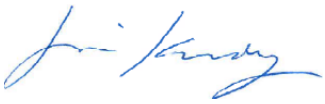
CITY OF HAMILTON
PUBLIC WORKS DEPARTMENT
Transportation Division
and
PLANNING AND ECONOMIC DEVELOPMENT DEPARTMENT
Transportation Planning and Parking Division

TO:	Chair and Members Public Works Committee
COMMITTEE DATE:	February 20, 2024
SUBJECT/REPORT NO:	Main Street Two-Way Conversion Implementation and One-Way Street Conversion Considerations (PW23074(a)/PED23248(a)) (City Wide) **(Outstanding Business List Item)**
WARD(S) AFFECTED:	City Wide
PREPARED BY:	Mike Field (905) 546-2424 Ext. 4576 Dipankar Sharma (905) 546-2424 Ext. 3016
SUBMITTED BY: **SIGNATURE:**	Carolyn Ryall Director, Transportation Division Public Works Department 
SUBMITTED BY: **SIGNATURE:**	Jackie Kennedy Director, Engineering Services Division Public Works Department 
SUBMITTED BY: **SIGNATURE:**	Brian Hollingworth Director, Transportation Planning and Parking Planning and Economic Development Department 

RECOMMENDATION

That the Recommendations in Report PW23074/PED23248 be replaced with the following:

(a) That the General Manager of Public Works be authorized and directed to negotiate and execute a non-competitive single source contract with WSP Canada Inc., to complete the detailed design and contract administration for the Main Street Two-Way Conversion Project, in a form satisfactory to the City Solicitor and in adherence to the City of Hamilton Procurement Policy By-law No.22-255;

(b) That staff be directed to undertake an accelerated project delivery approach as outlined in Report PW23074(a)/PED23248(a), funding for the implementation be referred for inclusion in the 2025 capital budget at a value of $26,492,000 with a target timeline to complete detailed design by Q3 2025/Q4 2025, commence construction Q4 2025, and target a project completion date of Q4 2027/Q1 2028;

(c) That the remaining unbudgeted candidate one-way to two-way street conversions and alternative complete street interventions as identified in Appendix “E” to Report PW23074/PED23248 be programmed, and that funding associated with the conversions be identified and brought forward as part of future annual capital budget submissions for consideration of Council.

EXECUTIVE SUMMARY

This Report addresses the December 4, 2023 Public Works Committee direction related to the conversion of Main Street from one-way operation to two-way operation as detailed in Report PW23074/PED23248.

Report PW23074/PED23248 outlined the cost to convert Main Street to two-way operation as $26,492,000. A proportion of scope was previously planned and budgeted for that would have been needed regardless of two-way conversion. Of the overall project budget, costs associated strictly with two-way conversion are approximately $15,417,000.

Further clarification of the recommended alternative is also provided, including a summary of the lane and space allocation considerations by segment. These considerations included traffic operations, transit, corridor flexibility and integration with the Light Rail Transit project. The recommended alternative (asymmetrical configuration) allows for the incorporation a number of complete streets features including curb extensions, parking and greening opportunities in the easterly section,

cycling facilities in the east/central section, and transit priority measures and low impact development opportunities in the central/westerly segment.

A review of project delivery identified options which could compress the schedule. An accelerated plan could enable a total savings of approximately 17 months; from a total project delivery of 60 months as initially presented in Report PW23074/PED23248, thereby enabling project completion by Q4 2027/Q1 2028. To enable the use of an accelerated approach, Council approval for single-sourcing would be required and therefore formed the Recommendation included in Report PW23074(a)/PED23248(a).

ALTERNATIVES FOR CONSIDERATION – Not Applicable

FINANCIAL – STAFFING – LEGAL IMPLICATIONS

Financial: There are no staffing implications associated with this Report. Approval to execute a non-competitive single source contract with WSP Canada Inc., to complete the detailed design and contract administration for the Main Street Two-Way Conversion Project, using the City of Hamilton Procurement Policy, By-law No. 22-255, requiring Council approval of non-competitive contracts under Policy #11 – Non-Competitive Procurements that are valued at greater than $250,000.

Funding for the detailed engineering design of the two-way conversion of Main Street between Dundurn Street South and Main Street East/King Street East (Delta) has been submitted as Capital Project ID #4032411048 at a value of $1,000,000 through the 2024 annual capital budget process.

Staffing: N/A

Legal: N/A

HISTORICAL BACKGROUND

At the December 4, 2023 Public Works Committee, Report PW23074/PED23248 was presented. The report responded to previous Council direction related to the conversion of Main Street from one-way to two-way operations and included three recommendations:

(a) That funding for the detailed engineering design of the two-way conversion of Main Street between Dundurn Street South and Main Street East/King Street East (Delta) in alignment with the principles established by the Main Street Two-

Way Conversion Study, be submitted as Capital Project ID #4032411048 at a value of $1,000,000 through the 2024 annual capital budget process for consideration of Council;

(b) Funding for the implementation of Main Street between Dundurn Street South and Main Street East/King Street East (Delta), following the completion of detailed engineering design, be earmarked in the 2026 capital budget at a value of $26,492,000 and considered for future approval by Council to enable construction targeted to begin in 2026 and completion in 2028;

(c) That the remaining unbudgeted candidate one-way to two-way street conversions and alternative complete street interventions as identified in Appendix “E” to Report PW23074/PED23248 be programmed, and that funding associated with the conversions be identified and brought forward as part of future annual capital budget submissions for consideration of Council.

Report PW23074/PED23248 was deferred, and additional direction was provided by the Public Works Committee. The approved direction was:

That staff be directed to report back to the Public Works Committee on February 5, 2024 on the following:

a) Quantify the core capital investment required to convert Main Street to two-way traffic, exclusive of necessary and already programmed capital works, AODA compliance upgrades, any other necessary or contemplated upgrades, reconstruction and rehabilitation capital works and residual lifecycle infrastructure renewal costs.

b) Provide further quantification of the assessment of the Main Street two-way evaluation criteria versus prioritizing eastbound vehicular traffic capacity in the recommended Option Three.

c) Provide options to implement Council’s direction of Main Street two-way traffic conversion within two years and/or prior to the initiation of LRT corridor construction by prioritizing core two-way conversion lane re-alignments, intersection and signal upgrades, and corridor upgrades necessary for implementation with further corridor upgrades, resurfacing and other capital rehabilitation work phased over the following four to six years.

d) Meet with impacted and interested Ward Councillors with Public Works staff and consulting engineering team.

POLICY IMPLICATIONS AND LEGISLATED REQUIREMENTS

The City of Hamilton Procurement Policy, By-law No. 22-255, requires Council approval of non-competitive contracts under Policy #11 – Non-Competitive Procurements that are valued at greater than $250,000.

RELEVANT CONSULTATION

The following parties have been consulted with during the development of this Report:

- LRT Project Office; and,
- Metrolinx.

ANALYSIS AND RATIONALE FOR RECOMMENDATION

Main Street Two-Way Conversion Capital Budget Composition:

Report PW23074/PED23248 provided a capital budget estimate for Main Street two-way conversion based on the functional design plans (Option Three). The estimated construction budget includes traffic signal reconstruction ($8,425,000), roadway rehabilitation ($10,000,000), corridor improvements ($3,557,000), and contingency/miscellaneous/staffing costs ($4,510,000), totalling $26,492,000.

Regardless of converting Main Street to two-way operation, the roadway rehabilitation was previously included in the five-year capital plan prior to the two-way conversion motion. Additionally, two new traffic signals were planned at the intersection of Main Street at Albert Street and Main Street at Hilda Avenue. The rehabilitation of Main Street between Dundurn Street and Delta scope included for roadway replacement, pavement markings and associated project contingencies. The budget cost estimate for these activities totalling $11,075,000 and detailed as follows.

Item:	Budget Estimate:
Traffic Signal Construction	$ 450,000
Roadway Rehabilitation	$10,000,000
Pavement Markings	$ 535,000
Contingency and Miscellaneous	$ 90,000
Total:	$11,075,000

There are other infrastructure needs on Main Street that have not been planned for in the five-year capital budget which would be addressed within the scope of two-way conversion. These include existing traffic signal rehabilitation, Accessibility for Ontarians with Disabilities Act improvements, sidewalk, and curb replacements. Budget cost

estimates for these works have not been developed, however they would be in the scale of multiple millions of dollars.

The estimated cost to convert Main Street to two-way operation, without inclusion of the previously planned rehabilitation work, totals $15,417,000.

Main Street Proposed Configuration:

As outlined in Report PW23074/PED23248, two different lane configuration alternatives for achieving two-way traffic flow on Main Street were evaluated, in addition to the "Do Nothing" option. A summary of the different two-way alternatives is presented in the table below. It should be noted that the lane allocations are the total lanes that could be available to vehicular traffic, not accounting for off-peak parking or other non-permanent lane utilization.

	Dundurn Street to Caroline	Caroline to Victoria	Victoria to Sherman	Sherman to King
Pre-2022				
Eastbound	5	4	4	4
Westbound	0	0	0	0
Current				
Eastbound	3	3	3	3
Westbound	0	0	0	0
Symmetrical/or Balanced				
Eastbound	2	2	2	2
Westbound	2	2	2	2
Proposed Asymmetrical				
Eastbound	3	2+Left turn	2	2
Westbound	1	1+Left turn	1	1
Bike lanes/greening	Future potential	Future potential	Bi-directional	0
On-street parking	South lane off-peak	South lane off-peak	0	North lane, full time

The primary difference between the two future options evaluated would be for the segment between Dundurn Street and Victoria Avenue. For this segment, the proposed alternative would consist of three eastbound lanes to Victoria Avenue and one westbound lane. Between Caroline and Victoria, one lane would operate as a left turn lane alternating between eastbound and westbound traffic. This configuration is like James Street and John Street between Cannon Street and St. Joseph's Drive which operate with an asymmetrical configuration.

Between Victoria Avenue and the Delta, the preferred option consists of two eastbound lanes and one westbound lane. For this segment, moving to an option that provides for a balanced capacity could be achieved by:

- Replacing the proposed parking on the north side with a vehicle lane. This is not recommended as the proposed parking is intended to provide a buffer for pedestrians and would be implemented in conjunction with bump-outs at intersections to shorten pedestrian crossing distances.

- Moving to a configuration with only one lane of vehicle traffic in each direction. This alternative is not recommended as one lane of travel would provide less than 50% of the capacity required to carry existing volumes. For example, the eastbound volumes in the afternoon peak hour are 1,850 vehicles per hour while the capacity of one arterial lane is typically about 800 vehicles per hour. Even with significant mode shifts and traffic diversions to other routes, it is not feasible that Main Street could function with one eastbound lane in this section.

Overall, between Dundurn and the Delta, the proposed asymmetrical configuration will provide corridor enhancements as presented in the following table:

Quantity:	Element:
3 kilometres	New cycling lanes on Main Street
21	New Transit stops for west-bound transit operations
20	Locations to be leveraged for green infrastructure, such as trees
3 kilometres	Additional pedestrian space buffered from vehicle traffic by on-street parking or separated cycling facilities

Traffic Volume Trends Analysis:

Main Street is currently one of the busiest streets related to motor vehicle use in the City. Before changes were implemented in 2022 to reduce the number of effective travel lanes, Main Street West between Dundurn Street and Queen Street carried approximately 33,500 vehicles per day. By comparison, at its highest point, the Lincoln

Alexander Parkway carries approximately 44,000 vehicles in one direction per day while James Street North at King William Street handles approximately 11,500 vehicles per day. These high volumes are directly a result of the fact that Main Street is the primary access off Highway 403 downtown, with York Boulevard and Aberdeen Avenue being the other alternatives. Without question, the high volumes have significant negative impacts on the walkability and overall liveability of the street, and its desirable to plan for reduced volumes over time.

In August 2022, changes were made to Main Street to reduce the effective traffic capacity and in turn, realize safer travel speeds. These changes have had a measurable but varied effect as summarized in the table below. Comparing the volumes before and after implementation there was an approximate 10% reduction in average daily traffic on Main Street. Speeds also decrease significantly for two of the sample locations.

Location (Main Street @)	Count Date	Volume (Annual Average Daily Traffic)	85th Percentile Speed
East of Dundurn Street			
Before	June 2022	33,361	49.6
After	June 2023	30,088	49.7
East of Bay Street			
	June 2022	28,591	57.5
	June 2023	26,851	49.9
East of Wentworth Street			
	June 2022	24,203	57.6
	June 2023	20,108	52.9
East of Gage Avenue			
	June 2022	17,993	59.6
	June 2023	16,549	60.9

Recognizing that reductions in traffic volumes is a key consideration in achieving a more liveable and complete Main Street, it is also important to present the overall volume context for the different alternatives. For illustrative purposes, the tables below summarize the volumes and capacities for Main Street, York Boulevard, and Aberdeen Avenue at Dundurn Street. Volumes are based on counts taken in May and June of 2023. A nominal capacity of 800 vehicles per lane is used for this simple analysis, based on industry rules of thumb. A more detailed traffic modelling exercise was conducted as part of the previous Main Street two-way conversion with results presented in Appendix “D” of Report PW23074/PED23248.

As shown in the tables below, the proposed configuration consisting of three eastbound lanes on Main Street (which is reflective of the existing number of lanes currently), Main Street is effectively operating at or close to capacity. This is reflective of actual experience where traffic occasionally is queued from the Highway 403 off-ramp to Bay Street or farther east. Similarly, York Boulevard and Aberdeen Avenue are at or exceeding their theoretical capacity.

A configuration with two eastbound lanes on Main Street, based on nominal per lane capacity assumptions, would be over capacity during some periods. Under this scenario, it could be expected that traffic would seek out other routes, or more desirably, shift to other modes.

Proposed Asymmetrical Configuration (Eastbound priority):

	Number of Lanes (Eastbound)	Capacity	P.M. Peak Hour Volume	Volume-to-Capacity Ratio	Residual Capacity
Main Street	3	2,400	2,135	89%	265
York Boulevard	2	1,600	1,750	109%	-150
Aberdeen Avenue	1	800	674	84%	126
Combined	6	4,800	4,559	95%	241

Alternate Configuration (Balanced capacity):

	Number of Lanes (Eastbound)	Capacity	P.M. Peak Hour Volume	Volume-to-Capacity Ratio	Residual Capacity
Main Street	2	2,400	2,135	133%	-535
York Boulevard	2	1,600	1,750	109%	-150
Aberdeen Avenue	1	800	674	84%	126
Combined	5	4,800	4,559	114%	-559

Overall, the key goals of the Main Street two-way conversion are to create a more Complete Street and a safer street, with enhanced road-user equity within the corridor through a lowered priority for vehicular level of service. However, it is also important to understand the potential impacts of the different alternatives. Moving to a balanced lane configuration on Main Street (i.e. two eastbound lanes and two westbound lanes) could mean that there is higher potential for traffic to infiltrate into local neighbourhood streets with associated impacts.

Transit Considerations:

At present, there are no HSR services operating in the westbound direction on Main Street between Longwood Road and the Delta (due to its one-way configuration). However, with the conversion of Main Street to two-way, there are opportunities to provide service in both directions. This will be advantageous during LRT construction for service continuity, and even post LRT construction for local service.

A design which can accommodate three lanes of capacity for vehicles in the eastbound direction would ensure efficient movement for HSR buses in the eastbound direction. In particular, it would mean that the existing bus queue jump lanes (painted red lanes) could be maintained, and potential expanded to provide a full transit lane. The drawback of this option is that only one lane would be provided in the westbound direction for both regular vehicles and HSR buses. HSR buses, which are planned to provide local service only at a peak frequency of every 20 minutes, would impede traffic flow when stopped due to the single lane configuration. It is noted that this is not unprecedented; for example, HSR buses operate in a single lane on portions of James Street North, Wilson Street – Ancaster and portions of Rymal Road.

Flexibility:

One of the factors which influenced the selection of Option Three – Asymmetrical as the preferred configuration was its flexibility to accommodate various use in the south lane. This could include a combination of bus priority lanes, on-street parking, or greening opportunities. An option with two westbound lanes would have less flexibility in this regard. However, it could be possible to utilize a second lane in the westbound lane for on-street parking or bus bays.

LRT Alignment Design:

In November 2023, Metrolinx announced a change in the alignment of the LRT which would see it running on Dundurn Street between King and Main and then along Main Street West vs the previous alignment which included a bridge over Highway 403. As a result, there will need to be significant modifications to the Main Street West and Dundurn Street intersection. At the time of this Report, the intersection design has not yet been finalized, but could potentially include a reduced overall number of traffic lanes than the five lanes that exists today (recognizing the LRT tracks will accommodate the space of two traffic lanes).

As such, the design for Main Street at Dundurn may need to evolve as the designs for the revised LRT alignment are finalized.

Implementation Schedule Compression:

Report PW23074/PED23248 for the detailed design phase of the two-way conversion provides a schedule estimate of 24-30 months with a construction schedule of an additional approximately 30 months.

On December 4, 2023, Council directed staff to provide options to implement Main Street two-way conversion within two years and/or prior to the initiation of LRT corridor construction by prioritizing core two-way conversion lane re-alignments, intersection and signal upgrades, and corridor upgrades necessary for implementation with further corridor upgrades, resurfacing, and other capital rehabilitation work phased over the following four to six years.

The work on Main Street is multidisciplinary in nature, requiring coordination of roadway design, including new signalized intersections, active transportation, parking, transit and street lighting. Multidisciplinary work requires design time for different specialties, as well as time to allow for specialties to cross-review and coordinate the work.

Additionally, the Main Street two-way conversion design will require coordination with the LRT team, such that construction sequencing is well understood and planned, to minimize traffic impacts and avoid rework. However, precise coordination of construction timelines and staging with the LRT team poses challenges since its schedule has not yet been published.

Given the request to accelerate pre-engineering work using internal City Staff was initiated in January 2024. This includes activities such as the inspection of existing underground traffic infrastructure, detailed surveying, preparation of base plans, and documentation of project management.

Staff evaluated three delivery options to accelerate the overall implementation schedule as follows:

Traditional Project Delivery:

Under a traditional project delivery model, there is a projected timeframe of 24-30 months allocated for the detailed design phase, including hiring of dedicated resources, followed by a 30-month period for the construction phase. This approach adheres to conventional project management practices and sequential approach and is the basis of the approach included in Report PW23074(a)/PED23248(a).

Accelerated Project Delivery:

Provides opportunities to advance the detailed design by nine to twelve months and construction by four to six months, resulting in an 18-21 month design period and a 24-26 month construction timeframe. To avail these opportunities, the following approaches are presented for consideration:

Seeking out consultant support to aid in detailed engineering design and construction administration would require a formal request for proposal process. This process is complex and time consuming. WSP Canada Inc. completed the Main Street two-way conversion study and are familiar with the project details and developed the preliminary design options. Negotiating a single-source agreement with WSP Canada Inc. to conduct the detailed engineering design and construction administration, rather than issuing a request for proposal, would offer a reduction of approximately five months to the overall design schedule. This reduction comes from a faster procurement process (three months), as well as a reduced design timeline (two months) realized by having the consultant who is most familiar with the design and stakeholders complete the detailed design assignment.

Significant public feedback was sought during the spring 2023 consultations, which aided in informing the options included in Recommendation Report PW23074/PED23248. It would accelerate the schedule by up to three months if further public engagement during the detailed design stage is limited to communication updates. The project team would also prepare and implement a robust communications plan prior to and throughout the construction period.

Implementing a delay of other capital projects to allow the reassignment of a dedicated existing staffing resource to the Main Street Conversion Project immediately would offer a reduction of approximately three months in the design timeline. Recommended projects to be put on hold include Fifty Road escarpment access - retaining walls, and Locke Street – King Street to York Boulevard and Margaret Street – Main Street to King Street.

The construction schedule designates an 18–20 week window for a contractor to obtain necessary equipment and materials such as traffic signal poles, signal heads, and other similar infrastructure components. If the City pre-purchases these items before awarding the contract, a potential saving of approximately four months in construction time could be achieved.

One of the construction schedule challenges is that two lanes of traffic must be maintained on Main Street during peak hours. However, using a full closure would allow for faster asphalt milling and paving. To achieve this, a staging plan that allows for work

in off-peak hours, including on weekends, when full closures could be implemented, would be included as part of the tender specifications, potentially saving 2-4 months in construction time. However, this would likely increase contractual costs.

The following table summarizes where schedule savings could be achieved by the accelerated project delivery model.

Item:	Description:	Project Phase:	Approximate Schedule Compression:
1	Single sourcing detailed design to WSP Canada Inc.	Detailed Design	3 months
2	Streamlined Public Engagement and Notice	Detailed Design	3 months
3	Project Deferrals	Detailed Design	3 months
4	Pre-purchase of materials and equipment	Construction	4 months
5	Staged full-closures	Construction	4 months
Total Estimated Schedule Savings:			17 months

Agile Project Delivery:

The agile project delivery method involves division of the project into manageable segments which would be constructed as soon as they are designed. Several tenders would be issued and awarded, potentially starting as early as mid-2025.

The drawback to the agile project delivery approach is that the cost of the work would increase for both design and construction because of additional administration and loss of efficiencies, and it will be more resource intensive for City Divisions, including Engineering Services, Traffic Engineering, and Procurement.

After review of the options presented in this Report for consideration, the accelerated project delivery approach is preferred, and therefore, the recommendation included in Report PW23074(a)/PED23248(a) supports undertaking this plan to deliver the project. This would enable targeting a completion date of mid-to-late 2027.

Consultation with Interested Ward Councillors:

Transportation, Engineering Services, and Transportation Planning and Parking staff met with Wards 1, 2, 3, 4 and 8 Councillors to discuss the Main Street two-way conversion project and sought input and feedback regarding the approach to

undertaking the project. Their comments have been considered in the development of Report PW23074(a)/PED23248(a).

ALTERNATIVES FOR CONSIDERATION

N/A

APPENDICES AND SCHEDULES ATTACHED

N/A