- A resident can ensure that the grading around their home's foundation slopes away from their home.
- Downspouts should not be connected directly into the weepers or the FDC system. They should outlet on grade away from a resident's home.
- Basement renovations, such as the installation of a new bathroom, should be completed in accordance with the Ontario Building Code and connected to the sanitary sewer.
- The installation of a sump pump in the basement can provide an additional safeguard against basement water infiltration.

43. Are approvals for new home builds being lessened to help with this water problem?

There have not been many new developments in the study area for a number of years, but those that went ahead were subject to stringent stormwater management requirements. Otherwise, the City has limited ability to stop new builds (i.e. single family residential) but, where possible, asks for appropriate drainage measures such as requiring sump pumps to pump water around the foundation up to surface level. No new developments are permitted to connect to the existing FDC system.

44. Why was the Stormwater pond at Tacc Drive and Winston Churchill Blvd. dredged instead of Osprey Marsh?

Following guidance from the Ministry of the Environment, Conservation and Parks, staff determine the need for dredging a pond by measuring the sediment volume in the pond. The Tacc Drive pond was previously identified for cleanout through this assessment process and capital works were subsequently carried out to dredge the pond. Osprey Marsh was last measured in 2018 and the sediment levels indicated that the pond did not require dredging. Staff continue to monitor the pond and will schedule future works in the Capital Program as necessary.

Miscellaneous

45. Is flooding specifically as a result of the 3 sewer system?

No – basement water infiltration is not specifically as a result of the 3 pipe system (sanitary, storm and FDC). Numerous other municipalities within Southern Ontario utilize the 3 pipe system without reported issues.

- 46. If the Lisgar area was to receive 100 mm of rain over 24 hours, would a sump pump in a home be helpful? How much can the storm sewer system handle? Would water likely infiltrate into a home?**

A residential sump pump is designed for low capacity flows such as those which would typically be expected from the foundation drain (weeping tile) around a home. The performance of a sump pump during a large storm event as suggested would depend on factors such as lot grading, soils, condition of the home's foundation drain and how much water is directed to it.

The storm sewer system within the Lisgar District was designed for the 1 in 2 year storm event. Overland flow routes (i.e. roadways with outlets to the creek system) were designed to the 1 in 100 year storm event. It should be noted though that these systems are largely independent from the FDC.

- 47. A house that backs onto Sixteen Mile Creek in Lisgar is pumping water from their backyard, across the pathway to the creek. The water ponds on the pathway in the fall and freezes on the pathway in the winter creating a safety hazard. Can this issue be corrected?**

We appreciate this being brought to our attention. While it is a property owner's responsibility to manage drainage on their site, this is something the City may look into further for corrective possibilities.