To: Chair and Members
Public Works Committee

From: Gerry Davis, CMA
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Date: April 3, 2009

Re: Rapid Transit Corporate Working Team Workshop, Technical Advisory Committee and Corridor Property Owner Meetings PW09034 (City Wide)

Council Direction:
As part of the City’s Rapid Transit initiative, the Rapid Transit Team has brought forward numerous reports for Council consideration, endorsement and information, as staff work towards securing Provincial funding for Rapid Transit in Hamilton. This Information Report outlines the results of the City’s Rapid Transit Corporate Working Team (CWT) Workshop #2 and the Rapid Transit Team’s first meetings with the Rapid Transit Technical Advisory Committee (TAC) and B-Line Corridor Property Owners (CPO). The CWT Workshop focused on reviewing rapid transit routing alternatives along the B-Line corridor and the first meeting with the TAC and CPO groups focused on introducing Hamilton’s Rapid Transit Initiative and identifying the potential rapid transit routing alternatives along the B-Line corridor (Eastgate Square to University Plaza).

Information:
Background
In June 2007, the Province of Ontario released their MoveOntario 2020 plan, which was a multi-year rapid transit action plan for the Greater Toronto Hamilton Area (GTHA). The plan, which was developed in response to concerns over transportation issues, focused on tackling gridlock throughout the GTHA and includes rapid transit projects in Hamilton, as defined by the Regional Transportation Plan (RTP) (November 2008), developed by Metrolinx. Metrolinx, the governing agency for the implementation of the RTP, has set the wheels in motion to build and fund a rapid transit system across the GTHA. Ultimately, the improved GTHA rapid transit network will move people and goods quickly and efficiently and will ensure the GTHA continued prosperity, as a result of minimizing both the environmental and social impacts of increased congestion.
The Province’s MoveOntario 2020 vision and associated funding commitments has both allowed and required that Hamilton accelerate rapid transit planning in our community. As a result of the initial phases of the City’s Rapid Transit Feasibility Study and public consultation program, Council endorsed a recommendation to focus on Light Rail Transit (LRT) as the preferred mode of rapid transit for Hamilton, as part of report PW08043d (October 2008). Subsequent to this endorsement, Hamilton’s existing B-Line corridor (Eastgate Square to McMaster University) has been identified as a top 15 priority project for implementation within the first 15 years of the Regional Transportation Plan by Metrolinx.

In order to provide an evidence-based platform for prioritization of the Top 15 projects, Metrolinx will undertake a Benefits Case Analysis (BCA), for each of the projects which are not already completed or substantially underway, or already funded through previous agreements. The Benefits Case Analysis will ultimately determine what technology (LRT or Bus Rapid Transit (BRT)) and routing is the optimum for Hamilton’s B-Line corridor; based on a “triple-bottom-line” analysis of the proposed investment (environmental, economic and social / community).

For Hamilton, the B-Line BCA will be initiated April 2009, with Metrolinx leading the project. All background studies presently being undertaken or already completed by the City of Hamilton’s Rapid Transit Team will feed into the B-Line BCA. Specific Information required by Metrolinx includes a transportation impact evaluation of potential routing scenarios, rapid transit mode (LRT and BRT) impact review and an economic impact analysis.

Prior to providing study results to Metrolinx for use in the Benefits Case Analysis, the Rapid Transit Team staff presented the potential route alternatives to the City’s Rapid Transit Corporate Working Team on February 5, 2009 for evaluation. The Corporate Working Team is comprised of staff from six City Departments including representatives from Public Works, Planning & Economic Development, Corporate Services, Community Services, Emergency Services and Public Health Services and Hamilton Police Services. The February 2009 session was a follow-up to the first Corporate Working Team session held in November 2008, at which time the following vision statement was developed and subsequently endorsed by Council at its meeting of January 28, 2009, as part of report PW09-007.

Rapid Transit is more than just moving people from place to place. It is about providing a catalyst for the development of high quality, safe, environmentally sustainable and affordable transportation options for our citizens, connecting key destination points, stimulating economic development and revitalizing Hamilton.

The rapid transit alternatives for the B-Line corridor that were discussed as part of the second meeting of the Corporate Working Group focused on the area between Paradise Road (west of Hwy 403) and the Delta (Main/King Split at Gage Park):

- LRT in exclusive curb lanes on one-way streets
- focus of Rapid Transit Feasibility Study (RTFS) Phases 1 and 2
- LRT and one-way traffic on both Main and King
  - Contra-flow on Main Street (maintain one-way traffic with two-way LRT)
  - one-way traffic eastbound with two-way LRT operation
  - Contra-flow on King (maintain one-way traffic with two-way LRT)
  - one-way traffic westbound with two-way LRT operation
  - LRT on Main Street with two-way traffic on both Main Street and King Street
  - LRT on King Street with two-way traffic on both Main Street and King Street

In addition to a discussion on rapid transit alternatives, staff was also updated on the findings of each of the studies being undertaken as part of the RTFS Phase 3 (BCA prep studies). These studies were utilized for route evaluation purposes in order to identify potential areas of impact of the above noted rapid transit alternatives. The results of all rapid transit studies undertaken to date have been summarized as study fact sheets and are included in Appendix A. In addition to the Rapid Transit Feasibility Study Phases 1 & 2, Phase 3 studies include:

- Transportation Modeling (building on RTFS Phases 1 & 2)
- Economic Uplift Potential
- Subsurface Infrastructure Review
- Technology Review
- Archeology
- Built Landscapes & Cultural Heritage
- Natural Environment
- Terrestrial & Avian
- Hydrogeology
- Air Quality & Noise
- Water Resources & Storm Water MP Impact
- Consultation (building on RTFS Phases 1 & 2)

As part of the on-going public and stakeholder consultation that has been an integral part of Rapid Transit planning to date, the Rapid Transit Team commenced the first meeting of the Rapid Transit Technical Agency and Rapid Transit B-Line Corridor Property Owners on February 23, 2009. These meetings were meant to officially introduce the rapid transit initiative to these key stakeholders, to introduce the potential rapid transit routing alternatives along the B-Line corridor (Eastgate Square to University Plaza) and to listen to initial concerns and questions that both these groups have in regards to the initiative and future processes. At this stage, without knowing the results of the Benefits Case Analysis or having an endorsement from Council in regards to Rapid Transit implementation, these meetings were held to provide general information on the initiative and to provide an early opportunity for those that will be most greatly impacted to meet with the Rapid Transit Team.

Although members of Council were advised of the Corporate Working Group, studies underway and B-Line rapid transit alternatives through Information Update CPI.09.05 (attached as Appendix B), and the Technical Advisory Committee and Corridor Property Owner Meetings through Information Update CPI.09.03 (attached as Appendix C), this
information has not been brought forward for Council consideration, given Provincial timelines and process as it relates to the Benefits Case Analysis to be undertaken by Metrolinx. It is the Metrolinx BCA that will evaluate all viable alternatives through a multiple accounts evaluation process and identified a recommended rapid transit scenario, including mode and routing, for implementation. The results of the BCA (recommended rapid transit scenario for Hamilton), anticipated funding amounts and proposed construction timing will be brought forward for Council consideration and ultimate project approval in late summer/early fall 2009. Information to be presented at that time for Council’s consideration and approval will include the recommendations of the Benefits Case Analysis, overall impact analysis and results of the on-going public consultation process on the aforementioned alternatives, being undertaken Winter 2008 through Summer 2009.

Corporate Working Team Workshop

On February 5, 2009 the Rapid Transit Team held a City-wide cross-departmental workshop, which was attended by 38 City staff personnel representing six City Departments, including Public Works, Planning & Economic Development, Emergency Services, Corporate Services, Community Services and Public Health. The purpose of the Corporate Working Team (CWT) workshop #2 was to:

- Provide information to City staff on the status and next steps of the rapid transit initiative;
- Present the data that has been collected for the B-Line corridor and route alternatives;
- Obtain input on the potential impacts of a route alternatives between the Delta and Paradise Road; and
- Review the benefits and challenges associated with rapid transit within the B-Line corridor.

The workshop commenced with presentations by the Rapid Transit Team staff and Rapid Transit Consultants, followed by a question and answer period at the end of each presentation topic. Presentations and discussions throughout the morning focused on:

- Project overview – Rapid Transit Team
- Visual fly through of the corridor (using Google Earth and noting areas of significance) – Rapid Transit Team
- Road Network Impacts - McCormick Rankin Corporation
- Impacts to Subsurface Infrastructure – Rapid Transit Team
- Economic Uplift Potential – IBI Group
- Technology Considerations – Rapid Transit Team

Building on the Rapid Transit Vision Statement and evaluation criteria that was developed at the first Corporate Working Team Workshop, the afternoon of the February 2009 session focused on reviewing the potential routing alternatives and identification of potential benefits and impacts. The evaluation criteria used is in line with Class EA evaluation criteria and Metrolinx Benefits Case Analysis evaluation factors. The key focus areas are noted below:
• Social / Community Impacts
• Natural Environment
• Technical Considerations
• Financial Considerations
• Economic Potential
• Transportation User Benefits

Overall, although staff participating in the workshop understood that the Benefits Case Analysis will be the mechanism by which the preferred routing will be determined, the Corporate Working Team unanimously agreed that the impact of rapid transit and more specifically LRT would be minimized and result in the most benefits to the City as a whole, if the two-way LRT scenario on King Street were to be implemented. This preferred scenario also focuses on and requires the conversion of two-way traffic on Main Street and King Street, to be implemented.

Technical Advisory Committee

In early February 2009, the Rapid Transit Team invited 99 technical agencies and stakeholders to form the City’s Rapid Transit Technical Advisory Committee (TAC). The first meeting was held in the morning of February 23, 2009 and was attended by 25 different representatives from 20 different organizations. Invitations were sent to all utility companies that utilize the City’s ROW, all applicable Provincial Ministries, Conservation Authorities, City Departments, GO Transit, Metrolinx and First Nations. As rapid transit planning in Hamilton continues to move forward the Technical Advisory Committee will be important in dealing with and addressing key issues and project coordination as it relates to the future design of rapid transit and its associated infrastructure impacts. The purpose of the initial meeting was to provide background information about rapid transit history in Hamilton, identify results of specific studies undertaken as part of the process to date, and discuss how various aspects of the implementation of rapid transit may impact the agencies themselves. As the project progresses, it is anticipated that the TAC will meet on a regular basis, particularly during more detailed design of any future rapid transit system and through future construction phases.

Overall, the members of the TAC were very interested in the logistics surrounding the implementation of rapid transit in Hamilton and did not identify a clear preference for routing, although minimizing the impact to existing infrastructure is a significant concern and should be considered when evaluating the route alternatives.

B-Line Corridor Property Owners

In early February 2009, the City’s Rapid Transit Team mailed out nearly 1800 invitations for the first meeting of the B-Line Corridor Property Owners (CPO). The invitations were mailed out, based on available tax role information, to all addresses of properties located within 30m on either side of the existing right-of-way of the B-Line corridor (Eastgate Square to University Plaza). This included all properties on both Main Street and King Street between Paradise Road (west of Highway 403) and the Delta (Main/King split). A copy of the invitation and mailing list key map are also included in
Appendix C as part of Information Update CPI.09.03. The invitations asked property owners and their tenants to attend one of two sessions of the first Corridor Property Owners meeting, February 23, 2009, between either 2pm – 4pm or 6pm – 8pm. These meetings were meant to be the first formal meeting between Corridor Property Owners and the Rapid Transit Team.

Although there has been general public consultation undertaken as part of the initiative to date, the Rapid Transit Team believed that it is critical to provide an early opportunity and avenue for those most greatly impacted by the changes that rapid transit may bring. The CPO sessions were tailored to provide the history of rapid transit Hamilton, identify results of specific studies undertaken as part of the process to date (particularly the potential for economic uplift as a result of the introduction of rapid transit), present the routing alternatives and discuss how various aspects of the implementation of rapid transit may impact the corridor. Although at this stage, many details are not available, the opportunity to discuss and identify potential benefits, challenges and concerns rapid transit for property owners; identify questions that they would like answered as information becomes available and as studies are completed; and identify how Corridor Property Owners wish to be engaged in the future, is valuable information for the Rapid Transit Team.

The February 23, 2009 afternoon session was attended by 47 people. The evening session was attended by 26 people.

Overall, there was support for the implementation of rapid transit and more specifically LRT, although there did not appear to be a specific preference for one routing alternative over the other at this time. The Corridor Property Owners are cautious and concerned about impacts to their properties and businesses, particularly during the various construction phases and early transition years of rapid transit in Hamilton. Staff ensured all those in attendance that there would be significant public and Corridor Property Owner consultation and outreach throughout the planning, design and implementation phases of any approved rapid transit project and that there would also be opportunities for one-on-one consultation as the initiative moves forward.

All information related to the CWT, TAC and CPO meetings is being summarized by the Rapid Transit Team as part of an overriding Rapid Transit Consultation Document. This document will be posted to the Rapid Transit website www.hamilton.ca/rapid-transit in Spring 2009.

Next Steps

The Metrolinx Benefits Case Analysis for Hamilton will undertake a comprehensive review of all viable routing alternatives, for both LRT and BRT rapid transit, in Spring 2009. All information gathered to date will be utilized as part of the BCA. The results of the BCA will identify the most viable option for rapid transit in Hamilton, using a multiple accounts evaluation process and identify the proposed Provincial strategy for rapid transit in Hamilton. The results of the BCA, identification of mode and routing for the B-Line corridor will then be brought forward for Council consideration and ultimate project approval late summer 2009/early fall 2009. At this time Council will be required to either
accept or reject the recommended Provincial plan for rapid transit in Hamilton. In order to aid in Council’s decision, the forthcoming staff report will outline the results of the BCA, as well as identify all known impacts related to the implementation of the recommended rapid transit plan for the B-line.

In addition to the meetings of the Corporate Working Team, Technical Advisory Committee and Corridor Property Owners meeting at key milestones in the rapid transit planning process, the Rapid Transit Team will be taking the route alternatives to the public and stakeholders for their consideration over the coming months. Rapid Transit Team staff continue to believe that public consultation plays a key role in this initiative. The Rapid Transit Team is working on scheduling full public meetings regarding these route alternatives for Spring 2009 and will carry this public consultation exercise through the summer months, prior to reporting back to Council in late summer/early fall 2009. Information to be presented at that time for Council’s consideration and approval will include the recommendations of the Benefits Case Analysis and results of the on-going public consultation process on the aforementioned alternatives, being undertaken Winter 2008 through Summer 2009.

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Gerry Davis, CMA
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Cultural Heritage Resource Assessment

- The proposed City of Hamilton Rapid Transit Initiative B-Line Corridor travels in an east-west direction, passing through the original City of Hamilton downtown core and into areas that retain a wide number of structures and landscapes that date back to the late 19th century and early to mid 20th century;

- To identify aboveground heritage sensitive areas in the Main Street and King Street corridors the following data collection methods were undertaken: review of 1876, 1893, 1898, and 1914 historic mapping and fire insurance plans; compilation and organization of properties designated under the Ontario Heritage Act and previously identified by the City of Hamilton’s culture department; completion of a windshield/pedestrian survey of the entire study corridor to conduct photographic documentation, confirm previously identified properties, and to identify properties of potential cultural heritage interest that have been previously unrecognized;

- Data collection and analysis results indicated that large portions of the study corridor, between Paradise Road and the Delta retain cultural heritage resources, set in close proximity to the right-of-way. The following data is preliminary and does not reflect comments that were received from the Culture Dept. on February 3rd. Please also note the following calculations are approximate:
  - A total of 450 cultural heritage resource properties were identified on King Street, between Paradise Road and the Delta;
  - 49% of the King Street corridor’s frontage (Paradise to the Delta) was identified as retaining heritage sensitivities;
  - A total of 286 cultural heritage resource properties were identified on Main Street, between Paradise Road and the Delta;
  - 41% of the Main Street corridor’s frontage (Paradise to the Delta) was identified as retaining heritage sensitivities;

- As the study advances the following issues should be addressed:
  - When more detailed concepts are available, a follow-up field review should be undertaken to examine impacts area in greater detail. The field review completed to date was conducted at a 'high' level, focusing on capturing general information rather than focusing on individual properties;
  - Property acquirements should avoid identified cultural heritage resources; and
  - Proximity of structures to right-of-way. Many structures are very close to the current road right-of-way, as such indirect impacts such as visual impacts of overhead LRT infrastructure; noise/vibration, appropriate buffering, health and safety concerns, and access to properties needs to be assessed.
Stage 1 Archaeological Assessment Preliminary Findings

- The City of Hamilton has a cultural history which begins approximately 10,000 years ago and continues to the present;

- The study corridor meets five of the eleven criteria used by the Ministry of Culture for determining archaeological potential:
  - Known archaeological sites within 250 m;
  - Primary water source within 300 m;
  - Indications of early Euro-Canadian settlement;
  - Associated with historic transportation routes; and
  - Contains property designated under the Ontario Heritage Act.

These criteria characterize the study corridor as having both Aboriginal and Euro-Canadian archaeological potential.

- The field review of the study corridor determined that the Main, King, and James Street ROWs have been previously disturbed by typical road construction and modern development;

- However, there are several areas adjacent to the disturbed ROW that remain undisturbed and contain archaeological potential:
  - 28 areas (or 39,833 M²) of archaeological potential are present along the Main Street corridor (between Paradise Road and the Delta);
  - 32 areas (or 30,704 M²) of archaeological potential are present along the King Street (between Paradise Road and the Delta)

Preliminary conclusions and recommendations include:

- The Main, King, and James Street ROWs do not retain archaeological site potential due to previous disturbances. Additional archaeological assessment is not required within the ROWs, and those portions of the study corridor can be cleared of further archaeological concern;

- A Stage 2 archaeological assessment should be conducted on lands determined to have archaeological potential, if the proposed project is to impact these lands. This work will be done in accordance with the MCL’s draft Standards and Guidelines for Consultant Archaeologists (MCL 2006), in order to identify any archaeological remains that may be present; and

- If the proposed undertaking is to impact the areas noted as “Vacant Lots” to the point of below-grade excavations, these activities should be subject to further archaeological investigation (i.e. detailed archival research) in order to document any significant archaeological features that may be present.
Air Quality

Modelling was completed for 4 cases:

- 2008 – Existing conditions;
- 2031 – No-Build (no LRT);
- 2031 – with-LRT Scenario 1: 1-way LRT on Main and King and 1-way traffic on Main and King; and
- 2031 – with-LRT Scenario 2: 2-way LRT and 2-way traffic on King with 2-way traffic only on Main.

Findings:

1. The modelling results indicate that on an overall basis, both downtown LRT alignments (i.e. 2031 with-LRT Scenarios 1 and 2) result in a reduction of ambient CO, NO\textsubscript{x} and PM\textsubscript{2.5} concentrations when compared to 2031 no-build case. This reduction is due to reduction in vehicular traffic volumes.

2. The study indicates that on an overall basis, a greater reduction was observed in the case of 2031 with-LRT scenario 1, versus the 2031 with-LRT scenario 2.

3. Reductions in CO, NO\textsubscript{x} and PM\textsubscript{2.5} concentration was also observed for the 2031 no-build case when compared to the 2008 (existing) case. This is attributed to a reduction in vehicular emissions which are factored into the MOBILE6.2 vehicular emission model. The reduction in vehicular emission is based on advancement in engine and emission control technologies as well as expected improvement in fuel consumption.

4. Based on the results presented above, no air quality mitigation measures are required.

Noise

Modelling was completed for 4 cases:

- 2008 – Existing conditions;
- 2031 – No-Build (no LRT);
- 2031 – with-LRT Scenario 1: 1-way LRT on Main and King and 1-way traffic on Main and King; and
- 2031 – with-LRT Scenario 2: 2-way LRT and 2-way traffic on King with 2-way traffic only on Main.

The City has a Transportation and Noise Policy Paper which provides a guideline in assessing noise impacts for capital projects. The Policy Paper has recommended adoption of the MOE/MTO Noise Protocol for such assessments. The methodology is based on the change in the average 24-hour noise level from the future “build” and “no-build” scenarios. Low impact of the “build” scenario is defined as an increase of 5 dB above the “no-build” scenario, moderate impact is an increase of 5 to 10 dB, and a high impact is an increase of more than 10 dB.

Findings:
1. For 2031 with-LRT Scenario 1, the hourly sound level equivalent (Leq) at intersections along Main St. ranged from 71 to 77 dBA, and along King St. ranged from 68 to 79 dBA. In comparison to the 2031 No-Build case, the with-LRT Scenario 1 resulted in a slight overall decrease in noise levels long both Main St. as well as King St.

2. For 2031 with-LRT Scenario 2, the Leq (1-hr) at intersections along Main St. ranged from 71 to 77 dBA, and along King St. ranged from 69 to 77 dBA. In comparison to the 2031 No-Build case, the with-LRT Scenario 2 resulted in a slight overall decrease in noise levels long both Main St. as well as King St.

3. Based on the assumptions made in the acoustic modelling and the location of the receptors chosen for this acoustic impact study, the 2031 with-LRT Scenario 1 resulted in a slightly better (lower) noise environment in comparison to 2031 with-LRT Scenario 2. However, it must be noted that the difference between the Scenarios would not be perceptible as it is less than 3 dBA. The differences between the LRT Scenarios and the No-Build condition would also be imperceptible as the mean difference is less than 3 dBA.

4. Although it is anticipated that for both 2031 with-LRT Scenarios there will be a slight reduction in traffic noise when compared to the 2031 No-Build case, no noticeable impact, as defined by the joint MOE/MTO Noise Protocol, is anticipated.

5. Based on the findings presented above, no noise mitigation measures are required.

Note: The findings of the air quality and noise studies presented above are based on the modelling assumptions and information provided to Dillon at the time of completing this study.
Consultation

The City of Hamilton embarked on a vigorous public consultation program in the spring of 2008 to obtain the public’s opinion on the Rapid Transit Initiative. The public consultation program approach reflected a two-way, open and proactive process for providing information to stakeholders. During the course of the consultation program, information about the Rapid Transit Initiative was presented on the project web site and local radio stations, and in municipal publications, newsletters, and local newspaper articles. In addition, surveys were developed and distributed to residents at fairs, in workshops and on the website. The following outlines the consultation activities that were undertaken.

Municipal Staff Consultation

Consultation with municipal staff, including Public Works (Transit, Capital Planning & Implementation, Energy, Fleet & Facilities, and Operations & Maintenance), Planning and Economic Development (Development Planning, Community Planning, Downtown and Community Renewal, Strategic Services and Special Projects, Real Estate, Parking and By-law Services), Corporate Services, Community Services, Emergency Services and Public Health Services included two Lunch and Learn sessions and two workshops. In the summer of 2008, Lunch & Learn sessions were held to educate City staff and to capture downtown commuters who are potential riders of a rapid transit system, many of whom presently commute to work using a single occupancy vehicle.

In the fall of 2008, a workshop was undertaken with municipal staff to update and engage staff, determine key contacts, understand any opportunities or challenges, and develop a vision statement that would guide rapid transit planning through to implementation. A follow-up workshop was held with municipal staff in February 2009 to provide an update on the information that has been gathered to date and to obtain comments on potential corridor and route alternative impacts.

Rapid Transit Vision Statement

*Rapid Transit is more than just moving people from place to place. It is about providing a catalyst for the development of high quality, safe, environmentally sustainable and affordable transportation options for our citizens, connecting key destination points, stimulating economic development and revitalizing Hamilton.*

Public Information Centres

Several Public Information Centres (PICs) were held between April 2008 and March 2009. Two public workshops were scheduled in May of 2008 following the completion of the Rapid Transit Feasibility Study (RTFS) Phase 1. The purposes of the PICs were to present information about the project and to receive public feedback on the type of Rapid Transit that should be pursued. In December 2008, two community
update meetings were held to provide the public with an update on Hamilton’s Rapid Transit Initiative, Metrolinx’ Regional Transportation Plan (RTP). Rapid Transit Team were also looking on input into the draft Vision Statement and how the public would like to participate in the planning process as the project moves forward.

Consultation with Corridor Property Owners

February 2009 marked the beginning of formal consultations with property corridor owners along the B-Line corridor. These sessions established a foundation and a positive working relationship to facilitate an information exchange which will continue over the course of the project. The workshops not only provided information about the project, but also engaged property owners to ask questions and provide comments in order for the City to better understand stakeholder issues and concerns.

Consultation with Technical Agencies

February 2009 also marked the beginning of consultations with technical agencies and organizations. Agencies included federal and provincial departments and ministries within an interest in the project, members of the Government Review Team and First Nations. A workshop was held on February 23, 2009 to establish a foundation and a positive working relationship to facilitate an information exchange which will continue over the course of the project. The workshop not only provided information about the project, but also engaged technical agencies to ask questions and provide comments in order for the City to better understand stakeholder issues and concerns. As the project proceeds, the City will continue its vigorous consultation program and continue collaboration with key agencies.

Consultation with Other Key Stakeholders

Between the May 2008 and March 2009, the Rapid Transit Initiative Team consulted with key stakeholders within the community. Consultations were undertaken with Metrolinx, a local realtors association, Hamilton International Airport, the Chambers of Commerce, St. Joseph’s Hospital, Business Improvement Areas, tourism groups, local interest groups, anti-poverty groups, colleges and universities, and resident’s associations. In addition, Rapid Transit Team members have attended numerous community events to discuss the initiative, have made presentations at Ward meetings, meet with community groups and other special interest groups.

A comprehensive communications plan has been developed in order to keep rapid transit momentum high and at the forefront of public interest and participation. The communications plan includes:

- Commitment to extensive two-way proactive consultation
- Meet early and often during the process
- Use of numerous communication channels to reach the widest audience possible
  - Web (FAQ’s, Fact Sheets, Videos, Photos, comment forms, etc)
  - Media (PSA’s, radio, tv, print, etc)
  - Newsletters and Project Updates
  - Targeted Meetings and Workshops (Technical Agency Committee, Stakeholder Groups (property owners, corridor tenants, community groups/organizations, etc)
  - General Meetings and Workshops (Public Information Centres, Design Charettes etc)
  - Rapid Transit Team presence at Community Events, Fairs, Educational Events etc

Questions and comments on the Rapid Transit Initiative are welcome at any time either through the project website www.hamilton.ca/rapid-transit, direct project e-mail to rapidtransit@hamilton.ca or in person.
Supportive policies are in place to help shape corridor

Over the past decade a number of integrated transportation and land-use plans and policies have been put in place to enhance the economic potential of the B-Line rapid transit corridor. This includes the Downtown Transportation Master Plan, Downtown Secondary Plan, City-wide Transportation Master Plan, the Environmental Remediation and Site Enhancement Plan (ERASE) and the Draft Urban Structure Plan. The goals and objectives of these plans could be enhanced significantly by the introduction of corridor common binding physical element such as rapid transit.

Investments in corridor transportation capacity enhancements are required to serve growth

With an estimated capital cost of $540 million, the B-Line LRT represents a significant investment. Similarly, it is likely that the enhanced service will result in increased operating costs, in particular those related to maintaining a new type of vehicle (e.g. LRT vehicles), track and station infrastructure, and specialized maintenance facilities. However, it is to be expected that investments in transit would be required in the future regardless if Hamilton is to meet the objectives set out for Urban Growth Centres. The proposed LRT system should be able to address transportation capacity needs for at least 50 years.

All Hamilton residents benefit from rapid transit

Approximately 17% of the City's population and 20% of the City's employment are within 800 m of the B-Line corridor. Additionally, 80% of HSR's current routes connect to the B-Line corridor. This means that the probability of Hamilton residents benefiting from rapid transit is high. These benefits include travel time savings, increased travel time predictability and potentially reduced auto ownership and operating costs (currently estimated at more than $9000 per year by CAA). Less direct but still significant benefits include reduced accident costs, the value of which is some $2 million per year when comparing the rapid transit scenario to the base case scenario.

The potential for intensifying development in the corridor is significant

While the downtown core of Hamilton is already at the minimum target density of 200 persons plus jobs per hectare specified for Urban Growth Centres, the average density for the entire corridor is just 25 persons plus jobs per hectare. At the same time, there are close to 500 vacant parcels of land within a two kilometre radius of the corridor and a number of other developments such as strip plazas, gas stations, and private parking lots which could be easily re-developed into more transit supportive land uses. In addition to generating additional property taxes, it is estimated that the potential development charges from new development could be in the order of several hundred million dollars.

With rapid transit comes jobs

The implementation of rapid transit would have a direct effect on job creation in the initial design and construction stage, as well as in the ongoing operations and maintenance phase. It is estimated based on accepted industry multipliers that some 6,000 jobs would be created due to construction expenditures combined with over 1,000 ongoing jobs due to on-going operations and maintenance.
Environmental benefits translate into economic benefits
The net impact of rapid transit on reducing air emissions is expected to be positive, although somewhat offset by reduced auto speeds and localized congestion. Preliminary modelling results suggest that the annual emissions costs due to travel in the study area could be reduced by approximately 7.5% equating to some $2 million annually.

An exceptional mix of land uses in the corridor will enhance economic activity
Due to its evolution over the past century, land uses in the corridor are highly mixed and include restaurants, places of worship, shopping, post secondary institutions, museums and public schools as well as a variety of office and residential uses. In addition to contributing to a very cost-efficient transit service (i.e. travel patterns bi-directional and spread out over the day) it also suggests that rapid transit could contribute to increased opportunities for economic and other activities.

The proposed rapid transit corridor covers areas of relatively high social need
Persons with social needs may include those who are unemployed, lone parent families, low educational attainment, low income or high rates of government assistance. The B-Line corridor stands out within Hamilton as well as regionally, provincially, and nationally in every category except for its proportion of seniors. For example, 35% of people living in the corridor are classified as low income compared to the national average of 15%. The implementation of rapid transit should be positive in that it provides these individuals with greater access to employment opportunities and health and wellness activities, but cautioned must be exercised so as not to displace these individuals from the corridor.

Economic potential should be maximized by constructing a single corridor
Notwithstanding any differences in construction and operating costs, which should be lower for a single corridor, there may be other less direct economic impacts of a single versus split corridor. For example a developer may be less attracted to a site with direct access to only one direction of rapid transit with the other direction being several hundred meters away in some cases.

Economic benefits are contingent on significantly changing land-use
The B-Line corridor is generally well served by transit today and there are many enhancements such as transit signal priority measures, increased service frequencies and improved passenger amenities that could be made to increase overall transportation accessibility and attractiveness. Similarly, development activity will continue in the corridor under the status quo scenario. Therefore, in order to realize significant net positive economic impacts compared to the base case, land uses within the corridor must be permitted to, and encouraged to, change and intensify significantly. Fortunately, the City of Hamilton has already started to move in this direction with its policies and plans. Rapid transit has the potential to define economic development in the city over the coming decades.
Existing Conditions

- The majority of the study area alignment is heavily urbanized with significant building structures along the central corridor. The topography is typically flat, with the exception of Coldwater Creek, the Chedoke Creek Area (403 corridor) and the Red Hill Creek Valley.
- Both Main Street and King Street are heavily encumbered with underground utilities, which can be found at depths ranging from 1.6 - 9.0 m below ground surface. These may act as a conduit for water due to use of granular backfill around the utilities;
- Historical water wells were not identified directly adjacent to the proposed B-Line route, with the exception of a few wells to the east of the Red Hill Creek Valley, and on the west end near Cootes Drive. These wells are unlikely to be connected or utilized. No information pertaining to septic systems was reviewed;
- The geology and hydrogeology of the alignment can be divided into three sections:
  1. **West of Highway 403 (including Chedoke Valley).** This area consists of a 6 to 8 m thick zone of interbedded silts and silty sand. The silty sand units are expected to hold perched groundwater that may require groundwater control during construction.
  2. **East of Highway 403 to approximately Parkdale Ave.** This area is characterized by a subsurface silty sand unit and an underlying coarser sand unit that stretches from the Chedoke Valley towards Ottawa Street, where it pinches out. These sand units are expected to contain a groundwater table, which in the core area will require dewatering to accommodate movement of deep infrastructure.
  3. **East of Parkdale Avenue, including Red Hill Creek Valley.** This area, with the exception of localized areas associated with the Red Hill Creek, generally consists of clay till, and as such, is not expected to be hydraulically active.

Potential Impacts and Mitigation Considerations

The construction of the LRT will be completed at existing grade, such that no significant excavation will occur along the corridor.
- On the basis of the above, no significant hydrogeological impacts are expected;
- Potential for lateral movement of infrastructure (eg. deeper excavations) will require consideration of short term hydrogeological impacts
- We expect dewatering to be required where silty sand and coarse sand is present within the study area.
- There were references to soil and groundwater contamination in some of the environmental reports for both Main Street and King Street. A Phase I review of available information should be conducted to identify actual and potential sources of contamination along the selected route, followed by development of contingency plans to handle the contaminated materials during construction

Preliminary Input regarding Downtown Alignment Alternatives

Based on what we have reviewed to date, there are no downtown alignment preferences based on hydrogeology. We suggest that the potential for encountering impacts from adjacent potentially contaminated sites be assessed.
Overview

Hamilton has a long history in the steel and manufacturing industries. While the city’s economy has become more diversified since the 1970s, manufacturing still plays a prominent role in the city’s economic and social development. The newly relocated CANMET Materials Research Laboratory (2010) at the McMaster Innovation Park recognizes the prominent role Hamilton plays in the province’s manufacturing industry. The potential use of light rail technology in the City of Hamilton, and across the Greater Toronto Hamilton Area (GTHA) market provides an opportunity for the local manufacturing industry to diversify its manufacturing base and build light rail vehicles (LRVs) and supporting components. This builds on Hamilton’s steelmaking base and supporting industries such as National Steel Car.

Locally Designed and Built

Portland Iron Works
A resurgence of Light Rail and Streetcar projects throughout the United States has sparked interest among key stakeholders to consider developing light rail technologies locally and to facilitate local design and construction. The first effort occurred in 2007 in Portland, Oregon with a $4 million contract to build streetcars similar to the ones supplied by Skoda of the Czech Republic, by United Streetcar, a subsidiary of Portland Iron Works Inc. This streetcar contract was the first of its kind in the United States. However, in Canada, parts of the Vancouver Skytrain and TTC streetcars are designed and built locally by Bombardier (Burnaby, BC, Thunder Bay, ON & Quebec), a Canadian company.

European Experience
Even with the resurgence of rail technology in North America, streetcars are still much more popular in Europe, one of the largest markets for rail technology in the world. The major light rail manufacturers, Bombardier, Siemens and Alstom manufacture most of their trains and components in Europe. Bombardier also has manufacturing facilities in Thunder Bay, which make TTC streetcars and components of the SkyTrain. Siemens, based in Germany, has a manufacturing plant in Sacramento California, which builds much of Portland and Calgary’s rolling stock. However, there is a large potential to build more LRVs in the GTHA, especially with the province’s MoveOntario 2020 initiative currently underway, representing an initial investment of $11.5 billion in rapid transit projects.

MoveOntario 2020, Regional Transportation Plan (RTP) and LRT
The Big Move represents a potentially large light rail vehicle demand when the TTC’s Transit City, the proposed Hamilton Rapid Transit system and York Region transit plans are taken into account. In addition, according to the RTP, as the regional transportation system matures and ridership increases, those regions running bus rapid transit (BRT) systems may be considered as potential areas for LRT upgrades. The potential demand for LRT is anticipated to grow, beyond the initial investment, as additional potential LRT rapid transit lines in Toronto and Hamilton are built and Canadian content policies are applied to the implementation of these systems.
GTHA Rapid Transit Plans & Timing

Hamilton Rapid Transit Initiative

Top 15 priority projects
- B-Line (East-West): McMaster to University Plaza
- A-Line (North-South): Waterfront to Airport

16 - 25 Year Projects
- T-Line: Centre Mall to Meadowlands

Beyond 25 Years
- S-Line: Eastgate Square to Ancaster Business Park
- L-Line: Downtown to Waterdown

Toronto Transit City, GO and York Region Connections

Top 15 priority projects
- Rail link between Union Station and Pearson Airport
- Spadina Subway extension to Vaughan
- Corporate Centre
- Yonge Subway capacity improvements and extension to Richmond Hill
- Eglinton rapid transit from Pearson Airport to Scarborough Centre
- Finch/Sheppard rapid transit from Pearson Airport to Scarborough Centre and Meadowvale Road
- Upgrade and extension of the Scarborough Rapid Transit line
- Extension of GO Rail service to Bowmanville

25 Year Projects
- A new subway service in the King/Queen corridor in Downtown Toronto
- Durham, Toronto and York will be connected by a new rapid transit service

Beyond 25 Years
- A direct Express Rail link between Mississauga City Centre and Union Station
- East-west Express Rail connecting the GTA

Further opportunities may also exist for a Hamilton based manufacturer to service future LRT lines across Canada. This would include commuter lines, such as those operated by GO transit, which could use smaller, lighter vehicles for high speed lines.
Opportunities for Hamilton Manufacturing

Hamilton's manufacturing base, along with its green energy potential could be coupled together to:

- **Work with local steel and manufacturing expertise to design and manufacture light rail vehicle (LRVs) and light rail transit (LRT) system components:**
  - Bogies (wheel base, axles, suspension systems, breaking system and drives)
  - Metal track components and wheels
  - Exterior metal/fiberglass/aluminum shells
  - Concrete and polymers for embedded track and power supply poles
  - DC motors for propulsion systems
  - Electricity supply systems and wires
  - Electricity collection systems on-board the train
  - Passenger information systems and display screens
  - Station design and construction with passenger information systems, metal framing, lighting, concrete, local art and advanced urban and transit oriented design features

- **Provide engineering services for signaling and train automation systems**

- **Produce local green energy to supply electricity to the LRT**

An Inclusive Process

Overall this concept has merit, with extensive potential; however, it requires an in-depth knowledge of the current state of LRT manufacturing on the continent. Companies such as National Steelcar could be leaders in understanding what needs to be taken into consideration when designing manufacturing processes for steel rails and wheels, fiberglass bodies and other key components.

Fixed Infrastructure means Sustainable Prosperity

Gauging the amount of manufacturing expertise that currently exists in Hamilton is the first step to building a sustainable LRV manufacturing base. Hamilton manufacturers could develop a business case that promotes and builds on existing expertise and its existing capacity to begin manufacturing immediately, distinguishing it from other GTHA neighbors. In addition, maintenance parts for LRVs will be important renewable components to manufacture for all North America's transit systems. The benefit of fixed infrastructure ensures that the market for replacement parts and train body upgrades will be sustained over time. This market is further stabilized by a LRV customer base consisting mainly of local and regional governments or public-private partners.
What are Operating and Maintenance Costs?

Modern light rail transit (LRT) vehicles, like all mechanized devices, have costs associated with their operation. These costs include the maintenance of the vehicle, tracks, stations and power infrastructure. They also include the costs to operate the vehicle, such as driver salaries and electric power supply. Many of these costs are similar to those incurred by other transit vehicles such as busses and heavy trains. Proper operating and maintenance is vital to ensuring a high level of reliability and to maximizing the operating life expectancy of the system. It also helps protect the city’s investment by maintaining a positive image and high level of service.

Costing Issues

The majority of the capital costs for the Hamilton Rapid Transit project will be funded by the province. Therefore, it is important to project realistic operating and maintenance costs for the system, since it represents the greatest on-going cost to the city. Some transit literature and research indicates that LRT systems are less expensive to operate then bus-based systems. Others have concluded that the opposite is true. It is important to be cautious as to how this comparison is made and what is being compared. For instance, basing the comparison on a per-vehicle factor, may bias the results because each LRT holds as many passengers as 2 - 4 busses (depending on the length of the train). Furthermore, one must ensure that the comparison is fair. As an example, if station maintenance is included in the LRT costs then it should also be included in the cost of bus operation.

Examining Transit Data

One way to estimate operating and maintenance costs is to examine the data from other cities which operate both LRT and bus systems. The United States National Transit Database collects the capital, operating and maintenance costs for all transit operators in the country. Data for Portland, OR, Minneapolis, MN, and other major North American cities which operate multiple modes of transit were analyzed (see table 1). The results were compiled as direct costs, cost per passenger mile traveled (PMT) and costs per unlinked passenger trip (UPT). Passenger Miles Traveled (PMT) is the cumulative sum of the distances traveled by each passenger; Unlinked Passenger Trips (UPT) is the total number of passengers who board transit vehicles per mode. These measures allow a fair comparison to be made between different transit modes by making the data relative to the usage rate of each system.

Results

As illustrated in Table 1, it is clear that on average the operating and maintenance costs for LRT systems throughout North America are significantly less than the costs to operate bus systems. The savings are as high as 60% (Houston TX) and in some cases, bus costs were less than LRT costs (Pittsburgh).
were not always similar between the PMT and UPT measures. For instance, in Pittsburgh, there was savings per passenger mile, but extra costs when the data was analyzed per unlinked passenger trip. In Pittsburgh, the low population may also have an effect, given the data, which indicates that populations of less than 300,000 may not efficiently support an LRT system.

### Table 1: Operating and Maintenance Costs for Selected North American Cities by Passenger Miles Traveled and Unlinked Passenger Trips

<table>
<thead>
<tr>
<th>City, State</th>
<th>Population</th>
<th>Per PMT</th>
<th>% Diff*</th>
<th>Per UPT</th>
<th>% Diff*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Bus</td>
<td>LRT</td>
<td></td>
<td>Bus</td>
</tr>
<tr>
<td>Denver, CO</td>
<td>588,349</td>
<td>$0.67</td>
<td>$0.34</td>
<td>-49%</td>
<td>$3.60</td>
</tr>
<tr>
<td>Houston, TX</td>
<td>2,208,180</td>
<td>$0.55</td>
<td>$0.53</td>
<td>-4%</td>
<td>$3.18</td>
</tr>
<tr>
<td>Minneapolis, MN</td>
<td>377,392</td>
<td>$0.72</td>
<td>$0.42</td>
<td>-42%</td>
<td>$3.20</td>
</tr>
<tr>
<td>Pittsburgh, PA</td>
<td>311,218</td>
<td>$0.90</td>
<td>$1.23</td>
<td>-37%</td>
<td>$4.29</td>
</tr>
<tr>
<td>Portland, OR</td>
<td>550,396</td>
<td>$0.93</td>
<td>$0.39</td>
<td>-58%</td>
<td>$2.72</td>
</tr>
<tr>
<td>San Diego, CA</td>
<td>1,266,731</td>
<td>$0.71</td>
<td>$0.27</td>
<td>-62%</td>
<td>$2.62</td>
</tr>
</tbody>
</table>

*The % Difference indicates the difference between the LRT and BRT values. If the LRT value is less than the BRT value, then a negative percentage is shown.

Hamilton's population is similar to that of Portland's and Denver's, and therefore would be well suited for BRT or LRT. Also, many of the cities which demonstrated low LRT operating costs have complimentary planning policies that support transit oriented development. When comparing the operating costs for bus and LRT in the same corridor, it is clear that based on the NTD data, an LRT system would have reduced costs and a lessened burden on taxes than a bus service. However, upon further analysis there may be reasons for this trend that clarify the outcomes, as demonstrated below.

### Analysis

The evidence presented is inconclusive because the bus system, by its very nature, operates in corridors of low ridership to feed the major transit trunk lines. Bus Rapid Transit (BRT) and LRT systems are usually placed in areas with the highest potential for ridership. Since ridership is the variable which effects the cost per rider trip measure, costs measured per trip would favor LRT and BRT trunk lines. A better comparison would be to evaluate BRT and LRT in the same corridor. This cannot be done in practice, because a trunk line usually contains one mode or the other. However, one can do this theoretically by varying parameters and mathematically modeling a sample transit system.

Eric Bruun (2005) performed one such study published in the Transportation Research Record in 2005. His study estimated operating cost differences for BRT and LRT using a parametric cost model and National Transit Database (NTD) information. The study assumed train sizes of 28 m and bus sizes of 18 m. Marginal cost estimates were included to more accurately describe peak hour demand costs, when additional vehicles are required to meet demand. The study was completed for a medium sized city, based on Dallas Texas and using the data from all cities reporting in the NTD. It was also assumed that the cost to operate one light rail vehicle (LRV) per year is $1.4 million; the cost for one bus per year is $600,000; and the cost for one BRT is between $835,000 to $934,000 per vehicle per year, depending on the upgrades over a standard articulated vehicle the bus has. This extra cost for BRT was assumed given its train like operation such as dedicated right of way, possible variation in power supply from traditional busses, cost to maintain a fleet that differs from the standard, and emissions and drive technologies.

While it is clear that on a per vehicle basis, LRT systems are the more expensive, the findings indicate that if the peak ridership demand of the system is 1556 passenger spaces (both seated and standing.
passengers) per hour or less, then BRT provides a better cost effectiveness than LRT. However, as peak demand increases, the LRT system becomes significantly less costly to operate than a bus or BRT system (24% less expensive). BRT costs increase at a constant rate as ridership grows since each bus needs an additional driver. However, LRT systems only increase in cost when a new driver is needed for an additional train, which is equivalent to 2 to 4 busses. LRT also becomes more attractive and less costly to operate than BRT, as service becomes more frequent and headways decrease, to provide increased capacity. Using the NTD data, as outlined in Figure 1 the marginal cost increase for LRT is significantly less than busses or BRT. This gives LRT the advantage if off peak demand is expected to increase in the future.

This data analysis agrees with the previous findings that LRT was less expensive to operate in most cities because it operates in areas of high ridership potential and short headways. The converse is also true; installing LRT systems in areas of low ridership, larger headways and slow growth will make them very costly to operate. In order to determine if Hamilton would benefit from LRT or BRT, solely on the basis of operating costs, this same parameterized analysis could be done for Hamilton specific information. We can also use this research in conjunction with research completed by IBI Group to develop general rules which can guide our decision making.

Other Research

Additional research conducted by the United States General Accounting Office (GAO) and the City of Houston, Texas, provide additional balanced research comparing the cost of LRT and BRT. According to the GAO results are mixed when comparing LRT and BRT operating costs. Results varied between cities which could possibly be attributed to the configuration of the transit network, urban planning strategies, types of vehicles used, the financial climate of the region and several other factors. While this evidence does not provide a definitive answer as to which technology is cheaper, it confirms that, depending on the system characteristics, operating and maintenance costs for LRT can be less costly than BRT and vice versa (GAO, 2001)

The Houston Evaluation for Build Alternatives: Major Investment Study/Environmental Assessment, Conducted by the Metropolitan Transit Authority of Harris County, Texas in 1999 found that the benefits of LRT over BRT were quite numerous, while the operating costs were similar (MTAHC, 1999).

Conclusion

The examination of gross operating costs for transit vehicles looks at one aspect of a much larger and more intricate analysis. The net operating costs are of particular interest and depend on a variety of factors including ridership. In addition to costing data, the projected economic spin-offs, increase in property values, and increase in transit oriented development all play a role in the success of the system and its cost over its entire life-cycle. When analyzing costing data or deciding between two alternatives, the overall benefits of the system will play a much larger role in decision making than a focus on operating costs, especially when these benefits offset the costs immensely.

This analysis focused on gross operating costs in order to examine one piece of the overall puzzle. It identified that at 1800 passenger spaces per hour the cost to operate BRT is higher than the cost of operating LRT. The specific number for Hamilton, in terms of passenger spaces per hour, may differ from this value, as it is based on averaged data from a variety of American cities. While this acts as a solid guideline, Hamilton specific data may be helpful in obtaining a more definitive result. However, it is clear from the analysis that LRT, given the proper amount of transit oriented development and ridership numbers, can be a viable option over other forms of transit.
## Figure 1 - Costing Data from Eric Brunn's Mathematical Paramaterization Research (Bruun, 2005)

**TABLE 6 Trunk Line Service Comparison with Peak Service Added for 6 h per Weekday**

<table>
<thead>
<tr>
<th>Service Condition</th>
<th>h (min)</th>
<th>N</th>
<th>Line Capacity (spaces/hour)</th>
<th>Annual Cost (1000)</th>
<th>Cost per Space-km</th>
<th>If Added Off-Peak</th>
<th>Cost per Space-km</th>
</tr>
</thead>
<tbody>
<tr>
<td>LRT Base service</td>
<td>15</td>
<td>5</td>
<td>744</td>
<td>$6,907</td>
<td>$0.038</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Add 1st car to each consist</td>
<td>15</td>
<td>10</td>
<td>1488</td>
<td>$2,285</td>
<td>$0.054</td>
<td>$470.9</td>
<td>$0.011</td>
</tr>
<tr>
<td>Add 2nd car to each consist</td>
<td>15</td>
<td>15</td>
<td>2232</td>
<td>$2,285</td>
<td>$0.054</td>
<td>$470.9</td>
<td>$0.011</td>
</tr>
<tr>
<td>Add 3-car train to line</td>
<td>12.5</td>
<td>18</td>
<td>2678</td>
<td>$1,513</td>
<td>$0.059</td>
<td>$424.7</td>
<td>$0.017</td>
</tr>
<tr>
<td>Add 2nd train to line</td>
<td>10.7</td>
<td>21</td>
<td>3125</td>
<td>$1,513</td>
<td>$0.059</td>
<td>$424.7</td>
<td>$0.017</td>
</tr>
<tr>
<td>Add 3rd train to line</td>
<td>9.4</td>
<td>24</td>
<td>3561</td>
<td>$1,513</td>
<td>$0.059</td>
<td>$424.7</td>
<td>$0.017</td>
</tr>
<tr>
<td>BRT Z = 1.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Base service for equal budget</td>
<td>9.25</td>
<td>8</td>
<td>778</td>
<td>approx. $6,907</td>
<td>$0.037</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Add to double capacity</td>
<td>4.6</td>
<td>16</td>
<td>1556</td>
<td>$2,524</td>
<td>$0.057</td>
<td>$1,257</td>
<td>$0.029</td>
</tr>
<tr>
<td>Add to triple capacity*</td>
<td>3.1</td>
<td>24</td>
<td>2334</td>
<td>$2,524</td>
<td>$0.057</td>
<td>$1,257</td>
<td>$0.029</td>
</tr>
<tr>
<td>Same capacity as LRT h = 12.5*</td>
<td>2.68</td>
<td>28</td>
<td>2687</td>
<td>$1,262</td>
<td>$0.057</td>
<td>$628.3</td>
<td>$0.029</td>
</tr>
<tr>
<td>BRT Z = 1.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Base for equal budget</td>
<td>10.6</td>
<td>7</td>
<td>679</td>
<td>approx. $6,907</td>
<td>$0.041</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Add to double capacity</td>
<td>5.3</td>
<td>14</td>
<td>1358</td>
<td>$2,576</td>
<td>$0.067</td>
<td>$1,466</td>
<td>$0.038</td>
</tr>
<tr>
<td>Add to triple capacity*</td>
<td>3.5</td>
<td>21</td>
<td>2037</td>
<td>$2,576</td>
<td>$0.067</td>
<td>$1,466</td>
<td>$0.038</td>
</tr>
<tr>
<td>Same capacity as LRT h = 12.5*</td>
<td>2.68</td>
<td>28</td>
<td>2687</td>
<td>$2,576</td>
<td>$0.067</td>
<td>$1,466</td>
<td>$0.038</td>
</tr>
</tbody>
</table>

**Tangential bus**

| Unit cost for 18-h service | 15 | 1 | 320 | $593.5 | $0.056 | $593.5 | $0.056 |

**Base network costs**

| LRT | 15 | 20 | $27,600 |
| BRT Z = 1.2 | 15 | 32 | $27,600 |
| BRT Z = 1.4 | 15 | 28 | $27,600 |
| Tangential bus | 15 | 258 | $153,100 |

*Headway and revenue speed may not be maintainable.

## References


Metropolitan Transit Authority of Harris County [MTAHC]. (1999). *The Houston Evaluation for Build Alternatives: Major Investment Study/Environmental Assessment.* Houston, TX: MTHAC.

RAPID TRANSIT FEASIBILITY STUDY (PHASE 1)

- Initiated Rapid Transit Feasibility Study Phase 1 in November 2007 as a result of Province’s MoveOntario 2020 announcement in anticipation of Provincial Funding for Rapid Transit in Hamilton.
- The study focused on the two corridors identified for Rapid Transit in Hamilton’s Transportation Master Plan (May 2007) and the Province’s MoveOntario 2020 Vision (June 2007):
  - East – West from Eastgate Plaza to University Plaza (B-Line)
  - North-South from the Waterfront to Hamilton International Airport (A-Line)
- Focused on opportunities and constraints in regards to technologies (BRT vs. LRT), parking and loading impacts, traffic impacts, built form, environment, capital cost estimates and operating requirements.
- Assumes that the existing right-of-way widths would not be significantly changed.
- Study identified specific areas for future considerations including the escarpment grade (A-line), impacts to lane widths, impacts to existing structures, impacts to parking/loading, pros/cons of both LRT and BRT and considerations specific to each corridor, including potential cross-sections.
- The Study confirmed that both LRT and BRT are feasible to implement in Hamilton along both the B-Line and the A-line, provided engineering solutions are introduced to address constraints identified.

RAPID TRANSIT FEASIBILITY STUDY (PHASE 2)

- Initiate Rapid Transit Feasibility Study Phase 2 in July 2007 to further review the opportunities and constraints of implementing rapid transit in Hamilton along the proposed corridors (A-Line and B-Line).
• Phase 2 focused on light rail transit (LRT), given strong community support for the system in Hamilton.
• Phase 2 investigated the Claremont Access as an alternative route for LRT to traverse the escarpment (A-Line), lane reduction impacts along the B-Line and a staging analysis for implementing LRT in Hamilton.
• Staging Analysis suggests the east-west corridor (B-line) would be the best initial investment in terms of cost effectiveness and benefit to the community.
• Along the B-line, land impacts are anticipated to be minimal (stations and intersections) and opportunities exist for exclusive transit lane operation for the entire length of the B-Line.
• Along the A-line, it is feasible to use the Claremont Access to traverse the escarpment but further study is recommended given the impacts of using the Claremont Access on the overall system (increased travel time, longer track required, missing key nodes, etc).
• Prepared Terms of Reference for future studies and functional design.

Phase 1 & 2 Rapid Transit Corridor Map (B & A Line)
Route Alternatives between Paradise Road and the Delta

- Purpose of the investigation - to examine the range of service and route location options for the B-Line corridor, particularly between Paradise Road and the Delta

- LRT planning guidelines include exclusive operation with dedicated lanes wherever possible, increased stop spacing with larger vehicles, proof of payment fare system, raised pedestrian platforms at stops, median operation on two way streets, local road and driveway access restrictions for curb LRT service, physical separation from GPL’s if possible

- At-grade operation investigated to minimize costs and maximize economic benefits

- Recap – median LRT operation proposed on Main Street between University Plaza and Paradise Road and on Queenston Road between Eastgate Square and the Queenston Traffic Circle with essentially the same number of general purpose lanes (GPL’s) retained

- Confirm - median LRT operation proposed on Main Street between the Delta and the Queenston Traffic Circle with a reduction in GPL’s from two to one in each direction

- Two options for the corridor segment between Paradise Road and the Delta
  - Option A – convert both King Street and Main Street to two-way operation, with median LRT operation on King Street
  - Option B – retain one-way operation with LRT in curb lane or in second lane
  - Contra-flow schemes not recommended for safety reasons

- Common issues and implications – constricted ROW, requirements for widening at stations and where left-turn lanes required, limitations on stopping, parking and loading, need for context-sensitive design and even shared space alternatives in some sections

- Current traffic volumes in the King-Main Corridor will have to reduce by 30-40% through increased use of transit, TDM, and diversions to alternate routes

- A doubling of current transit usage is necessary, supported by changes in parking policies and costs, road and traffic control changes including the Hwy 403 ramps, supportive land use policies, and suburban park’n’ride facilities

- Improvements in transit service cannot wait – they must start shaping demand now

- Construction staging will be very important to limit mobility impacts up to system commissioning

- It would be prudent to limit reductions in arterial road capacities prior to LRT system implementation
Typical Cross-section (LRT on Main and King, One-way)

Typical Cross-section (LRT on King Street Only, Two-way)
Subsurface Infrastructure and Clearances

In terms of Rapid Transit system design and construction, Hamilton’s subsurface infrastructure is comprised of all buried serviced in the transit corridor. This includes watermains, sewers, gas lines, electrical utilities and communications infrastructure, as well as the track bed which supports the light rail vehicle. In most recent LRT system designs in North America, clearance areas of 5 to 10 feet below and adjacent to the tracks, have been established where no parallel infrastructure should be located.

Clearance zones are established for a variety of reasons. The most important reason being that LRT service must be interrupted when subsurface infrastructure parallel to the tracks require servicing. To avoid disruption, the underground network should be configured so that delays to the LRT system are minimized or eliminated. In this case any direct physical conflict, such as a manhole in the right-of-way or operational encroachment in the clearance envelope of the LRT should be eliminated. This ensures the safety of road workers and ensures that the LRT corridor is not disrupted by adjacent road work. Subsurface infrastructure must also be moved out of the train clearance envelope to minimize degradation from the light rail vehicle’s load and vibration forces and to minimize the possibility of corrosion from stray currents along the LRT track flowing to municipal infrastructure.

Utility Free Zone

Transport Canada and other authorities have guidelines regarding the clearance envelope surrounding rail tracks, which defines the utility-free zone where no infrastructure can be installed. Only infrastructure which crosses perpendicular to the track should be maintained in the utility-free zone, provided it is protected from surface loading and stray current. While most utilities parallel to the tracks would have to be abandoned or relocated, many of the sewers which are deep enough to be out of the utility-free zone can be accessed by offset manholes. These manholes do not lie directly over the sewers; rather they are located diagonally sideways from the sewer line. However, it may still be desirable to relocate the sewers entirely.

The depth of the utility-free zone takes into account the vehicle weight loading on the tracks. In a typical LRT design, the weight of the LRV is concentrated at the track which transmits forces downward and sideways from the point where the wheel makes contact with the track. In the Subsurface Infrastructure (SI) Report (AECOM, 2009), it was determined that for flexible and rigid buried pipe the underground clearance (from the surface to the top of pipe) is 11 ft (3.35 m) and 10 ft (3.05 m), respectively. A pipe located within this zone would suffer damage from the train’s loading forces over time. Horizontally, pipes within 3 to 5 m
of the LRT centreline should be evaluated for risk factors, including possible hazards to the LRT or workers, if the pipe needs to be repaired.

Figure 1: Impact zones for typical LRT street configurations which outline the utility free zone

Optimal LRT Corridor

Traditionally water pipe and sewer lines are installed in the centre of the road and other utilities to the sides of the road. An LRT system with a median right of way would impact municipal infrastructure to a greater extent than it would impact other utility relocations. In modern street designs, infrastructure is generally built near the curbside rather than the median. In Hamilton’s case, building the LRT in the median of Main or King Street in the downtown core, where there are one way streets, could possibly be more expensive, given the age of the road network in the core. However, a median right of way on Main Street West and Queenston Road after the Delta would generally be considered a more feasible configuration.

The SI Report (AECOM, 2009) confirms this hypothesis. An LRT configuration which consists of the LRT traveling west along King Street at the curbside and east along Main Street at the curbside, from the Delta to Highway 403, is less expensive to build then if the LRT runs exclusively along King Street in the median from the Delta to Highway 403. An examination of figure 1 visually confirms that the impact zone along the median is larger, impacting more infrastructure in the CBD.

Cost of Infrastructure Impacts

The cost of impacted infrastructure relocation depends on the complexity of the corridor, ease of access to subsurface infrastructure, amount of disruption to transit service that can be tolerated and the inherent safety risks in accessing the infrastructure. It is generally 10% to 20% of the total project cost. The costing data contained in the SI Report (AECOM, 2009) was based on the following assumptions:

- All sewer and water infrastructure within the LRT right-of-way that parallels the LRT must be relocated because access to maintain the asset will be severely or completely restricted.
- All “branch” sewer mains that currently enter the LRT right-of-way and connect to a “trunk” sewer within the LRT right-of-way must be reconnected when the trunk sewer is relocated. For simplicity, it
is assumed that each affected branch sewer will require an extension or replacement of 7.5m. It is also assumed that half of those branch sewers will extend through to the other side of the LRT, and that any passing through the structural impact zone will require structural assessment.

- All sewer mains that cross completely through the LRT right-of-way, are below the structural impact zone, and are readily accessible via manholes on both sides of the LRT right-of-way, will remain in place. Of course, inspection may reveal that some of these assets are deteriorated and must be repaired or replaced, but these costs are not included in this projection.
- All sewers that cross completely through the LRT right-of-way as above, but are within the structural impact zone, must undergo structural assessment. Costs to perform these assessments are included in the projection. Costs of pipe replacements required due to insufficient strength are not included in the projection.
- All water mains that cross completely through the LRT right-of-way must be replaced and installed in a casing pipe. Since it may be prudent to replace aged water mains within the right-of-way, each replacement is assumed to be 15m in length.
- All sewer and water services entering the LRT right-of-way must be replaced within the right-of-way. Each replacement is assumed to be 15m in length. Any structural assessments are considered to be included in the construction design cost.
- All water main valve and hydrant relocations are considered inclusive in the costs of main relocation.
- All catch basins within the LRT right-of-way must be relocated (AECOM, 2009).

The City also completed work on the impacts of moving water and wastewater infrastructure on other utilities that are not directly affected but may need to move when water/wastewater infrastructure is relocated. The utilities are not responsible for paying the full price of relocation. If no agreement between the utility and the city exists then the city and utility share the costs of labour and labour saving devices, 50% each and the utility covers the cost of materials at 100%. Where an agreement exists the breakdown is as follows: gas lines installed after 1981, 35% City, 65% Union Gas; gas lines installed before 1981, 100% Union Gas; municipal water & sewer = 100% of costs to the City.

Based on these assumptions and the data collected by the city, the total cost impact on subsurface infrastructure is estimated to be $70 million in the one-way street configuration in the CBD; and $100 million for the two-way street configuration and LRT only on King Street in the CBD (AECOM, 2009). The full breakdown can be found in the table 1 and includes the costs to relocate utilities that are disrupted as other municipal piping is moved to clear the right of way.

Table 1: Projected Costs to Mitigate the Impact of LRT Development

<table>
<thead>
<tr>
<th>Infrastructure Type</th>
<th>Configuration of the CBD (Hwy 403 to Delta)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 way on Main St and 1 Way on King Street (Curbside)</td>
</tr>
<tr>
<td>Municipal Service (water &amp; wastewater)</td>
<td>$50 800 000.00</td>
</tr>
<tr>
<td>Utility Relocations</td>
<td>$36 000 000.00</td>
</tr>
<tr>
<td>Utility Relocations (after cost sharing)</td>
<td>$15 300 000.00</td>
</tr>
<tr>
<td>Total (rows 1 &amp; 3)</td>
<td>$66 100 000.00</td>
</tr>
</tbody>
</table>
Subsurface Infrastructure Defined

In terms of Rapid Transit system design and construction, Hamilton’s subsurface infrastructure includes all buried service in the transit corridor. This includes water mains, sewers, gas lines, electrical utilities and communications infrastructure, as well as the track bed which supports the light rail vehicle.

LRT Track Components

**Ballasted Track**
This is the traditional method for constructing rail. In older cities, concrete was poured over the tracks to provide a street level system which could blend with the asphalt.

- Ballast is required to support the weight of the train
- Can be laid as a stone base or a concrete slab platform
- Cross ties are required to maintain the track gauge of 1.435 m
- Ensures that the rails do not buckle
- Provides water absorption and drainage

**Resilient Embedded Track (most common for street level systems):**
These modern systems require materials that distribute load, mitigate vibration and are electrically resistant, as the tracks are embedded in the street.

**Embedded Components**
- Uses a concrete base and no top ballast (1, 2)
- Drainage pipes to the sewer system (3)
- Steel ties or gauge rods are used to maintain gauge between tracks, rather than ties (4)
- Incorporates insulating and vibration mitigating materials into the concrete pour (6, 7, 8)
- The insulating barrier can be located at the rail boot (7) or around the concrete base (8)
Subsurface Challenges and Mitigation Strategies

Clearance Requirements: In order to provide un-interrupted LRT service and preserve the track bed, it is recommended that no parallel infrastructure lay under the track. An additional horizontal clearance of 5 feet on either side of the track is also required for safe access to the infrastructure. For piping and wiring that crosses the track perpendicularly, a clearance of 10 feet (3m) below the track is required due to the weight of the vehicle and the track base.

Mitigation Strategy: Research alternatives to traditional track bed design and use of traditional light rail vehicles. This would include using a lighter vehicle in order to lessen the 3 m, worst case, under-track burial requirement. It may also lessen the need to move some infrastructure.

Stray Current and Corrosion: Electrolytic corrosion can be occur in underground infrastructure due to leakage (stray) currents from the track rails, especially with DC power systems. The running track provides a path for electricity to flow from the catenary wires; however, electricity can stray from the rails and flow to other infrastructure. Leakage currents can cause and accelerate corrosion in underground piping, steel reinforcement in concrete structures and may damage underground utilities.

Mitigation Strategy:
- Cathodic Protection of piping with the use of galvanic anodes to attract electric currents away from the piping
- Electrical insulation of piping
- Electrical isolation of embedded track from earth with plastic/concrete encasement

Relocation and Cost: Relocating and replacing infrastructure is time consuming and costly; however, it provides an opportunity for infrastructure renewal and reorganization. The costs would be shared with the local utility providers as such:
- Municipal water & sewer = 100% of costs to the City
- Gas (lines after 1981) = 35% city, 65% gas utility; (lines before 1981) = 100% gas utility’s cost
- Electricity = 50% City, 50% Horizon (includes cost of labour and labour saving devices, not materials)
- Bell and other telecommunications = City in process of developing agreements for 100% cost to the utility (with Bell services, anything before the agreement is 50/50)

Mitigation Strategy:
- Identify and confirm the location of existing subsurface infrastructure to determine impacts
- Identify the condition of existing infrastructure to determine the replacement need and risk of not relocating it
- Select the optimal transit corridor location. This is typically the median of the road way because most infrastructure is located at the curbside.
- An LRT system running in the median of the roadway would avoid the need to relocate some infrastructure
Hamilton’s Definition of Light Rail Transit (LRT)

LRT is a lightweight metropolitan electric railway system characterized by its ability to operate single cars or short trains along exclusive right-of-way at street level. These vehicles are usually powered by overhead electrical wires, and offer a frequent, fast, reliable, comfortable and high quality service that is environmentally sustainable.

Draft Technical Specifications

Infrastructure and Rolling Stock

It is anticipated that Hamilton LRT vehicles and track systems will most closely resemble Portland Oregon’s and Minneapolis Minnesota’s systems which use trains supplied by Siemens and Bombardier, respectively. While their design can vary, our trains will resemble the following specifications:

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Track Gauge (Standard) *</td>
<td>1.435 m</td>
</tr>
<tr>
<td>Vehicle Weight (Empty, average)</td>
<td>41 000 kg</td>
</tr>
<tr>
<td>Vehicle Weight (Full, average)</td>
<td>63 000 kg</td>
</tr>
<tr>
<td>Single Vehicle Height (may vary according to pantograph height)</td>
<td>3.9 m</td>
</tr>
<tr>
<td>Single Vehicle Length (average)</td>
<td>28 m</td>
</tr>
<tr>
<td>Single Vehicle Width</td>
<td>2.65 m</td>
</tr>
<tr>
<td>Horizontal Vehicle Clearance (total)</td>
<td>1.0 m</td>
</tr>
<tr>
<td>Vertical Vehicle Clearance (minimum)</td>
<td>4 m</td>
</tr>
<tr>
<td>Ballast/Track Bed Depth (average)</td>
<td>0.74 m</td>
</tr>
<tr>
<td>Passengers (seated/standing, average)</td>
<td>60/130</td>
</tr>
</tbody>
</table>

* The TTC does not use standard gauge; they use a 1.49 m TTC gauge, the only one of its kind in the world.
System Power Supply

Catenary System: The electric traction system anticipated for Hamilton could be powered by an overhead, one or two-wire catenary current collector system, using pantographs with the return circuit provided by running rails. Hamilton’s system could be similar to Portland’s where stations are rated for 1MW, connected to an 13.8 kV AC three phase power supply, delivered by the municipal power utility company (Horizon Utilities) at a distance of one 1 to 1.6 km apart. The trains will receive 750 V DC power to drive the traction system and will therefore require AC and DC switchgear, traction power transformers, power rectifiers and programmable logic controllers (PLCs) to automate the process.

PRIMOVE Induction System: Alternative technology exists that could allow the trains to be powered without the use of catenaries using an embedded third rail or an induction power system. This option uses induction, which incorporates electromagnets to achieve a contactless power transfer as the train’s current collector passes over a buried wire. The system, developed by Bombardier, can accommodate all weather conditions since it has no physical contacts, but it has not yet been incorporated in a commercial vehicle.

Technological Challenges

The proposed B-Line corridor encounters some complicated geographical challenges due to the city’s existing infrastructure and extensive grade changes. Particular challenges include: the highway 403 crossing in the City’s west end, which may require a flyover; the roadway under the TH&B bridge (at Hunter Street) and the pedestrian walkway over James Street, which may need to be lowered to accommodate the train’s catenary system; acquisition for station locations and issues with corrosion and vibration.

Overcoming these challenges will include research into each vehicle. The measurements of some vehicles make them more ideal for the under-bridge crossings, requiring only minimal road lowering. Catenary-free vehicle technologies also help solve the problem of bridge crossings while minimizing visual impacts and maintenance costs. In terms of corrosion and vibration control, various resilient technologies and materials exist to soften metal-on-metal forces, isolate running rails from surrounding infrastructure and extend the life of rails and wheels in the process.

Benefits of Light Rail Transit Technologies

- Catalyst for development and revitalization of downtown cores
- Improved accessibility to major city areas and services
- Creation of new housing, offices and shops
- Increased values of properties along LRT corridors and stations
- Reduction in auto use, congestion and noise/air pollution
Existing Conditions

- The majority of the study area alignment is urban with existing infrastructure displacing all natural environment components with exception to young landscaped trees. Generally few natural areas occur along the proposed LRT alignment.

- The proposed LRT B-Line route crosses three watercourses including:
  - Coldwater Creek (also known as Ancaster Creek) at the west end of the alignment
  - Chedoke Creek at Highway 403; at the point of crossing the creek is covered (conveyed via a large culvert)
  - Red Hill Creek at the Red Hill Valley Parkway.

- The study area is in close proximity or overlaps designated natural features at each of the three watercourse crossings. These include, the Red Hill Creek Escarpment Valley (ESA) and Cootes Paradise (ESA, Provincially Significant Wetland and Life Science ANSI) associated with the Chedoke Creek crossing, and the Ancaster Valley Life Science ANSI, Dundas Valley ESA associated with Coldwater (Ancaster) Creek crossing.

- Gage Park and a small portion adjacent to Coldwater Creek are classified as Urban Area in the Niagara Escarpment Plan.

- NHIC database indicates several historical occurrences of rare species. This includes 12 plant species, 1 mammal, 1 bird, 3 herptiles and 1 fish. Ontario Breeding Bird Atlas indicates 11 species of concern have been observed. Also, 90 conservation priority species (Couturier 1999) for the Hamilton-Wentworth region were documented.

Potential Impacts and Mitigation Considerations

- It is our understanding that minimal expansion of the current right-of-way is planned in order to facilitate the construction and operation of the LRT system. Based on this, we do not anticipate impacts to the natural environment. The proposed B-Line route is an urbanized area and has limited habitat value for vegetation communities and wildlife. No direct impact to vegetation, wildlife, wildlife habitat or Species at Risk is anticipated.

- If the removal of some streetscape trees is necessary, provisions should be made for their replacement. The removal of vegetation could affect nesting habitat for migratory birds and mitigation measures may be required.

- The temporary increase in the anthropogenic disturbance during the construction period is unlikely to result in a significant increase in indirect impacts (i.e., habitat degradation, noise disturbance, etc.) to habitat features or wildlife along the LRT route as many of them are situated in a high noise, high traffic area.

- Should one of the downtown alignments result in the need for a new crossing of the Chedoke Creek/Hwy 403 area, additional detailed study would be required to ensure appropriate design and mitigation to minimize impacts; there may be a need for additional agency consultation and further approvals.

Preliminary Input regarding Downtown Alignment Alternatives

Based on background information reviewed and fieldwork completed, there are no downtown alignment preferences as they relate to terrestrial and avian features.
This Information Update is to advise that the City’s Rapid Transit Corporate Working Team met February 5, 2009. This session was set-up by the Rapid Transit team to review and discuss various rapid transit system alternatives and provide an update on study progress in preparation for the Metrolinx Benefits Case Analysis expected to be undertaken Spring 2009. The Corporate Working Team is comprised of staff from six City Departments including representatives from Public Works, Planning & Economic Development, Corporate Services, Community Services, Emergency Services and Public Health Services and Hamilton Police Services. The February 5th session was a follow-up to the first Corporate Working Team session held in November 2008, at which time the following vision statement was developed and subsequently endorsed by Council at its meeting of January 28, 2009.

Rapid Transit is more than just moving people from place to place. It is about providing a catalyst for the development of high quality, safe, environmentally sustainable and affordable transportation options for our citizens, connecting key destination points, stimulating economic development and revitalizing Hamilton.

The rapid transit alternatives that were discussed as part of the second meeting of this group included the following transportation options for the Main/King corridor of the proposed B-Line, (primarily between Paradise Road, west side of Hwy 403 to the Delta, Main/King Split at Gage Park):

- RTFS Phases 1 and 2 identified LRT could operate in exclusive curb lanes on one-way streets
  - LRT and one-way traffic on both Main and King
- Other alternative alignments for consideration through downtown
  - Contra-flow on Main (one-way traffic eastbound with two-way LRT operation)
  - Contra-flow on King (one-way traffic westbound with two-way LRT operation)
  - LRT on Main Street with two-way traffic
  - LRT on King Street with two-way traffic

In addition to a discussion on rapid transit alternatives, staff were also updated on the various studies that are underway in preparation for the upcoming Benefits Case Analysis. These studies include:

- Transportation Modeling
- Economic Uplift Potential
RE: Rapid Transit – Technical Agency and Corridor Property Consultation (CPI.09.05) - Page 2 of 2

- Subsurface Infrastructure Review
- Technology Review
- Archeology
- Built Landscapes & Cultural Heritage
- Natural Environment
  - Terrestrial & Avian
  - Hydrogeology
  - Air Quality & Noise
  - Water Resources & Storm Water MP Impact
- Facilitation (Dillon)
  - Staff Workshop
  - Technical Agencies Meeting #1
  - Corridor Properties Meeting #1
  - Preliminary EA prep

The Rapid Transit Study Team will update Council on the feedback received at these meetings in addition to the findings of these studies in the near future as well as keep Council informed in regards to the feedback staff receive at the upcoming Technical Agencies and Corridor Properties Meetings scheduled for February 23, 2009 (information on these sessions provided in Information Update CPI.09.03).

For more information, please contact Lisa Zinkewich at ext. 1473 or lisa.zinkewich@hamilton.ca

Jill Stephen, P.Eng
Director, Strategic & Environmental Planning (Temporary)
Capital Planning & Implementation
Public Works Department

Copy to: Chris Murray, City Manager
Gerry Davis, Acting General Manager, Public Works
Tony Tollis, Acting General Manager, Finance & Corporate Services
Tim McCabe, General Manager, Planning and Economic Development
Jim Kay, General Manager, Emergency Services
Joe-anne Priel, General Manager, Community Services
Elizabeth Richardson, Medical Officer of Health
Kevin Christenson, City Clerk
Rose Caterini, Deputy Clerk/Manager of Legislative Services and Records
Phil Homerski, Public Affairs Coordinator, Public Works
Kelly Anderson, Public Affairs Coordinator, Public Works
Carolyn Biggs, Legislative Assistant, City Clerks
Alan Kirkpatrick, Acting Manager, Strategic Planning
Don Hull, Director, Transit
David Adames, Executive Director, Planning & Economic Development
Neil Everson, Director, Economic Development & Real Estate
Ron Marini, Director, Downtown & Community Renewal
Bill Janssen, Acting Director, Planning & Economic Development
Jim Dahms, Manager, Transit Planning & Customer Services
John Howe, Metrolinx
Chief Brian Mullen, Hamilton Police Services
As the Rapid Transit Initiative moves forward, the City’s Rapid Transit Team continues to implement an extensive stakeholder outreach and engagement program.

In addition to the general public meetings that have been held to date, the Rapid Transit Team is now targeting specific stakeholders to consult with at this stage of the planning process. In February, staff will be meeting with appropriate technical agencies and other key organizations who should be involved in the planning for this initiative, as well as property owners along the Main/King corridor between McMaster University and Eastgate Square.

The meetings are being held to ensure that those who will be most greatly impacted by the proposed Rapid Transit Initiative are given an opportunity to meet with the Rapid Transit Team early in the planning process, to learn more details on the initiative and provide their direct input into the process. Although staff have already met with key primary node stakeholder representatives along the proposed Rapid Transit corridors, including McMaster University, Eastgate Square and Yale (Jackson Square), these meetings are intended to initiate dialogue between the Rapid Transit Team and all adjacent property land owners and their tenants.

Notice of the upcoming meetings will be delivered to an extensive Technical Agency list that was developed following the Class EA process and will be mailed to all corridor property owners within 30 metres of the existing Right of Way along the B-Line corridor (the notices and a map identifying the corridor properties is attached for your information). Meeting times are as follows:

**Technical agencies/organizations:**
Monday, February 23rd
9:00 a.m. – 12:00 p.m.
Hamilton Convention Centre, Room 314

**Property owners along Main/King Corridor:**
Monday, February 23rd
2:00 p.m. – 4:00 p.m. OR 6:00 p.m. – 8:00 p.m.

Information to be presented at these meetings will include:
- Rapid Transit Project Background
- Rapid Transit Feasibility Study Phases 1 & 2 results
RE: Rapid Transit – Technical Agency and Corridor Property Consultation (CPI.09.03) - Page 2 of 2

- Metrolinx (including the Regional Transportation Plan, Capital Budget Process and next steps including the required Benefits Case Analysis)
- Public Engagement and Results
- Rapid Transit Initiative Next Steps

The Rapid Transit Team continues to meet with Metrolinx representatives to discuss plans for moving rapid transit ahead for the City of Hamilton and have begun the process of initiating the required studies that will feed into Metrolinx’s Benefits Case Analysis, anticipated to take place in spring 2009. Rapid Transit Team staff are continuing to move forward in an aggressive manner in order to secure Provincial funding for rapid transit in Hamilton and more specifically for Light Rail Transit (LRT) funding, for construction to begin as early as 2011 along the B-Line corridor.

Public consultation has been an important part of this process to date, and will continue to play an integral role in the development of the overall system. As always, the Rapid Transit Team is available to speak to community groups or ward meetings, or to provide updates to ward newsletters. Comments are always welcome at rapidtransit@hamilton.ca.

The Rapid Transit Study Team will update Council on the feedback received at these meetings in a future Information Report to Public Works Committee.

For more information, please contact Lisa Zinkewich at ext. 1473 or lisa.zinkewich@hamilton.ca

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Jim Dahms, Manager, Transit Planning & Customer Services
John Howe, Metrolinx
Help shape the future of Rapid Transit in Hamilton

The City of Hamilton is moving forward with plans to implement rapid transit along the Main/King Corridor (see map below) from Centennial Parkway (Eastgate Square) to McMaster University/University Plaza, with studies currently focusing on Light Rail Transit (LRT) as the preferred mode of technology.

City of Hamilton staff would like to meet with you and your organization/agency to exchange ideas, listen to concerns and identify potential issues. Please join us at the meeting time noted at right to receive material related to this initiative and meet with Rapid Transit Team staff. An agenda will be provided closer to the date.

We hope that you will attend. Your participation and feedback on this exciting initiative is an important part of the process.

Please complete the attached (on back) fax-back form to confirm your involvement in this initiative and appropriate contact person.

To help us with our planning, we would appreciate it if you could please RSVP to the Project Team so we can ensure the appropriate number of materials are available.

For more information about the Rapid Transit initiative, including newsletters, studies, Council minutes and route maps, please visit www.hamilton.ca/rapid-transit

When
Monday, February 23rd, 2009
Hamilton Convention Centre,
1 Summers Lane, Hamilton, ON
Room 314
9:00am – 12:00pm

Contact
Rapid Transit Initiative
Public Works Department
City of Hamilton
77 James Street North, Suite 320
Hamilton, ON L8R 2K3
905-546-2424, ext. 2553
rapidtransit@hamilton.ca
Fax Back Form

Please respond by Wednesday, February 18th, 2009
To: Lisa Zinkевич, Senior Project Manager, Rapid Transit
Fax: 905-546-4435
Re: Technical Agencies Committee – City of Hamilton Rapid Transit Initiative

Name:

Title:

Organization/Agency:

Address:

Postal Code:

Phone:

Fax:

Email:

Please indicate the appropriate response:

☐ My organization/agency will be attending the City of Hamilton's Rapid Transit meeting for technical agencies on Monday, February 23rd and would like to be added to the Technical Agencies Mailing List.

☐ My organization/agency is NOT able to attend the City of Hamilton's Rapid Transit meeting for technical agencies on Monday, February 23rd but would like to be added to the Technical Agencies Mailing List.

☐ Please take my organization/agency off the City of Hamilton's mailing list as we have no interest in the current planning for rapid transit along the East-West corridor.

Please feel free to provide any comments, areas of interest or concerns.

_____________________________________________________________________

_____________________________________________________________________

_____________________________________________________________________

Rapid Transit
MOVING HAMILTON FORWARD
Help shape the future of Rapid Transit in Hamilton

The City of Hamilton is moving forward with plans to implement rapid transit along the Main/King Corridor from Centennial Parkway (Eastgate Square) to McMaster University/University Plaza, with studies currently focusing on Light Rail Transit (LRT) as the preferred mode of technology.

Your property is located directly adjacent to this corridor (see map) therefore City of Hamilton staff would like to meet with you and your neighbours to discuss this exciting initiative.

This is the first of many meetings the Rapid Transit Team will hold specifically with corridor property owners in order to exchange ideas, listen to concerns and identify potential issues. Please join us at one of the meeting times noted at right to receive material related to this initiative and meet with Rapid Transit Team staff.

We hope that you will attend. Your participation and feedback on this exciting initiative is an important part of the process.

To help us with our planning, we would appreciate it if you could please RSVP to the Project Team so we can ensure the appropriate number of materials are available.

If you are unable to attend but are interested in learning more about the initiative, or sharing your opinions with the Rapid Transit Team, please feel free to contact us at rapidtransit@hamilton.ca or 905-546-2424 ext. 2553.

For more information about the Rapid Transit initiative, including newsletters, studies, Council minutes and route maps, please visit www.hamilton.ca/rapid-transit

When

Monday, February 23rd, 2009
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Room 314
2:00pm – 4:00pm; presentation at 2:30
OR
6:00pm – 8:00pm, presentation at 6:30

The same information will be shared at both meetings.

Contact/RSVP

Rapid Transit Initiative
Public Works Department
City of Hamilton
77 James Street North, Suite 320
Hamilton, ON L8R 2K3
905-546-2424, ext. 2553
rapidtransit@hamilton.ca

Please share this notice with all the tenants in your building.