

**For Information**

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**REPORT TITLE: Lakeview Village Development – Update on Proposed Automated Vacuum Waste Collection System, 1082 Lakeshore Road East, City of Mississauga, Ward 1**

**FROM: Kealy Dedman, Commissioner of Public Works**

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**OBJECTIVE**

To provide an update on the proposed automated vacuum waste collection system in the Lakeview Village community, in the City of Mississauga, Ward 1.

**REPORT HIGHLIGHTS**

- The Lakeview Community Partners Limited have been working with the Region of Peel and City of Mississauga on a proposed automated vacuum waste collection system for the Lakeview Village community since 2018.
  - The business case and governance models evolved over time, since 2018, and Region and City staff assessed each new proposal as presented by the Lakeview Community Partners.
  - Region and City staff worked with the Lakeview Community Partners Limited to assess the capital costs and funding sources, yearly operating costs, lifecycle replacement costs, estimated costs to users in the community and overall benefits of such a system compared to conventional waste collection.
  - The most recent proposal provided to staff in January 2022 was seeking support for a Region of Peel owned and operated governance model and support for a joint City/Region/Lakeview Community Partners Limited government funding request for \$21.3M to cover the costs for the central waste collection terminal and infrastructure to service the parks within the community.
  - In a letter dated March 31, 2022, the Lakeview Community Partners Limited noted their decision to no longer pursue the automated vacuum waste collection system within the Lakeview Village community due to outstanding challenges, risks, and barriers to implementing the system.
  - While the vacuum waste system could have provided a higher level of service and could have provided local community and environmental benefits to the Lakeview Village community, it proposed to do so at a significantly higher capital and operating costs to all stakeholders than a conventional waste collection.
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# Lakeview Village Development – Update on Proposed Automated Vacuum Waste Collection System, 1082 Lakeshore Road East, City of Mississauga, Ward 1

## DISCUSSION

### 1. Background

The Lakeview Village development is a 177-acre site located at 1082 Lakeshore Road East, east of Cawthra Road, south of Lakeshore Road East. The property is owned by the Lakeview Community Partners Limited ('the Partners') comprised of Argo Development Corporation, TACC Construction Limited, Branthaven Homes, Greenpark Group and CCI Development Group of Companies.

The proposed development is planned to accommodate approximately 20,000 people within 8,050 new residential units in a mix of housing forms (including townhouses, mid and high-rise apartment buildings), and 9,000 jobs, supported by retail, parkland, commercial, innovation corridor (mix of employment and commercial) and campus (school) uses.

In accordance with the City of Mississauga's Official Plan policies for the Lakeview Node, the Partners have explored the use of innovative and sustainable technology such as a low carbon district energy system and an automated vacuum waste collection system ('vacuum waste system') to service the community.

The proposed development received planning application approvals in November 2021. The Partners are now working to satisfy the conditions of approval and engineering design and approvals to service the community. This report provides updated information on the vacuum waste system proposed within this development. An accompanying report regarding the implementation of a low carbon district energy system within the community is presented by staff at the June 23, 2022, Regional Council meeting.

Since discussions between the Partners, Region and City staff began in 2018 regarding the vacuum waste system, the proposal has evolved to address the needs of the community design and stakeholders involved. During this time, the proposal for a vacuum waste system has been described in a number of reports to Regional Council or Committees (Waste Management Strategic Advisory Committee) to regularly update Regional Council and Committee members of the work being undertaken by the Partners, Region and City staff.

The original proposal for a vacuum waste system was presented to the City and Region in April 2020. It proposed that the system would be owned by the Region of Peel and be designed, constructed, and commissioned by the Partners to the Region's satisfaction. The system would be assumed and operated by the Region of Peel after an initial break-in period. At that time, the Partners were seeking endorsement for the implementation of a vacuum waste system within this development, subject to necessary funding being secured. In response to this initial proposal, staff identified some challenges to the ownership model and unknown funding sources available to aid in the capital investment.

In April 2021, the Partners explored a privately-owned and operated model for the vacuum waste system with Miller Waste Systems Inc. Throughout the balance of 2021, the Partners, Miller Waste Systems Inc., Region and City staff continued to meet and further develop this proposal. However, in December 2021, Region and City staff were advised by the Partners that Miller Waste Systems Inc. concluded that their preference was to operate the system in partnership with the Partners and the Region of Peel but not own the system.

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In January of 2022, the Partners re-engaged the Region to present updated information on general principles, proposed governance and financial models, and estimated capital, operating and lifecycle costs for the vacuum waste system. The Partners were seeking support for a municipally owned and operated vacuum waste system and asked the Region to consider ultimate municipal ownership and operation of the system. Additionally, the Partners were seeking support in a joint Region/City/Lakeview Community Partners Limited government funding request for \$21.3M in capital costs for the central waste collection terminal on-site and infrastructure to service the parks within the community.

In this proposal the Partners planned to design, construct and commission a vacuum waste system for an initial break-in period of five years. During this period, the Partners planned to contract the vacuum waste system operation to Miller Waste Systems Inc. Following the initial break-in period, the Region of Peel would assume ownership of the vacuum waste system and the operation responsibilities by a third party would need to be addressed through the Region's public procurement process.

In March 2022, the Partners met with City and Region staff to advise that due to continued challenges and ongoing dialogue with City and Region staff, the Partners made the decision to move forward without a vacuum waste system being incorporated as part of the project. Despite significant efforts put towards this initiative by all parties, the Partners noted in a letter dated March 31, 2022 (see Appendix I) that issues regarding governance, funding/financing, and timing remained outstanding without any certainty of resolution.

In the sections below, Region staff provide additional details around the latest business case and costs associated with the implementation of a vacuum waste system in the community and a brief overview of risks staff identified through our assessment to date.

### **2. Vacuum Waste Collection system business case & assessment**

#### **a) The proposed system**

The proposed vacuum waste system would have been designed to collect garbage, recycling and organics from residential and commercial units, and the future school site. Waste and recycling collection would have been provided in the parks and waterfront public spaces in the Lakeview Village Community.

From the inlet points, material would be transported through a network of underground pipes to a central terminal. The central terminal was proposed to be located within the Sustainability Centre at Lakeview Village. From the central terminal, the material would be loaded into bins for transport to existing processing and transfer facilities.

Collection of large items, glass, cardboard, as well as other items not accepted in the Region's waste collection system (hazardous, biomedical or electronic waste) would require alternative collection methods. The condominium boards would have been responsible for contracting with a private waste management firm to provide collection of these materials.

#### **b) Region staff assessment of the proposed system**

Region staff had assessed the proposed business case for the vacuum waste system through all iterations and proposed ownership models. The assessments were based on information provided by the Partners and information gained from site visits to vacuum

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waste system installations in Sweden and Quebec City. The assessments were further informed by a survey of existing vacuum waste system installations comparable in scale to that proposed for Lakeview completed by a consultant retained by the Region. Region staff assessed the system against current Regional and Provincial Waste Management policies, breakdown of costs (capital, operating and lifecycle costs) and the local community and environmental benefits of such a system.

A summary of the assessments is presented in the following sections:

### **i. Compatibility with Regional and Provincial Waste Management Policies**

#### **a. Regional Programs and Policies**

The vacuum waste system would provide garbage, recycling and organic waste collection to multi-residential and townhouse units. As proposed by the Partners, condominium boards will be responsible for managing private waste collection of items not compatible with the system, including household hazardous waste (HHW), electronics, bulky items, and glass, large cardboard items that would normally be collected by the Region.

To serve public spaces such as streets and parks, the vacuum waste system would provide inlets, also referred to as self-emptying bins, to collect garbage and recycling. Manual pick-up of litter would still be required, and additional waste containers may be required during special events. Currently the City and Region cooperate to pick up litter and collect garbage and recycling from public spaces in Mississauga.

The vacuum waste system would provide a waste collection service to commercial establishments within Lakeview Village that is only offered to commercial establishments within Business Improvement Areas in the Region.

#### **b. Provincial Programs and Policies**

By providing infrastructure for the collection of source-separated organics, the proposed vacuum waste system would be compatible with the Provincial Food and Organic Waste Policy Statement.

In 2021, the Provincial government announced the process to transition Ontario's blue-box recycling program to full producer responsibility through the release of O. Reg 391/21 - "Blue Box Regulation". Through this regulation, producers are responsible for the management of blue box recyclables. The Province identified October 1, 2024, as the date that the responsibility for providing blue-box services, including collection and recovery of post-consumer recyclables, transfers from Peel to producers. This program will be transitioned before the first phase of Lakeview Village development is occupied. After transition, the producers will only be responsible for collecting recyclables from the central terminal and the processing of collected materials.

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### ii. Local community and environmental benefits

The business case provided by the Partners on April 30, 2020, and further updated in early 2022, proposed that a vacuum waste system in this community would deliver the following benefits:

- Waste, recycling (select materials) and organic collection available 24-7, improving accessibility to waste disposal and recycling
- Eliminates collection day trucks traversing local roads throughout neighbourhood which assists in traffic flow and safety
- Ability for one system to collect waste from residential buildings, non-residential buildings, and public realm spaces
- Self-emptying collection system in Parks will eliminate overflowing litterbins and garbage blowing into Lake Ontario
- Increase in waste diversion rates (estimated increase from 17 per cent Business as Usual to 55 per cent for Lakeview)
- Reduction in CO<sub>2</sub> emissions (estimated at 2580 tonnes CO<sub>2</sub>e/year for Lakeview)
- A completely sealed system which eliminates pests, noises, and odour resulting from traditional collection
- Improves hygiene and cleanliness
- Improves Security and Public Safety
- Frees up space inside of buildings for other uses through elimination of waste bin storage areas
- Improves occupational health and safety for waste collectors
- Less vulnerable to severe weather conditions and climate change
- Ability to implement access controls (RFID fobs, no-touch motion sensors) to system inlets, creating system user non-anonymity
- Ability to equip system with user identification and/or weighing capabilities allowing for “pay as you throw model”

Staff evaluated the proposed benefits of the system in comparison to a conventional waste collection. In terms of environmental impacts, it was found that the proposed greenhouse gas (GHG) reductions would largely be replaced by the production of GHG emissions because every waste collection vehicle eliminated from driving within the site is replaced with a roll-off truck transporting waste from the central terminal to the appropriate waste processing or transfer facility. Roll-off collection vehicles will need to visit the central terminal station daily to transport collected materials to the processing or transfer facilities. As well, conventional haulage vehicles will still be required to collect items from within the development that are not compatible with the system, including bulky waste and large cardboard materials.

It was also found that an increase to the Region’s overall diversion rate as a result of providing infrastructure to support source separated collection of organics at Lakeview would be minimal. Staff estimate that organics collected from 8,050 units would amount to approximately 2,000 tonnes per year or 0.4 of a diversion point towards the Region’s target. To achieve this rate, the Region would also need to budget for continuing promotion and education to ensure increased organic waste diversion rates if the vacuum waste system was implemented.

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**iii. Capital, Operating and Lifecycle Costs**

The Partners had proposed the following capital, operating and lifecycle costs (all costs are in 2021\$) associated with implementing a vacuum waste system at Lakeview Village:

<b>SYSTEM CAPITAL COST SUMMARY</b>		
<b>Component</b>	<b>Capital Cost</b>	<b>Notes</b>
Pipes in Public Rights-of Way	\$ 6,553,000	Pipes, Pipe Bends, Pipe Y-Connections, Control Valves, Access ports, and service lateral connections to property line. Includes approximately 3300m of 500mm dia. pipe.
Building Connections	\$ 10,969,000	63 Building Connects and Indoor 3-Fraction Valve Rooms. Includes approximately 4300m of 500mm dia. pipe
Parks Infrastructure	\$ 7,911,000	60 Two Fraction Litter Bins including one Large for Special Events. Includes approximately 3300m of 500mm dia. pipe
Waste Terminals	\$ 13,759,000	Terminal 1, Terminal 2, Containers, Building
<b>TOTAL</b>	<b>\$ 39,192,000</b>	<b>Includes 15% Contingency, 10% Engineering, Freight</b>

<b>SYSTEM OPERATIONAL COST SUMMARY</b>		
<b>Component</b>	<b>Yearly Cost</b>	<b>Notes</b>
Operating Personnel	\$ 270,000	One manager and two operators
Energy Consumption	\$ 250,000	Based on \$0.16/kwhr
Maintenance Costs	\$ 1,040,196	Calculated by TyLIN/Envac. Based on 100% pipe replacement after 30 years.
Spare Parts	\$ 120,000	Estimated by Envac
Haulage Costs	\$ 220,000	To haul waste from Terminal to PIWMF
Terminal Condo Maintenance Fee	\$ 25,000	Based on \$2/ft <sup>2</sup> /yr (Source CBRE)
Bulk Items/ Cardboard Collection	\$ 100,000	This is a rough estimate
Loan Repayment	\$ 0	Assumed Low Interest Loan replaced with Grant
<b>TOTAL</b>	<b>\$ 2,025,196</b>	

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By comparison, conventional waste collection provided by the Region would have a capital cost of \$350,000 for supply of recycling bins to all multi-residential buildings in the community and a yearly operating cost of \$520,000.

**iv. Proposed Capital and Operating cost Funding**

The Partners proposed the following capital and operating cost funding model to cover the one-time capital costs associated with implementing a vacuum waste system and the annual operating cost estimates:

<b>CAPITAL COST FUNDING DISTRIBUTION</b>				
	<b>Fee Type</b>	<b>Pays For</b>	<b>Fee Amount</b>	<b>% Contribution</b>
LCPL	Capital Contribution	Infrastructure in Roadways	\$ 6.55M	16.75%
Residential Buildings	Connection Fee \$500/unit (phase 1) \$750/unit (phase 2)	Infrastructure on private lands	\$ 6.79M	17.37%
Non-Residential Buildings	Connection Fee \$2.03/ft <sup>2</sup>	Infrastructure on private lands	\$ 3.71M	9.49%
School	Connection Fee	Infrastructure on school lands	\$350,000	0%
City of Mississauga Parks	Capital Contribution	Infrastructure on City parklands	\$0 with Government Grant	0%
Region of Peel	Capital Contribution		\$0	0%
Government Grant	Capital Contribution	Waste Terminal City Parks Infra.	\$13.8M \$7.9M	35.3% 20.2%
<b>TOTAL</b>			<b>\$39.1M</b>	<b>100%</b>
Note: Fees in \$2021 and subject to yearly indexing based on CPI If \$7.9M in Government Grant is not secured, City Capital Contribution of \$7.9M to be funded through Parks Development Charges				

<b>ANNUAL OPERATING COST FUNDING DISTRIBUTION</b>					
<b>Distribution/Units/ Gross Floor Area (GFA)</b>		<b>Business as Usual (BAU) Fee</b>		<b>Operating Cost of \$1,985,000/year</b>	
	<b>Units/ ft<sup>2</sup></b>	<b>BAU Rate</b>	<b>BAU \$</b>	<b>Proposed Rate</b>	<b>Proposed \$/year</b>
Region	8050	\$ 40/unit	\$ 322,000	\$ 40/unit	\$ 322,000
Residential Condo unit	8050	\$ 36/unit	\$ 290,000	\$ 131.7/u/yr or \$ 11/u/mo	\$ 1,060,000
Non-Residential Buildings	1.43M	\$ 0.08/ft <sup>2</sup>	\$ 146,600	\$ 0.12/ft <sup>2</sup>	\$ 220,000

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<b>ANNUAL OPERATING COST FUNDING DISTRIBUTION</b>					
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	<b>Units/ ft<sup>2</sup></b>	<b>BAU Rate</b>	<b>BAU \$</b>	<b>Proposed Rate</b>	<b>Proposed \$/year</b>
School	1	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000
City of Mississauga Parks	1	\$ 450,000	\$ 450,000	\$ 333,000	\$ 333,000
<b>TOTAL</b>			<b>\$1.26M</b>		<b>\$1.99M</b>

**RISK CONSIDERATIONS**

Staff have identified several key risks and challenges associated with the development and ownership of the vacuum waste system:

**a) Capital Funding Risks**

- Government funding commitments are delayed or offer less than the targeted amount of funding
- Release of funds is delayed
- Changes in government resulting in reduced funding or cancellation
- Actual capital costs exceed estimates (due to external factors such as price escalations due to supply chain issues)

**b) Operations and Maintenance Funding Risks**

- Funding structure established at the outset will be too low or will have an insufficient number of paying users to cover costs during the period prior to full occupancy (at Year 15) or after full occupancy is achieved.
- With a transition of the blue box program to producers, producers may not support full operating costs associated with a vacuum waste system.

**c) Asset Management Funding Risks**

- Contributions to the reserve may be insufficient, either because the equipment wears out more quickly than expected or replacement costs were underestimated.

**d) Technical Risks**

- Local applicable reference standards for the design and operation of a vacuum waste system do not exist.

**e) Operational Risks**

- There is a risk of significant system failure and not being able to secure specialized equipment, parts and services from overseas.
- Providing conventional waste collection services in the event of a service disruption would be a significant challenge.



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### CONCLUSION

While the Partners together with their consultant team, and Region and City staff had been working diligently on the business case and assessment of a vacuum waste system in the Lakeview Village community, there are a number of unresolved risks, barriers, and challenges to its implementation.

The Partners advised Region and City staff of the cancellation of the initiative in a letter dated March 31, 2022. While the vacuum waste system could have provided a higher level of service and could have provided local community and environmental benefits to the Lakeview Village community, it proposed to do so at a significantly higher capital and operating costs to all stakeholders than a conventional waste collection. Additionally, while the vacuum waste system did align with Regional and Provincial policies for 3Rs diversion, the transition of the blue box program to producers does not require that producers fund the operation of the vacuum waste system (or even use the vacuum waste system) which could pose a challenge for the Blue Box program to Producer Responsibility Organizations under the Provincial Blue Box regulation.

Region staff is committed to working with the City of Mississauga and the Partners to determine if alternative waste collection practices could be advanced in the Lakeview Village community to realize some of the same local and environmental benefits that a vacuum waste system would have otherwise provided such as, implementing organic waste collection, alternative parks waste bins, and others.

### APPENDICES

Appendix I - Lakeview Community Partners Limited Vacuum Waste Update March 31, 2022

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Kealy Dedman, Commissioner of Public Works