Transportation and Transit Master Plan (TTMP)

City of Brampton
Terms of Reference
May 2002

1 INTRODUCTION

1.1 In the fall of 2001, City Council directed staff to initiate the process to complete a Transportation and Transit Master Plan (TTMP) for the City of Brampton. Given Brampton's period of sustained high growth over the past several years, several transportation studies have been/are being completed for various areas of the City as development activity proceeds.

1.2 To ensure a coordinated and comprehensive approach in dealing with overall transportation issues in Brampton, the City is seeking to retain the services of a consulting engineering firm or consortium of firms to prepare a Transportation/ Transit Master Plan, which will include a strategy to optimize the role of transit, and which will provide the transportation model, related analytical tools, and training that will enable staff to address transportation and growth consistently and on a continuing basis.

1.3 The existing population of the City is estimated at 336,000. Current population forecasts estimate that the City of Brampton will have a population of approximately 595,000 by 2021 and 685,000 by 2031. The bulk of the population growth after 2021 will be in North West Brampton.

1.4 The overall TTMP Study will consist of a "Two Stage" approach. The information, analysis and recommendations from the "Stage 1" component of the TTMP, as described above, will provide the basis and background for the transportation component of the City's Development Charges (DC) By-Law Update. The optional "Stage 2" component of the TTMP shall provide the necessary transportation infrastructure timing and cost information for the purposes of DC By-law calculations.

2 STUDY CONTEXT & SCOPE

2.1 The TTMP shall establish infrastructure and program needs and supporting policies for the City of Brampton's transportation system to the year 2031.

2.2 Through a comprehensive analysis of current and forecast future travel demand, with particular attention given to strategies for improving transit and increasing transit modal split (as well as other travel modes), the TTMP will provide direction and requirements for roads, transit, and traffic management and modelling systems, and establish a basis for the policies, strategies and priorities to address transportation infrastructure and service requirements in support of projected population and employment growth in the City of Brampton.

2.3 Although the focus area of the TTMP is the existing incorporated area of the City of Brampton, the study will also address transportation impacts and requirements within a study area extending beyond the City of Brampton to Highway 27 on the east, Highway 401 on the south, Trafalgar Road on the west, and Regional Road No. 9 (King Road) on the north (as shown in Appendix A).

2.4 The Consultant shall develop a City-wide EMME/2 travel demand model (derived from the Region of Peel's model), to define the optimum 2031 transportation/transit system for Brampton and address several specific transportation issues. Upon completion of the TTMP, the Consultant will provide to the City a fully functional City-wide EMME/2 model and shall clearly identify a monitoring strategy and process for continued model updating and calibration by City staff.

2.5 Following an evaluation of the existing transportation network, the Consultant shall determine the major road network requirements, including all jurisdictions within the City of Brampton and adjacent areas for study horizon years 2011, 2021, and 2031 (assumed full build-out of the City). For Development Charge review purposes, our requirements also call for year 2013 and year 2023 road network requirements to be established as accurately as possible. The Consultant shall define the approach to attain appropriate analysis platforms to attain these target horizons as one of the key deliverables for the project.

2.6 The Consultant shall evaluate the current transit system, define a long-term (2031) vision for transit service in Brampton, identify the associated realistic modal split factor, make recommendations for the establishment of an effective and efficient system, and shall outline the strategies to achieve the long-range plan over the intervening years.

2.7 Based on the findings of the transportation analysis, the Consultant shall recommend an optimum long-term road network and transit system and shall prepare a comprehensive implementation strategy for any proposed system improvements to roads and transit in the context of the defined interim horizon years.

2.8 The Consultant shall extract the recommended road and transit improvements from the first stage of the study, expand the details, and provide the necessary transportation infrastructure timing and cost information for the purposes of DC By-law calculations.

3 STAGE 1: TTMP STUDY

The Consultant shall prepare a TTMP document which will address the following tasks:

3.1 Data Collection and Issue Identification

3.1.1 The Consultant will review current and previous transportation studies (identified in Appendix B) and extract the relevant conclusions and findings, including the identified ultimate road network requirements and impacts for further consideration in the TTMP exercise.

3.1.2 The Consultant will prepare an analysis of existing traffic characteristics and travel patterns. Where it is available, existing traffic data will be provided by the City and the Region of Peel. Where there is insufficient information, new data will be provided by the Consultant.

3.1.3 The foregoing analysis will include, but not be limited to, origin and destination analysis, auto and truck traffic volumes and percentages, volume and peaking characteristics, transit ridership patterns and demand (discussed in further detail in the Section 3.3), and any other factors or characteristics deemed appropriate by the steering committee for use in the analysis.

3.1.4 Based on the analysis of existing traffic, and existing and proposed land uses, the Consultant will develop a consolidated forecast of traffic/travel demands in the City of Brampton.

3.2 Travel Demand Modelling and Road Network Assessment

The modelling component will be a major function of the TTMP project and the Consultant will be required to utilize the EMME/2 travel demand model for this component. The modelling exercise will be developed and used by the Consultant to determine the required ultimate 2031 road network and assess all major road and transit corridors within the limits of the City at time horizons determined by the Steering Committee. A City EMME/2 model derived from and related to the Regional EMME/2 model is required and upon completion of the TTMP, the Consultant will provide to the City a fully functional City-wide EMME/2 travel demand model.

The modelling analysis stage (following the development of the model) should proceed concurrent with the formulation of the optimum transit strategy (described in Section 3.3) so that the interdependence of transit service and the road system is appropriately reflected in the analysis.

Tasks under the modelling assignment are as follows:

3.2.1 The Consultant will develop a City-wide EMME/2 travel demand model derived from and related to the Regional EMME/2 model.

3.2.2 The required City EMME/2 model development should be based on a typical 4 stage transportation analysis process, involving trip generation calculations, the determination and application of appropriate modal splits based on a realistic transit plan and pedestrian and cycling assumptions, the distribution of trips based on origin/destination data (i.e. TTS data), and assignment to the road network, including model calibration and the iterative determination of optimum road network requirements.

3.2.3 The road network assessment shall include:

~ All major corridors, arterial roads, and major collectors within the City of Brampton, regardless of jurisdiction;
~ Number of lanes required for each key link;
~ A determination of service level thresholds based on V/C ratios;
~ Requirements for major intersections.

3.2.4 Within the context of the City-wide EMME/2 transportation model, the following key issues are to be addressed:

~ Evaluation of other east-west road requirements with and without a Clark/Eastern/Wellington connection;
~ The implications of substantial delays beyond desired timeframes for the extensions of Provincial Highways #410 and #427;
~ The implications of a “within Peel” versus “outside Peel” alignment of Hwy #427
~ The implications of having/not having a new east-west Provincial corridor north of the Brampton/Caledon boundary;
~ The implications of having/not having a new north-south Provincial corridor near the Brampton/Halton Hills boundary;
~ Further analysis of the Norval By-Pass alternatives;
~ Further analysis to refine the Bramwest Parkway/Highway #407 interchange business case.

3.2.5 It is expected that several model runs will be required to define optimum requirements for the four distinct timeframe horizons (i.e. 2031 or mature state, 2021, 2011 and current/ 2001). It is likely that the requirements for the intermediate timeframe horizons 2011 and 2021 will need to be determined for 2 or 3 alternative staging scenarios. As detailed in Section 4 (“Development Charges Calculation”), the Consultant will also recommend the best way to derive accurate road and transit network estimates for the DC time horizons of 2013 and 2023.

3.2.6 The Consultant will provide “hands-on” EMME/2 training to designated City staff as part of the modelling assignment.

3.2.7 The Consultant is to provide a detailed schedule outlining the systematic approach that will enable City staff to maintain the EMME/2 model on a continual basis for the future.

3.2.8 The Consultant should also identify any analysis gaps between the effective capabilities of the EMME/2 model and the requirements of these Terms of Reference, and should identify/recommend the use of other models or analysis techniques that could be used (as an optional component of this study) to improve the validity of the overall study.

3.2.9 As an extension of this latter requirement, the Consultant shall make recommendations for the City’s ongoing use of other compatible transportation analysis models to address sub-area and micro-level analysis requirements (i.e. defining more detailed network requirements, intersection turning volumes, transit and truck accommodations, etc.) and the associated software/staff resources and budget necessary to carry out this analysis.

3.3 Comprehensive Transit Strategy

Establishing an effective and efficient transit system to provide a competitive alternative to the automobile in the long-term is one of the key strategies to managing traffic growth in Brampton and moderating the severity of congestion in the future. In approaching this objective, the transit strategy component of the TTMP shall comprise:

- A comprehensive evaluation of Brampton Transit's existing system, routing, and allocation of resources to identify where modifications can be made to optimize the present-day level of transit service;
- The development of a long-term vision and optimum system for Brampton's transit services in 2031. The long-term vision should be framed in the context of the following questions:
  - ~ Are transit resources being allocated efficiently and effectively?
  - ~ What are the future prospects and potential for ridership growth?
  - ~ What are the main transit markets and how can we provide for their needs?
  - ~ What are the priorities and constraints to meet defined transit strategy?
  - ~ How is the transit strategy to be staged in terms of the 2011, 2021, and 2031 timeframes?
  - ~ What is the realistic modal split that would be achieved by the optimum transit system?
- An evaluation of opportunities and constraints;
- An implementation strategy to achieve the long-range plan, and its application in the short- and medium-range time horizons, including:
  - ~ Enhancements to Brampton Transit routing and service delivery;
  - ~ Procurement plan and financing strategy;
  - ~ Service level and amenity needs for existing and planned transit terminals;
  - ~ Integration/coordination of Brampton's transit services with adjacent municipalities and with GO Transit.

The following tasks detail the issues to be addressed in the transit strategy:

3.3.1 The Consultant shall evaluate the current system, by reviewing the following:

~ Service profile (e.g., routes, rolling stock, facilities, operating costs, etc.) and operating standards;
~ Rider profile
~ Market characteristics and trends;
~ Performance trends and issues;
~ Opportunities and constraints.

3.3.2 Based on the foregoing review, the Consultant shall identify where modifications can be made to the existing system to:

~ Improve the level of service to major destinations outside of Brampton;
~ Reduce waiting times at transit stops;
~ Reduce the number of transfers for travel within and beyond the City;
~ Improve customer convenience at terminal locations and major stops (e.g., enhanced technology, such as GPS, to report waiting times);
~ Better assess customer satisfaction (i.e., survey tools).

3.3.3 Concurrent with the transportation modelling exercise, an optimum modal split and associated transit requirements will be derived and incorporated in the model, such that the ultimate 2031 road network and the transit system (and associated road priority measures such as HOV, RBL, etc) can provide the capacity to accommodate total projected demand.

3.3.4 To assess the future prospects and potential for ridership growth, and needs for improvement to the transit system, a consultation process (e.g. surveys, focus groups) should be established to determine public attitudes and perception of the transit system, and what can be done to improve it.

3.3.5 The Consultant shall evaluate the opportunities and constraints for the integration/coordination of Brampton's transit services with adjacent municipalities and with GO Transit. Recommendations in this regard are to include an implementation schedule consistent with the defined modal split target(s). A list of available background studies is provided in Appendix C. The evaluation of transit integration/coordination beyond Brampton's boundaries shall particularly include:

~ An assessment of potential transit connections along either Highway 7 or Highway 407 in Brampton to the proposed York Transit facility along the Highway 7 corridor in Vaughan;
~ The implications for Brampton of alternative transit connections along Airport Road or Highway 427 to the Eglinton/Highway 403 transit corridor in Mississauga;
~ The potential for enhanced transit connections to the Highway 10 and Erin Mills Parkway/Mississauga Road corridors in Mississauga;
~ The potential for transit connections into Halton Region; and
~ The potential for enhanced transit connections to Bolton and other areas in Caledon.

3.3.6 In formulating this long-term optimum transit system, maximum realistic use of each of the following transit measures will be evaluated and the Consultant shall address how they can be effectively incorporated:

~ Expansion of GO bus services including GO express services (or alternatively express buses operated by a local transit operator);
~ Expansion of GO transit rail service;
~ Potential LRT service;
~ Optimum use of reserved bus lanes;
~ HOV lanes;
~ Arterial grid-based transit routes;
~ Increased headways;
~ Fare strategies;

~ Enhanced promotion and information services.

3.4 TTMP Recommendations/Implementation Plan

3.4.1 Based on the analysis of existing traffic and forecasted demands, the Consultant will identify and evaluate a full range of pragmatic and practicable options to accommodate transportation and development to 2031, and to enhance transit services within and beyond Brampton, and will recommend an optimum long-term road network and transit system. The TTMP should determine this most effective option in the context of Brampton's expected year 2031 characteristics and in terms of the maximum realistic modal split for Brampton.

3.4.2 The Consultant will recommend planning and land-use policies, including Transit Priority and Travel Demand Management (TDM) measures, that will support and encourage the promotion of public transit with the goal of maximizing the 2031 modal split. The strategy may imply changes to the Official Plan, zoning and traffic By-laws, urban design guidelines, development charges policies, engineering standards, and transit service operational plans.

3.4.3 The Consultant shall prepare a comprehensive implementation strategy for the transportation/transit recommendations reached in the study. Such a strategy will include specific targets, objectives and performance measures for any proposed system improvements to roads and transit in the context of interim horizon years. Additional details in this regard are as follows:

~ Provide a year by year road and transit implementation schedule up to 2015;
~ Provide 5-year implementation intervals from 2016-2031;
~ Detail road link and major intersection requirements and associated costs;
~ Identify timing and costs for: transit corridors (HOV, RBL, etc.), bus procurement, transit storage and repair facilities, and terminal requirements;
~ Identify implementation requirements and alternative cost comparisons which will enable the City to utilize these cost figures for DC purposes;
~ Identify the key road and transit projects that will have the greatest strategic impact on the City.

4 STAGE 2: DEVELOPMENT CHARGES CALCULATION

4.1 The Consultant shall provide professional services to the City to provide the required transportation calculations for the upcoming DC By-Law update/review. The transportation system recommended by the completed TTMP will form the basis for the required DC work. Any additional modelling required by the DC review program to expand the details of required transportation/transit infrastructure will be specifically identified in the consultant's proposal and tied to the background modelling analysis from the TTMP.

4.2 The primary task of the DC By-law component of this overall TTMP Study is to provide the itemized and detailed costing of the transportation and transit infrastructure required by specific years as determined in Stage 1 of the TTMP Study.

4.3 The format for compiling and tabulating this information will be defined by a separate DC By-law Steering Committee.

Note: *This Stage 2 component of the overall TTMP study is one which the City might alternatively choose to undertake using its own resources or to incorporate in a separate broader DC By-law consulting assignment. Accordingly, consultant proposals for this study should cost this component separately and as an optional item.*

5 REPORTING REQUIREMENTS

5.1 The Consultant shall prepare a final TTMP document which, in addition to addressing the foregoing Study terms of reference, shall include:

5.1.1 An executive summary;

5.1.2 A description of the study purpose and methodology (including analysis criteria and assumptions);

5.1.3 A detailed summary of the data collected;

5.1.4 An explanation of the findings and evaluations that support the conclusions and recommendations of the Study;

5.1.5 All relevant maps, exhibits and tables as required to illustrate data, assessments and findings, including all required detailed timing and costing information;

5.1.6 A comprehensive and concise set of conclusions and detailed recommendations.

5.2 The Consultant will submit 25 copies of a draft final report to the Steering Committee for review and approval prior to finalization of the Study.

5.3 The Consultant shall provide 75 copies of the finalized TTMP document.

5.4 Should the Consultant be retained to proceed with Stage 2 of the Study, a separate Development Charges By-law study report shall be prepared, which will set out the additional infrastructure detail required for DC purposes, including detailed individual and aggregated infrastructure costs for the transportation/ transit system required to accommodate projected growth to the end of the proposed DC By-law timeframe (present-day to 2023).

5.5 During the course of the Study, the Consultant will prepare brief interim technical summaries/progress reports to facilitate discussion at Steering Committee/Technical Committee meetings.

5.6 The Consultant will attend meetings with the Steering Committee (approx. 4-6) and with the Core Technical Committee (approx. 6-8) at key stages during the course of the study.

5.7 To assist the Steering Committee in maintaining appropriate contact with Council and the public during the course of the Study, the Consultant will be expected to make 2-3 interim or final presentations to Council or the public.

6 STUDY ADMINISTRATION & TIME-FRAME

6.1 The Transportation and Transit Master Plan Study will be administered by a Steering Committee that will comprise of appointed members of Council, and staff representatives from the City of Brampton's Planning, Design and Development Department; the Ministry of Transportation; the Regions of Peel, York, and Halton; and the adjacent local municipalities of Mississauga, Caledon, Halton Hills, and Vaughan.

6.2 A Core Technical Committee identified by the Steering Committee will coordinate and assist the work of the Consultant team on an ongoing basis and provide interim direction between Steering Committee meetings.

6.3 The successful consultant will meet with and receive direction from the Steering Committee at key stages of the TTMP Study. The Steering Committee will issue final approval for all components of the Study.

6.4 The Study is funded by the City of Brampton. A maximum of 75% of the Study budget will be paid as work progresses, the level of such progress to be judged exclusively by the Study Coordinator assigned by the Steering Committee.

6.5 The TTMP Study is to commence by June 14, 2002 and shall be completed within nine (9) months following authorization by the Steering Committee to proceed. The Study timetable will include an effective interim recommendation stage within six (6) months of study initiation.

7 PROPOSAL INSTRUCTIONS

7.1 The Consultant shall prepare, in consideration of the foregoing TTMP Study terms of reference, a proposal submission based on a budget of $200,000-$300,000.

7.2 The proposal submission shall include the following:

7.2.1 An Executive summary;

7.2.2 The scope and activities to be undertaken for the Study, identifying the work activity components and tasks required to complete the Study;

7.2.3 Identification of optional tasks, such as the analysis of a number of development or staging scenarios which would require additional intermediate timeframe model runs, and particularly the separate cost of the Stage 2 Development Charges calculations component;

7.2.4 A schedule identifying the time allocation for the activities, due dates for completion of technical/progress reports, an interim recommendation report, and the final TTMP Study report;

7.2.5 A meeting schedule for the Steering Committee and the Core Technical Committee (see Section 6);

7.2.6 A list and description of similar projects completed by the Consultant, and references who may be contacted in regard to these projects;

7.2.7 Personnel to be assigned to the Consultant's project team, including qualifications (education, experience), responsibilities and time involvement associated with the project activities, and per diem costs.

7.2.8 Total Price, including all disbursements and GST, and a unit cost breakdown by task (including meetings and presentations, and any optional tasks) to be utilized to calculate savings or increased costs in the event of study reductions or increases;

7.2.9 Cost control and project management measures to be maintained by the Consultant to ensure that cost and time schedules are maintained.

7.3 The Consultant shall submit fifteen (15) copies of the detailed proposal, enclosed in a sealed package clearly identifying the Consultant and the project, to be received not later than 4:30pm local time on Monday May 27, 2002, addressed as follows:

Mr. Brad Hale
Transportation Planning Supervisor
Corporation of the City of Brampton
2 Wellington Street West
Brampton, Ontario
L6Y 4R2

7.4 The Corporation of the City of Brampton shall not be held liable for any costs associated with the preparation of proposals.

8 PROPOSAL EVALUATION/CONSULTANT SELECTION

8.1 All proposals received will be evaluated with consideration given to the following factors (among others):

~ Comprehensiveness and quality of the proposal;
~ Efficiency and effectiveness of the work plan;
~ Qualifications and experience of the consulting team;
~ Cost-effectiveness in relation to the City's overall requirements;
~ Innovative applications/concepts;
~ Fees and associated expenses.

8.2 The City of Brampton reserves the right to accept or reject any or all proposals submitted.

8.3 The selection of a consultant will be based upon the written submission and a presentation to be made to the Steering Committee through a formal interview process.

8.4 The City may elect to award only a portion of the contract, or may elect not to award the contract.

8.5 The final consultant selection is subject to approval of the City of Brampton Council

Appendix A