INFORMATION REPORT

TO:	Chair and Members Truck Route Sub-Committee
COMMITTEE DATE:	January 10, 2025
SUBJECT/REPORT NO:	Truck Route Monitoring and Evaluation Framework (PED19073(e)) (City Wide) **(Outstanding Business List Item)**
WARD(S) AFFECTED:	City Wide
PREPARED BY:	Steve Molloy (905) 546-2424 Ext. 2975
SUBMITTED BY: **SIGNATURE:**	Brian Hollingworth Director, Transportation Planning and Parking Planning and Economic Development Department 

COUNCIL DIRECTION

On, September 2022, direction was provided by the Truck Route Sub-Committee to report back to the Sub-Committee on the evaluation of the approved Truck Route Network as identified below:

> That staff be directed to operationalize the truck route network evaluation framework including all required data collection, public and stakeholder engagement and analysis commencing in early 2023 and through 2023/2024 and report back to the Truck Route Sub-Committee by no later than Q4 2024.

Direction was also provided as part of the approval of the Goods Movement Strategy (PED24049) as identified below:

> That staff be directed, as part of the in-progress Truck Route Network Monitoring and Evaluation actioned by Report PED19073, to report back to the Truck Route Sub-Committee on potential updates and/or modifications to the 32 Actions identified in the Goods Movement Strategy in order to explicitly address concerns and opportunities related to term of council priorities, including equity, public

health, roadway safety, impacts of continued road expansion; and urgency around the City's declared climate crisis.

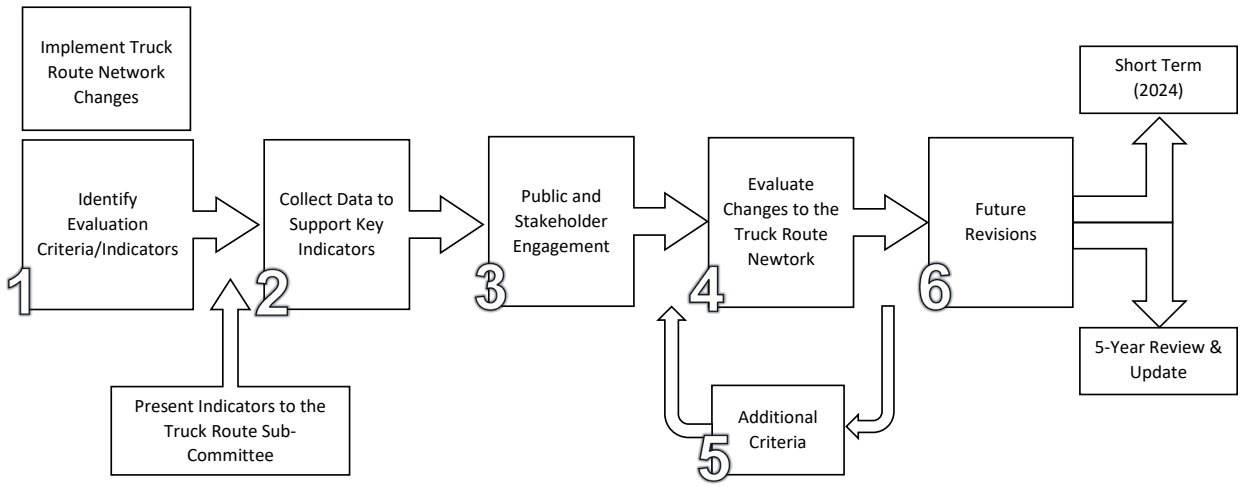
INFORMATION

The April 2022 Council Approved Truck Route Master Plan and network emphasizes the use of the ring road concept for heavy trucks via the Red Hill Valley and Lincoln Alexander Parkways, Highway 403 and QEW. This is intended to improve the quality of life for residents and vulnerable populations. Implementation of truck route signs occurred between May and September 2023 with follow-up adjustments based on community feedback.

The approved evaluation framework identified several criteria to measure the impacts of network changes. The objective of the evaluation is to measure the effectiveness of the changes from a community liveability, environmental and public health, and economic prosperity perspectives.

The evaluation framework is illustrated in Figure 1. The evaluation framework includes both the collection of data and public input through the truck route reporting tool. This data informs the evaluation of the truck route network and serves to contribute to future updates of the Truck Route Master Plan.

Figure 1: Truck Route Network Monitoring and Evaluation Framework



The purpose of this Report is to present the results of truck route monitoring work to date. The Report also identifies overall observed impacts of the changes and areas

where further refinement and improvements to be made to improve the effectiveness of the truck route network. It is noted that this is an interim report and continued data collection, and analysis is on-going to help to inform continuous improvements and network refinements.

Evaluation Criteria and Key Indicators

The approved evaluation framework identified several criteria to measure the impacts of the truck network changes. The selection of evaluation criteria/indicators was informed by the vision, goals, and guiding principles of the Truck Route Master Plan, and the City's Strategic Plan priorities. The high-level categories include Community Livability, Environment and Public Health, and Economic Prosperity. Each category and the monitoring results to date are discussed below.

Community Liveability

This set of criteria is intended to measure how the revisions to the truck route network support a safe multimodal transportation system that adheres to the Vision Zero policies and minimizes and distributes the impacts of the truck route network away from vulnerable communities therefore improving equity. Community livability is also measured and expressed by the volume of truck types travelling through neighbourhoods, collision, and compliance/enforcement data along designated truck routes.

- Volume Data

Truck Route data was collected at select corridors to measure the impacts of network changes, particularly, the removal of truck routes in the Lower City. The results, as shown in Table 1, indicate significant reductions in truck volumes on Wellington Street and Victoria Avenue, which would also be reflective of trucks travelling through the Downtown core.

Volume counts were also taken on King Street and Main Street; however, it was determined that data may have been affected by a construction project in the vicinity of the counts. Based on informal observations and spot counts, there is anecdotal evidence that truck volumes have decreased on these streets. Additional counts are being programmed to confirm the reductions.

Upper James Street observed relatively stable volumes, Rymal Road observed an increase in volumes, while Centennial Parkway observed a reduction in volumes. Each of these routes are full-time truck routes with five axle or more.

Table 1: Before and After Comparison of Truck Volumes on Select Truck Route Corridors (Daily trucks)

Location	2021/2022 Truck Volume (percent of total volume)	2023 Truck Volume (percent of total volume)	**Percent Increase / Decrease
Wellington Street*** Before (south of McAuley) After (south of Barton)	*Five Axels or more 293 (7.4%) Four Axels or less 224 (5.6%)	*Five Axels or more 41 (0.6%) Four Axels or less 125 (1.8%)	- 86.0% - 44.2%
Victoria Avenue*** (south of Barton)	*Five Axels or more 197 (2.0%) Four Axels or less 242 (2.5%)	*Five Axels or more 101 (1.2%) Four Axels or less 206 (2.5%)	- 47.8% - 14.9%
Upper James Street (south of Lincoln Alexander Parkway)	*Five Axels or more 1,179 (3.0%) Four Axels or less 1,189 (3.0%)	*Five Axels or more 1,226 (3.2%) Four Axels or less 1,164 (3.0%)	+ 4.0% - 2.1%
Centennial Parkway (south of Queenston)	*Five Axels or more 651 (2.4%) Four Axels or less 1,132 (4.2%)	*Five Axels or more 551 (2.2%) Four Axels or less 935 (3.7%)	- 15.4% - 17.4%
Rymal Road*** Before (east of Upper Ottawa) After (West of Upper Ottawa)	*Five Axels or more 300 (1.6%) Four Axels or less 754 (4.1%)	*Five Axels or more 352 (1.9%) Four Axels or less 852 (4.6%)	+ 17.3% + 13.0%

Notes:

* Includes articulated Hamilton Street Railway buses.

** Calculated based on truck volume not percent of total volume.

*** Count location is different but is representative of the expected volume change due to network modifications.

As Table 2 indicates, there has been a substantial increase in five axel or more trucks travelling along the Lincoln Alexander and Red Hill Valley Parkways, which demonstrates success in re-routing heavy trucks to these parkways. These increases are higher in scale than the changes in the Lower City, which suggests the changes may have also been influenced by other factors. This could include changes due to the recovery from the Pandemic as well as increased development activity in the Red Hill Valley Business Park.

Table 2: Before and After Comparison of Truck Volumes on the Lincoln Alexander and Red Hill Valley Parkways

Location	2019-2021-2022 Truck Volume (percent of total volume)	2023 Truck Volume (percent of total volume)	**Percent Increase / Decrease
Lincoln Alexander Parkway (east of Dartnall)	*Five Axels or more 2,917 (4.2%) Four Axels or less 2,699 (3.8%)	*Five Axels or more 4,917 (5.5%) Four Axels or less 3,147 (3.5%)	+68.6% +16.6%
Red Hill Valley Parkway (south of Barton)	*Five Axels or more 2,607 (3.2%) Four Axels or less 3,332 (4.1%)	*Five Axels or more 4,889 (6.0%) Four Axels or less 2,275 (3.4%)	+ 87.5% - 31.7%

Notes:

* Includes articulated Hamilton Street Railway buses.

** Calculated based on truck volume not percent of total volume.

*** Count location is different but is representative of the expected volume change due to network modifications.

- Collision Data

Four-year (2019 to 2022) collision data has been reviewed along selected corridors to establish a benchmark for comparisons as illustrated in Table 3. A total of 148 collisions involving trucks were recorded at these collective locations, with approximately 52% of these collisions occurring along the King Street and Main Street segments. There were three collisions involving pedestrians and cyclists. No fatalities were recorded.

Collision data for 2023 will not be available until early 2025. Once this data is available, it will be reviewed as a follow-up report to the Truck Route Sub-committee as well as being integrated into the Annual Collision Report prepared by the Transportation Division in Public Works. As a result, there is no current data to indicate if the Potential for Safety Improvement ranking has changed based on the truck route network modifications.

Table 3: Collision Summary Involving Trucks

Location	2019	2020	2021	2022	*Collisions Involving Pedestrians / Cyclist	Total
East-West Corridors						
Burlington Street (Gage to Ottawa)	0	1	1	2	0	4
Cannon Street (Wellington to Queen)	5	2	2	7	(2)	16
King Street (Dundurn to Wentworth)	6	3	4	12	(1)	25
Main Street (Dundurn to Wentworth)	12	12	16	12	0	52
Rymal Road (Upper Gage to Red Hill Valley Parkway)	3	0	2	4	0	9
North-South Corridors						
Centennial Parkway (King to Queenston)	0	3	8	1	0	12
Upper James Street (Lincoln Alexander Parkway to Stone Church	1	1	0	1	0	3
Wellington Street (Barton to Cannon)	1	0	1	1	0	3
Victoria Avenue (Barton to Cannon)	2	0	2	0	0	4
Parkways						
Red Hill Valley Parkway	3	4	3	0	0	10
Lincoln Alexander Parkway	0	0	5	5	0	10
Total						
All Locations	33	26	44	45	(3)	148

* Pedestrian and cyclist collisions are a subset of the total collisions recorded.

- Enforcement Data

Due to the timing of sign installation and education period, enforcement data is not representative of activities. However, based on data to the end of October 2024, Hamilton Police Services' Traffic Services Division has issued approximately 300 charges relating to the Truck Route By-law. This number could be higher as other Divisions within Hamilton Police Services carry out enforcement, however, these Divisions group all by-law infractions together for data collection and reporting. Therefore, the exact number is not available at this time.

Ensuring trucks are operating in a safe manner is also important to community safety. So far, in 2024, the Commercial Motor Vehicle Inspectors, within the Traffic Division, have inspected approximately 597 Commercial Motor Vehicles, taken 179 (or 30 percent) out-of-service, and have issued 2,073 charges in relation to Commercial Motor Vehicles. These charges have occurred on both truck and non-truck route roadways.

Environmental and Public Health

These criteria serve to measure how the revisions to the truck route network have succeeded in influencing environmental, climate change, and public health outcomes. The indicators are intended to measure the exposure level of truck volumes to sensitive land uses through the measurement of air quality and noise data.

- Air Quality Data

Collaborated through a Smart Cities initiative with Ecosystem Informatics Inc. to collect a snapshot of before and after air quality data to identify any pattern changes. Six total scans were collected in each phase: Phase 1 in Fall-Winter 2022; and Phase 2 in Spring 2023. Factors influencing the data set include seasonal weather changes, vegetation, human activities, industrial land use activities, and the change in travel patterns, such as the truck route changes.

The route driven by Ecosystem Informatics included Hamilton General Hospital (location one), the Industrial Sector (location two), Queen Street and King Street area (location three), the Red Hill Valley Parkway (location four), and the Lincoln Alexander Parkway via Upper James Street (location five). This route captures most neighbourhood development areas. An Air Quality report was prepared and is provided in Appendix "A" attached to Report PED19073(e). A summary of the findings of this Report is provided in Table 4.

Table 4: Summary of Air Quality Data Results

Pollutant	Summary
Sulfur Dioxide	There was an increase in the ambient Sulfur Dioxide levels recorded in Phase 2 when compared to Phase 1 across the entire route. In follow-up analysis undertaken, data spikes were identified that were consistent with findings from data observed from air quality monitoring stations. These spikes occur during the May and June months as compared with other months and requires further investigation into contributing factors and solutions.
Nitrogen Dioxide, Carbon Monoxide, and Ozone	Nitrogen Dioxide, Carbon Monoxide, Ozone, and Particulate Matter had relatively similar hourly average levels in both Phase 1 and Phase 2. There is a spatial shift in locations with higher concentration levels of Carbon Monoxide and Ozone towards the Red Hill Valley and Lincoln Alexander Parkways in Phase 2. This is an expected outcome, given the increase in the volume of trucks using these corridors (see table 2).
Particulate Matter 2.5 and Particulate Matter 10	Increase in measured levels of Particulate Matter 2.5 and Particulate Matter 10 in the Industrial Sector. The data also indicates some reductions along the Lincoln Alexander Parkway.

- Noise Data

In a collaborative effort to leverage a Smart Cities approach, noise sensors (via SmartLinx) were placed at various locations to monitor decibel levels near designated truck routes to evaluate the effectiveness of change. The location of the SmartLinx noise sensors is provided in Appendix “B” attached to Report PED19073(e).

A snapshot of the data was selected for a nine-day period between January 6 and 14, 2023, and between January 6 and 14, 2024, which is presented in Table 5. The data represents an average decibel level based on 15-minute intervals from approximately 720 data points collected during each period selected. This data does not represent peak agricultural activities but is representative of typical travel patterns.

Overall, the decibel levels have increased along all corridors measured during the selected time-periods. Based on the previous section, traffic volumes have been steadily increasing, which may account for differences, in addition to other factors such as nearby construction activities, road condition, and other activities. Of note, the Garner Road decibel level had the highest increase, which can be attributed to background noise relating to construction activities in the area.

Other notable increases, which demonstrates the effectiveness of the route changes is the increase in decibel levels near the Nickola Tesla Parkway and Woodward Avenue. Conversely, the decibel levels at the Red Hill Valley Parkway sensor near Barton Avenue is less than others, which is likely attributed to reduced speeds during the peak hour periods.

Table 5: Pre- and Post-Network Changes Impact on Decibel Levels

Location	Pre-Implementation (Jan 2023)	Post-Implementation (Jan 2024)	Percent Change
King Street	58.4	63.0	+7.8%
Main Street	60.8	65.5	+7.7%
Victoria Avenue	57.0	62.5	+9.7%
Centennial Parkway South	60.8	67.5	+11.1%
Upper James (Twenty Road)	61.7	67.9	+10.0%
Nikola Tesla Parkway/Burlington Street (Woodward Overpass)	58.9	72.1	+22.7%
Garner Road (Miller Drive)	49.8	67.4	+35.2%
Rymal Road East (Upper Ottawa)	58.5	65.4	+11.7%
Rymal Road East (Trinity Church Road)	60.3	67.2	+11.5%
Lincoln Alexander Parkway (Limeridge-Upper Gage)	66.3	71.6	+7.9%
Lincoln Alexander Parkway (Cranbrook-Upper Paradise)	67.0	72.4	+8.1%
Red Hill Valley Parkway (Barton Overpass)	66.4	69.3	+4.5%
Red Hill Valley Parkway (Hixon Road)	66.4	71.6	+7.7%
Red Hill Valley Parkway (Pritchard Road)	66.1	72.2	+9.2%

Economic Prosperity

A variety of indicators were identified to assess changes in economic prosperity including travel reliability, resiliency and connectivity among goods-generating land uses, access to employment centres, as well as economic uplift due to the removal of designated truck routes from the network. Given the more gradual change in economic

conditions as opposed to other indictors, the evaluation of economic prosperity should be considered on-going. For example, development activity in the corridors where truck routes were removed is an indictor which requires a longer period of time to evaluate.

Another indicator of economic activity is the overall volume of truck movements to and from Hamilton. Currently, there is only one time horizon for this data, which is presented in this Report as a baseline only. This dataset includes trucking volumes collected as part of the Commercial Vehicle Survey led by the Ministry of Transportation (which the City is a partner) and shows the general origin and destination of goods moved by trucks. The breakdown is provided in Table 6 and is discussed in more detail as part of the Council approved Goods Movement Strategy (Report PED24049).

A review of the action items in Report PED24049 for opportunities for modifications and updates that align with this term of Council priorities was undertaken and are provided in Appendix "C" attached to Report PED19073(e).

Table 6: Weekly Truck Flows based on the Commercial Vehicle Survey

Location	**Origin Hamilton (out) N = 19,512**		**Destination Hamilton (in) N = 19,208**	
	Weekly Volume	**Percent**	**Weekly Volume**	**Percent**
Central Ontario (GTA)	10,274	52.7%	10,274	53.5%
Southwest Ontario	5,235	26.8%	6,550	33.6%
Northern Ontario	248	1.3%	66	0.3%
Eastern Ontario	251	1.3%	344	1.8%
Canadian Provinces	852	4.4%	505	2.6%
United States	2,652	13.6%	1,469	7.6%

The Goods Movement Strategy also identifies trucking activity and intensity clusters, which generally aligns with designated Employment Areas and Economic Centres within the city. It also identifies mid-day travel speeds based on TomTom data (TomTom is a data collection company that uses GPS and cell-phone data). The data aligns with what would be expected. For example, higher speeds are generally experienced along the Ministry of Transportation Highway Network and the Red Hill Valley and Lincoln Alexander Parkways. Lower speeds are observed within activity cluster themselves as well as some first and last mile connections into the Highway and Parkway network (e.g. Dartnall Road connection and connections from the Parkways to the Highway network). These clusters and mid-day travel speeds are provided in Appendix "D" attached to Report PED19073(e) and are also available within the Goods Movement Strategy.

Additional information relating to the change in truck trip travel times using telemetric data to compare data used in the Truck Route Master Plan is in progress and was not available at the time of this Report.

A final source of economic prosperity data relates to activities in the Port Area. At the time of the truck route network review, concerns were raised about the impact of removing lower City routes on the viability of businesses in the Port. As noted on the Hamilton Oshawa Port Authority ports website, “Hamilton Oshawa Port Authority Ports has released results for the 2023 navigation season, reporting a combined total cargo of 11,293,179 metric tonnes (MT) through the ports of Hamilton and Oshawa. The 2023 total was a 9% increase from 2022, marking the second-highest volume in the past decade. The season saw a total of 665 vessels, with 603 in Hamilton and 62 in Oshawa, taking advantage of the longest ever Seaway shipping season.

This high-level statistic would suggest that to date, the Hamilton Port area continues to be a major and growing contributor to the economy.

Public Engagement

The online truck monitoring tool is a tool that allows residents to report any truck route violation they observe in their community and is a key source for public input. The tool was launched in August 2024 and communications to promote the tool occurred in September. As of the time of writing this Report, there was 1,499 data points (representing unique submissions) (220 in August, 299 in September, and 977 in October), which include comments, photographs, and completed survey. This data assists in identifying and highlighting problem areas for further engagement with residents and stakeholders to develop and implement solutions. Appendix “E” attached to Report PED19073(e) contains heat maps for each month as well as a combined map, where locations for further investigation, engagement, and action have been highlighted.

Based on collated survey results shown in Table 7, there are two distinct issues that stand out: Trucks on non-designated truck routes (62%); and Driver behaviour / road safety (29%).

Table 7: Distribution of Online Tool Survey Concerns

Concern / Issue	Percent of comments to date	Number
Trucks on non-designated routes	62%	935
Driver behaviour / road safety (includes speeding / rolling stop / ability to turn etc.)	29%	437
Trucks with five or more axels on a non-designated route	8%	116
Trucks not following time of day restrictions on designated route (includes non-designated routes)	1%	11

In terms of trucks on non-designated routes and as illustrated in the heat maps, there are two areas that stand out:

- Locke Street North, where it has been observed that trucks are travelling in violation of the designated truck route network. This is attributed to the road reconstruction project on York Boulevard and portions of Cannon Street. Overall, the issue, not limited to Locke Street, but is a broader issue to improve the integration of construction and transportation management communications during construction projects and concurrent projects.

- Glanbrook between the Airport Employment Growth District and the Red Hill Business Park, which are more complex issues and involves several factors. The lack of a designated truck route and network redundancy has created issues. Short and long-term solutions include the completion of the Rymal Road improvements between Dartnall Road and Upper James Street, review the timing of improvements to Upper James Street south of Rymal Road, and advancing the Red Hill Business Park to Highway 6 conceptual link study as described in Report PED23246.

As road projects move forward, there is need to improve construction and transportation management coordination and communications. Applying an array of strategies to reduce the impact on the broader community, not just those directly affected by these projects. This would also apply to development construction activities as well. Again, the example of Glanbrook, where previous complaints of trucks using Dickenson Road (which is not a designated truck route) have shifted to Miles Road and White Church Road as Dickenson Road has been closed due to construction.

Other issues reported by the community (e.g. Millgrove area) have been previously identified, such as the historical issue of trucks using Millgrove Sideroad as opposed to Concession 5 West. This issue requires further discussions with the Ministry of Transportation and the community for a suitable resolution. In addition, further review of data, investigation of noted issues, and the potential for interventions to address driver behaviour, will be undertaken based on the data set.

Summary of Successes, Challenges and Opportunities

There is a need for continued data collection and evaluation using consistent data sets. This data will help inform the need for further truck route network refinement. Notwithstanding the need for more data to inform decisions, there are actions that can have a positive impact on the community. Based on the data collected thus far, Table 8 summarizes the various successes, challenges, and opportunities.

Table 8: Successes, Challenges and Opportunities

Successes	
Impact	**Opportunity / Action:**
Decrease in trucks five axels or more along Wellington Street and Victoria Avenue	Continue to monitor and evaluate compliance of trucks that are greater than five axels
Increase in truck volumes on the Red Hill Valley and Lincoln Alexander Parkways, consistent with the adopted ring road network concept	Continue to advance planning for capacity improvements on the Lincoln Alexander Parkway and Red Hill Valley Parkway per previous Council Direction
Online reporting tool effective in visualizing community problem areas	Identification of some problem areas for further investigation and interventions
Enforcement has improved and tickets have been issued to improve compliance and overall road safety of commercial vehicles	Work with Hamilton Police Services to improve reporting information such as breakdown of locations where tickets have been issued
Challenges	
Impact	**Opportunity / Action:**
On-line tools such as Google Maps do not provide additional positive guidance based on Hamilton's truck route network	Investigate opportunities to integrate Hamilton's truck route network into the Ministry of Transportation's Ontario 511 application. Continue to advocate for the integration of the truck route network into mapping platforms such as Google and Apple maps.
Construction Projects	Improve coordination, communications, as well as construction management and detour plans around road construction projects that occur on truck routes. Improve the coordination of growth-related and development-specific construction projects.
Road Network Improvements	Continue to advance key road infrastructure projects as identified in the City-wide Transportation Master Plan and Airport Area Growth District Master Plan Advance studies to provide network redundancy in the former Glanbrook area.

Enforcement	Identify capital projects to achieve enforcement through design. Through advancing road infrastructure projects, enforcement resources may be allocated to other locations.

APPENDICES AND SCHEDULES ATTACHED

Appendix “A” to Report PED19073(e) - Air Quality Report
Appendix “B” to Report PED19073(e) - SmartLinx Noise Sensor Locations
Appendix “C” to Report PED19073(e) - Potential Action Plan Modifications and Updates
Appendix “D” to Report PED19073(e) - Goods Movement Strategy Data
Appendix “E” to Report PED19073(e) - Online Reporting Tool Heatmaps