Volume One
Summary Report

Mississauga Transitway Environmental Assessment Report

City of Mississauga
January 1992

MISSISSAUGA *Transportation and Works*

Ministry of Transportation Ontario

LET'S MOVE

MISSISSAUGA TRANSITWAY ENVIRONMENTAL ASSESSMENT REPORT

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1. EXECUTIVE SUMMARY

1.1 Introduction

The Mississauga Transitway Planning Study was carried out in 1990 and 1991 by the City of Mississauga, with the support of the Ministry of Transportation of Ontario and the involvement of interested agencies and the public. The Study built on the earlier recommendations of the Mississauga Transportation Study and had as its goal the identification of a feasible, appropriate Rapid Transit facility in an east-west direction in central Mississauga so that property may be protected to allow its future staged implementation.

The Mississauga Transitway is a key element in the long-term transportation strategy of both the City and the Greater Toronto Area. In recognition of this role, the Minister of Transportation of Ontario has included the Mississauga Transitway in the "Let's Move" program of investment in Rapid Transit infrastructure in the Greater Toronto Area.

The study process, its conclusions, and their rationale are documented in this Environmental Assessment Report, which is hereby submitted to the Minister of the Environment of Ontario for review under the Environmental Assessment Act. Approval of the project by the Minister is one of the essential steps which will allow the City to proceed to acquire the necessary property, construct, and operate the Transitway and its ancillary features.

In order to meet the requirements of the EA Act (Revised Statues of Ontario, 1980, Chapter 140, Section 5(3)), this report contains the following elements:

EA Requirement		Mississauga Transitway EA Report Section
(a)	Purpose of the Undertaking	1.2
(b)	Description of and statement of the rationale for	
	(i) the undertaking	1,4, 1.5, 4.1 - 4.6, 5.1, 5.2
	(ii) the alternative methods of carrying out the undertaking	1.4, 4.2, 4.4, 4.5
	(iii) the alternatives to the undertaking	1.4, 4.1
(c)	A description of	
	(i) the environment that will be affected by the undertaking and its alternatives	1.6, 3.3 - 3.6
	(ii) the effects...caused to the environment by the undertaking and its alternatives	1.6, 4.1, 4.2, 4.4, 4.5, 5.2, 5.3
	(iii) the actions necessary...to prevent, change, mitigate, or remedy the effects of the undertaking and its alternatives	1.6, 4.1, 4.2, 4.4, 4.5, 5.2, 5.3
(d)	An evaluation of the advantages and disadvantages...of the undertaking and its alternatives.	1.4, 1.5, 4.1, 4.2, 4.4, 4.5, 4.6, 5.2, 5.3

1.2 Purpose of the Undertaking

The City of Mississauga now contains 460,000 residents and over 280,000 employment opportunities. Extraordinary growth has occurred since 1970 and is planned to continue into the next century, with an ultimate projected population level of approximately 700,000 and over 500,000 employment opportunities. The City plays a major role in the Greater Toronto Area (GTA), and it is planned to focus a significant proportion of the area's growth on Mississauga.

The goals of the City therefore include the provision of an adequate level of transportation infrastructure and service to maintain mobility in the City at all levels of development, and to provide such services as are necessary to support future development and allow the City's land use goals to be realized. The existing transportation system is inadequate to accommodate the anticipated / planned growth in travel demand.

Various studies have been carried out to assess the extent of future transportation needs in Mississauga (see Section 4.1.1, p.88), and it has been determined that a balanced transportation system comprising freeways, streets, commuter rail, and rapid transit facilities will be required in order to meet the City's land use and transportation service goals.

One of the key requirements of an effective overall transportation system is the provision of an east-west Rapid Transit facility in central Mississauga. Known as the Mississauga Transitway, this proposed undertaking is the subject of the current study, and has as its purposes:

- to act as a high-capacity east-west transit spine within the City, linking with major north-south corridors to provide City-wide transit mobility;
- to serve transit users destined to and originating from the major employment centres and transportation nodes in central Mississauga, such as the City Centre, Airport Corporate Centre, Meadowvale Town Centre, Burnhamthorpe / Eglinton corridor, and GO Rail Milton line;
- to link with existing and future transit systems and facilities in adjacent municipalities, thereby becoming integrated in a GTA rapid transit network;
- to promote the use of transit within and to Mississauga, by providing a convenient, fast and efficient service;
- to add to the capacity of the overall transportation system in such a location and to such an extent that land use goals in the affected areas can be realized;

- to be a facility which can be implemented in appropriate physical, operational, and fiscal stages as required, yet be flexible enough that a range of future demand levels and types can be supported; and

- to be a physically, fiscally, socially, environmentally, and operationally feasible facility.

1.3 Study Area

The Mississauga Transitway Planning Study considered three levels of study area (see Exhibit 1 p.4):

a) Regional Context

As a key element in the Greater Toronto Area transportation network, the Transitway would, in some respects, affect the entire City of Mississauga and the surrounding area. It was in the regional context that the need for, and role of, the facility was determined.

b) Alternative Corridors

The corridor between Burnhamthorpe Road and Eglinton Avenue was considered in detail as to the potential direct effects of the Transitway, and of the alternatives to the undertaking.

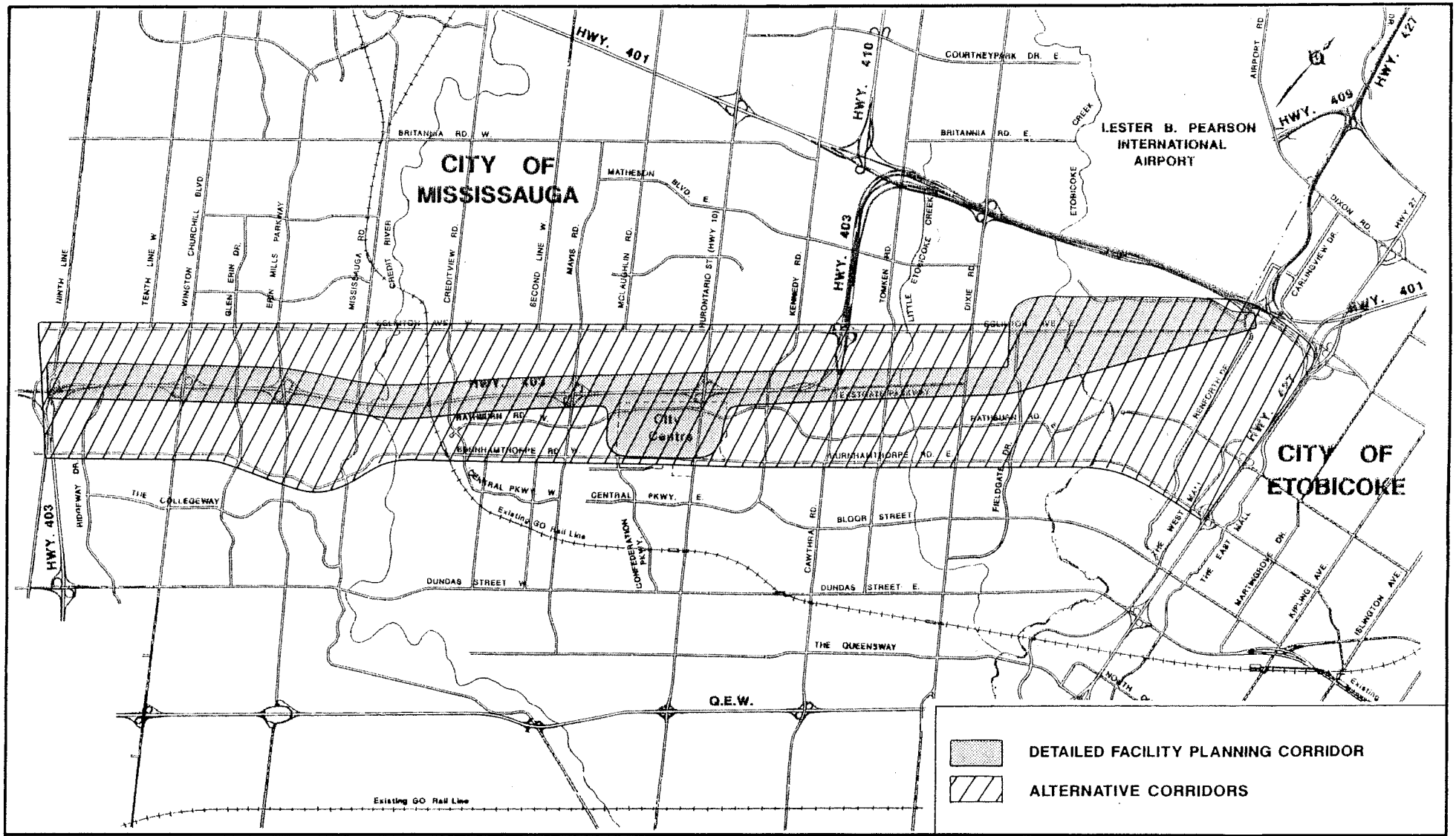
c) Detailed Facility Planning Corridor

Following the analysis of alternative corridors, one corridor was selected for the development of alignment alternatives. The Parkway Belt West Southern Link between the western limits of Mississauga at Ninth Line and the City's eastern limits at Renforth Drive, consisting generally of the Highway 403/Ontario Hydro corridor, was the area considered in great detail in planning the Transitway. In the Mississauga City Centre area and the land east of Fieldgate Drive, the study area extended beyond the Parkway Belt.

1.4 Identification and Analysis of Alternatives

1.4.1 Analysis Process

In developing a recommended solution to an identified need, the Environmental Assessment Act requires that all reasonable alternatives be considered. The planning process for the Mississauga Transitway followed this principle, and Section 4 (p.86) of this report documents the entire process and its conclusions.



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 1

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SCALE

STUDY AREA

The comprehensive travel demand modelling done during the Mississauga Transportation Study for a variety of scenarios, revealed a shortfall in the long term (by 2001) in transportation capacity in several key corridors in Mississauga.

It was apparent that increased transit usage would have to play an important role in the long term if Mississauga was to be able to reach its planning and land use goals. Consequently, the study developed and assessed a variety of transit scenarios, most involving the provision of Rapid Transit (i.e. dedicated bus, light rail, or subway) facilities in the corridors exhibiting the greatest future demand.

An analysis of alternative transportation strategies identified the east-west corridor in central Mississauga (between Burnhamthorpe Road and Eglinton Avenue) as the most important element in an ultimate Rapid Transit plan; it is this corridor which is the subject of this report, while other north-south corridors (such as Hurontario and Dixie) will be subject to separate future studies.

Simultaneously with the demand and corridor analysis, a study of appropriate modal alternatives was carried out. It was found in the initial study (and reconfirmed in 1990 with more detailed modelling) that a transit demand of approximately 10,000 - 15,000 passengers per hour per direction would be present in sections of the east-west central corridor. The Rapid Transit modes were then analyzed in the context of this demand and the available rights of way in the corridor.

The determination of the appropriate technology and route within the corridor then drove the development and analysis of actual facility alignments along the recommended route. With the determination of the recommended alignment and facility layout, property can now be identified and protected for the purpose of the facility's implementation.

This process, as documented in Section 4 (p.86), is briefly outlined in the following pages, covering:

- modal alternatives
- corridor alternatives
- route / alignment alternatives
- recommended undertaking.

1.4.2 Alternatives to the Undertaking

Given the anticipated level of travel demand, as modelled on the basis of achieving the City's ultimate development plan, several alternatives to the undertaking may be considered. These alternatives and their analysis are summarized in Table 1 (p.7), and Section 4.1 (p.88) provides more detail.

Given that the scenarios under which the capacity shortfall for central Mississauga's east-west travel will occur include both the "reasonably expected" maximum capacity road network and the "physical maximum" road network, it was clear that neither improving the road network nor the "do nothing" approach would adequately address the community's transportation needs.

Of the transit technologies available, only Bus Transitway or Light Rail systems on dedicated rights of way were appropriate in terms of capacity. Between the Bus Transitway and Light Rail concepts, the Transitway was favoured for the initial development of rapid transit in Mississauga, for the reasons of easy staging, simple technology, least cost, operational flexibility, ability to construct in an early timeframe, and cost-effectiveness.

Subway technology was considered, but its capacity is greater than 30,000 passengers per hour per direction, with correspondingly high costs; the ridership that would justify such an investment is not foreseen in Mississauga, even at the ultimate state of development. The constraints on effectively staging and funding the construction of a subway system in isolation from the Toronto subway network was also a significant factor in rejecting subway technology for Mississauga.

Heavy Rail (i.e. GO Train) technology is also a high-capacity approach to meeting concentrated demand for long interurban trips. However, the travel demand analysis revealed a diffuse, multi-nodal pattern within Mississauga, which would not be feasible to attempt to serve with GO Rail. Within Central Mississauga, only the Milton GO line exists in any case, with insufficient spare capacity during peak periods to accommodate 15,000 extra trips, even if they could be focused on the GO corridor. The possibility of constructing new GO Rail lines through populated areas of Mississauga was not considered to be realistic. Continued emphasis on improving GO Rail for downtown Toronto-destined trips was, however, considered very necessary.

Increasing Bus service on widened roads, even with reserved Bus lanes, would not provide enough additional capacity by itself to service the entire demand nor would it be possible to provide the level of service needed to achieve the necessary modal split to transit on a city-wide basis, although corridor-specific opportunities were once again highlighted.

It was recognized that a Bus Transitway could be built in such a way as to allow conversion to Light Rail or Subway technologies should unforeseeable condition or demand changes occur in the long term or if necessary as part of an area-wide rail strategy. However, bus technology is suited to both the ultimate level of demand and the operating characteristics appropriate for Mississauga, and a Bus Transitway is hence recommended.

TABLE 1 - ANALYSIS OF ALTERNATIVES TO THE UNDERTAKING

ALTERNATIVE	TEXT SECTION	ANALYSIS CATEGORY				SUMMARY
		TRANS. SERVICE	SOCIAL ENVIRON.	ECONOMIC ENVIRON.	NATURAL ENVIRON.	
EXPAND EXISTING SYSTEM						
WIDEN ROADS	4.1.3.1	○	○	○	○	– Expansion beyond Base Case not feasible
BUS–HOV LANES	4.1.3.2	◒	○	◒	○	– Not viable as standalone alternative
GO TRAIN	4.1.3.3	○	○	◒	◒	– Does not serve internal Mississauga needs
BUS SERVICE	4.1.3.4	◒	◒	○	◒	– Incapable of accommodating ultimate demand
TRANSPORTATION SYSTEM MGMT.	4.1.3.5	–	–	–	–	– Considered an integral part of all alternatives
ADDITIONAL ELEMENTS						
NEW ROADS	4.1.3.6	–	–	–	–	– No viable corridors
BUS TRANSITWAY	4.1.3.7	●	◒	◒	●	– Viable alternative; preferred over LRT
STREETCAR	4.1.3.8	◒	○	○	◒	– Insufficient capacity yet requires major road widenings
LRT	4.1.3.9	●	◒	◒	●	– Viable alternative
SUBWAY	4.1.3.10	◒	◒	○	●	– Inappropriate technology for demand level
GO RAIL	4.1.3.11	–	–	–	–	– No viable corridors
NON–TRANSPORTATION						
DO NOTHING	4.1.3.12	○	○	◒	◒	– Severe long–term drawbacks
REVISE LAND USE	4.1.3.13	–	–	–	–	– Not considered an alternative "to" the undertaking; integral component of all alternatives

● GOOD / MOST PREFERRED ◒ FAIR ○ POOR / LEAST PREFERRED

1.4.3 Corridor Alternatives

The ability to implement a Transitway to address central Mississauga's ultimate transportation needs is dependent on the availability of a functionally viable route. Three corridors were considered at the time of the 1985 Mississauga Transportation Study: the Eglinton Avenue, Burnhamthorpe Road, and Parkway Belt (Highway 403) corridors. Section 4.2 (p.122) contains the detailed analytical comparison of the corridors, while Exhibit 1 (p.4) illustrates their location.

Comprehensive travel demand computer models were run to compare the three options, and each was determined to attract comparable rapid transit ridership (although it should be noted that the development plan considered in 1985 had 65,000 City Centre jobs, whereas current plans are for up to 110,000 jobs in that zone). Travel demand was once again modelled during 1990, reflecting the current development plans.

A set of other factors (cost, service, impacts) were considered in 1985, with the analysis supplemented by the parallel GO-ALRT corridor study going on at that time. The GO-ALRT study for an advanced interregional light rail system across the Greater Toronto Area addressed many key network and corridor issues, and was reviewed by local Councils and by the public. In 1985 the provincial government suspended the GO-ALRT program in favour of more conventional transit modes. A summary of the comparison of corridors follows in Table 2, based on the Mississauga Transportation Study Technical Summary Report. The Highway 403 corridor was preferred under most factors, and performed adequately on all accounts. It was therefore preferred in both the GO-ALRT and Mississauga Transportation studies. Upon review in 1990, it was determined that the original analysis remained valid, with the exception that subsequent development in the Eglinton and Burnhamthorpe corridors had made those options even less attractive in terms of physical feasibility, construction cost, and potential neighbourhood impact.

Through the provisions of the Parkway Belt West Plan, the revised City Centre Secondary Plan, and the Highway 403 Arterial Extension Study, an adequate right of way remains viable for a Bus Transitway in the Highway 403 / Parkway Belt West corridor between Ninth Line and Renforth Drive, and the corridor was consequently recommended for Transitway location and further study as to a detailed alignment plan.

TABLE 2 - ANALYSIS OF CORRIDOR ALTERNATIVES

ALTERNATIVE CORRIDOR	ANALYSIS CATEGORY				SUMMARY
	TRANSPORTATION SERVICE	SOCIAL ENVIRONMENT	ECONOMIC ENVIRONMENT	NATURAL ENVIRONMENT	
EGLINTON	◒	○	○	◒	CONSTRAINED CORRIDOR; SIGNIFICANT IMPACT
HIGHWAY 403	●	◒	●	◒	GOOD SERVICE; LIMITED IMPACT: PREFERRED OPTION
BURNHAMTHORPE	◒	○	○	○	CONSTRAINED CORRIDOR; SIGNIFICANT IMPACT

● GOOD/ MOST PREFERRED ◒ FAIR ○ POOR/ LEAST PREFERRED

1.4.4 Alignment Alternatives

1.4.4.1 Planning and Design Standards

The concept of a Transitway, as recommended for Mississauga, involves some fundamental assumptions that directly affect the "alternatives" that may be considered. These base conditions, for which no alternatives are considered, include:

- grade separation between the Transitway and all crossing roads
  - essential to long term operational integrity of both Transitway and roadways
  - at-grade crossings unfeasible at Highway 403 interchanges
  - at-grade crossings may be considered in construction staging; however the undertaking is defined as the ultimate Transitway, for which grade separations are required.
- stations at major crossing roads
  - essential to integration of Transitway in overall transportation network
  - stations can vary in scope; passenger transfer facilities required at a minimum
  - the undertaking as defined includes protection of property for the ultimate station needs
- plan, profile, and cross section geometry to allow conversion to light rail and subway modes
  - essential protection for possible change in technology
  - provides for optimum Transitway operation in Bus mode.

1.4.4.2 Development and Analysis of Alignment Alternatives

Within the nineteen kilometre length of the Parkway Belt / Highway 403 corridor through Mississauga, there are several possibilities for the Transitway alignment, including the right-of-way currently designated for that purpose in the Parkway Belt West Plan. Although conventional analyses of alternatives have been carried out and conclusions generated that support the recommended route, two overriding constraints clearly influence the choice of alignment: proximity to adjacent land uses; and functional requirements of the physical facility.

Regarding land use, in sections of the corridor where low density residential development abuts the corridor, it was strongly preferred by residents that the Transitway be located as far away as possible; conversely, in existing or future commercial areas, the effectiveness of the Transitway would be enhanced by being as close as possible to employment centres. Within the Parkway Belt itself, the presence of existing facilities and the designation of a continuous 30 m wide strip for transit use in the Parkway Belt West Plan had some influence on the development of alternatives.

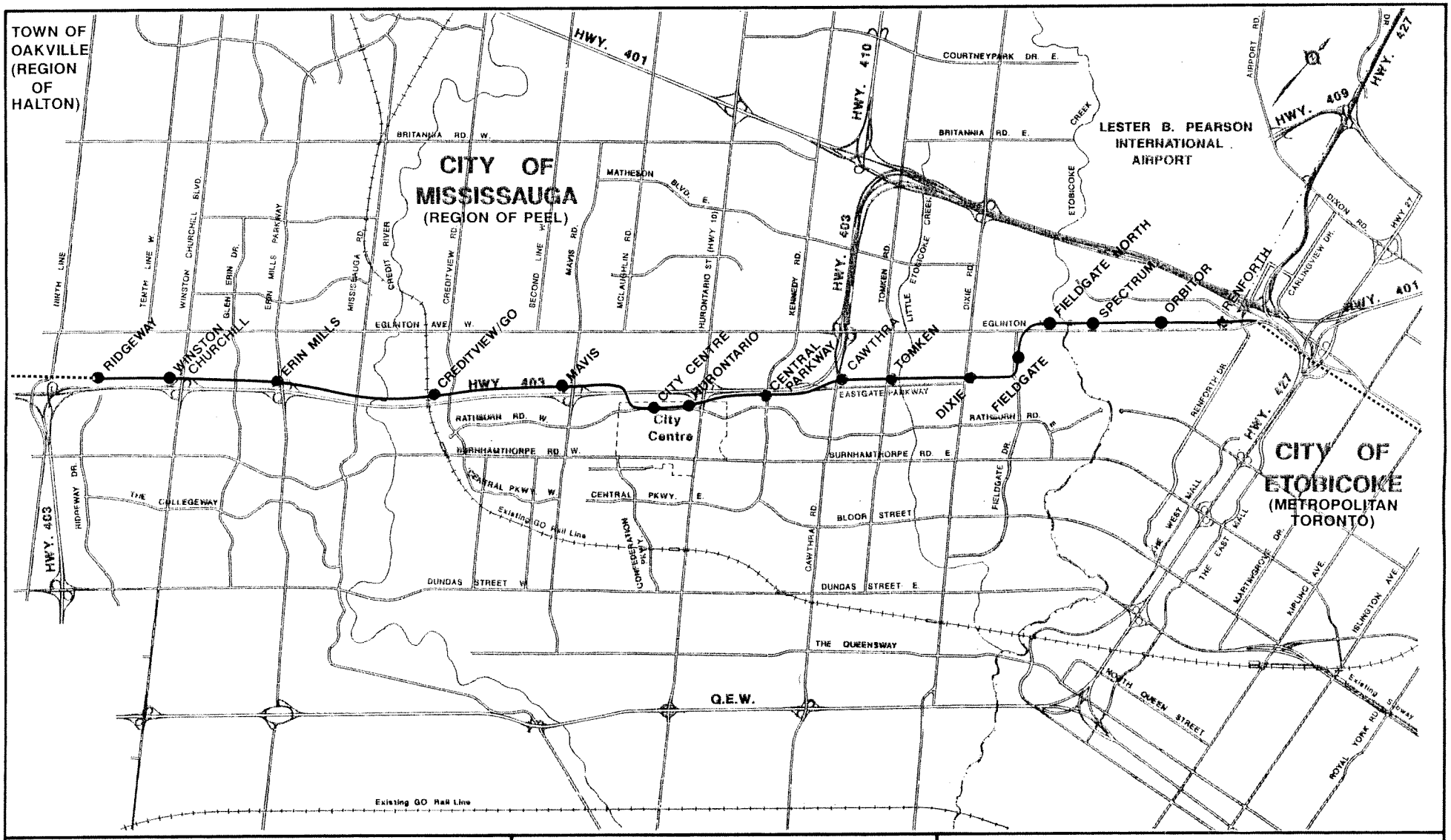
The Transitway's functional requirements stem from its role in the overall transportation system - a convenient, flexible, cost-effective "spine" capable of making a significant contribution to a citywide shift in modal split towards transit. This entails stations at major north-south arterials, station envelopes allowing passenger facilities and efficient bus movement, grade separation of the Transitway with all roadways, and high-speed geometric design standards.

The alignment of the Transitway reflects functional requirements constrained by contextual factors. With frequent stations which are far more constrained in location than the Transitway itself is, the analysis is readily segregated into discrete sections, ten in all, between key stations. Within each section, there are typically several possible alignments for the Transitway, generally either north or south of the Ontario Hydro corridor or Highway 403. An option within the median of the freeway can be considered in some areas. Of course, the Transitway must be continuous between sections, but this is ensured through the location of stations as common "nodes" between sections.

Other factors entered into the analysis of alternatives: natural environment, cost, other users or facilities in the Parkway Belt, station location opportunities, land use and development, and jurisdictional planning needs.

Exhibit 2 (p.11) is a key plan showing the Transitway stations; to review the station and alignment alternatives considered in each section of the Transitway route, refer to Sections 4.4 (p.141) and 4.5 (p.145) of this report.

Table 3 (p.12) summarizes the analysis process by which feasible station locations were identified. This serves as a necessary precursor to Exhibit 3 (p.13), in which the analysis of alternative Transitway alignments throughout the corridor is summarized. The factors used in the analysis of alternatives are broad categories which reflect the intent of the Environmental Assessment Act. The "good-fair-poor" indicators used in Exhibit 3 (p.13) are intended only to illustrate the conclusions of the analysis; the analysis itself is documented fully in Section 4 (p.86).



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 2

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SCALE

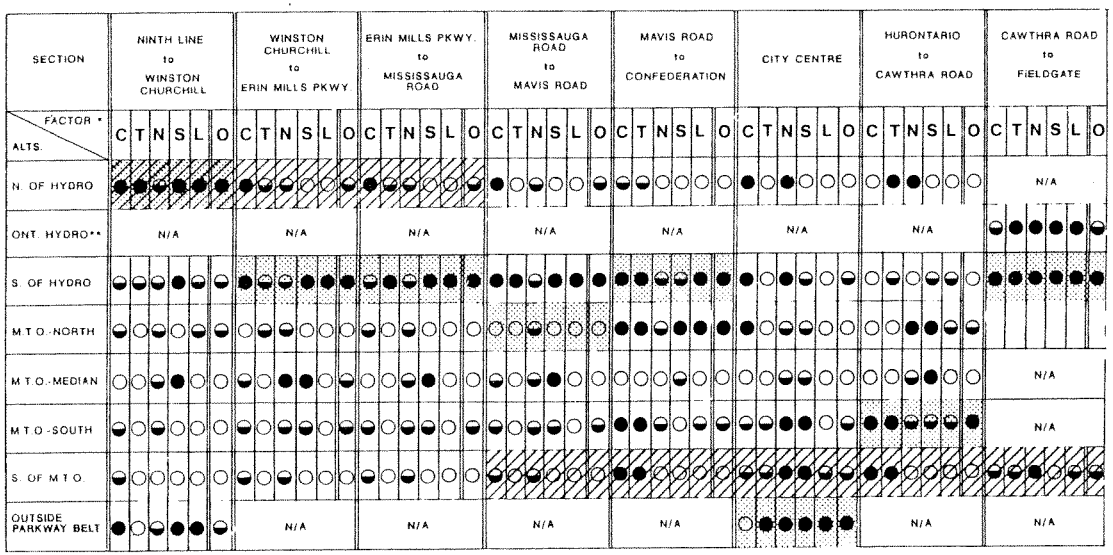
TRANSITWAY KEY PLAN

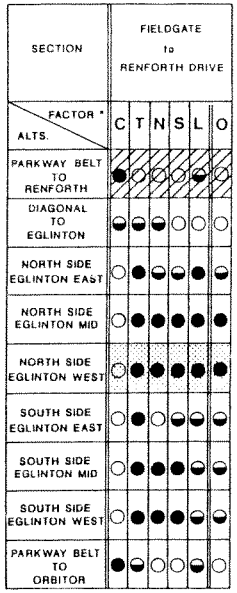
STATION — TRANSITWAY

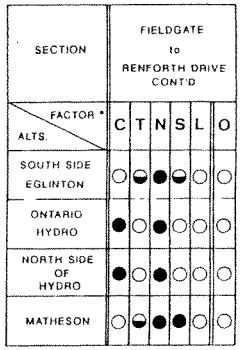
..... FUTURE EXTERNAL LINK

TABLE 3 - ANALYSIS OF STATION LOCATIONS

Station	Type	Rationale for Recommendations
Ridgeway	Arterial	Connecting transit routes on Ridgeway Drive. Potential for incorporation into new development.
Winston Churchill	Gateway	Access from Highway 403/407. Transit node for future Mississauga, Halton and Oakville Transitways. Potential for incorporation into new development.
Glen Erin	Intermediate	Connecting routes serving Erin Mills Town Centre; not recommended, however, due to proximity to adjacent stations, duplication of service / facilities, and impact on adjacent properties. Operational flexibility retained with bus-only ramp.
Erin Mills	Arterial	Major connecting routes on Erin Mills Parkway.
Mississauga Road	Intermediate	Connecting routes on Mississauga Road serving Streetsville and Erindale College; not approved, however, due to potential for impact on character of Mississauga Road.
Creditview	Arterial	Major transfers between GO Transit Milton Line and Transitway.
Mavis	Arterial	Major N-S transit route integration.
Confederation	Intermediate	Not recommended due to property impact and proximity to City Centre station.
City Centre	Gateway	Key station; focus of rapid transit service to largest employment node in Mississauga; essential to support City Centre growth.
Hurontario	Gateway	Serve eastern part of City Centre, provide Transitway interface with N-S routes in Hurontario corridor.
Central Parkway	Intermediate	Interface with transit routes serving local area and Kennedy / Britannia industrial employment to the north.
Cawthra	Gateway	Major park-and-ride opportunity and key access point to Transitway from 401 / 410 / 403 corridor, serving Brampton and northern trips.
Tomken	Arterial	Major N-S transit route integration.
Dixie	Arterial	Major N-S transit route integration. Park-and-Ride opportunities available.
Fieldgate	Intermediate	Potential station site to serve future development area.
Fieldgate North	Intermediate	Serves future development area.
Spectrum	Intermediate	Station spacing provides good service to Airport Corporate Centre.
Orbitor	Intermediate	Station spacing provides good service to Airport Corporate Centre.
Renforth	Gateway	Location provides best opportunity to accommodate all Gateway needs and network integration plans.







NOTES:

● GOOD/ MOST PREFERRED

◒ FAIR

○ POOR/ LEAST PREFERRED

RECOMMENDATION

EXISTING PARKWAY BELT TRANSIT CORRIDOR

* FACTORS: C=COST
T=TRANSPORTATION SERVICE
N=NATURAL ENVIRONMENT
S=SOCIAL-ECONOMIC ENVIRONMENT
L=LAND USE and DEVELOPMENT
O=OVERALL

** NOTE:
LINEAR TRANSPORTATION FACILITY WITHIN ONTARIO HYDRO RIGHT OF WAY UNACCEPTABLE TO ONTARIO HYDRO

N/A - NOT APPLICABLE

MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 3

SUMMARY OF ANALYSIS OF ALIGNMENT ALTERNATIVES

1.5 Recommended Undertaking

1.5.1 Rationale for the Recommendation

The recommended plan for the Mississauga Transitway represents the culmination of several years of study and analysis. The rationale for the Transitway, its location, and its alignment is well established:

Need: continued planned growth in Mississauga must be supported by a balanced transportation network consisting of a variety of modes, facilities and services, of which the Mississauga Transitway forms an essential part. In particular, the Transitway addresses a significant future demand for east-west travel in central Mississauga, and can act as the entire City's east-west transit spine.

Mode: the provision of a Transitway dedicated to bus operation is the most cost-effective, flexible, efficient rapid transit concept for application in Mississauga. GO Trains do not serve intra-Mississauga travellers, subways are far more expensive to construct, and neither Light Rail nor Subway modes offer the operational and staging flexibility of a bus-based system.

Corridor: the use of the Highway 403 / Parkway Belt corridor is the least costly, least disruptive, yet most effective route for the Transitway, when compared to the Eglinton and Burnhamthorpe alternative corridors. An adequate right-of-way for transit use has been protected in the corridor by the Parkway Belt West Plan.

Alignment: the recommended Transitway alignment has been developed on a segment-by-segment basis which reflects the unique conditions and issues present along discrete portions of the route. Each portion of the route has been subject to refinement, review, analysis, and public involvement, and has gained city-wide support. The Transitway can be buffered from all existing homes backing on the Parkway Belt, while the plan protects all other existing and future users of the Parkway Belt. The Transitway will run as close as possible to existing roadways throughout its entire route east of Winston Churchill Boulevard. Table 4 (p.15) provides a brief summary of the rationale for the recommended alignment in each section of the study area, and can be reviewed with reference to Exhibit 2 (p.11).

In summary, for Mississauga to grow in the way it is planned, it requires a Transitway. It is recommended that the Transitway use bus operation and be located within the Highway 403 / Parkway Belt corridor on the specific alignment shown in this report.

1.5.2 Description of the Recommended Undertaking

The proposed Mississauga Transitway is a grade-separated two lane roadway dedicated solely to transit use. Essential features include transfer stations at key crossing roadways, passing lanes at stations, and high geometric standards to allow efficient bus

TABLE 4 - SUMMARY OF EVALUATION OF ALIGNMENT ALTERNATIVES

Ninth Line to Winston Churchill Blvd.	Winston Churchill Blvd. to Erin Mills Parkway	Erin Mills Parkway to Mississauga Road	Mississauga Road to Mavis Road	Mavis Road to City Centre	City Centre	Hurontario Street to Cawthra Road	Cawthra Road to Fieldgate Drive	Fieldgate Drive to Orbitor Drive	Orbitor Drive to Renforth Drive
The recommended location for the Transitway is in the transit corridor.[1] A draft Secondary Plan for the land north of the Transitway has been prepared and is currently undergoing public review; there is a possibility that the future plan for the area could be adjusted to strengthen usage of the Transitway by integrating it into the development. Possible conflict with Ontario Hydro is minimized.	The recommended Transitway alignment makes a transition from the designated transit corridor[1] to the designated utility corridor[1] east of Winston Churchill Blvd. This alignment shifts the Transitway away from the existing residential development located adjacent to the designated transit corridor[1]. This alignment is preferred over an alignment south of Highway 403 because of its lesser impact on the Winston Churchill / Highway 403 interchange. An alignment south of Highway 403 would also impact on the residential development on the south side of the Parkway Belt, and there is insufficient room to provide a station and station ancillaries with south side alignments.	The recommended Transitway alignment is in or just south of the utility corridor.[1] This alignment is approximately equi-distant from the residential development on the north and south edges of the Parkway Belt. An alignment in the designated Parkway Belt transit corridor[1] would directly border the adjacent low density residential development. An alignment in the Highway 403 median would limit MTO's plans to widen Highway 403. Providing a station and its ancillaries on the south side of Highway 403 would impact significantly on the adjacent low density residential development.	The recommended alignment of the Transitway is in or just south of the designated utility corridor[1]. An alignment in the designated transit corridor[1] would directly border the adjacent residential development. There is also insufficient space to fit a station and station ancillaries in the transit corridor[1]. An alignment in the Highway 403 median would limit MTO's plans to widen Highway 403 to its ultimate 8 lane cross section.	The only feasible Mavis Station location was in the northwest quadrant of the interchange. A crossing of Highway 403 was therefore required to reach the City Centre. In choosing between a route located between Highway 403 and Ontario Hydro, and one south of Highway 403, the former is preferred. The reasons include a greater separation from existing homes at an equivalent cost, an optimum crossing of Highway 403, and a minimum length of costly underground Transitway within the City Centre area.	Since the Transitway as a whole is premised on the provision of good service to the City Centre, a route which penetrates the core of the area as much as possible is preferred. However, at some point the balance of additional service and extra cost is reached. In assessing demand and cost for a great number of options, a Transitway route which would leave the Parkway Belt east of Confederation Parkway and use the Rathburn Road corridor eastward to Hurontario Street was considered optimum.	A route within Ontario Hydro r.o.w. is unacceptable to Ontario Hydro. Highway 403 ultimate collector lane requirements need protection. A choice remains between a route immediately south of Ontario Hydro and one between the freeway and the south limit of the corridor. The north route is $15m more costly, and although farthest from homes south of Highway 403, would be very visible. The south route would maintain a 30-50m gap from the adjacent residential property line, place few constraints on Highway 403, minimize woodlot damage, and could be readily blended into the landscape. Upon extensive review with area residents and all agencies, a south side route was recommended.	The recommended location for the Transitway is in the utility corridor[1] between the Hydro corridor Eastgate Parkway. This alignment was selected after a comprehensive review and extensive public involvement during the Highway 403 Arterial Road (Eastgate Parkway) Preliminary Design Study.	The choice between a route in the designated transit corridor[1] and a route following the 403 Arterial to the north side of Eglinton Avenue provided a trade-off between better service to the area and least cost. The transit corridor[1] alignment was less costly ($30m) but provided inferior service to the Airport Corporate Centre and involved significantly greater impacts to the natural environment. The cost of the Eglinton alignment could be reduced by providing an open cut cross section. With the reduced cost the Eglinton alignment is preferred.	The recommended location is in the corridor[1] protected for transit in the Parkway Belt West Plan on the north side of Eglinton Avenue. This option connects the preferred north side Eglinton option to the proposed Renforth Gateway station. Public property is available at the Renforth location to develop a full facility gateway station. Other options on the south side of Eglinton affect the Transitway development and do not provide the same opportunity for the Gateway development.

[1] currently designated in the Parkway Belt West Plan

operation as well as the potential for a future change in mode. Other features of the Mississauga Transitway include grade separation with all crossing roadways, grading and landscaping to minimize the Transitway's impact on its neighbours, the integration of key stations with adjacent development where possible, and the provision of access ramps so that buses may enter and leave the Transitway at major stations.

The proposed facility is approximately nineteen kilometres long, stretching across Mississauga from Ninth Line to Renforth Drive (see Exhibit 2 p.11). The Transitway is planned to be located within the Parkway Belt West/Highway 403 corridor for most of its length, with the exception only of the Mississauga City Centre area and the section east of Fieldgate Drive. In those two sections the Transitway is to be located amidst areas of significant future commercial development.

Property protection for sixteen stations is recommended, to include five major "Gateway" type facilities with potential for parking and/or integration with adjacent private development, seven "Arterial" stations providing a transit interface with crossing roadways, and four "Intermediate" stations providing only a simple passenger transfer point. Bus-only access ramps are planned in a further two locations.

The Transitway will be in open earth cut for most of its route, crossing under intersecting roads. It will be located in a tunnel within the City Centre area. The Transitway will be landscaped extensively and fit into its surroundings with a minimum of visual intrusion on adjacent residents. The facility will closely parallel existing major roadways along its entire route east of Winston Churchill Boulevard.

Construction of the Transitway is capable of being staged over a number of years, as funding levels and demand permit. The staging sequence is part of a city-wide transportation strategy, as documented in Section 6.1 (p.322). The recommended Transitway staging concept would see initial stations at key points in the corridor, with bus use of priority lanes on existing or widened roads, followed by grade-separated Transitway links and additional stations being implemented in sections where the greatest benefit would be derived. Staging will be influenced by the timing of other elements of the provincial "Let's Move" rapid transit program, and may take up to twenty years to complete.

Mississauga Transit will be the major Transitway user, providing a variety of express, line-haul, shuttle, and special services along all or parts of the Transitway. Other public carriers such as GO Transit and the Toronto Transit Commission may also use the Transitway. Private automobile use of Transitway facilities will be restricted to designated parking and drop-off areas and their access roads. The potential exists for the Transitway to accommodate emergency vehicles.

Major structural elements, basic geometric design criteria, and station layout are planned so as not to preclude the possibility of eventually operating a light rail or subway technology on all or part of the facility. However, bus technology is capable of

accommodating the ultimate projected demand on the Transitway and is the recommended initial mode of operation (note that "ultimate" refers to the modelled passenger travel demand at the City's projected final population of 710,000± and employment of 540,000±, assumed to be in the year 2021 or later). Therefore the "undertaking" for which Environmental Assessment approval is being sought is the construction and operation of a bus-only roadway and its associated stations / facilities. The application is based on the functional plan and associated property envelope outlined in this report; within the envelope sufficient flexibility to accommodate preliminary design, detail design, and unanticipated requirements exists. The use of any new or different modal technology would be subject to further EA approval. The total cost of the Transitway and its ancillary facilities as shown in this report is in the order of $500 million (1991 dollars) (see Section 5.2.11, p.281).

1.5.3 Area Context

There are a number of major transportation improvements and facilities currently being planned in the western part of the Greater Toronto Area. The Eglinton West Rapid Transit line, Highway 407 and its associated Transit Corridor, the Halton Transitway, the Bloor Subway Extension, Highway 403 in Halton, Highway 401 improvements, and others are projects underway which are not under the control or proponency of the City of Mississauga.

The proposed Mississauga Transitway fits into the regional transportation network which will ultimately emerge with the completion of these projects, and is entirely compatible with (and supportive of) each initiative. In recognition of this role, the Transitway has been included in the provincial "Let's Move" program of Rapid Transit initiatives within and around the Metropolitan Toronto area. The compatibility and role of the Transitway within the City's internal transit network has already been noted. In fact, the need to be compatible physically and operationally with such a wide variety of initiatives, in the absence of a definite time frame (and in some cases, transit mode choice) was a key factor in recommending the use of bus technology for the Mississauga facility. The Transitway can operate efficiently and effectively both under various staging options of its own and in connection with other facilities via direct interfaces, buses on priority lanes, and buses operating in mixed flow. This flexibility can not be matched by another mode and is virtually essential at this stage in the development of Mississauga's transportation system as well as in the broader GTA context.

Another important consideration is that the flexibility of operation just described allows the Mississauga Transitway to be constructed in stages and operate successfully fully independent of the timing, mode, and sequence of the other GTA transit facilities. Thus the Transitway can address Mississauga's transportation needs as required without depending on external links, yet fit into the overall network as those links materialize.

Regarding the independence of justification for the Transitway from a demand point of view, it may be noted that it is not anticipated that a significant proportion of the

Transitway trips would be inter-regional trips having neither an origin nor a destination in Mississauga; in fact the demand modelling done to date indicates that well over 90% of the future Transitway passengers will have either origins, destinations, or both within Mississauga. Demand for these Mississauga-oriented trips will continue to grow in accordance with development in the City.

It is of note that the Transit Implementation Group - provincial and regional officials charged with prioritizing and developing an implementation strategy for the various "Let's Move" rapid transit initiatives - have agreed that the Mississauga Transitway, Spadina LRT, and Spadina Subway extension Environmental Assessments should proceed ahead of the other "Let's Move" projects, as the three most advanced plans; in fact the two Spadina projects have already been submitted to the Ministry of the Environment for approval, and the subway extension was approved in January 1992.

In summary, the Mississauga Transitway is justified on its own merit, while ultimately forming an essential part of the GTA transportation system. Its flexible operation and staging potential will allow it to perform effectively both in combination with a variety of other transit facilities and as the east-west transit spine within Mississauga.

1.6 Environmental Effects and Mitigation Measures

There are two general categories of "Environmental Effects" due to the proposed Transitway: the broad area-wide issues of transportation systems and urban planning, upon which the Transitway has an effect; and the more immediate perceivable impacts within the Transitway corridor that may result from its physical presence.

The broad effects of the Transitway are discussed in their proper context elsewhere in this report, in consideration of the fact that the Transitway is itself a mitigation measure for the area-wide transportation problems. In this section, a focus on specific corridor effects and associated mitigation measures will be maintained. Table 5 (p.19) summarizes the route-specific Natural environmental effects of the recommended route and the mitigation measures to be incorporated in the undertaking, while Table 6 (p.20) provides a similar summary for the Social-Cultural environment. Tables 5 (p.19) and 6 (p.20) are general in nature; a more detailed list of the mitigating measures typically associated with any major construction project is included in Appendix V, and specific mitigation measures in the area of the natural environment are discussed in Section 5.3 (p.291) and in Appendix M.

TABLE 5 - SUMMARY OF EFFECTS ON NATURAL ENVIRONMENT AND COMMITMENT TO MITIGATION

Element	Environmentally Significant Area / Issue	Concerned Agency*	Effect of Transitway	Mitigation Measures	Commitment to Future Work
Physiography and Soils	Protection against possible soil and physiography impacts. Erosion of exposed slopes. Disturbance of bedrock fossils.	MNR CVCA	• Limited sensitivity. • Locations near watercourses more sensitive. • Potential bedrock disturbance in construction.	Apply necessary temporary and permanent erosion control measures for exposed soils, slopes.	Develop erosion and sedimentation management plan in detailed design stage. Continued review and reporting of conditions during and after construction. Identify and assess bedrock fossil areas prior to construction.
Watercourses and Fisheries	Creek crossings and realignment; erosion and sedimentation in streams; conflict between fish migration and construction activities. Potential impact of roadway drainage. Salt runoff from roadway. Degradation of fish habitat. Changes to hydraulic characteristics of watercourse.	MNR MOE CVCA MTRCA	• Possible stream sensitivity to sedimentation and erosion. • Hydraulic design of possible realigned channel sensitive to future upstream development. • Increased runoff and salt spray expected. • Possible hydraulic changes to watercourse due to new crossing structures.	MNR/CVCA/MTRCA permits required for any floodplain activity. • Direct bridge runoff away from stream. • Use standard MTO erosion / sediment control at creek crossing areas. • Install and maintain silt fence protection until site stabilized. • Apply CVCA/MNR Sediment Control Guidelines (1990).	Proper work scheduling and continued review with concerned agencies regarding construction procedures and transitway developments. Prepare comprehensive stormwater management design during detailed design stage. Develop drainage plan using principles of no net loss of fisheries habitat, no degradation of stream hydrology, and no negative impacts on watercourses.
Vegetation	Possible vegetation and woodland clearing and disruption during construction. Reduction / alteration of wetlands.	MNR MTRCA CVCA	• New edges sensitive to salt spray, vehicle emissions. • removal of vegetation on r.o.w. • Outside of woodlots sensitivity to change limited since most vegetation is planted. • Possible elimination of small seasonal wetlands on route.	• Minimize vegetation / woodlot clearing through both design and construction measures. • Restore and rehabilitate natural vegetation where possible; supplement elsewhere with plantings and landscaping. • Minimize physical intrusion through detailed design process.	Commitment to minimizing vegetation / woodlot removals. Develop detailed restoration plans in detailed design stage, based on existing vegetative communities and ecologically sound rehabilitation principles. Compensation for wetland loss per CVCA practice.
Wildlife	Possible effect on terrestrial and aquatic wildlife movements and habitat.	MNR MTRCA CVCA	• May discourage terrestrial wildlife movement as natural cover would be affected. • Limited sensitivity due to previous condition changes particularly outside woodlots. • Aquatic wildlife movement potentially impeded during construction process. • Aquatic wildlife habitat potentially disturbed at crossings or due to sedimentation / hydraulic changes.	• Vegetation retention and replanting will encourage terrestrial wildlife movements. • Construction scheduled to consider terrestrial and aquatic wildlife impacts. • See measures to protect watercourses.	Proper staging of construction to minimize disruption to terrestrial and aquatic wildlife movement. For habitat, see commitments above re: watercourses and vegetation.
Designated Environmentally Sensitive Areas	Protection against change in character or impact on environment of designated areas.	MNR MOE Ministry of Consumer and Commercial Relations City of Mississauga City of Etobicoke MTRCA CVCA	• See above.	• See measures to protect watercourses and vegetation. • Involve affected City Planning Departments regarding Environmental Policy Areas.	Continued consultation with interested agencies.

* Abbreviations used:

MOE - Ministry of the Environment
MNR - Ministry of Natural Resources
CVCA - Credit Valley Conservation Authority
MTRCA - Metropolitan Toronto and Region Conservation Authority

TABLE 6 - SUMMARY OF EFFECTS ON SOCIAL CULTURAL ENVIRONMENT AND COMMITMENT TO MITIGATION

Element	Environmentally Significant Area / Issue	Concerned Agency / Group	Effect of Transitway	Mitigation Measures	Commitment to Future Work
Noise	Impact of Transitway operation on outdoor noise levels in surrounding area	Ministry of Environment (MOE) Residents	Minimal effect. Noise analysis shows no locations where noise levels exceed the future ambient by an amount requiring mitigation	Noise barriers / berms to be provided where appropriate	Liaison with the MOE will be continued through design. Detailed design of each section to be reviewed by local residents prior to construction.
Visual Impact	Possible visual intrusion of Transitway	MOE Residents	Minor impact. Certain areas may require specific attention	Credit River crossing - structure / piers and bridge profiles will attempt to match configuration of Highway 403 structure. Adjacent to Highway 403 - restricted Transitway and Station lighting so as to not spill over to Highway 403 or adjacent residential areas. Rathburn Road Tunnel - Within Mississauga City Centre extensive architectural, planning, landscaping and structural review	Reduction of visual impacts will be reviewed in preliminary design.
Air Quality	Possible increase in air pollutants due to Transitway	MOE Residents	Minimal effect. Low emission vehicles will prevent higher pollutant levels	Ensure design measures are developed to result in adequate levels of air quality in tunnels and stations	Commitment to low emission vehicles for transit service.
Property Value	Impact of Transitway on value of adjacent properties	Landowners / residents MGS	No significant impacts. Potential positive impact on some commercial / residential properties due to improved accessibility	High architectural standards; Integrated development where feasible; Minimize physical / environmental impact where integration not feasible	Commitment to well developed plans and continued discussion with adjacent property owners.
Construction Disruption	Possible disruption to existing traffic. Temporary noise level increase	MOE Ministry of Transportation (MTO)	Detours required during construction of Transitway	Construction will comply with any by-laws regarding noise emission of equipment. Restriction of construction activities during certain time periods	Proper work schedules and review of detour arrangements by MTO for approval prior to construction.
Vibration	Increased vibration due to Transitway	MOE Residents	Minimal possible air-propagated vibration; no ground-borne vibration	Since air-propagated vibration is essentially identical to noise in its characteristics it may be assumed that, in meeting criteria for noise levels at adjacent homes, the Transitway also would not result in residents experiencing air borne vibration	Low volume facility not considered a significant issue with vibration.
Safety	Possible safety hazards associated with the Transitway and passenger safety	MTO City of Mississauga	Minimal risk to passenger safety and community	• passenger areas well lit and visible • passenger shelters transparent to the degree required to provide visibility both in and out • pedestrian bridges to be preferred over pedestrian tunnels • bus routes, schedules and safety information will be posted in all stations • 1.8 m high chain link fence between Transitway and adjacent development	Consultation with agencies involved in safety review.
Station Access	Protection for ultimate access into Transitway stations	MTO City of Mississauga	Various station layout and design may require protection for pedestrian tunnels	Ensure stations are fully accessible to all persons including handicapped	Review and continued development of station layout in detailed design stages. Pursue access from Forest Fire Lane to Cawthra Station via pathway through transformer station property with Ontario Hydro.
Heritage Resources	Protection of possible heritage resources in the Parkway Belt West corridor	MOE Ministry of Culture and Communications City of Mississauga	Potential unearthing of heritage / archaeological material during construction	Transitway alignment avoids known heritage sites	Standard reporting of unearthed finds. Transitway r.o.w. to be assessed by licenced heritage resource consultant prior to construction.

1.7 Parkway Belt West Plan

The Parkway Belt West is a system of linked open space, utility corridor, and urban separator areas extending across the western part of the Greater Toronto Area. Development within the corridors so designated is governed by the Parkway Belt West Plan, as administered by the Ministry of Municipal Affairs. The Highway 403 / Eastgate Parkway / Ontario Hydro corridor across central Mississauga is part of the Parkway Belt, and consequently most of the recommended Transitway alignment is also within the Parkway Belt.

Part of the role of the Parkway Belt is to protect continuous integral rights of way for possible future use by inter-urban transit and linear utilities (e.g. pipelines, electric transmission lines). Two thirty metres wide rights of way, dedicated to Transit and Utility use respectively, are protected in the Parkway Belt across Mississauga. They are currently vacant. The recommended Transitway route utilizes in large part the right-of-way currently designated for potential utility use, and it is proposed (see Section 5.3.4, p.314) that a switch in designations occur so that what is now the Transit corridor becomes available for utility use, and the current utility corridor is redesignated to reflect its use by the Transitway.

This proposal is the subject of ongoing discussions between the City, the Ministry of Municipal Affairs, and all property owners and users in the Parkway Belt, and has been integrated into the Environmental Assessment process. It is intended that this report provide a basis for review of the Parkway Belt impact of the Transitway, the proposed resolution of any corridor designation issues, and approval of the project with respect to the requirements of the Parkway Belt West Plan by the Minister of Municipal Affairs.

1.8 Consultation Process

Section 2 (p.25) contains the details of the consultation and review program used throughout the development of the Transitway recommendations to ensure that all interested parties had an opportunity to contribute to and comment on the project. The Technical Co-ordinating Committee provided a forum for input from the three key areas: public, elected officials, and technical /regulatory agencies. The Co-ordinating Committee consisted of senior representatives of the City, Region, Province, Transit, and Parkway Belt agencies.

Apart from tri-weekly meetings of the Co-ordinating Committee, regular meetings and correspondence occurred with interested public and review agencies. Elected officials were briefed at each key point during the study, and participated in an open public process at the time of approvals.

It should be noted that the current study built on the significant public involvement programs of three previous initiatives:

- Mississauga Transportation Study (see Section 2.5.1 (p.35) and Appendices E and J)
  - 7 Public Information Centres in 1983 and 1984
  - extensive publicity
  - identification of need, analysis of alternatives, recommendations regarding mode and corridor
- Highway 403 Arterial Extension Planning Study (see Section 2.5.2, p.36)
  - Public Information Centres over five rounds in 1988 and 1989
  - Public meetings
  - formation and involvement of Community Advisory Committee
  - alignment alternatives and recommendations for road and transitway in Cawthra - Fieldgate segment of Parkway Belt
- Mississauga City Centre Busway / Gateway Planning Study (see Section 2.5.3 (p.39) and Appendix O)
  - 2 Public Information Centres in association with South Service Road Planning Study in 1989
  - direct consultation and meetings with City Centre property owners
  - component of City Centre Secondary Plan revision process
  - route alternatives, station locations, and property protection recommendations for a rapid transit line within the City Centre area.

The alternatives, analyses and conclusions of these earlier studies were revisited and presented again for comment during the Transitway Planning Study's public review process.

There were four periods where particular efforts were made to solicit public and technical input to the study, and to raise awareness among interested parties of the study progress to date.

The process to encourage involvement during each period of public review was amongst the most extensive ever undertaken in Mississauga, reflecting the extent and importance of the Transitway proposal. The process included:

- presentations to Committees of Council of Mississauga, Etobicoke, and Metropolitan Toronto as appropriate;

- delivery of brochures summarizing study progress and notifying residents of upcoming Information Centres to all homes and businesses between Eglinton Avenue and Burnhamthorpe Road (34,000), and on one occasion to all households in the City (160,000)

- hosting of Public Information Centres at which a comprehensive set of displays, plans, maps, and photos outlined the study progress and future steps

- direct notification to previous Information Centre attendees and all interest groups

- mailed information to MPs, MPPs, Councillors, technical agencies, ratepayers' associations, and interested commercial property owners

- between 8 and 10 newspaper advertisements in local papers

- Cable television notices

- on-bus Mississauga Transit flyers.

In addition, local newspapers gave extensive coverage to the Transitway and the public debate, thereby contributing a great deal to public awareness and understanding (see Appendix H).

The Public Information Centres were staffed by members of the Technical Co-ordinating Committee, who, through individual discussion with attendees, explained the project and became fully aware of public concerns and ideas. The four review periods, documented fully in Appendices A-D, were:

March 1990:	Study overview, rationale, and background
June 1990:	Identification and preliminary analysis of alternatives
November 1990:	Evaluation of viable alternatives and preliminary functional plan
February 1991:	Technical recommendations and functional plan

All of the Public Information Centres were held in Mississauga's Civic Centre, and two additional locations within the study area were also used in the June 1990 period. Over the course of the study, approximately 550 people attended the Information Centres and written comments totalled over 450. This input proved extremely valuable in identifying significant and sensitive issues, and in ensuring that all interested individuals and agencies were fully aware of the project and its implications.

A further stage in public involvement occurred in 1991, when the study recommendations were considered by City Council members. Three meetings (two of Committee and one of Council as a whole) dedicated to the issue were advertised and held, each comprising of a staff presentation, submissions by members of the public,

discussion amongst elected officials, and consideration of the recommendations. A number of meetings associated with this review period were held with concerned neighbourhood groups and councillors, and further work was carried out in order to provide responses to expressed concerns and outstanding issues.

Upon approval of the Transitway recommendations in September, 1991 (see Appendix F) Mississauga City Council committed to a process of further public involvement throughout the remainder of the design and implementation period of the project, through approval of the following two motions:

- that a commitment to a public meeting process for each planning and financial stage in the phasing program shall be incorporated in the Official Plan Amendment (for the Mississauga Transitway); and

- that a Community Advisory Committee be struck, consisting of representatives of each of the (City) wards, to provide public input to the City of Mississauga regarding the project on an ongoing basis.

In this way, the comprehensive public involvement process which has been a key feature of the planning steps to date will be continued into the future, through to the completion of the undertaking. The process undertaken to date is described in greater detail in Sections 2.5.4 (p.41), 4.1.6 (p.122), 4.2.3 (p.127), 4.3.4 (p.141), 4.4.3 (p.142), 4.5.5 (p.191), and Appendices A-D.

2. PLANNING PROCESS

2.1 Environmental Assessment Process

The purpose of the Environmental Assessment (EA) Act of Ontario is to ensure that the environment (in the broadest sense of the word) is protected, conserved, and wisely managed through good planning and informed decision making. The EA Act applies to the Mississauga Transitway, as it is a major municipal undertaking. The EA Act is administered by the Minister of the Environment of Ontario.

The City of Mississauga, as the Transitway proponent, must therefore obtain approval of the Minister of the Environment before the project can be implemented.

The EA Act defines the process for seeking approval, which includes the submission of an Environmental Assessment Report (this report) which documents the planning study and its conclusions.

There are five key features of the EA planning process:

- early involvement and consultation with affected parties;
- consideration of a reasonable range of alternatives (including the "Do Nothing / Status Quo" alternative);
- identification and consideration of the effects of each alternative on all aspects of the environment;
- systematic and explicit evaluation of each alternative's advantages and disadvantages through a net effect analysis; and
- a clear, understandable, traceable planning process which is both followed and documented appropriately in the EA Report.

Acceptance of the Environmental Assessment document and approval of the project by the Minister of the Environment will allow the City of Mississauga to:

- identify the recommended Transitway route alignment in the Official Plan;
- protect and acquire the property necessary for project implementation;
- proceed with the staged implementation of the Transitway facility; and
- operate the completed facility.

2.2 Additional Approvals Process

While Transitway planning has been carried out with reference mainly to the Environmental Assessment Act of Ontario, there are two additional Provincial legislative requirements of the project: since it will require an amendment to the City of Mississauga's Official Plan, approval of the Amendment to the Plan is required under the Planning Act; and the project's recommended location in large part within the Parkway Belt requires the approval of the Minister of Municipal Affairs under the Parkway Belt Planning and Development Act.

It is intended that this report contain adequate documentation to allow review of the proposed undertaking under all three provincial Acts, and that a co-ordinated, concurrent approvals process be followed.

2.3 Study Background

2.3.1 Overview

The concept of the Mississauga Transitway has a long history; Table 7 provides a brief overview of the past twenty years of transit and transportation planning in Mississauga, and it is important to note that an east-west rapid transit facility in Central Mississauga has been consistently recommended and planned for since 1970. Protection of a right-of-way for such a linear transit facility was established in the Parkway Belt in 1978, while protection for the proposed Transitway was a feature of two major planning studies (City Centre Gateway and Highway 403 Arterial Extension) that were completed before the current study was initiated. This previous work included significant involvement of technical interests, the public, elected officials, and planning staff in the affected areas.

The Transitway was one of the recommended facilities in the comprehensive city-wide Mississauga Transportation Study, carried out in 1982-85. That work formed the basis for the current study, and its conclusions were reviewed and incorporated as appropriate in the more recent studies.

Prior to formal initiation of the current study, the City discussed the project with the Ministry of Transportation of Ontario, the Ministry of the Environment (EA Branch), the City of Etobicoke, and the Municipality of Metropolitan Toronto.

The Mississauga Transitway Planning Study was initiated by the City of Mississauga in late 1989 as a major step in a long sequence of events which will lead to the facility's implementation and operation. The study was funded jointly by the City and the Ministry of Transportation of Ontario. At the time of study initiation, it was recognized that it would need to be carried out in accordance with the guidelines of the Environmental Assessment Act of Ontario, but the categorization of the Transitway as an individual EA project had not been determined.

TABLE 7 - TRANSITWAY-RELATED STUDIES

YEAR	STUDY	RECOMMENDATIONS	PUBLIC REVIEW	STATUS
1970 May	Town of Mississauga Traffic Planning Study	• transit in reserved r.o.w. in 403, Hurontario & Dixie corridors • express bus in Erin Mills Corridor	Technical study; no public involvement	
1974 August (draft)	Mississauga Transportation Planning Study	• transportation implication of various development scenarios outlined • balance jobs and residents to reduce travel	Technical Study; 1,700 households surveyed for input	
1975 March	Mississauga Urban Development and Transportation Study	• Intermediate capacity transit in Burnhamthorpe, Erin Mills and Hurontario • no Highway 403		
1975 September	Transportation Requirements in the Burnhamthorpe Corridor to 1983	• Reserved Bus Lanes on Burnhamthorpe, Dixie and Dundas • do not pursue LRT but keep option open until O.P. review	Staff study; no public involvement	Council Resolution #287 Approved September 18, 1975
1978 July	Parkway Belt West Plan	Establish multi-use corridor • protect for Ontario Hydro, Hwy. 403, Utility and inter-urban Transit use	Public Involvement	Approved by Ontario Cabinet by Order-in-Council 2188/78 July 19, 1978
1980	City of Mississauga Official Plan (Revised)	• municipal Intermediate Capacity Transit System in Burnhamthorpe corridor • 693,000 pop., 432,000 emp.	Public involvement	Approved by City Council by-law 509-80 June 23, 1980. Provincial approval in 1981
1980	Metro/Mississauga Cross Commuting Study			
1981	City Centre Secondary Plan	65,000 jobs		Approved by Council
1982	GO-ALRT Northern Link Planning Study (Province)	• Advanced Light Rail • use Parkway Belt corridor for part of Northern Link • all possible routes in Mississauga considered	Open houses, publicity	GO-ALRT Program cancelled by Province in 1985
1985 October	Mississauga Transportation Study	• Bus Transitway required in Parkway Belt; • bus lanes on Dixie, Hurontario, Erin Mills	Open houses, publicity	Approved by Council July 17, 1985 by-law 1066-85
1985 October	City Centre Transportation Plan	• locate Bus Transitway in Rathburn corridor in City Centre	Part of Mississauga Transportation Study	
1985 December	Municipal Rapid Transit Service Study	• transit operating strategy focused on 403 Corridor Bus Transitway; Bus lanes on Dixie, Hurontario and Erin Mills		
1988	Highway 403 Arterial Extension	• protect for Bus Transitway on north side of arterial roadway in Parkway Belt	Comprehensive public involvement	Cawthra to Fieldgate roadway approved by Council October 25, 1988
1989	City Centre Busway / Gateway Planning Study	• protect for Busway in Rathburn corridor within City Centre	Full review as part of Secondary Plan update and South Service Road EA Study	Incorporated in Mississauga Transitway Planning Study. Recommendations incorporated in revised Secondary Plan
1989 November	City of Mississauga Development / Transportation Staging Study	• implement Mississauga Transitway • implement reserved bus lanes on Eglinton, Dundas, Hurontario, Erin Mills	Technical Study; no public involvement	
1990 March	10 Year Transit Strategy	• implement grid network • use reserved bus lanes • build towards Bus Transitway	Technical Study; no public involvement	
1990 November	Revised City Centre Secondary Plan	109,000 jobs • Transitway essential for ultimate growth • Rathburn Road corridor protected in City Centre	Extensive review with affected property owners	• Approved by Council • Submit for approval of Minister of Municipal Affairs
1991	Mississauga Transitway Planning Study	• confirm previous recommendations • functional bus Transitway plan in Parkway Belt corridor • Environmental Assessment report	Comprehensive public involvement	• Approved by Council September 23, 1991 • submit for EA approval

Accordingly, the study began as a functional planning effort designed to establish the Transitway's feasibility and identify any property requirements. In the spring of 1990, the provincial government identified the Transitway as a component of the "Let's Move" rapid transit program. Later that year, additional funding was made available by the province in order to carry the study to its completion, which had by then been determined to be an individual EA report. This involved more detailed analytical work in some areas, an additional round of public involvement, and preparation of the Transitway EA Report (the current document) in accordance with E.A. requirements.

2.3.2 Related Studies

2.3.2.1 Studies Under The Control Of The Proponent

Apart from the current study, a list of relevant studies carried out by the City of Mississauga follows. Excerpts from some of the documents are appended to the current report for reference, as noted:

Mississauga Urban Development and Transportation Plan (March 1975)

This comprehensive study led to the preparation of an Official Plan for the City, and recommended the development of Light Rail Transit facilities in the Burnhamthorpe Road corridor to link Mississauga with the Metro Toronto Transit network.

City of Mississauga Official Plan (June 1980)

An Intermediate Capacity Transit System line in the Burnhamthorpe Road corridor was identified as a long term concept in the Official Plan. An interregional transit corridor was also protected within the Parkway Belt West Plan, which was wholly incorporated in the Official Plan.

Mississauga Transportation Study (1985) (Appendix J)

A grade-separated transit facility in the vicinity of the Parkway Belt was one of a number of recommendations made to accommodate east-west travel demand in the City. This bus-only roadway would provide rapid transit service on a route in the Highway 403 / Highway 403 Arterial Road Extension corridor between Winston Churchill Boulevard and Dixie Road, extending along the Ontario Hydro corridor northeastward to Eglinton Avenue in the vicinity of Elmcrest Road. The facility would link the high-density area of the City Centre to the Toronto Transit system, first via express buses to the Kipling Station on the Bloor subway line, and eventually directly to the Eglinton West Rapid Transit facility. Since the mode / technology to be used on the Eglinton West facility had not been determined at that time (Bus or Light Rail), it was recommended that protection for possible conversion of the Mississauga Transitway from Bus to Light Rail operation in the long term be made. The Parkway Belt corridor was recommended over both the Burnhamthorpe and Eglinton corridors as trans-Mississauga rapid transit corridors.

Mississauga Transportation Study City Centre Transportation Plan (July 1985)

In specifically addressing the transportation needs of the City Centre, this report recommended that the bus Transitway and station(s) be located in the Rathburn Road corridor within the City Centre.

Municipal Rapid Transit Service Study (1985)

This study investigated the busway routing in the Highway 403 corridor, including station interface and operational aspects.

Highway 403 / Mississauga City Centre Feasibility Study (March 1987)

An increase in City Centre employment from 65,000 to the 90,000 job level was investigated, and the resultant transportation demand confirmed the need for the busway.

Mississauga Ten Year Transit Service Strategy Plan (March 1990)

This study presented a short term strategy for transit operational changes in Mississauga, which determined the need for the transit service to evolve towards a "grid" type route network. The role of HOV lanes and service changes leading up to Transitway implementation was assessed. Immediate initiation of planning study, corridor protection, and design work for the Transitway was recommended.

Mississauga City Centre Busway / Gateway Study (February 1990) (Appendix O)

This study identified the Transitway / transit terminal / gateway needs within the City Centre and developed functional plans and property plans to enable implementation of the Secondary Plan and future development of the City Centre. The study conclusions are incorporated in the current Transitway EA study.

Revised City Centre Secondary Plan (Draft June 1987 - Approved November 1990)

The revised Plan includes the provision for a busway and a major transit terminal by means of the temporary reservation of a block of property in the Rathburn Road corridor adjacent to the Square One shopping centre. The proposed revisions to the Secondary Plan would result in an increase in the employment level from 90,000 to 109,000 jobs.

Highway 403 Arterial Road Extension - Cawthra Road to Dixie Road Planning and Design Study (October 1989). Dixie Road to Eglinton Avenue Planning and Design Study (April 1990)

The planning of the Highway 403 Arterial Extension was done in two parts, since the section east of Dixie Road required an Environmental Study Report to be prepared under the Environmental Assessment Act of Ontario, while the western section had been previously included in the EA exemption given Highway 403. A very extensive public involvement program was featured in the combined study, and more than a dozen

alternative arrangements of facilities (including the Transitway) within the Parkway Belt were analyzed. In light of public input and technical analysis, the City committed to an alignment of the Transitway between the Arterial and the Ontario Hydro corridor between Cawthra Road and Fieldgate Drive. A deeming to that effect was requested of the Minister of Municipal Affairs, administrator of the Parkway Belt, but was deferred pending the completion of the current Transitway study.

2.3.2.2 Technical Studies

A number of specific technical investigations were undertaken during the course of the current Transitway Planning Study. These were documented in standalone reports, of which relevant components are included as appendices to the Environmental Assessment Report as noted.

These reports include:

Summary of First Round of Public Involvement - McCormick Rankin, March 1990 (Appendix A)

Summary of Second Round of Public Involvement - McCormick Rankin, June 1990 (Appendix B)

Summary of Third Round of Public Involvement - McCormick Rankin, November 1990 (Appendix C)

Summary of Fourth Round of Public Involvement - McCormick Rankin, February 1991 (Appendix D)

Transitway Station Concepts (Draft Technical Report) - McCormick Rankin, May 2, 1990 (Appendix Q)

Mississauga Transitway Planning Study - Ventilation Requirements - H.H. Angus, June 20, 1990

Mississauga Busway Ridership Forecasts - IBI Group, November 1990 (Appendix I)

Impact of Transitway on Pipelines - IBI Group, McCormick Rankin, M.M. Dillon, January 1991 (Appendix U)

Environmental Noise Study - Proposed Mississauga Busway System - S.S. Wilson, February 1, 1991 (Appendix N)

2.3.2.3 Studies / Initiatives Not Under the Control of the Proponent

A number of area-wide planning and policy initiatives have been taken by the provincial government, addressing the role of the Mississauga Transitway in the regional transportation context. Key points are as follows:

The Parkway Belt West Plan (July 1978)

This provincial Plan defines a multi-purpose utility corridor, urban separator and linked open space system in the Toronto-centred area between Hamilton and Markham. Plan is administered by Ministry of Municipal Affairs of Ontario; all projects with a potential impact on the Parkway Belt require M.M.A. approval. The Parkway Belt West Plan is discussed in detail in Sections 1.7, 3.5.3.2, and 5.3.4.2 of the current report.

Northern Section Inter-Regional Rapid Transit (GO-ALRT) Study (1985)

A comprehensive study of alternative alignments for an Advanced Light Rail Transit system serving the Greater Toronto Area (Hamilton to Oshawa) was carried out by the provincial government; in Mississauga, the Parkway Belt West was the recommended corridor and functional plans and profiles were prepared for it. The plans were reviewed by local municipal Councils and the public, and the recommended corridor was supported. The GO-ALRT program was suspended by the province in 1985, and the final report was therefore never completed.

GO-ALRT Mississauga City Centre Transit Interface Feasibility Study (1985)

As part of the interregional Advanced Light Rapid Transit study, four below-grade alignments for the rail-based interregional facility were analyzed in the City Centre Area. Although the GO-ALRT program was cancelled later in 1985, the recommended route in the Rathburn Road corridor within the City Centre area provided the basis for the subsequent protection of the property in the corridor for transit use. It is the corridor that was also identified in the City Centre Transit Plan for a Transitway. The use of the corridor for Transitway purposes was approved in principle by City Council.

Greater Toronto Area Transportation Planning Forum (October 1986)

The Mississauga Transitway was identified as an immediate transportation need within the Greater Toronto Area.

Transportation Directions for the Greater Toronto Area (May 1988)

Evolving from the GTA Planning Forum, the Minister of Transportation announced support for a number of transportation initiatives in the GTA, including the Mississauga Transitway.

Provincial Gateways Initiative (May 1988)

The Ministry of Transportation has initiated a program of support for the development of transportation "gateways" in the Greater Toronto area. Potential gateways include the Winston Churchill, City Centre, and Renforth Transitway stations.

"Let's Move" (April 5, 1990)

The Minister of Transportation announced the province's commitment to a $5 billion rapid transit agenda for the 1990's. Initiatives include "a Mississauga Busway

connected to an Eglinton West rapid transit line leading to the Spadina subway". (See Appendix G).

Environmental Impact Assessment - Mississauga Southern Link Pipeline (Consumers Gas) - MacLaren Plansearch, August 1990

Hurontario Transformer Station 230 Kilovolt Environmental Study Report - Ontario Hydro, June 1987.

2.4 Study Steps

A planning study process compatible with the requirements of the Environmental Assessment Act was applied to the Mississauga Transitway Planning Study. The City initiated the project, with funding support from the Ministry of Transportation as part of its "Let's Move" initiative.

Three consulting firms with expertise in the area were retained and a Technical Co-ordinating Committee was formed to direct the study activities. The Committee included representatives of the City, Region, Province, Transit, Parkway Belt, and other key agencies. Previous studies were reviewed and a plan of study was formulated, then carried out.

2.4.1 Technical Co-ordinating Committee

The makeup of the Technical Co-ordinating Committee and its relationship with external agencies and the public is shown on Exhibit 4.

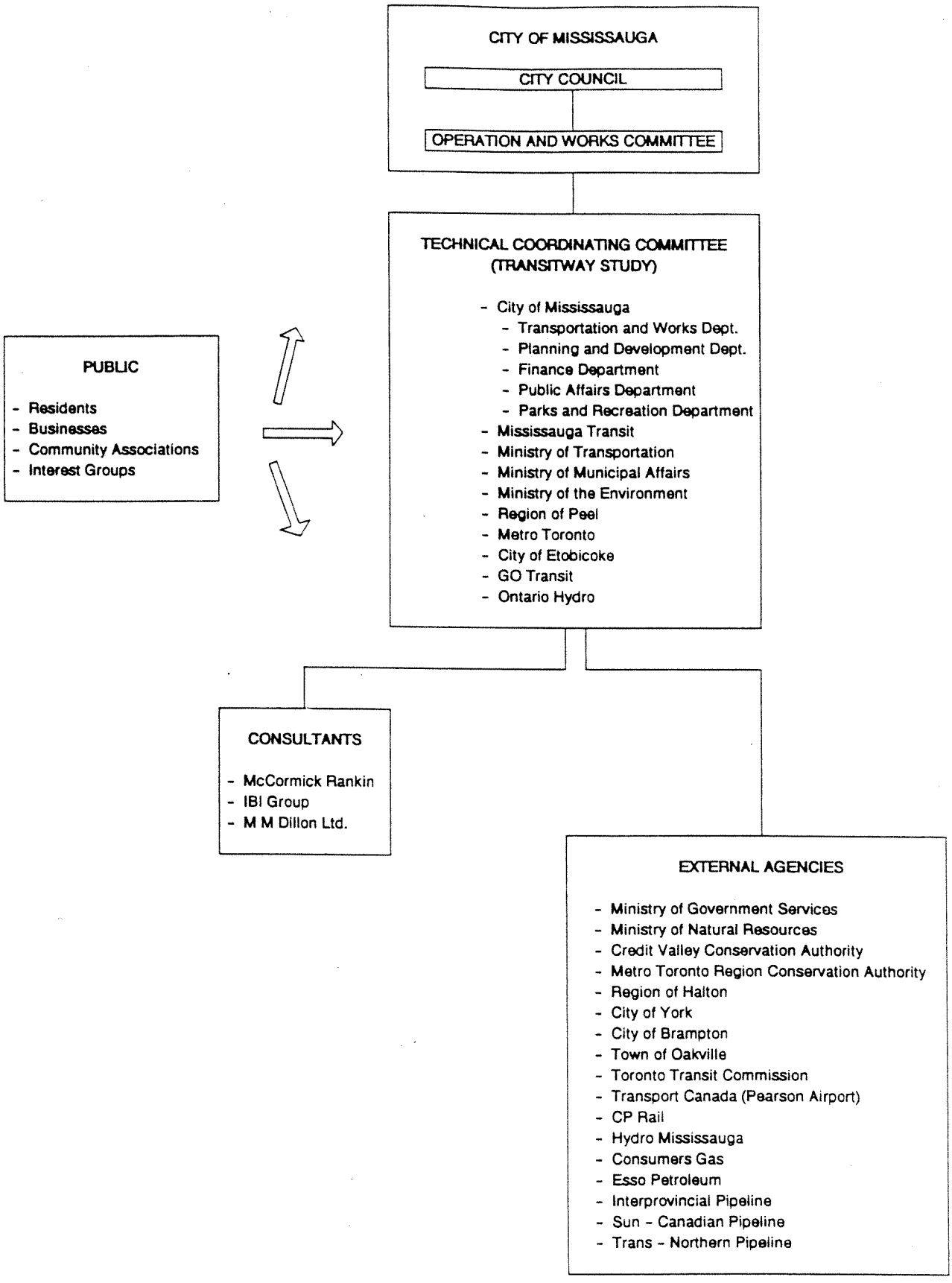
This committee was chaired by the City of Mississauga, and met every three weeks during the study. It was responsible for the overall direction and results of the study. Direct contact was maintained with numerous interest groups, interested agencies, property owners and the public through individual meetings, correspondence and Public Information Centres. Close contact was maintained with the utility users in the Parkway Belt West corridor and adjacent residential neighbourhoods through numerous meetings and correspondence.

2.4.2 Study Schedule and Activities

The sequence of activities comprising the Mississauga Transitway Planning Study and the overall time frame of the planning work are summarized on Exhibit 5.

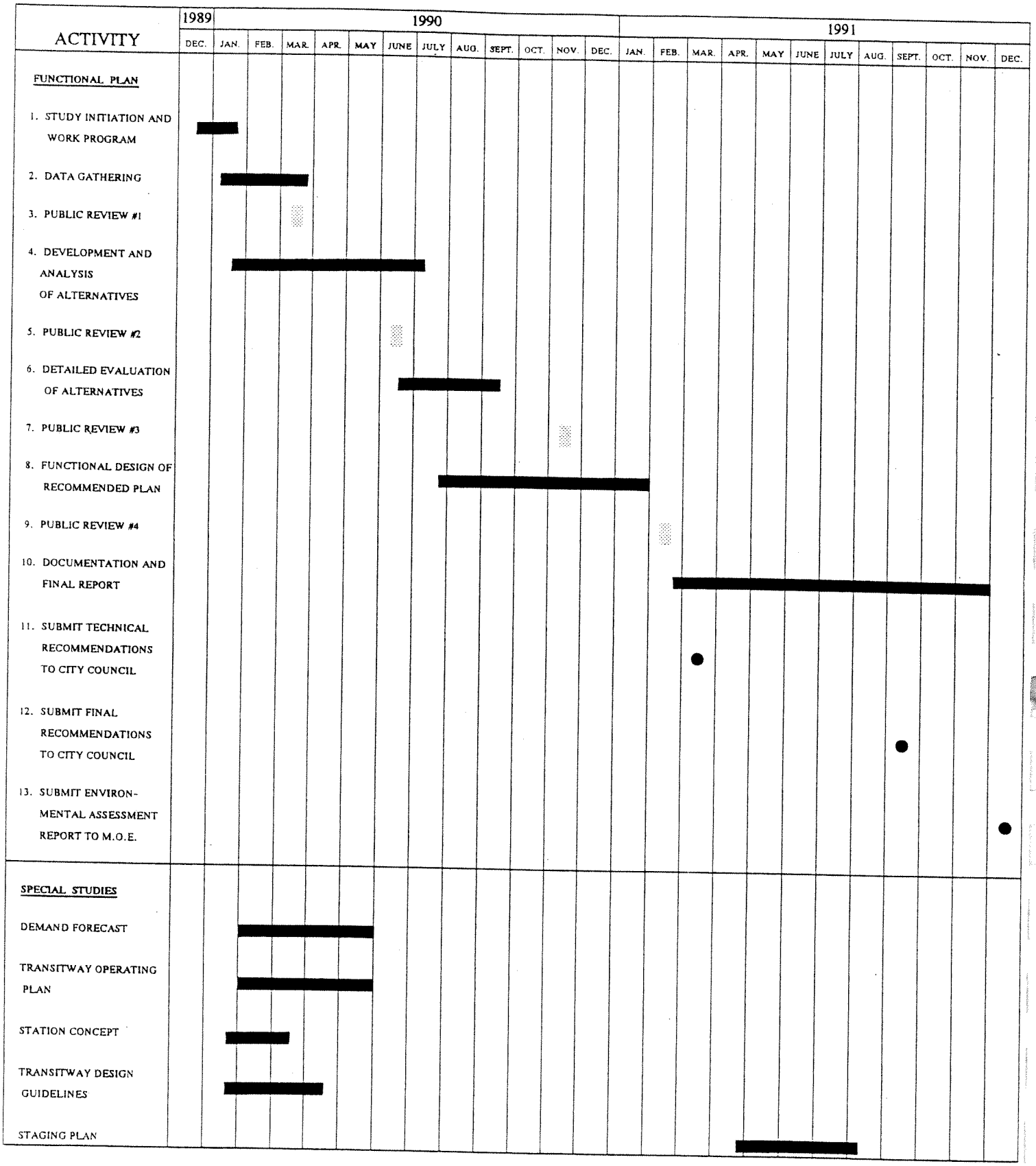
2.5 Consultation with Affected Parties

A key feature of the Environmental Assessment process is its requirement that all parties known to be affected by the undertaking be consulted. Early involvement is recommended, in order to ensure that concerns are identified and addressed before irreversible decisions and recommendations are made. The Mississauga Transitway planning study has been carried out in this manner, with the intent that a mutually acceptable, environmentally sound solution be found.



MISSISSAUGA TRANSITWAY FUNCTIONAL PLANNING STUDY	EXHIBIT 4	STUDY ORGANIZATION

EXHIBIT 5 - STUDY SCHEDULE



The public and technical agency consultation process stretches back to the 1970's, with the promulgation of the Parkway Belt West Plan, and three directly relevant studies in the 1980's featured comprehensive public information and involvement programs:

- Mississauga Transportation Study (1982-85)
- Highway 403 Arterial Road Extension Planning Study (1987-90)
- City Centre Busway / Gateway Planning Study (1988-90)

Since the results of each of these three studies are crucial to the current Mississauga Transitway Planning Study, it is appropriate to outline the public involvement programs for each prior to addressing the current study. This highlights the fact that public involvement has been an integral component of the entire Transitway planning process to date.

2.5.1 Mississauga Transportation Study

In late 1982, the City of Mississauga started a comprehensive transportation study of the City. A number of alternative road and transit networks were developed, analyzed, and tested. Public input was also sought, and two series of Public Information Centres were held prior to the completion of work in 1985. The dates and publicity mechanisms for these review periods are summarized in Table 8.

TABLE 8 - PUBLIC INFORMATION CENTRES - MISSISSAUGA TRANSPORTATION STUDY

Date	Location	Publicity
Monday, Nov. 21, 1983	Meadowvale Community Centre	• seminar for all Ratepayers' Association executives Nov. 9, 1983
Wednesday, Nov. 23, 1983	Malton Community Centre	• Mississauga News advertisement Nov. 9, 16, 1983
Monday, Nov. 28, 1983	Mississauga Valley Country Club	• Notice on Cable 10 TV
Tuesday, Nov. 29, 1983	Port Credit Library	• Notified all Mississauga community newspapers, planning consultants, land developers
Monday, Nov. 26, 1984	Meadowvale Community Centre	• as above
Tuesday, Nov. 27, 1984	Huron Park Recreation Centre	• Ratepayers' meeting Nov. 28, 1984
Thursday, Nov. 29, 1984	Clarke Hall (161 Lakeshore Rd. W.)	• advertisement in Toronto Star

The study recommendations, including the need for a Transitway, its technology, and corridor location, were presented for public comment at these Information Centres. The recommendations as presented are included in Appendix I of this report, and were used as the basis for initiating the current Mississauga Transitway Planning Study.

2.5.2 Highway 403 Arterial Road Extension Planning Study

Between the Fall of 1987 and the Spring of 1990 the City of Mississauga undertook a comprehensive planning and environmental assessment of the Highway 403 Arterial Road Extension (now named Eastgate Parkway). Between Cawthra Road and Fieldgate Drive, within the Parkway Belt, the locations of the arterial road and the proposed Mississauga Transitway were totally inter-dependent and, in fact, the Highway 403 Arterial Road Study resulted in the selection of the Transitway location between Cawthra Road and Fieldgate Drive.

The Highway 403 Arterial Road Extension Study included a very extensive public and agency consultation program, the details of which are included in the "Environmental Study Report" for the Highway 403 Arterial Road Extension, dated April 1990. The program is summarized in Table 9.

The study was carried out by the City of Mississauga through a technical advisory committee consisting of City and MTO representatives directing the two consulting firms: McCormick Rankin and M.M. Dillon.

Technical agencies that were contacted throughout the course of the study included:

- Ministry of Municipal Affairs;
- Ministry of Government Services;
- Ministry of the Environment;
- Ministry of Citizenship and Culture;
- Ministry of Natural Resources;
- Metropolitan Toronto and Region Conservation Authority;
- Ontario Hydro;
- Bell Canada;
- Consumers' Gas;
- Region of Peel;
- InterProvincial Pipeline Ltd.;
- Sarnia Products Pipeline (Imperial Oil Ltd.);
- TransCanada Pipelines;
- TransNorthern Pipelines;
- Sun Canadian Pipelines; and
- Maclean Hunter Cable T.V.

TABLE 9 - HIGHWAY 403 ARTERIAL ROAD STUDY PUBLIC INVOLVEMENT PROCESS

October 1987	Study commenced
October 1987 to March 1988	Various meetings with agencies and groups
January 27, 1988	Presentation to Operations and Works Committee
February 17, 1988	Presentation to Ward 3 Council
March 7, 8 and 9, 1988	Public Information Centres
March 9, 1988	Public Meeting
March 1988 to June 1988	• Expansion of Study Area • Intense involvement with the Community Advisory Committee
June 1, 1988	Presentation to Operations and Works Committee
June 8 and 9, 1988	Public Information Centres (Progress report summarizing work to date)
June 1988 to September 1988	Continued involvement of the Community Advisory Committee
September 7, 1988	Presentation to Operations and Works Committee
September 13 and 14, 1988	Public Information Centres
September 14, 1988	Public Meeting
October 20, 1988	Fifth Community Advisory Committee Meeting
October 25, 1988	Special Council Meeting - approval of plan for the Arterial Road between Cawthra Road and Fieldgate Drive
June 1, 1989	First Public Information Centre for the North-South Arterial (alternatives south of Eglinton Avenue were presented at this time)
October 25, 1989	Community Advisory Committee meeting
November 15, 1989	Second Public Information Centre for the North-South Arterial (the recommended alignment, south of Eglinton Avenue, was presented at this information centre)
January 8, 1990	Council meeting - approval of plan for the Arterial Road between Fieldgate Drive and Eglinton Avenue

In view of the implications of the project on the Parkway Belt, and also on existing Ontario Hydro facilities, the Ministry of Municipal Affairs, the Ministry of Government Services and Ontario Hydro had particularly close involvement in the project.

The Highway 403 Arterial Road project generated an extremely high level of interest in the adjacent community, and as such, the originally planned comprehensive public consultation program was expanded in response to local interest. The resulting final program included public information centres, meetings with individuals and various ratepayers groups and the very close involvement of a specially struck 12-person Community Advisory Committee (see Table 9).

Following the approval of the Highway 403 Arterial Extension / Transitway concept between Cawthra Road and Fieldgate Drive, the work emphasis in that area shifted into detailed design of the roadway. Meetings continued to be held with the Community Advisory Committee throughout the detailed design process, on January 12, April 13, May 11, and October 3, 1989. The process concluded with a Public Information Centre on October 10, 1989 at which the final plan for the roadway was presented. The Ministry of Transportation published the "Notice of Construction" for the Highway 403 Arterial Extension in the Mississauga News on November 16, 1989. Construction occurred throughout 1990 and the roadway was opened to traffic from Cawthra Road to Dixie Road in 1991.

For the Dixie Road to Eglinton Avenue section, the following public consultation has occurred to date during the detailed design phase:

11 July, 1990	Public Meeting
4 September 1990	Meeting with Community Advisory Committee
27 September 1990	Public Information Centre
4 October 1990	Meeting of concerned residents, to discuss landscaping alternatives
31 January 1991	Meeting with the representatives of local residents to discuss progress in resolving objections to ESR

2.5.3 Mississauga City Centre Busway/Gateway Planning Study

Within the Mississauga City Centre, the need to identify and protect an alignment for the proposed Transitway was an essential element of the Secondary Plan review for the area, which was carried out as a standalone project prior to the initiation of the overall Mississauga Transitway Planning Study. The City Centre study is summarized in Appendix O. Involvement of the public in the selection of a recommended alignment for the Transitway (referred to at that time as a Busway) through the City Centre followed two paths: the review and revision process of the City Centre Secondary Plan, spanning 1987 to 1990; and the joint public information program conducted with the Highway 403 South Service Road Planning Study in 1989-90.

The South Service Road project had the same study area as that of the Busway / Gateway study, and as a major municipal road project, followed the Class Environmental Assessment process for Municipal Roads.

A Technical Steering Committee consisting of City, provincial, and City Centre representatives provided ongoing direction to both the South Service Road and the City Centre Busway Planning Study simultaneously, although some committee members' concerns were limited to one or the other of the two studies.

The study was funded jointly by the City of Mississauga and the Ministry of Transportation of Ontario.

A number of government agencies interested in but not directly involved in the study were contacted as necessary throughout the study by phone, correspondence, or meeting. They were made aware of both periods of public review, and were met with as a group on July 11, 1989. These agencies included:

Ministry of the Environment
Ministry of Municipal Affairs
Ministry of Government Services
Ministry of Natural Resources
Regional Municipality of Peel
Credit Valley Conservation Authority

At two key stages in the South Service Road/City Centre Busway study, public review sessions were held, focusing on open house-style Public Information Centres. The first stage was following the identification and analysis of alternatives, culminating in an Information Centre at the Mississauga Civic Centre (within the study area) on June 7, 1989. The second Public Information Centre, showing the recommended plans, was held in the same location on December 5, 1989.

The Information Centres were each preceded by a sequence of events including presentations to Committees of Council (Transportation Technical Committee and

Operation and Works Committee), discussions with local ward Councillors, placement of newspaper advertisements, delivery of notices to adjacent residents and notification of interested agencies. For the first Information Centre, City staff:

- met local ward Councillors to review studies and plan public involvement prior to information centre;
- placed advertisements in the Mississauga News on May 31 and June 7, 1989; and
- delivered information sheets to all the homes in the area bounded by Highway 403, the city Centre, Rathburn Road, and the soccer field west of Wakefield Crescent.

By the time of the second round of public involvement, awareness of the studies within the adjacent residential area had been fully raised by the publicity surrounding the first Public Information Centre and by the efforts of the two local ward Councillors throughout the year. The City of Mississauga publicized the December 5 Information Centre through advertisements in the Mississauga News (November 29, December 1, December 3, 1989) and through personal contact by Councillors Culham (west of Mavis Road) and Dale (east of Mavis Road). As well, the City distributed copies of the newspaper advertisement to all homes on both sides of Wakefield Crescent, Sugarbush Road and Greenpark Crescent in the areas immediately bordering the South Service Road.

Throughout the public involvement program for the South Service Road and City Centre Busway Planning Studies, public attention and concern was focused almost exclusively on the South Service Road. The only Transitway-related issue that arose in the Information Centre process was a strong desire on the part of Greenpark Crescent residents that the future Transitway not be located south of the proposed South Service Road.

The major group interested in the Transitway was the City Centre property owners. Their interest lay in the proposed changes in the City Centre Secondary Plan to allow greater density and revised land use patterns. The alignment and operation of the Transitway within the City Centre were key issues with the property owners. Of the numerous property owners in the Centre, however, only two were potentially directly impacted by the Transitway: Hammerson Canada Inc. and Matthews Group Ltd.

Since the majority of the property requirements for the Transitway in the City Centre would be Hammerson lands, Hammerson was directly involved in the Technical Steering Committee, and numerous meetings were held with Hammerson and its Architectural consultant during the study. A number of individual meetings with the Matthews Group regarding their property west of Confederation Parkway and north of Rathburn Road were held.

The alternatives, analysis, and results of the City Centre Busway Study were presented to City Centre property owners as a group on February 1, 1990. Further involvement of the property owners occurred as part of the overall Transitway study process, summarized in the following Section 2.6.4., and in the City Centre Secondary Plan review process, carried out by the City's Planning Department.

The revised City Centre Secondary Plan, including the designation of the Transitway corridor within the City Centre along Rathburn Road, was approved by City Council on May 28, 1990.

2.5.4 Mississauga Transitway Planning Study

The public involvement and technical / government agency consultation process undertaken as part of the current study are summarized in this section. Sections 4.1.6, 4.2.3, 4.3.4, 4.4.3, 4.5.5, and Appendices A - D document the process in greater detail.

2.5.4.1 Purpose of Pre-submission Consultation

Over the course of the study extensive consultation occurred, with the intention that those groups, officials, reviewing agencies and individuals interested in the project would be given an opportunity to:

- be aware of the progress and findings of the study at each of its stages;
- identify "environmentally significant areas / issues";
- review and comment on the study process;
- review and comment on the analysis of alternatives and recommendations.

2.5.4.2 Public Involvement Process

Table 10 outlines the means by which those who were interested in or potentially affected by the undertaking were made aware of and involved in the Transitway study.

Public involvement was actively solicited during four review periods. All interested agencies and members of the public were notified of the Public Information Centres through an extensive publicity program, summarized in Table 11. The procedures and results of each review round were compiled in summary reports and are included in Appendices A through D. The summary reports include the comment sheets and mail-in questionnaires received during each round of review.

TABLE 10 - PLANNING STUDY CONSULTATION PROCESS

CONSULTING GROUP	INTERESTED / AFFECTED PARTY	INVOLVEMENT MECHANISM
DIRECTLY INVOLVED AGENCIES	City of Mississauga Ministry of Transportation Ministry of Municipal Affairs Ministry of the Environment Regional Municipality of Peel Municipality of Metropolitan Toronto City of Etobicoke GO Transit Ontario Hydro	- Technical Coordinating Committee, chaired by the City of Mississauga. - Meetings every three weeks. - Responsible for overall direction and results of study. - Individual meetings as required.
OTHER INTERESTED AGENCIES	Ministry of Goverment Services Ministry of Natural Resources Credit Valley Conservation Authority Metro Toronto Region Conservation Authority Region of Halton City of York City of Brampton Town of Oakville Toronto Transit Commission Transport Canada (Pearson Airport) CP Rail Hydro Mississauga Consumers Gas ESSO Petroleum Inter Provincial Pipeline Sun Canadian Pipeline Trans - Northern Pipelines	- External Team meeting prior to each Public Information Centre. - Individual meetings and correspondence as required.
INTEREST GROUPS	Ratepayers Association Study Area Residents Mississauga Residents Commercial Property Owner	- Meeting with Ratepayers Associations prior to Public Information Centres. - Advertising and publicity. - Individual meetings and correspondence as required.
INDIVIDUALS	MPs MPPs Municipal Councillors Previous Information Centre Attendees General Public	- Public Information Centres at four key points during the study - Advertising and publicity, including brochure distribution to all City residents. - Newspaper and brochure questionnaires. - Correspondence as required.

TABLE 11 - PUBLIC AWARENESS PROGRAM

STAGE	ACTIVITY			REVIEW ROUND				
				I (WINTER 1990)	II (SPRING 1990)	III (FALL 1990)	IV (WINTER 1991)	V (FALL 1991)
PRIOR TO INFORMATION CENTRES	MUNICIPAL COMMITTEES		City of Mississauga City Council Operation and Works Committee Municipality of Metropolitan Toronto Planning Committee City of Etobicoke Works Committee	March 21	May 30 June 4	September 26 October 18 October 9	March 18 March 6	September 23 September 4
	PUBLICITY	BROCHURES	Hand - City of Mississauga	-	-	160,000	-	-
			Hand - Mississauga Study Area	34,000	-	-	34,000	Yes
			Mail - Mississauga Study Area	-	34,000	-	-	-
			Hand - Adjacent Homeowners	Yes	Yes	Yes	Yes	Yes
			Mail - Previous Attendees	-	Yes	Yes	Yes	Yes
			Mail - Interest Groups / Agencies	Yes	Yes	Yes	Yes	Yes
			Hand - Mississauga Transit Displays / Riders	Yes	Yes	Yes	Yes	Yes
		LETTER OF NOTIFICATION	MP's	Yes	Yes	Yes	Yes	Yes
			MPP's	Yes	Yes	Yes	Yes	Yes
			Municipal Councillors	Yes	Yes	Yes	Yes	Yes
			External Agencies	Yes	Yes	Yes	Yes	Yes
			Interested Agencies	Yes	Yes	Yes	Yes	Yes
			Ratepayers Organization		Yes	Yes	Yes	Yes
			City Centre Businesses		Yes	Yes	Yes	Yes
			City Centre Property Owners		Yes	Yes	Yes	Yes
		ONTARIO GOVERMENT NOTICES	Environmental Assessment Notice Mississauga News Etobicoke Guardian Toronto Star			October 24,25,31	February 13,15,20 February 13,20 February 21	
		ADVERTISEMENT	Toronto Star (Neighbours West)	March 22,29	June 7,14	October 18,25 November 1	February 14,21	Aug. 15, 22, 29
			Mississauga News	March 21,23,25,28	June 10,13,15,17	October 17,24,31	February 13,20	Aug. 14, 21, 28 Sept. 13, 15, 18
			Etobicoke Guardian	March 21,28	June 10,13	October 31		
			Mississauga Board of Trade			October	February	
	OTHER MEDIA		Cable 10 Character Generator		Yes	Yes	Yes	Yes
			Cable Television / Phone In Program		Yes	-	-	-
			Public Service Announcement Request / News		Yes	Yes	Yes	-
			Mississauga Transit Phone Message		Yes	Yes	Yes	-
	PUBLIC INFORMATION CENTRES		City of Mississauga	Great Hall Mississauga Civic Centre March 29, 1990	Glen Forest S.S. June 18, 1990 Great Hall Mississauga Civic Centre June 19, 1990 South Common Community Centre June 20, 1990	Great Hall Mississauga Civic Centre Nov. 5,6 1990	Great Hall Mississauga Civic Centre Feb. 25,26,27 1991 Staff present at . February 25 Information Centre	
			Total Attendance (approx.)	110	150	150	150	200
			Registered Attendees	56	105	127	109	-
			Comment Sheets Received	9	32	48	36	-
			Mailed Comment Sheets	-	-	336	-	-
FOLLOW UP ACTIVITIES	SUMMARY REPORT		Copies to Technical Coordinating Committee	Yes	Yes	Yes	Yes	-
			Copies to Mississauga Council	Yes	Yes	Yes	Yes	-

In addition to the broad public awareness campaign, it was recognized that many technical agencies and government bodies had an interest in the project. Efforts were made to ensure that all had an opportunity to participate in the study process. Table 12 summarizes the key meetings and correspondence which took place with interested parties over the course of the study.

The public involvement process for the Mississauga Transitway Planning Study achieved its purpose, as outlined in Section 2.5.4.1.

2.5.4.3 Commitment to Future Public Involvement

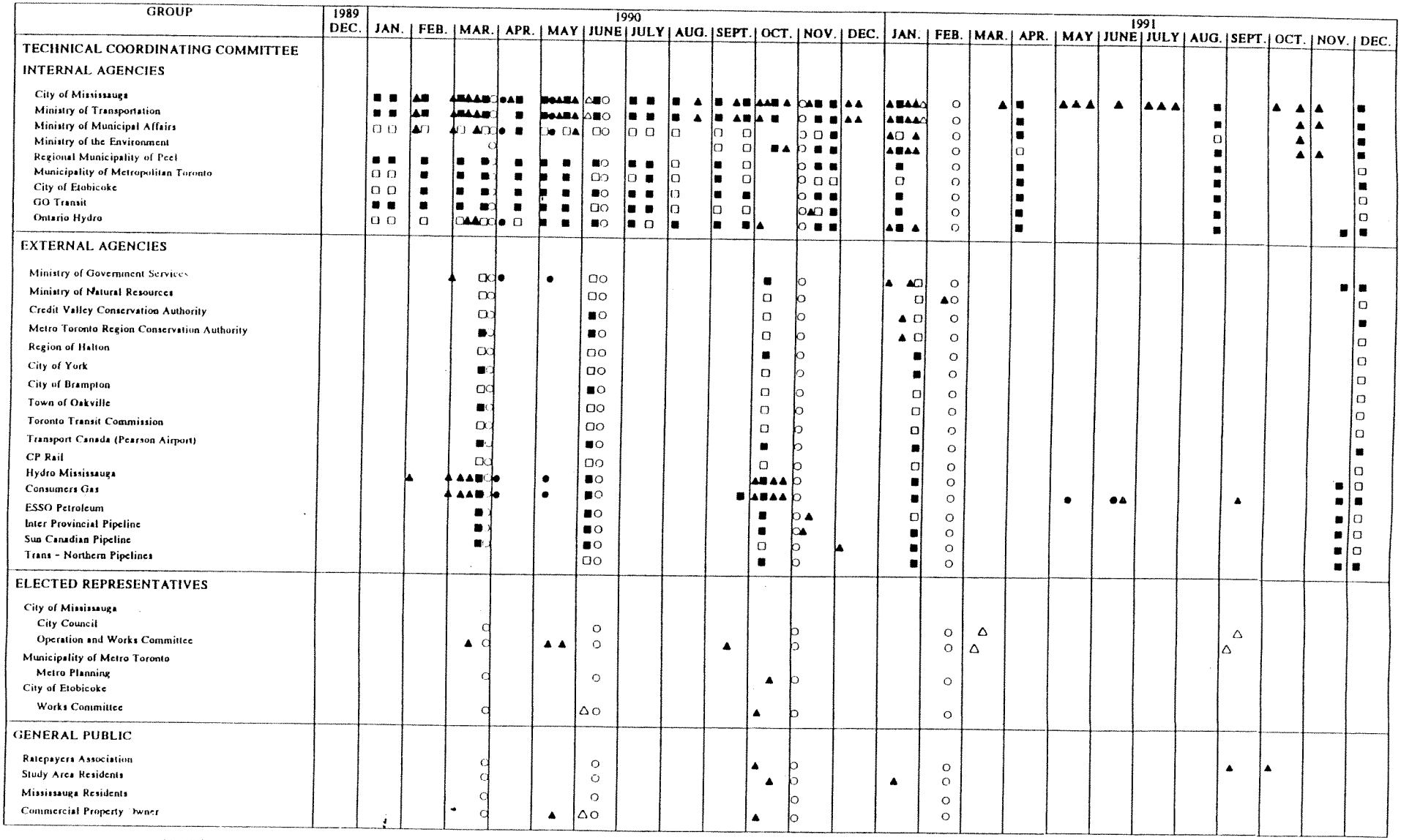
Upon approval of the Transitway recommendations in September, 1991 Mississauga City Council committed to a process of further public involvement throughout the remainder of the design and implementation period of the project, through approval of the following two motions:

- that a commitment to a public meeting process for each planning and financial stage in the phasing program shall be incorporated in the Official Plan Amendment (for the Mississauga Transitway; and

- that a Community Advisory Committee be struck, consisting of representatives of each of the (city) wards, to provide input to the City of Mississauga regarding the project on an ongoing basis.

In this way, the comprehensive public involvement process which has been a key feature of the planning steps to date will be continued into the future, through to the completion of the undertaking.

TABLE 12 - MISSISSAUGA TRANSITWAY PLANNING STUDY
STUDY SCHEDULE/MEETINGS



LEGEND

△ PRESENTATION
▲ INDIVIDUAL MEETING
COMMITTEE MEETING
■ ATTENDED
□ AGENDA/MINUTES
● CORRESPONDENCE
○ INVITATION TO INFORMATION CENTRE

3. STUDY AREA CONDITIONS

The conditions existing in the study area are documented in this section, as are the methods of data collection, limitations on the data, and any identified environmentally significant areas or issues. Existing conditions also include those plans and proposals now in place that affect the study area. The information in this section is intended to be comprehensive, accurate, and current as of the date of writing this report (spring 1991).

3.1 Study Area Definition

Given that the rationale for the Transitway and its location are rooted in a series of city-wide and area-specific transportation studies carried out in Mississauga over the past decade, it could be considered that the entire city constitutes the study area. Furthermore, since analysis of alternatives to the undertaking, which could include everything from bus lanes on all arterials to GO Rail improvements, are so geographically extensive, an understanding of the physical, social, and natural environmental conditions of the entire city and its surroundings is useful in determining relative net impact of each alternative.

However, the alternatives to the undertaking are, for the most part, analyzed on the basis of system operation, cost, system capacity, technology, and other common criteria that are independent of the actual physical surroundings. A number of overall City plans are included in this section in order to provide a context for analysis of area-wide alternatives, but detailed information is restricted to the relevant analysis section and provided as necessary in Section 4.

Given that the travel demand analysis in the 1985 Mississauga Transportation Study identified the central east-west corridor as the main area of interest, it was appropriate to provide an adequate level of detail on the area generally between Burnhamthorpe Road and Eglinton Avenue to allow an understanding of both the analysis of alternative corridors done at that time and the current (1991) conditions. For this reason, an overview of the conditions in the Burnhamthorpe, Highway 403 / Parkway Belt, and Eglinton corridors is provided in key exhibits in this section.

The analysis of corridor alternatives yielded a recommendation that the Transitway be located generally within the Parkway Belt West corridor.

The detailed study area for alignment alternatives was therefore limited to the Parkway Belt, and the sections of the Mississauga City Centre and east of Fieldgate Drive where alternative alignments were possible beyond the limits of the Parkway Belt.

The assessment of the effects of the alternative alignments and the mitigation requirements associated with the recommended alternative considered the extent of impact under a variety of factors, and varied from areas in immediate physical proximity to the proposed undertaking to region-wide impacts depending on the factor.

3.2 Definition of Environmentally Significant Areas/Issues

Given the broad definition of "environment" in the Environmental Assessment Act of Ontario:

"(i) air, land or water,

(ii) plant and animal life, including man,

(iii) the social, economic and cultural conditions that influence the life of man or a community,

(iv) any building, structure, machine or other device or thing made by man,

(v) any solid, liquid, gas, odour, heat, sound vibration or radiation resulting directly or indirectly from the activities of man, or

(vi) any part or combination of the foregoing and the interrelationships between any two or more of them,

in or of Ontario;",

a very extensive review and analysis of existing and future conditions is required in order to properly assess the net impact (positive and/or negative) of the proposed undertaking and its alternatives. The identification of environmentally significant areas / issues in the Mississauga Transitway Planning Study reflected those areas / issues that would significantly compromise the ability to implement the Transitway if its impacts and mitigation measures were not resolved at this stage.

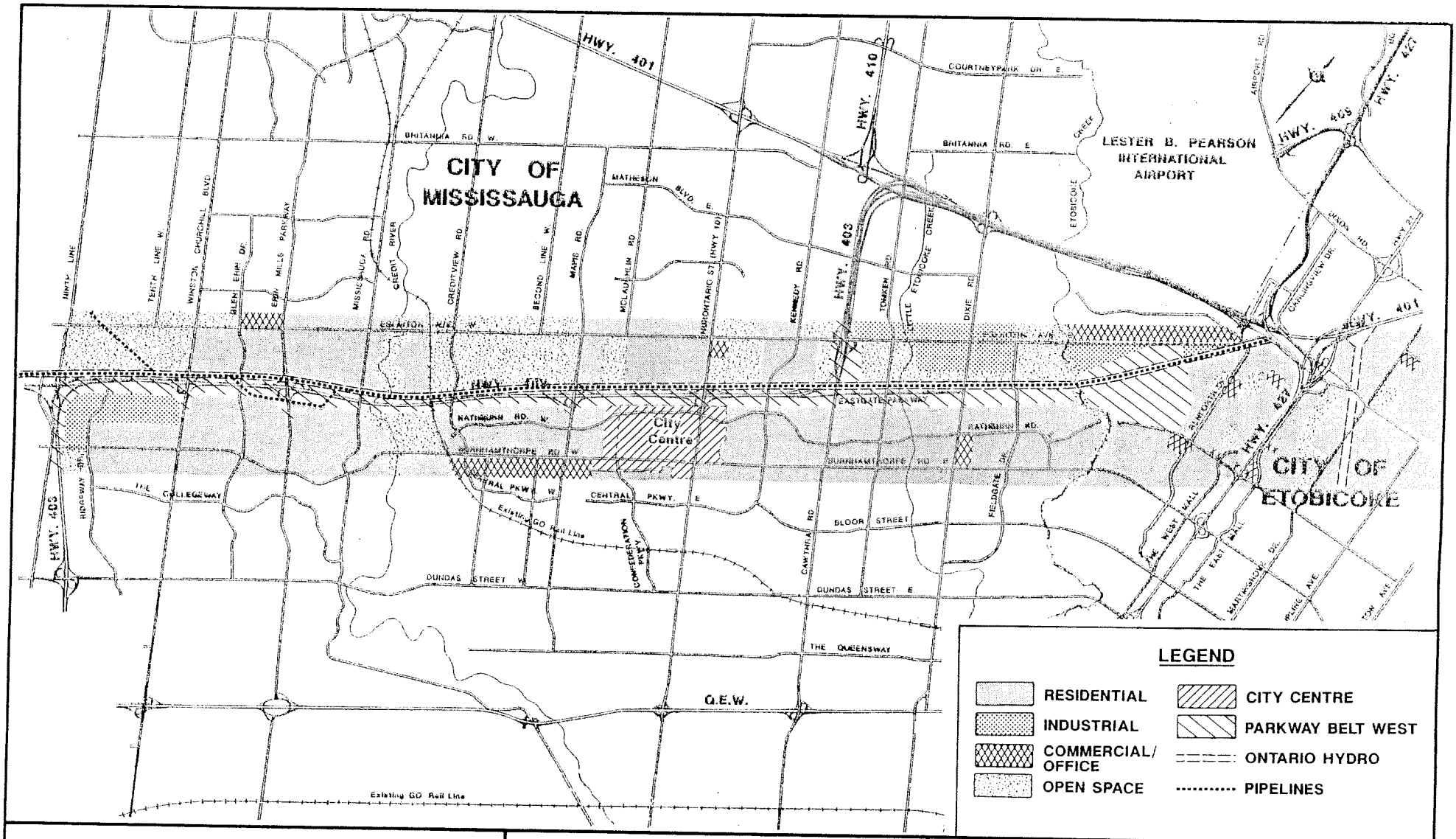
3.3 Physical Environment

In reviewing the physical environment potentially affected by the undertaking and its alternatives, the focus is on east-west corridors in central Mississauga - Burnhamthorpe Road, Parkway Belt West / Highway 403, and Eglinton Avenue. Detailed information is provided for the Parkway Belt West corridor, in recognition of its identification in previous studies and the current work as the recommended corridor for a new east-west transportation facility. The physical environment includes both man-made and natural components; the two are assessed and described separately in this Section.

The physical environment was described fully through aerial photography and use of large scale plans in the public forums for the study; the plans in Section 5.2.1 may be referred to regarding questions of specific areas.

3.3.1 Built Environment

The existing and planned physical features that have been built by man and which alter the original environment are described in this section. Three general categories are used: Roadways/Railways; Utilities; and Adjacent Development. The overall picture of the transportation and land use system is described in Sections 4.5 and 4.6; in this section the description is limited to an overview of the physical conditions present in the Burnhamthorpe, Parkway Belt, and Eglinton corridors. Exhibit 6 provides an overview of the built environment, and Tables 13a-13c provide a focus on conditions within and adjacent to the Parkway Belt in Mississauga.



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 6

0 2,000 4,000 6,000m

SCALE

EXISTING LAND USE
STUDY AREA

TABLE 13A - BUILT ENVIRONMENT - PARKWAY BELT WEST CORRIDOR
NINTH LINE TO MAVIS ROAD

	ROADWAYS/RAILWAYS WITHIN/CROSSING CORRIDOR	UTILITIES WITHIN/CROSSING CORRIDOR	ADJACENT DEVELOPMENT
Information Sources	• direct observation • design contract plans • aerial photography • topographic mapping • meetings with road authorities	• design plans provided by Utility companies • survey plans • roadway contract drawings • meeting with each Utility	• direct observation • study area photographs • aerial photography • planning documents
Existing Conditions	• Highway 403: 6 lane rural divided controlled access highway; existing interchanges with Winston Churchill Boulevard, Erin Mills Parkway • Winston Churchill Blvd.: 4/6 lane arterial; limited access • Glen Erin Drive: 4/6 lane arterial; limited access • Erin Mills Parkway: 6 lane divided arterial; limited access • Mississauga Road: 2/4 lane; scenic route • Creditview Road: 4/6 lane; limited access • Canadian Pacific Railway, double and triple track; carries GO Transit Milton service	• Ontario Hydro: two high-tension 230 KW lines on steel towers. • Mississauga Hydro pole line • Interprovincial Pipeline company: 750 mm dia pipeline • Sarnia Products Pipeline: 250 mm and 300 mm dia. pipelines • Sun-Canadian Pipeline: 200 mm and 300 mm dia. pipelines • Consumers Gas: 750 mm pipeline under construction Fall 1991 • all of the above run east-west from Ninth Line to Mavis Road, mainly within or adjacent to Ontario Hydro corridor. • twin 2400 mm storm culvert east of Winston Churchill and twin 2400 storm culvert east of Glen Erin Drive • municipal services and utilities in crossing arterials	South Side • Ninth Line to Winston Churchill. Developing prestige industrial area abutting Highway 403 corridor. Recent residential community to the south of industrial area. Mostly single detached with some semi-detached and townhouses. • Winston Churchill to Erin Mills: established residential community, primarily detached units. Large estate lots between Mullett Creek and Mississauga. • Erin Mills to Mississauga Road: established residential community. Entirely detached. • Mississauga Road to Mavis Road. Credit River valley and large wooded area between Mississauga Road and C.P. Railway • C.P. Railway to Mavis Road: Recent residential community, primarily detached with some semi-detached and townhouse units. North Side • Ninth Line to Winston Churchill: Rural lands currently used for agricultural purposes. • Winston Churchill to Erin Mills: Established residential community comprised mostly of single detached with some townhouse units abutting arterial roads. Emerging apartment area along Eglinton Avenue. • Erin Mills to Mississauga: Single family detached community. Townhouse community recently established on Eglinton Avenue. • Mississauga Road to Credit River: Recent single detached community between Credit River and C.P. Railway. Emerging residential community between C.P. Railway and west of Mavis Road. Abutting Mavis Road is a large area of agricultural land, zoned for residential development. Ontario Hydro operates a large transformer station west of Mavis Road.
Future / Proposed Conditions	• Highway 403: provision in median for widening to 8 lanes; modification / relocation of interchange ramps; provision of bus bypass lane on interchange ramps. • extension northerly of Ridgeway Drive from south of Highway 403.	• Ontario Hydro: double existing circuits, either on new or existing towers, raise / relocate towers in conflict with Transitway. • Mississauga Hydro: second pole line from Erindale Transformer Station to Ninth Line.	South Side • with the exception of the emerging prestige industrial area located between Ninth Line and Winston Churchill abutting the Highway 403 corridor, the area is built-out. Much of this industrial area is under construction or site preparation. North Side • between Winston Churchill and C.P. Railway the area is generally built-out. The area east of Mississauga Road, north of the Highway 403 corridor which is currently an orchard, is a potential infill site. However, this area is designated as a "Special Park" area. As a result, this site will likely continue to be a non-urban use. • between Ninth Line and Winston Churchill the area is currently under study. It is included in the Central Business Park Secondary Plan area with a combination of prestige industrial and office/commercial planned. Eventual development of this area may include residential uses. • between the C.P. Railway and Mavis Road, much of this area is currently undergoing low density residential development. To the west of the area currently being developed is a large parcel which is designated medium density residential.
Sensitivity to Condition Change	• grade separation required at crossings • intersection modifications required for Station access • additional structures/temporary detours required • storm water management design issue • noise/visual barriers design issue	• relocations and/or lowerings of some pipelines may be required • secondary use of Ontario Hydro corridor may affect design of Ontario Hydro facilities • reduce / affect options for future expansion • significant cost impact, if alteration to existing conditions required.	• little effect on existing or planned residential development adjacent to Parkway Belt. • potential for improved access to existing and planned industrial / business centre located between Ninth Line and Winston Churchill Blvd. • potential for improved access to City Centre for existing and planned developments.
Data Limitations	• preliminary or detailed design plans are not available.	• buried pipelines require field location prior to construction. Municipal services and utilities to be confirmed in detail design. Detail design plans are not available for Hydro Mississauga and Ontario Hydro future expansions.	• Secondary Plan for development area west of Winston Churchill Blvd. is not complete. Industrial/business centre between Ninth Line and Winston Churchill Boulevard could likely support higher density with provisions of improved transportation service. Potential higher residential / commercial density with improved transportation service.
Environmentally Significant Areas/Issues (Concerned Agency)	• protection for ultimate Highway 403 expansion needs (Ministry of Transportation)	• protection for Ultimate Ontario Hydro expansion needs within Ontario Hydro right-of-way (Ontario Hydro). • protection for Hydro Mississauga pole line easement (Hydro Mississauga).	• most environmentally significant areas have already been built upon. Mullett Creek and Credit River valley are the major environmental features in the study area. Both are identified as Environmental Protection Areas. (City of Mississauga)
Process to Resolve Significant Areas/Issues	• continued co-ordination of planning roadways; alignment of Transitway to allow for feasible highway expansion; do preliminary design of Transitway, access ramps, etc. (City of Mississauga, Ministry of Transportation, Ontario).	• continued liaison with utility companies. Submit preliminary and final design of Transitway to Ontario Hydro for their approval. Avoid locating Transitway in Ontario Hydro's right-of-way as close to a right angle as possible. (City of Mississauga, Ontario Hydro).	• control design through planning and design permit process (City of Mississauga, CVCA). • continued monitoring of significant areas / issues

TABLE 13B - BUILT ENVIRONMENT - PARKWAY BELT WEST CORRIDOR MAVIS ROAD TO CAWTHRA ROAD

	ROADWAYS/RAILWAYS WITHIN/CROSSING CORRIDOR	UTILITIES WITHIN/CROSSING CORRIDOR	ADJACENT DEVELOPMENT
Information Sources	• direct observation • design contract plans • aerial photography • topographic mapping • meetings with road authorities	• design plans provided by Utility companies • survey plans • roadway contract drawings • meeting with each Utility	• direct observation • meetings with developers and residents • aerial photography • topographic mapping • Secondary Plans
Existing Conditions	• Highway 403: 6 lane rural divided controlled access highway; interchanges with Mavis Road, Hurontario Street, Cawthra Road. • Mavis Road: 4/6 lane arterial; limited access • Hurontario Street (Highway 10): 6 lane divided arterial; limited access • Cawthra Road: 4 lane arterial; direct connection with Highway 403; limited access • Eastgate Parkway: 4 lane divided arterial, open 1991; limited access • Rathburn Road: 4/5 lane arterial; limited access; interchange with Hurontario Street	• Ontario Hydro: two high-tension lines on steel towers; four 230 kV circuits • Imperial Oil (Esso) Sarnia Products Pipeline: 250 mm, 300 mm oil pipelines • Sun-Canadian Pipelines: 200 mm, 300 mm oil pipelines • Interprovincial Pipeline: 1,200 mm pipeline • all of the above run east-west in the Ontario Hydro corridor from east of Mavis Road to east of Cawthra Road • Hydro Mississauga pole line: 47 kV • municipal utilities in Rathburn Road corridor	South Side: • West of Mavis to Elora: low-density single family attached and semi-detached homes • Elora to Hurontario: undeveloped old-field succession; Square One regional shopping centre south of Rathburn • Hurontario to Chalfield: medium-density office and parking • Chalfield to Central Parkway East: low density single family detached and semi-detached homes • Central Parkway East to Curia Cr.: medium-density residential townhomes • Curia Cr. to east of Cawthra: low-density single family homes North Side • west of Mavis, west of Confederation Parkway, and Hurontario to west of Central Parkway: undeveloped farmland • east of Mavis, Confederation Parkway to west of Hurontario, and west of Central Parkway to Highway 403: low-density single family homes • east of Cawthra: vacant public land (Min. of Gov't. Services) • west of Hurontario: high density office/commercial
Future / Proposed Conditions	• Highway 403: provision in median for widening to 8 lanes; extensive collector roadway system proposed from west of Mavis to Eglinton, with eastbound access points at Mavis, City Centre streets, and Hurontario; and at Hurontario, Duke of York, and Confederation westbound. • Mavis Road: widen to 6 lanes south of Highway 403 • Hurontario Street: widen to 8 lanes • Cawthra Road: no change • Highway 403 Arterial Extension: protection for widening to 6 lanes and grade-separated interchange with Cawthra • Rathburn Road: widen to 7 lanes; w-s ramp at Hurontario • Additional City Centre streets to complete grid system • Confederation Parkway: 6 lane arterial	• Ontario Hydro: double existing circuits, either on new or existing towers; transformer station east of Hurontario within right-of-way • Consumers Gas: 30" gas pipeline planned for 1991 construction within or adjacent to Ontario Hydro corridor • Hydro Mississauga: second pole line parallel to existing line; ultimate requirement for third pole line.	South Side: • major long-term development of high-density downtown core planned for City Centre area (west of Confederation to east of Hurontario; Highway 403 to south of Burnhamthorpe); highest density office use (Floor Area Ratio 4.0/30± storey towers) planned for Rathburn Road corridor; highest density residential use planned for Rathburn/Confederation vicinity North Side • continued infill of low-density residential subdivisions in vacant land • higher density nodes possible at Hurontario and west of Mavis • no proposals for use of MGS property east of Cawthra
Sensitivity to Condition Change	• grade separation required with crossing roads • intersection modifications required • Rathburn Road reconstruction required in City Centre • additional structures / temporary detours required at crossings • minor geometric constraints on future Highway 403 collector roads • drainage, barriers, and other design issues	• relocations and/or lowerings of some sections of some pipelines may be required • secondary use of Ontario Hydro corridor for station facilities (access roads, parking, etc.) may affect design of Ontario Hydro facilities • reduces/affects options for future expansion or additional provision of utilities • significant cost impact if alteration to existing conditions required.	• adequate transportation system is fundamental component of City Centre Secondary Plan; ability to develop to ultimate level is dependent on high transit modal split • City Centre development in shorter term (i.e. prior to road capacity being reached) can proceed irrespective of future constraints • little effect on existing or planned residential development • opportunity to link development to Mavis, City Centre, and Hurontario nodes
Data Limitations	Preliminary or detailed design plans are not available for planned roadways	Buried pipelines require field location prior to construction. Municipal utilities to be confirmed in detailed design. Detailed design plans not available for Hydro Mississauga or Ontario Hydro future expansions	Final architectural design plans not available for future development areas. Integration with future City Centre development subject to long term development plans
Environmentally Significant Areas/Issues (Concerned Agency)	Protection for ultimate Highway 403 expansion needs (Ministry of Transportation of Ontario)	Protection for Ultimate Ontario Hydro expansion needs within Ontario Hydro right-of-way. (Ontario Hydro)	Protection for development in accordance with City Centre Secondary Plan (City of Mississauga; City Centre developers)
Process to Resolve Significant Areas/Issues	Continued co-ordination of planning roadways; Alignment of new facilities to allow feasible Highway expansion; do preliminary design of new facilities (City of Mississauga, Ministry of Transportation of Ontario)	Continued liaison; submit preliminary and detail designs to Ontario Hydro for review / approval; avoid location on Ontario Hydro right-of-way; cross right-of-way as close to right angle as possible (City of Mississauga, Ontario Hydro)	Continued liaison with developers; control design through planning and design permit process (City of Mississauga, City Centre developers)

TABLE 13C - BUILT ENVIRONMENT - PARKWAY BELT WEST / EGLINTON CORRIDOR CAWTHRA ROAD TO RENFORTH DRIVE

	ROADWAYS/RAILWAYS WITHIN/CROSSING CORRIDOR	UTILITIES WITHIN/CROSSING CORRIDOR	ADJACENT DEVELOPMENT
Information Sources	• direct observation • design contract plans • aerial photography • topographic mapping • meetings with road authorities	• design plans provided by Utility companies • survey plans • roadway contract drawings • meeting with each Utility	• direct observation • meetings with developers and residents, and City Planning Staffs • aerial photography • topographic mapping • City of Mississauga Official Plan and Secondary Plans • City of Etobicoke Official Plan
Existing Conditions	• Eastgate Drive: four-lane divided arterial opened to Dixie in 1991; limited access, direct connection to Highway 403 • Eglinton Avenue: four-lane arterial; limited access • Tomken Road: four-lane arterial, limited access • Dixie Road: four-lane arterial, limited access • Fieldgate Drive: two to four-lane collector • Spectrum Way/Rakely Boulevard, Satellite Drive, Orbitor Drive/Centennial Drive, Explorer Drive, Commerce Boulevard: two to four-lane local collectors	• Ontario Hydro: two high tension lines on steel towers 230 kv • Sarnia Products Pipelines: 10" and 12" diameter pipelines • Sun Canadian Pipelines: 8" and 12" diameter pipelines • TransNorthern Pipeline: 10" and 12" diameter pipelines • Interprovincial Pipelines: 30" diameter pipeline • Consumers Gas: 36" diameter pipeline (completed late 1991) • all of the above run east-west in the Ontario Hydro Corridor from west of Tomken Road to east of Renforth Drive • municipal utilities in the Eastgate Drive and Eglinton Avenue corridors • Mississauga Hydro connections to transformer station west of Tomken Road	South Side • East of Cawthra to Dixie: low density single-family detached and semi-detached homes and medium density townhouses and Rathwood District Park • Dixie to Fieldgate: low density single-family detached houses and semi-detached houses • Fieldgate to Centennial Park Boulevard: vacant, undeveloped industrial land to the east of Fieldgate to Etobicoke Creek - lands to the west occupied by industrial uses except for the vacant property at the SW corner of Eglinton and Fieldgate. The properties on the south side of Eglinton have been developed for large industrial warehouse/office uses • Centennial to Renforth: City of Etobicoke recreational facilities as well as industrial office buildings (Centennial Centre Limited) have developed here North Side (Cawthra to Dixie) An Ontario Hydro Corridor is located on the north side of the Parkway Belt and north of that the lands remain primarily undeveloped except for pockets of industrial development along Tomken and commercial uses at the intersection of Tomken and Eglinton. The remainder of the lands have been intensely developed for industrial uses as well as the Canada Post Gateway facility. • Dixie to Fieldgate: these industrially designated lands remain primarily undeveloped • Fieldgate to Satellite: the major land uses for this area are undeveloped industrially designated lands, some of which are part of the Airport Corporate Centre, and open space around Etobicoke Creek • Satellite to Renforth: some industrial office uses have developed here as part of the Airport Corporate Centre, while much of the area remains undeveloped
Future / Proposed Conditions	• Eastgate Drive: planned extension through Parkway Belt and north on Fieldgate alignment to Eglinton in 1992. Extension north of Eglinton in long term • Eglinton Avenue: proposed widening to six lanes • Tomken Road: proposed widening to five lanes south of Eglinton to Transitway • Dixie Road: widening to six lanes in longer term • Airport Corporate Centre Collector Roads: no change	• Ontario Hydro: double existing circuits, either on new or existing towers • Hydro Mississauga: additional connections to transformer station west of Tomken Road • 1,800 mm storm sewer to be constructed east from Dixie and Eastgate Drive to Etobicoke Creek	South Side • continued development of industrial and commercial uses on vacant land near Eglinton as several development applications have been approved or are proceeding through the approvals process • continued infill of low-density residential subdivisions / development on vacant land North Side • major long-term development of industrial lands and Airport Corporate Centre
Sensitivity to Condition Change due to Transitway	• grade separation required with Transitway • intersection modification required for station access • additional structures/temporary detours at crossing of Transitway • drainage, barriers and other design issues	• relocations and/or lowerings of some sections of pipelines may be required at some Transitway stations • secondary use of Ontario Hydro corridor for station facilities (access roads, parking, etc.) may affect design of Ontario Hydro facilities • storm sewer connections east of Dixie and on north side of Eglinton altered/relocated when Transitway constructed • reduces/affects options for future expansion or additional provision of utilities • significant cost impact if alteration to existing conditions required	• Transitway provides opportunity to support additional development in and around the Airport Corporate Centre • little effect on development adjacent to Parkway Belt • opportunity to link development at all Stations from Fieldgate to Renforth
Data Limitations	• Preliminary or detailed design plans are not available for the planned roadways	• buried pipelines require field location prior to construction. Municipal utilities to be confirmed in detailed design. Detailed design plans not available for Ontario Hydro or Hydro Mississauga future expansion	• Development opportunities still exist along right-of-way east of Fieldgate. Integration of the Transitway and Stations with the future development will be subject to the timing of each facility
Environmentally Significant Areas/Issues (Concerned Agency)	• None	• protection for ultimate Ontario Hydro expansion needs within Ontario Hydro right-of-way (Ontario Hydro)	• Protection for development in accordance with City of Mississauga Official Plan and Airport South Secondary Plan and City of Etobicoke Official Plan (City of Mississauga, City of Etobicoke, and area developers, especially Airport Corporate Centre Developers)
Process to Resolve Significant Areas/Issues	• Not applicable	• continued liaison: submit preliminary and detail designs of Transitway to Ontario Hydro for review/approval; avoid locating Transitway on Ontario Hydro right-of-way; cross right-of-way as close to right angle as possible. (City of Mississauga, Ontario Hydro)	• Continued liaison with developers, control design through planning and design permit process (City of Mississauga, City of Etobicoke and area developers, especially Airport Corporate Centre developers).

3.3.2 Natural Environment

Although the physical environment of the area has been significantly altered by the man's actions, sufficient natural environmental areas exist to warrant separate consideration. These natural environmental features relate to the earth, water, vegetation and wildlife of the study area.

In providing an overview of the key natural environmental areas, Exhibit 7 illustrates the fragmented and linear nature of most relevant areas. The key areas are defined in the City of Mississauga Official Plan under three categories:

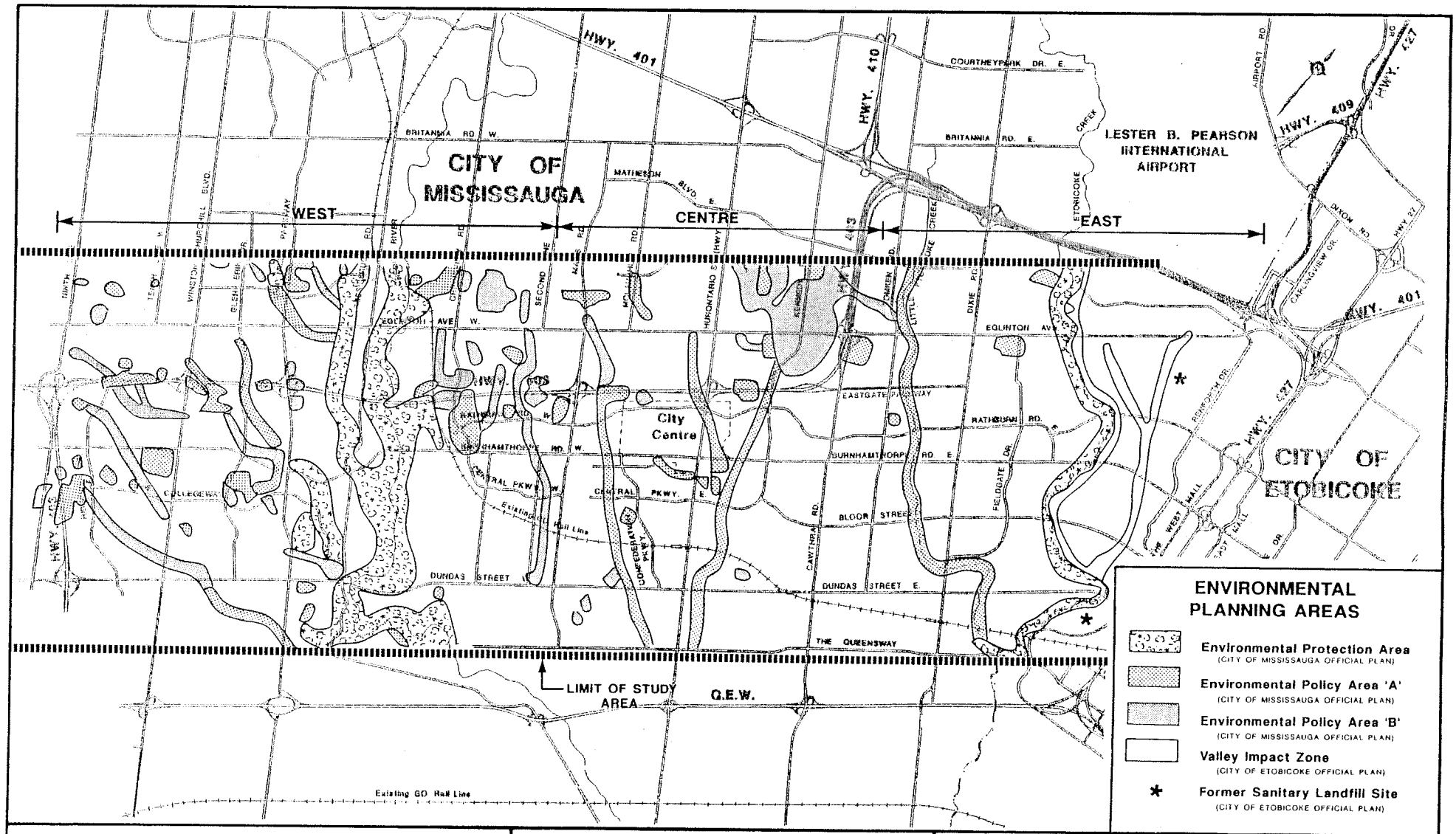
Environmental Protection Area - "Areas having the highest level of environmental significance and ecological sensitivity....These include land and water resources which exhibit environmental hazard and are critical to the maintenance of natural systems".

Environmental Policy Area "A" - "lands and water resources which have lesser environmental significance and ecological sensitivity than Environmental protection areas, and which can tolerate limited modifications".

Environmental Policy Area "B" - "lands which exhibit lesser environmental significance and ecological sensitivity than Environmental Policy Areas "A" and into which some urban uses can be integrated.

Key areas identified in the City of Etobicoke Official Plan include the Valley Impact Zone. Valley lands are identified as an important natural resource which need to be protected in order to preserve the natural environment, habitat and linkage of open space as well as recreational opportunities for natural scenery of the valleys.

Tables 14a-14c summarize the detailed field work and documentation carried out for the Mississauga Transitway Planning Study. This work is contained in full in Appendix M, and is broken into three sections of analysis, corresponding to the study areas addressed by the three Consultants. The review focuses on the area in and around the Parkway Belt West / Highway 403 corridor.



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 7

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SCALE

DESIGNATED ENVIRONMENTALLY SENSITIVE AREAS

TABLE 14a: NATURAL ENVIRONMENT - PARKWAY BELT WEST - NINTH LINE TO MAVIS ROAD

	Physiography and Soils	Watercourses and Fisheries	Vegetation	Wildlife	Designated Environmentally Sensitive Areas
Information Sources	• MNR Mineral Resources mapping • Background documentation	• Study area visits 19/9/90, 0/9/90, 26/9/90. • Photographed features. • Credit Valley Conservation Authority • MNR Maple District • Background documentation	• Study area visits 19/9/90, 20/9/90, 26/9/90. • Photographed features • Credit Valley Conservation Authority • MNR Maple District • Background documentation	• Study area visits 19/9/90, 20/9/90, 26/9/90. • Presence of wildlife noted. • Credit Valley Conservation Authority • MNR Maple District • Background documentation	• City of Mississauga Official Plan and Secondary Plans. • MNR Maple District CVCA
Existing Conditions	• Mississauga Road to Ninth Line alternating bands of Oneida clay loam and Chinguacousy clay loam along seasonal drainage courses. • Mississauga Road to slopes of Credit River valley consists of Fox sandy loam. • From the crest of the Credit River to Creditview Road, deep, heavy soils of Oneida catena are present. Small pockets of Chinguacousy clay loam and poorly drained Jeddo clay loam does exist. • Soils between Creditview Road and Mavis Road are Brockport catena. Pockets of Oneida clay are also present. • Topography flat to moderate except for severe changes at Credit River valley. Some man-made berms flanking Highway 403 corridor.	• Glen Erin Brook, Sawmill Creek, Chappell Creek and Wolfdale Creek contribute to drainage of the study area but are seasonal and as such have no fisheries • Mullett Creek serves to drain an area of 33.2 sq. km and maintains a year round flow. This creek has a storm water diversion to the Credit River at the north end of Streetsville. Provides habitat for 7 species of fish. • Credit River drains over 858 sq. km. This is the major watercourse feature in Mississauga and has a mix of low density residential, industrial and agricultural uses flanking the crest of the valley within the study area. The Credit River between Burnhamthorpe and Eglinton, provides habitat for 14 species of fish. The Credit River serves as a major sport fishing destination for salmon / trout anglers due to the annual fall migration. These species are prevented from moving further upstream through the Road Milling dam at the south end of Streetsville.	• The slopes of the Credit River valley are the only examples within the study area of presettlement conditions. None of the trees or stands of trees are of unusual size or maturity. Sporadic wood lots exist throughout the study area. Most of those are located on undevelopable lands. Within the Highway 403 corridor area is maintained a field of grasses and clover which is periodically mowed. Between Ninth Line and Winston Churchill typical "old fields" communities of grasses, agricultural legumes and colonizing herbaceous plants exist. • No rare or significant plant species were identified in the study area.	• Common urban wildlife. • No unusual concentration of wildlife is known in the study area, nor have special breeding or denning areas been reported. Also no rare or uncommon species have been reported. • Whitetail deer are known to move along the Credit River valley in the vicinity of the study area.	• The Credit River and valley lands within study area have been designated an Environmentally Significant Area by the CVCA. Other areas identified within City of Mississauga Official Plan or Secondary Plans are of little significance as natural areas.
Future/Proposed Conditions	• Additional roadwork and bridging across Mullet Creek and the Credit River may disturb exposed slopes.	• Additional upstream channelization and watercourse crossings are likely as Northern Mississauga continues to expand its urban boundaries.	• Possible removal and disruption of vegetation along and next to selected alignment. • Increase salt spray and emissions resulting from increased traffic.	• Continued urbanization will further focus migration of both aquatic and terrestrial wildlife along the major watercourse valley. Credit River and valley is the main corridor for such movements in Mississauga.	• None

TABLE 14a (Cont): NATURAL ENVIRONMENT - PARKWAY BELT WEST - NINTH LINE TO MAVIS ROAD

	Physiography and Soils	Watercourses and Fisheries	Vegetation	Wildlife	Designated Environmentally Sensitive Areas
Sensitivity to Condition Change	• Very limited sensitivity	• During construction, potential to increase sedimentation downstream. • Fisheries will be affected. • Increase runoff and salt spray are expected.	• Increased edge affect as new edges will be sensitive to salt spray and emissions. • Some portion of existing wood lots in watercourse valleys may be removed.	• Removal of woodlots may discourage terrestrial wildlife movement as natural cover would be affected. • Outside of valleys, limited sensitivity due to largely urbanized area. • Migrating salminids could be affected by increased sedimentation.	• Watercourses, vegetation and wildlife are subject to condition change. See respective boxes.
Data Limitations	• None	• None	• None	• None	• None
Environmentally Sensitive Areas/Issues (Concerned Agency)	• Erosion of exposed soils and slopes	• Unimpeded basewater flow in Mullet Creek and the Credit River need to be continued. • Stormwater movement from watersheds draining across the transitway corridor need to be undisturbed. • Fisheries movement, should not be impeded.	• Removal of portions of valley woodlots	• Affect on terrestrial and aquatic wildlife movements.	• Designated areas may be affected as size of wood lots on valley walls decrease.
Process to Resolve Significant Areas/Issues	• Apply standard erosion control measuring for exposed soils, slopes.	• Use of a bridge structure similar to the Highway 403 span across the Credit River should address all of the above concerns regarding the Credit River valley. • For Mullett Creek a wide concrete culvert similar to the one at Highway 403 should be installed in order to accommodate the height and volume of a regional storm. • During construction of the transitway, efforts should be made to minimize sediment inputs to watercourses and to avoid disrupting wildlife migrations across the highway corridor. • Bridge footings and supports should be constructed from May to early August. To control sediments, straw bales and layering of geotextile materials should be incorporated. Structures should be built on flat, dry lands, not on slopes or within the river channel.	• Supplement natural vegetation with planting and landscaping. • minimize removal of woodlots in valleys. • Valley walls should be hydroseeded after construction affecting valley walls is completed.	• Vegetation retention and replantings will encourage terrestrial wildlife movements. • Construction of bridges during low flow periods (May - August) will minimize impacts on migrating salmonids.	• See measures noted for watercourses, vegetation and wildlife. • City of Mississauga Planning Department to be consulted regarding Environmental Policy Areas.

*Note: Abbreviations used:

MNR : Ministry of Natural Resources (Ontario)
MOE : Ministry of the Environment (Ontario)
MCCR : Ministry of Consumer and Commercial Relations (Ontario)
MTO : Ministry of Transportation (Ontario)
CVCA : Credit Valley Conservation Authority

TABLE 14b: NATURAL ENVIRONMENT - PARKWAY BELT WEST - MAVIS ROAD TO CAWTHRA ROAD

	Physiography and Soils	Watercourses and Fisheries	Vegetation	Wildlife	Designated Environmentally Sensitive Areas
Information Sources	• MNR Mineral Resource mapping • background soils info. • Highway 403, roadway, and sewer borehole records • Consumers Gas pipeline geotechnical and construction records	• visited study area (4/89, 8/90, 10/90, 6/91); photographed features • Credit Valley Conservation Authority • MNR Maple District	• visited study area (4/89, 8/90, 10/90); photographed features • MNR Maple District	• visited study area (4/89, 8/90, 10/90); wildlife presence noted • MNR Maple District	• City of Mississauga Official Plan • MOE (re landfill / site re-use) • MCC (Fuels Safety Branch) • MNR Maple District
Existing Conditions	• mainly Oneida clay loams, good drainage • scattered areas with Chinguacousy clay loam (imperfect) and poorly drained Jeddo clay loam (wet pockets) • much of study area disturbed by past grading, spoil/debris dumping, clearing • level to gently sloping - most of area • steeper slopes to west of Central Parkway and associated with 403 berms (south side) • no unusual topographic constraints	• Mary Fix Creek - tributary to Credit River, connects to Credit near Lake Ontario • above ground (channelized) and below ground sections • Cooksville Creek and tributary similarly disturbed. Flows directly to Lake Ontario. Both Cooksville Creek and Mary Fix Creek have been heavily urbanized through the study area • remaining drainage features are surface drainage channels of low quality • no fishery in study area due to urbanization	• vegetation consists of remnant small woodland stands, old field and woody succession, disturbed field/scrub succession, scattered wet pockets (tree-scrub), MTO plantings and scattered tree clusters • community diversity and quality limited due to fragmentation and urbanization • no significant or unusual plant species identified • no MNR evaluated wetlands in study area • scattered wet tree/shrub pockets are too small to be evaluated and limited in significance	• typical urban wildlife species noted during surveys • no unusual species or critical wildlife habitats noted • study area already an urban wildlife environment - habitat corridors fragmented in past by urban development	• no crown land forests, Agreement Forest, WIA Forests, Forest Productivity Areas or Regional ESAs identified • Environmental Policy A and B wooded remnants to south of 403 • Chalfield Lane woodland remnant is more intact Policy A stand in study area • both Cooksville Creek and Mary Fix Creek identified as Policy A areas but have been heavily urbanized through study area
Future/Proposed Conditions	Additional roadwork and creek crossings may disturb some exposed slopes	Increased upstream urbanization of channels due to development of northern Mississauga. Additional culverts and creek crossings. Possible creek diversion and alteration of roadway drainage pattern.	Possible removal of some vegetation and alteration of wet pockets in the course of road work. Increased traffic in corridor leading to more emissions and salt spray	No change	No change
Sensitivity to Condition Change	• very limited sensitivity	• possible downstream sensitivity to sedimentation • since no fisheries in study area, sensitivity to change extremely limited • hydraulic design of realigned channel sensitive to future upstream development • sensitive to road runoff, salt, heavy metals	• new edges sensitive to salt spray, emissions • outside of wood lots, sensitivity to change extremely limited since most vegetation is planted.	• sensitive to removal of woodlots • limited sensitivity due to previous condition changes particularly outside woodlots	• see Vegetation for woodlot sensitivity • see Watercourses for creek sensitivity
Data Limitations	• borehole records limited to specific, scattered sites	Flood plain mapping outdated	None	None	None
Environmentally Sensitive Areas/Issues (Concerned Agency)	Erosion of exposed soils, slopes	Creek crossings and realignments; erosion and sedimentation in streams; conflict of spawning and construction activities (MNR, CVCA). Potential impact on roadway drainage (MTO)	• woodland clearing (main concern is aesthetic) • disruption during construction	None	Change in character or impact on environment of designated areas.
Process to Resolve Significant Areas/Issues	• apply standard erosion control measures for exposed soils, slopes	• MNR/CVCA permits required for creek diversion • prepare master drainage plan prior to construction • use standard MTO erosion / sediment control measures at creek crossing areas	• minimize woodland clearing through both design and construction measures • supplement natural vegetation with plantings and landscaping • install and maintain snowfence protection throughout construction	None required. Any vegetation retention measures will benefit wildlife	• see measures to protect watercourses and vegetation • involve City of Mississauga Planning Department regarding Environmental Policy Areas

*Note: Abbreviations used:

MNR : Ministry of Natural Resources (Ontario)
MOE : Ministry of the Environment (Ontario)
MCCR : Ministry of Consumer and Commercial Relations (Ontario)
MTO : Ministry of Transportation (Ontario)
CVCA : Credit Valley Conservation Authority

TABLE 14c: NATURAL ENVIRONMENT - PARKWAY BELT WEST / EGLINTON CORRIDOR - CAWTHRA ROAD TO RENFORTH DRIVE

	Physiography and Soils	Watercourses and Fisheries	Vegetation	Wildlife	Designated Environmentally Sensitive Areas
Information Sources	• Chapman & Putnam • Ontario Soil Survey • topographic maps	• visited study area (1987-1990) • Metro Toronto and Region Conservation Authority • MNR Maple District	• visited study area (1987-1990) • air photographs • written material from local naturalist (A.L. Adams) • MTRCA	• visited study area (1987-1990) • MNR Maple District and MTRCA	• City of Mississauga Official Plan • City of Etobicoke Official Plan • MNR Central Region • MTRCA
Existing Conditions	• mainly Chinguacousy clay loam: fertile, imperfectly drained, few stones, smooth gently sloping • scattered areas of Oneida clay loam with better drainage but more susceptible to erosion • bottom land occurs in flood plains • bedrock outcrops and steep slopes along Etobicoke Creek	• Etobicoke Creek and tributaries • not an important fisheries creek • main creek is in a valley susceptible to erosion with is evident in disturbed areas	• vegetation consists of agricultural crops, old fields, remnant forests and scattered trees • currently most significant is Rakely Court woodlot east of Etobicoke Creek with mature bur oak, sugar maple and shag bark hickory	• typical suburban wildlife species noted during surveys • regionally rare species include northern harrier hunting near Etobicoke Creek • Etobicoke Creek valley serves as local wildlife corridor and provides habitat for yellow-spotted salamander, northern water snake, ringneck snake and wood turtle	• in Mississauga, Etobicoke Creek Valley is an Environmental Protection Area • the valley of Little Etobicoke Creek and woodlots are Environmental Policy Areas "A" • in Etobicoke, the valleys of Etobicoke, Elmcrest and Renforth Creeks are "Valley Impact Zones" • a former sanitary landfill site between Renforth Creek and Renforth Drive
Future/Proposed Conditions	• additional roadwork and creek crossings may disturb some exposed slopes	• increased upstream urbanization of channels due to development • additional culverts and creek crossings. Possible creek diversion and alteration of roadway drainage pattern.	• possible removal of some vegetation and alteration of wet pockets in the course of road work. • increased traffic in corridor leading to more emissions and salt spray	• possible removal of habitats	• possible further removals and disruption
Sensitivity to Condition Change	• locations near watercourses, especially Etobicoke Creek, are most sensitive	• possible downstream sensitivity to sedimentation • sensitive to road runoff, salt, heavy metals	• new edges sensitive to salt spray, emissions • outside of woodlots, sensitivity to change extremely limited since most vegetation is planted	• sensitive to removal of woodlots (creek valley disruption) • limited sensitivity due to previous condition changes outside woodlots and creek valley	• see watercourses, vegetation and wildlife
Data Limitations	• borehole records limited to specific, scattered sites	• flood plain mapping may need updating	• not significant	• not significant	• not significant
Environmentally Sensitive Areas/Issues (Concerned Agency)	• erosion of exposed soils, slopes • elimination of bank habitats	• creek crossings and realignments; erosion and sedimentation in streams; conflict of spawning and construction activities (MNR, MTRCA). Potential impact on roadway drainage (MTO)	• woodland clearing • disruption during construction	• habitat removal • disruption during congestion	• change in character or impact on environment of designated areas
Process to Resolve Significant Areas/Issues	• road location • apply standard erosion control measures for exposed soils, slopes • preserve high quality topsoil to facilitate rehabilitation	• MNR/MTRCA permits required for creek diversion / crossing • prepare master drainage plan prior to construction • use standard MTO erosion / sediment control measures at creek crossing areas • construction should not occur in streams during April - June to minimize impact on fish	• minimize woodland clearing through both design and construction measures • supplement natural vegetation with plantings and landscaping • install and maintain snowfence protection throughout construction	• vegetation retention measures will benefit wildlife • tree removal should not be undertaken during May - June to minimize impact on nesting birds	• see measures to protect watercourses, vegetation and wildlife • involve City of Mississauga and City of Etobicoke

*Note: Abbreviations used:

MTRCA: Metropolitan Toronto and Region Conservation Authority
MNR : Ministry of Natural Resources (Ontario)
MTO : Ministry of Transportation (Ontario)

3.4 Social-Cultural Environment

In this Section of the report, background information is provided on the existing social-cultural environment in the study area. Both the historic background (manifested in today's heritage resources) and the current context are reviewed. The focus is on existing conditions, as future conditions will be determined to a great extent by the land use planning process described in Section 4.3

3.4.1 Heritage Resources

Heritage, historic, and archaeological resources associated with the area now covered under the Parkway Belt West Plan are mainly those associated with nature trails (particularly along the river valleys) and nineteenth century farms.

However, the development of roadways and utilities within the Parkway Belt, and residential, commercial and industrial subdivisions adjacent to it, has meant the disturbance of the original ground of most of the study area. During this previous construction, little of heritage note was identified or uncovered, and the extent of the disruption indicates that significant future finds are unlikely. The fact that the available corridors for a new transportation facility generally lie immediately adjacent to, or within, ones already disturbed by the construction of major existing roadways indicates that little heritage material is likely to be affected by the new work. The parallel Burnhamthorpe and Eglinton Corridors have been disturbed to an even greater degree by recent development, and are assumed to fall under the same categorization.

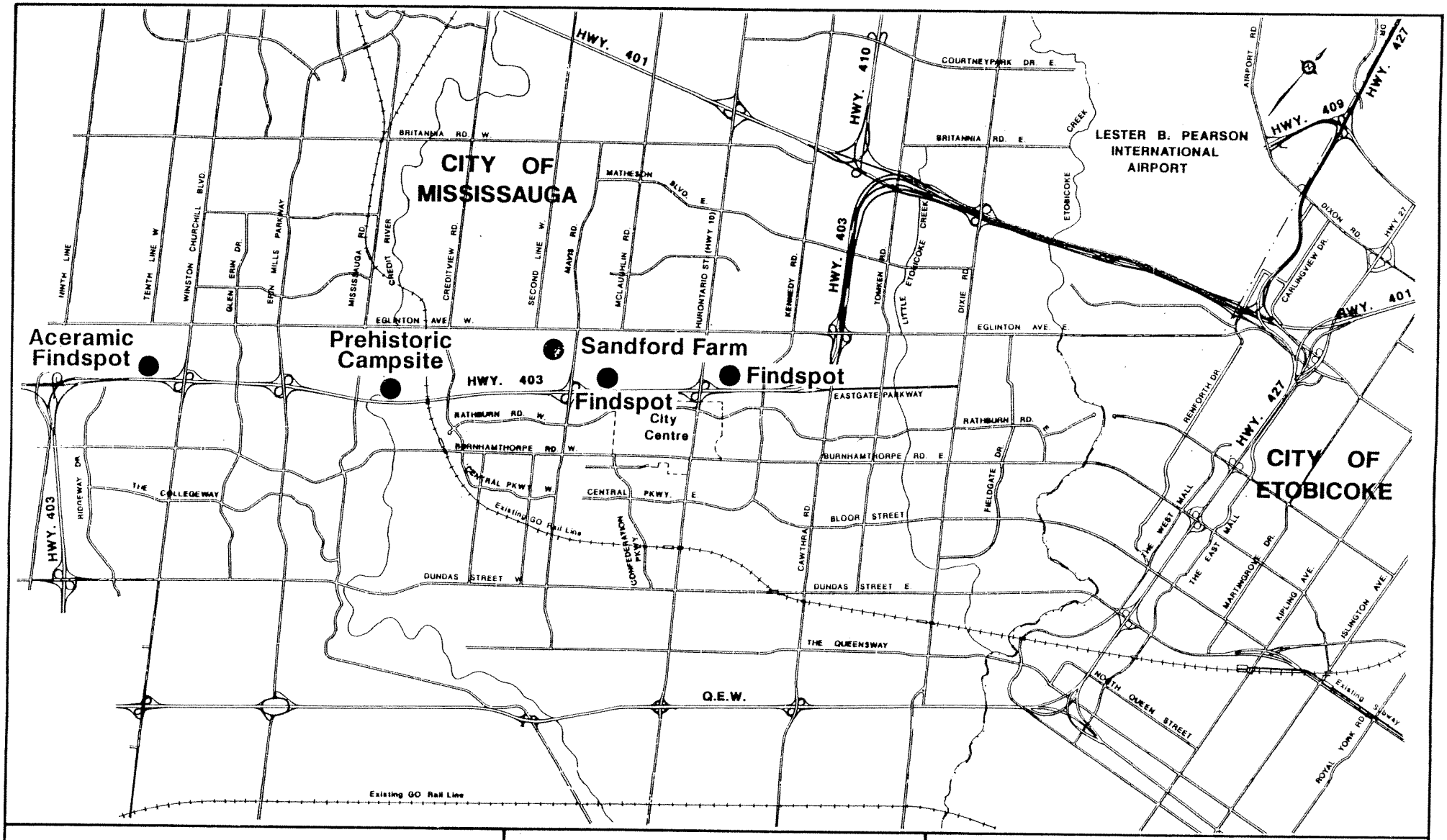
Table 15 summarizes the existing heritage resources in or near the Study Area, while their locations are noted in Exhibit 8. Appendix L contains correspondence related to heritage resources. In response to the request of the Ministry of Culture and Communications' request (see July 5, 1990 letter in Appendix L), specific sites are not identified in this report.

3.4.2 Communities

The study area's community environment may be characterized by its residential nature, recency of development, and physical segregation by land use type. The residential subdivisions tend to be uniform and self-contained, with commercial areas either in retail plazas along major arterials or concentrated in the major City Centre node. East of Cawthra Road and north of Eastgate Parkway, the character is entirely industrial / warehouse / commercial. Virtually all development in the study area has occurred since 1970.

TABLE 15 - HERITAGE RESOURCES

	NINTH LINE TO MAVIS ROAD	MAVIS ROAD TO CAWTHRA ROAD	CAWTHRA ROAD TO RENFORTH DRIVE
Information Sources	• Ministry of Culture and Communications and City of Mississauga.	• Correspondence with Ministry of Culture and Communications and MTO • GO-ALRT records • City of Mississauga records.	• Correspondence with Ministry of Culture and Communications • GO-ALRT records • City of Mississauga records.
Existing Conditions	• One prehistoric campsite is on table land just east of Credit River within the Ontario Hydro right-of-way; undetermined cultural affinity. • One findspot located on the Ontario Hydro right-of-way about 1200 m west of Winston Churchill Blvd. The nature of the collection is not indicated but it is assigned an Aceramic cultural affinity. • No heritage properties were identified near the study area.	• No archaeology concerns identified by M.C.C. (Mavis to Hurontario only). • One heritage property adjacent to study area (Sandford Farm, near Mavis / Eglinton). • Two findspots located on the Ontario Hydro right-of-way; one in the vicinity of Central Parkway and the other several hundred metres east of Mavis Road.	• No archaeology concerns identified. • No heritage properties in study area.
Sensitivity to Condition Change due to recommended undertaking.	• The two sites could be affected during construction if recommended facility passes through area.	• Findspots could be affected during construction if recommended facility passes through area.	• No impact
Data Limitations	• Field assessment	• Field assessment	• Field assessment
Environmentally Significant areas / issues.	• Potential unearthing of heritage / archaeological material during construction.	• Potential unearthing of heritage / archaeological material during construction.	• Potential unearthing of heritage / archaeological material during construction.
Process to resolve Significant Issues	• Site identification prior to construction, in order to minimize impact on sites. Standard reporting of unearthed finds.	• Standard reporting of unearthed finds.	• Standard reporting of unearthed finds.
	Preferred right-of-way to be assessed by a licenced heritage resource consultant prior to construction.		



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 8

0 2,000 4,000 6,000m

SCALE

HERITAGE RESOURCES IN THE STUDY AREA

Because the residential neighbourhoods are so recent, the evolution of a strong sense of community has not fully occurred in most areas. However, a strong community response can rapidly develop in the event of a threat of physical change to the surroundings, as witness the public concern and involvement in the Highway 403 Arterial Extension project. There are several reasons for this, among them:

- since many residents are relatively recent arrivals in Mississauga, it is difficult to ensure their awareness of the background or future plans related to the city's infrastructure;

- there has been little reason in most areas for strong neighbourhood associations to develop, as issues which face older communities have not yet faced the planned residential subdivisions; this inhibits community involvement in, and awareness of, the planning process; and

- most residents are new home owners who have specifically chosen to live in this area of Mississauga for a variety of personal reasons; any change to the context in which that decision was made tends to generate concerns about the risk of making the neighbourhood less attractive than when it was chosen by its residents.

In this context, the awareness and support of existing residents for transportation planning improvements is a significant issue, and on which is sensitive to the presentation and means of publicizing the issues and plans.

In the two main commercial nodes in the study area, both the City Centre and Airport Corporate Centre have active property owners' associations which seek to encourage and manage the growth of their respective areas. Both are extremely interested in transportation, land use, funding, and planning issues as a result. The investment decisions which are made in both areas are extremely sensitive to each of the above-mentioned factors.

3.5 Economic Environment

The population, employment, land use, and economic development strategies of the City all indicate key aspects of the existing and future conditions in which the undertaking is proposed. These descriptions segregate naturally into two study areas; the city-wide conditions crucial to understanding the ultimate transportation needs of the area; and the more detailed Secondary Plan areas such as the City Centre and Airport Corporate Centre which hold the potential to generate a significant proportion of future trips in the City.

It is not the intent of this Section to reiterate in detail the material which is readily available in the City's Official Plan and the relevant Secondary Plans; illustrative overviews of key economic aspects of Mississauga are provided on a few exhibits, while a more detailed review of the corridor potentially affected by a new facility in or near the Parkway Belt is provided.

3.5.1 Population

Current information regarding the existing and future population situation in Mississauga is available from the City Planning Department.

Mississauga's population has grown at a tremendous rate since the 1960s, increasing 250 per cent in that time to reach 457,700 in 1991, which makes the city Canada's tenth most populous. The potential exists (and is planned) for growth to continue unabated into the twenty-first century, finally settling at a level of approximately 700,000. This would be larger than all but Montreal, Toronto and Vancouver among current Canadian cities. Exhibit 9 shows the historic and projected population growth pattern of the area over a sixty-year period beginning in 1971.

Starting from three historic nuclei - Port Credit, Cooksville, and Streetsville, the City of Mississauga has, since its formation in 1974, spread generally northwest from Lake Ontario and westward from Metropolitan Toronto. Exhibit 10 illustrates the major residential neighbourhoods of the City, along with the current and planned ultimate populations. Exhibit 10 shows the population growth pattern of the area over a sixty-year period beginning in 1971.

It is clear that the significant growth projected in Exhibit 9 (55 percent more than the existing population) will occur in the neighbourhoods north and west of Highway 403, and that most of the residential neighbourhoods south of Highway 403 (as well as Malton) have essentially reached maturity. It would not be expected that redevelopment and intensification of those areas already in existence would occur in the foreseeable future, since (as can be seen from Exhibit 9) most of the housing stock in Mississauga is less than twenty-five years old. Furthermore, the low-density single family residential subdivisions which comprise most of Mississauga's housing stock do not lend themselves to population intensification under any circumstances.

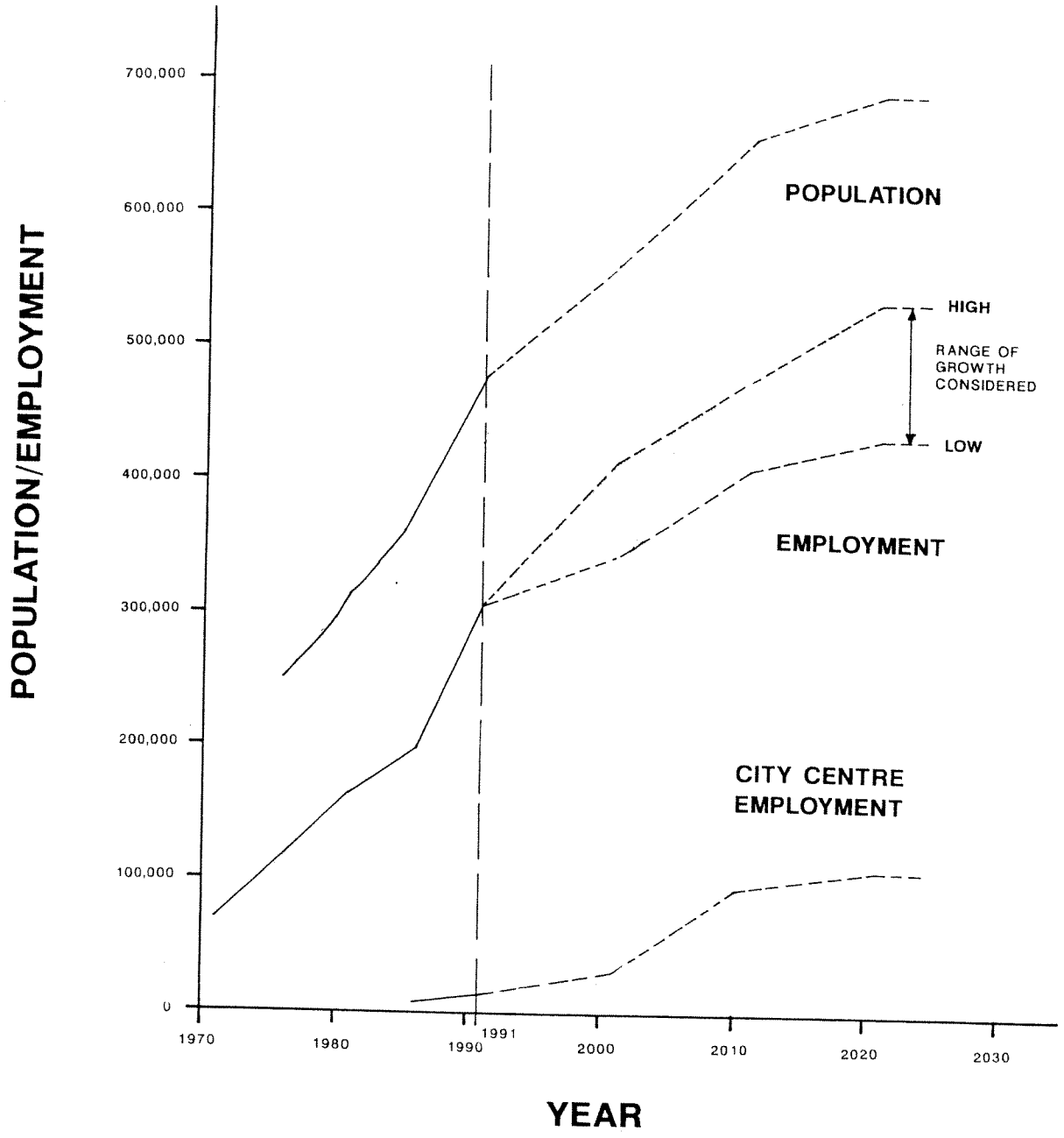
3.5.2 Employment

Current information regarding the existing and future employment situation in Mississauga is available from the City Planning Department.

As with population, employment in Mississauga has grown at a sustained high rate for the past two decades. Almost one-quarter of a million new jobs have been created in the City since 1971, bringing the overall level to approximately 280,000 (see Exhibit 10).

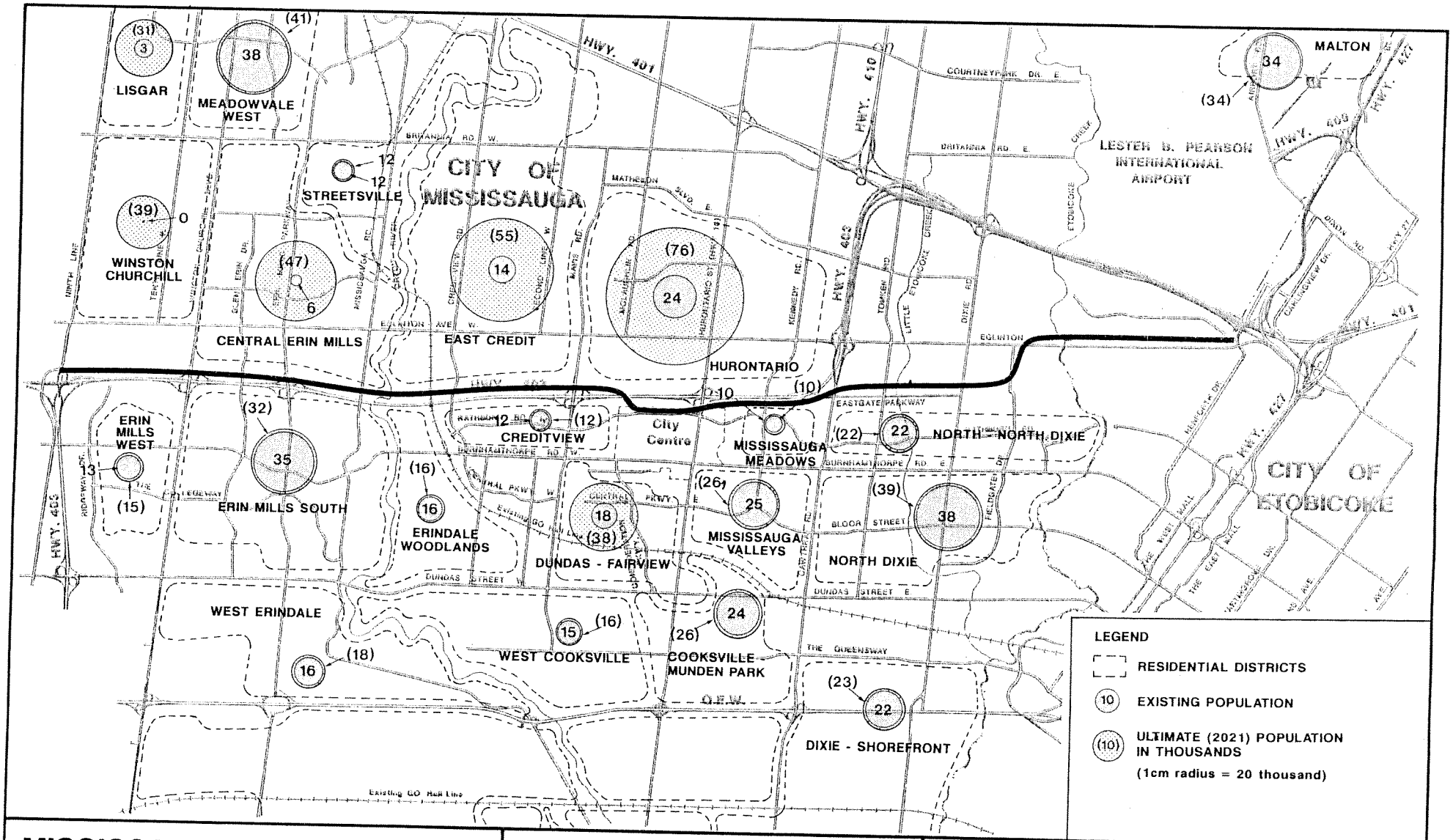
Since employment has grown at nearly the same pace as population, the percentage of the City's population employed within Mississauga has risen, and was at 42 per cent by 1986 (latest available data). Looking ahead to the ultimate planned employment and development situation, Mississauga will be home to nearly 600,000 jobs and will be a net importer of workers. Exhibit 11 shows that this future growth will be concentrated in the City Centre, the Airport area, the Hurontario North corridor, and in the western parts of the City. With the exception of the City Centre, employment opportunities south of Highway 403 are not anticipated to expand significantly in the coming years (as a sign of the maturity of that part of the City).

CITY OF MISSISSAUGA



SOURCE: CITY OF MISSISSAUGA PLANNING DEPT., AS USED IN "MISSISSAUGA BUSWAY RIDERSHIP FORECASTS", IBI GROUP, NOV. 1990.

MISSISSAUGA TRANSITWAY FUNCTIONAL PLANNING STUDY	EXHIBIT 9	POPULATION AND EMPLOYMENT FORECASTS



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 10

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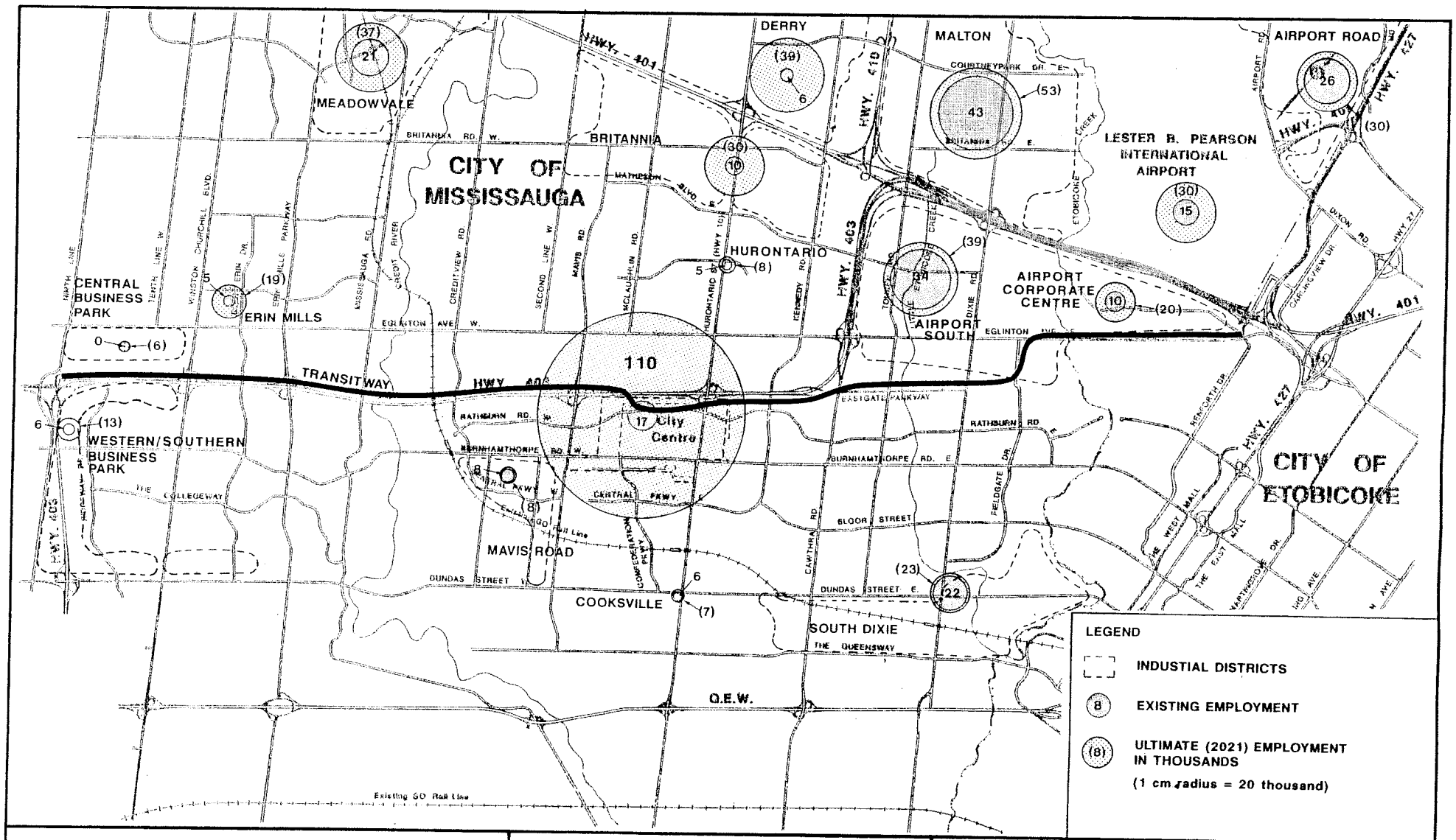
SCALE

POPULATION CENTRES IN MISSISSAUGA



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 11

0 2,000 4,000 6,000m

SCALE

EMPLOYMENT CENTRES IN MISSISSAUGA

Mississauga plays, and will continue to play, a major role in the Greater Toronto Area due to its concentration of employment opportunities, and particularly its ability to absorb and focus future office and industrial development. The provincial Office of the Greater Toronto Area forecasts that Mississauga will ultimately contain 10.6 percent of the GTA's population and host 14.6 percent of its jobs. This imbalance between employment opportunities and available labour force highlights the need for the ultimate transportation system to accommodate a high volume of Mississauga-destined cross-boundary work trips. Such a concentration of employment-based trips would be anticipated to generate particularly heavy demand during the morning and afternoon peak periods (in comparison to, for example, retail trips which are spread throughout the day and evening). This heavy peaking characteristic tends to produce severe road congestion, but is also typically amenable to transit use. If transit service can be maintained at a high level through separation from congested roadways, significant potential exists for it to serve a major share of the work trip market.

Thus, it is this planned growth in employment which, more than any other factor, provides the impetus to plan for and provide an adequate transportation system in Mississauga. As a consequence, the sensitivity of employment growth to transportation system capacity, mode, location, and service is very high. This note is made in the context of Mississauga's population growth and taxation load being tied to the level of employment opportunities in the City, and considering the place of Mississauga within the competitive development marketplace of the Greater Toronto Area.

3.5.3 Land Use Planning

There are two major documents in which Mississauga's current and future land uses are defined, and which control the overall land use picture in the area. The first is the Official Plan of the City of Mississauga, incorporating within it the individual Secondary Plans that apply to each neighbourhood. Secondly, the broad corridor used by Highway 403, Eastgate Parkway, a major Ontario Hydro transmission line and several pipelines is controlled by the province through the Parkway Belt West Plan.

Other key agencies which have an interest in various aspects of land use and planning in Mississauga include:

- **Federal Government**
  - Transport Canada (Lester B. Pearson International Airport)
  - railways
- **Province of Ontario**
  - Ontario Municipal Board
  - Ministry of Transportation
  - GO Transit
  - Ministry of Municipal Affairs
  - Parkway Belt West Plan, Planning Act
  - Ministry of the Environment
  - Ministry of Natural Resources
  - Ontario Hydro
- **Region of Peel**
  - police
  - water, sewer, and waste services
  - health and welfare
  - Regional Roads
- **Conservation Authorities**
  - Credit Valley C.A.
  - Metro Toronto and Region C.A.
  - Halton Region C.A.
- **School Boards**

3.5.3.1 City of Mississauga Official Plan

The Official Plan of the City of Mississauga identifies the municipality's long term goals and objectives, and defines (at a conceptual level) the land use plan and transportation system which will support the achievement of these goals.

More specifically, the Official Plan's Transportation goal is "to plan a transportation system for the rapid, safe, convenient, and comfortable movement of people and goods". The objectives associated with this goal include:

- to keep trip times to a minimum
- to maximize integration between different transportation modes
- to achieve a pattern of development which has the potential for a high usage of public transit
- to locate new transportation facilities so as to promote the desired pattern of development.

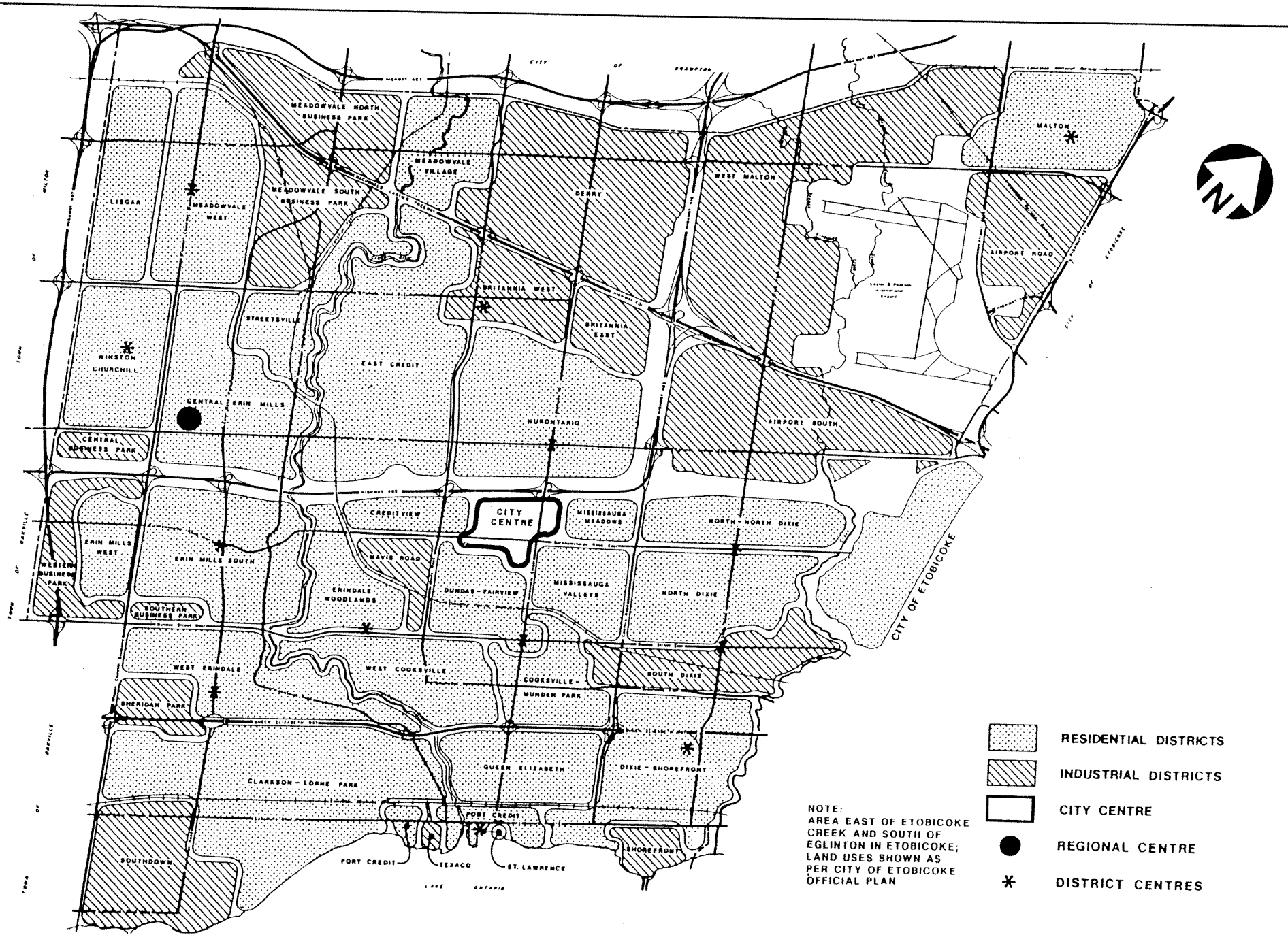
Exhibit 12 illustrates the general land use concept as put forward in Mississauga's Official Plan. Included in the concept is the development of a high density retail / office / institutional / residential focus at the City Centre. Surrounding the core are residential areas of varying densities, and industrial development is concentrated in the northern part of the city where the disruptive influence of the Airport would otherwise impinge on residential enjoyment. Various sub-centres concentrate retail / office development at key nodes throughout the city.

The Official Plan incorporates the Parkway Belt West Plan (see Section 3.5.3.2), and itself is comprised of a number of Secondary Plans. A Secondary Plan has been prepared for each district in the City, in order to provide a more detailed local area plan.

Exhibit 12 also illustrates the fact that most of the districts in central Mississauga are residential in character, with the notable exceptions of the City Centre and Airport South (Airport Corporate Centre) areas. In the City Centre, high densities of residential, office, and retail development are planned to lead to a job level of more than 100,000 in the long term, thus creating a "downtown" concentration second in the GTA only to the Toronto core in terms of job opportunities.

The prestige office and industrial area to the south and southwest of the Airport is planned to add a further 60,000 to the area's job total.

The role of transportation facilities in supporting the development of the City Centre has been subject to extensive study; the City Centre Busway / Gateway Planning Study Technical Status Report (included as Appendix J in the current document) provides an overview of the land use planning process in that area, as well as the outstanding issues.



SOURCE: SCHEDULE 1, CITY CENTRE SECONDARY PLAN, NOV. 1990

MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 12

Scale - 0 1 2 4 Kilometres

CITY OF MISSISSAUGA
LAND USE OVERVIEW/SECONDARY PLAN AREAS

Overall, the City's Official Plan (and all its components) is of the utmost significance in shaping the growth of a rapidly-changing city such as Mississauga. The ability to achieve the ultimate goals of the Plan, since it contemplates the addition of residents and jobs which amount to a good-sized city in themselves, is correspondingly sensitive to the provision of the infrastructure (services, transportation facilities, utilities, etc.) required to support the land use provisions.

Of importance is that, in order to implement a major facility which is not included in the Official Plan, or which significantly alters what is provided in the Plan, requires an Amendment to be approved by City Council and endorsed by the Minister of Municipal Affairs of Ontario, per the requirements of the Planning Act.

3.5.3.2 Parkway Belt West Plan

The Parkway Belt West Plan is a provincial document which defines a multi-purpose utility corridor, urban separator and linked open space system for the western part of the Greater Toronto Area.

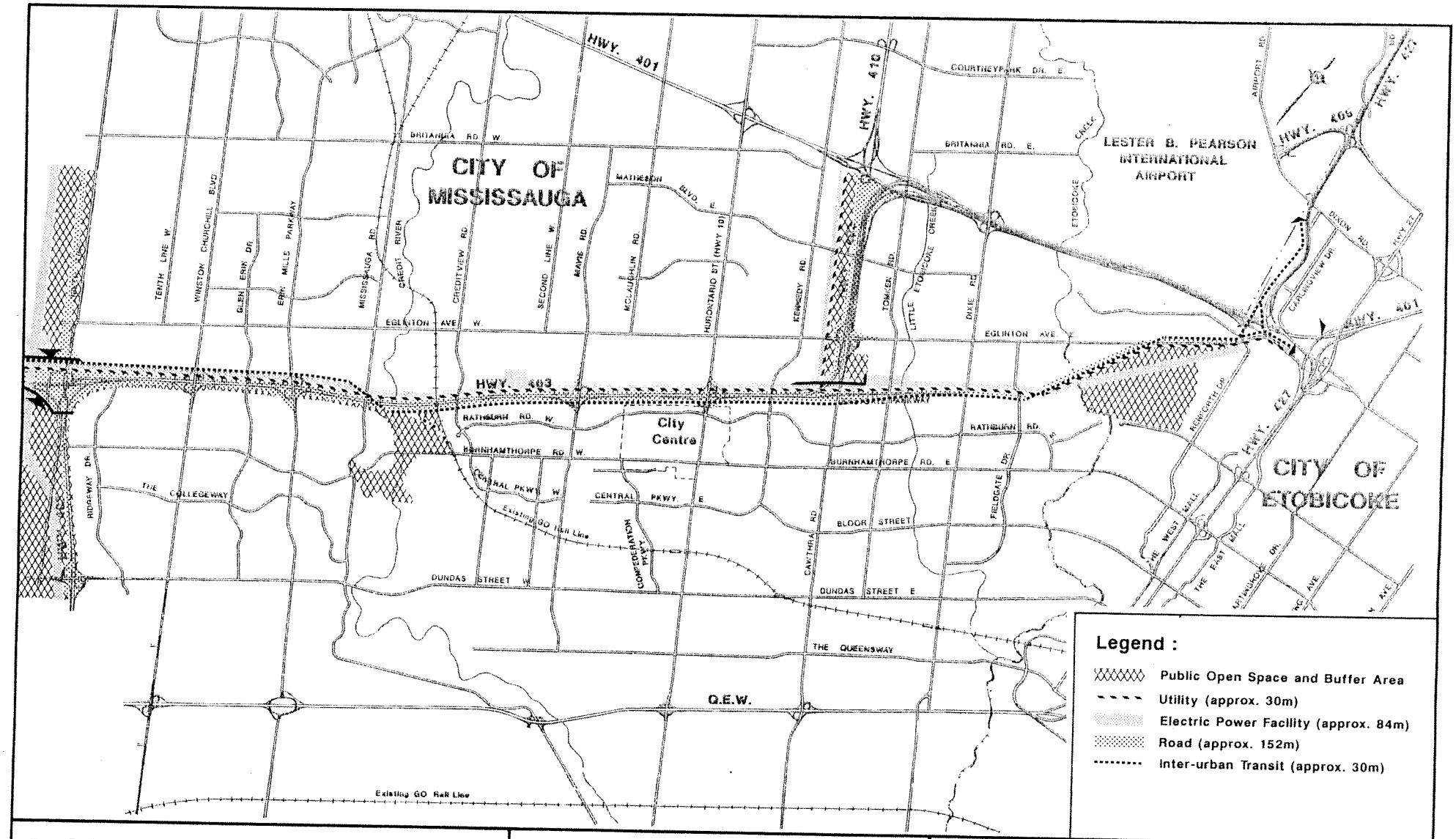
The Parkway Belt as a whole has four major goals:

- Separate and define the boundaries of urban areas, thus helping to provide the residents with a sense of community identification.
- Link urban areas with each other and with areas outside the region by providing space for the movement of people, goods, energy, and information, without disrupting community integrity and function.
- Provide a land reserve for future linear facilities and for unanticipated activities requiring sites of high accessibility and substantial land area.
- Provide a system of open space and recreational facilities linked with each other, with nearby communities, and with other recreational areas.

There are a series of general and specific objectives related to the various goals; these are outlined in the Parkway Belt West Plan (1978). The implementation and administration of the Plan is the responsibility of the Ministry of Municipal Affairs of Ontario.

The Parkway Belt West in Mississauga provides four continuous corridors designated for particular uses - Hydro, Utility, Roadway, and Transit - as illustrated on Exhibit 13. In addition, "Open Space" and "Buffer" designations have been applied to some other portions of the Belt. Although the designated corridors occasionally cross each other within the Belt, they are essentially continuous for the length of the Parkway Belt.

In Mississauga, the Road corridor is occupied by Highway 403 west of Cawthra Road, and by the Highway 403 Arterial Extension (Eastgate Parkway) from Cawthra Road to Fieldgate Drive. There are currently no plans for its use east of Fieldgate Drive. The corridor is owned by the Ministry of Transportation of Ontario.



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 13

0 2,000 4,000 6,000m

SCALE

PARKWAY BELT WEST PLAN (1978)
EXISTING DESIGNATIONS

The Electric Power Facility corridor was designated around the existing Ontario Hydro twin tower line, and is reserved in its entirety for Ontario Hydro's long term needs. There are several oil pipelines within the Ontario Hydro owned right-of-way, in easements granted by the power authority. A Hydro Mississauga pole line is also located within Ontario Hydro lands.

The remaining two corridors for Utilities and Inter-urban transit are each approximately 30 m wide and are not currently utilized. The property is held by the province, through the Ministry of Government Services. The Utility corridor lies between the Road and Power corridors, while the Transit corridor forms the north boundary of the Parkway Belt west of the Credit River, and the south boundary from the Credit River easterly to Fieldgate Drive. The pattern of development in Mississauga has resulted in low-density residential subdivisions being constructed alongside the designated Transit corridor for the entire length of the Parkway Belt, with the exceptions only of the future City Centre high density commercial / residential development, the parkland at the Credit River, and the commercial / park land uses east of Fieldgate Drive.

It should be emphasized that, due to the City's Official Plan's conformity with the provincial Parkway Belt Plan, the Official Plan contains both an interurban transit right-of-way within the Parkway Belt and an Intermediate Capacity Transit System right-of-way alongside Burnhamthorpe Road as protected transit corridors.

Residential, commercial, or other urban developed land uses are not generally permitted within the area designated under the Parkway Belt West Plan. Being a provincial document, the Parkway Belt West Plan is the definitive guideline to use of the corridor, and any municipal Official or Secondary Plan must conform to it. Any proposals for the construction of facilities within the Parkway Belt must obtain the approval of the Minister of Municipal Affairs. In the event that the proposal involves a substantive change to the Plan, the Minister must either approve an Amendment to the Plan or deem that the undertaking is in conformity with the intent of the Plan for it to proceed.

3.5.3.3 Region of Peel Draft Official Plan

The Region of Peel, comprising the City of Mississauga, City of Brampton, and Town of Caledon, has a draft Official Plan governing areas of its responsibility. The plan therefore includes the role of Regional Roads such as Erin Mills Parkway and Dixie Road, and shows the long term intra-regional transportation requirements. Exhibit 14 is an excerpt from the Draft Plan, and it is of note that an Intermediate Capacity Transit facility is identified between Erin Mills Parkway and the Renforth / 427 / Eglinton area in the Highway 403 / Parkway Belt corridor. The facility is shown to intercept a similar north-south route in the Erin Mills corridor and a link with Brampton via the 403 / 410 corridor. The Regional concept is thus consistent with the City of Mississauga's long term transportation strategy.

DRAFT

NOTE: EXCERPT FROM DRAFT OFFICIAL PLAN; FOR TECHNICAL INFORMATION ONLY

LEGEND:

- Freeway
  - Conceptual Alignment
- Major Arterial
- Minor Arterial
- Intermediate Capacity Transit
- Commuter Rail
- Long-term Urban Peel

MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 14

Scale: 0 km 5 10
0 miles 2 4 6

REGION OF PEEL
DRAFT OFFICIAL PLAN
LONG-TERM TRANSPORTATION PLAN

3.6 Transportation

Information in this section is based on a variety of sources at all levels of government, as channelled through their representation on the Technical Co-ordinating Committee for the Transitway study.

3.6.1 Greater Toronto Area Context

Just as Mississauga as a city is a key component of the urban area known as the Greater Toronto Area, its major transportation systems must be seen in the area-wide context. The provincial government takes an active role in supporting, co-ordinating, and funding all major transportation initiatives in the area except airports and freight rail. The co-ordination of Mississauga's internal interests, therefore, with those of adjacent municipalities and senior jurisdictions is ensured through the overview function and funding role of the Ministry of Transportation of Ontario.

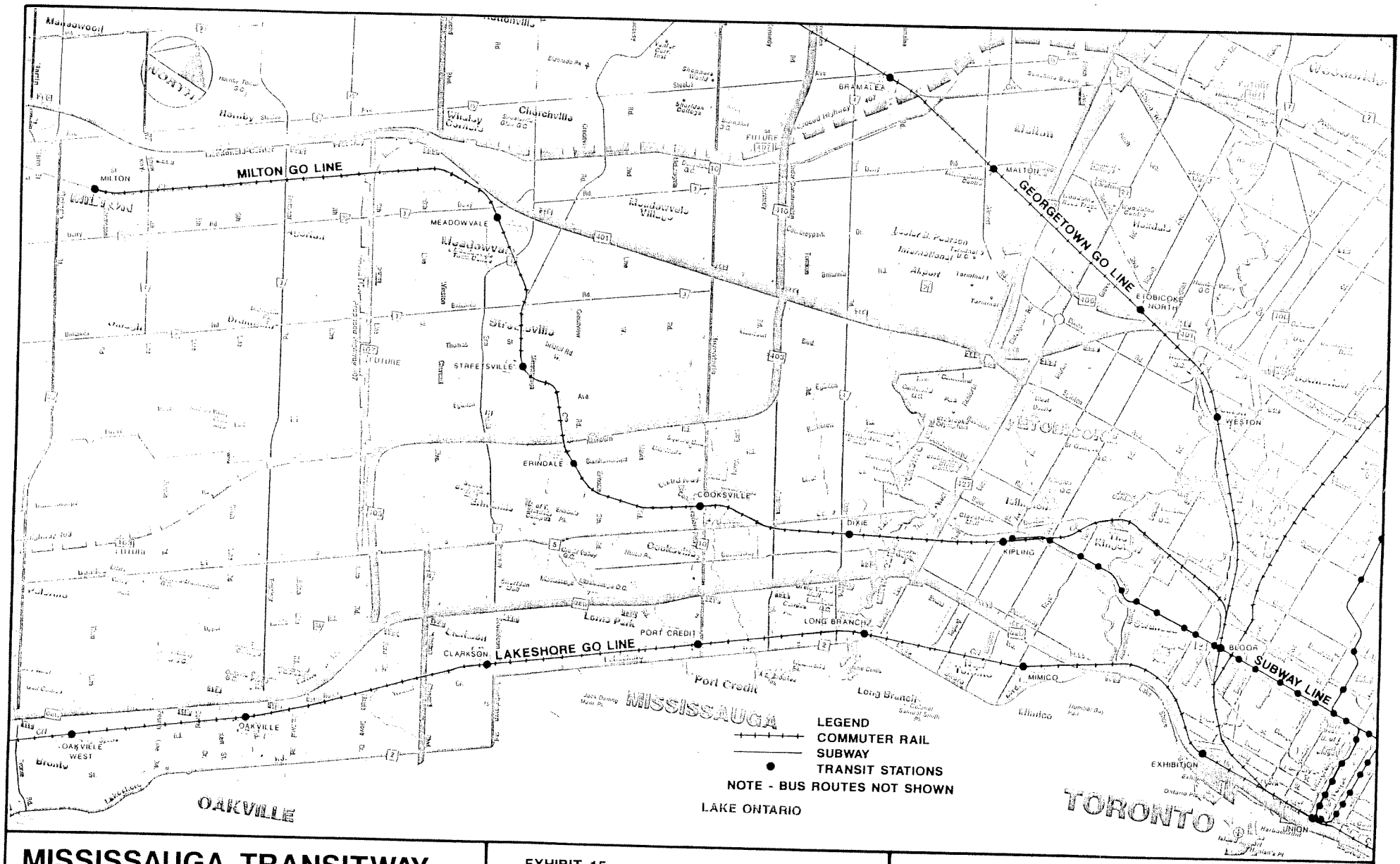
In addition to the co-ordination of municipal initiatives, the Ministry of Transportation is responsible for the two major intercity transportation systems in the area: the provincial freeway network and, through GO Transit, the GO Train and Bus commuter service.

Two exhibits follow, showing firstly (Exhibit 15) the existing major transportation systems in the Mississauga portion of the Greater Toronto Area (including those under construction), and secondly (Exhibit 16) those proposals and plans now underway or anticipated.

There are four major transportation initiatives underway in the GTA, apart from the regular maintenance and planned expansion of the existing system. As they affect Mississauga, the four are:

a) **"Let's Move" rapid transit program:** an agenda for rapid transit expansion in and around Metro Toronto, announced by the provincial government in 1990, as a $5 billion, 10 year program. Eight elements were identified at that time:

- Yonge Subway - Spadina Subway loop
- westerly extension of Bloor Subway to Mississauga
- extension of Scarborough RT to Malvern
- Spadina streetcar line
- Mississauga Transitway from City Centre to Metro Toronto
- Eglinton West Rapid Transit line from Spadina Subway west to meet Mississauga Transitway
- Harbourfront LRT extension - east to Greenwood, west to CNE
- Sheppard Subway between Yonge Subway and Scarborough City Centre.



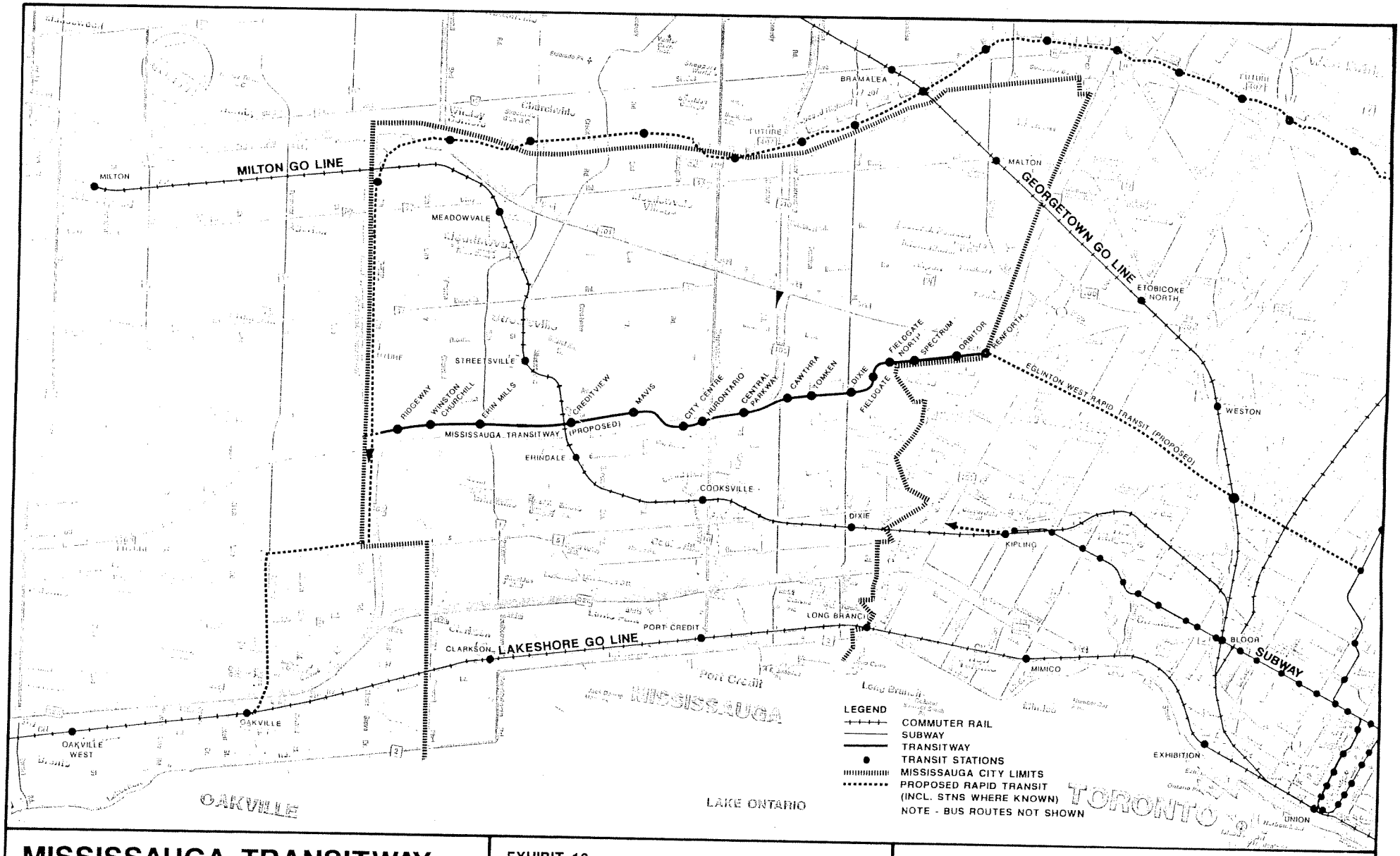
MISSISSAUGA TRANSITWAY
FUCTIONAL PLANNING STUDY

EXHIBIT 15

0 2 4 6 8 10 Km

SCALE

EXISTING TRANSPORTATION CONDITIONS



MISSISSAUGA TRANSITWAY
FUCTIONAL PLANNING STUDY

EXHIBIT 16

0 2 4 6 8 10 Km
SCALE

FUTURE TRANSPORTATION CONDITIONS

b) **Provincial Freeway program**

- construct Highway 407 through Peel, York and Durham Regions
- complete Highway 403 from Ninth Line in Mississauga westerly to the QEW / 403 interchange in Burlington
- extend collector roadways on Highway 401 westward to Winston Churchill / future Highway 407 area
- complete Highway 403 / 401 / 410 interchange
- expand Highway 403 as required

c) **GO Train Service Expansion Program**

- expand peak period service on all GO Train lines to all day two way service
- extend Lakeshore service to Oshawa and downtown Hamilton

d) **Provincial "Gateways" initiative**: the concentration of transit, road, services, and employment at key nodes in the transportation network is the thrust of the "Gateways" program. These will provide intermodal transfer points, commuter services, and transit facilities, thereby increasing transit accessibility and supporting the nodal form of urban development. Within Mississauga, the City Centre and Eglinton / Renforth nodes were identified as recommended "Gateway" sites.

Although each of these programs is supported at all levels of government, the individual elements are going through the established planning, design, and Environmental Assessment processes and are being funded out of regular programs. Accordingly, the sequence, priority, and implementation timing of each element has not been defined to date. Nevertheless, the Mississauga Transitway has already been identified as a significant element in the GTA transportation network and would ultimately form an major interregional link in addition to its local service function. Equally significant would be the gap in the ultimate GTA transportation network if a high-capacity east-west transit line in central Mississauga were to not be provided. The ability to achieve a balanced system, in which a major share of peak period travel demand is served by transit, relies on the presence and operation of all the major components of the area-wide rapid transit network, as well as the effectiveness and attractiveness of the local services feeding that network. This balanced transportation system is an essential element in the ability to achieve the land use objectives of the entire Greater Toronto Area.

3.6.2 Transportation Facilities

Mississauga is well-served by transportation facilities. The relatively recent growth of the area has meant that virtually all of the transportation infrastructure is of recent vintage, and is therefore of high standard and reasonably well-matched to current demand.

3.6.2.1 Air

Lester B. Pearson International Airport, Canada's busiest domestic and international passenger and cargo air terminal, is located in northeast Mississauga. Ground access to the Airport is a key issue under current demand levels, and with proposals for significant increases in airside capacity now being considered, access will continue to be a major focus into the foreseeable future. Not only the Airport itself is involved as a major employment and activity centre, but the associated commercial / industrial / support service area surrounding the facility will continue to generate activity as a result of its proximity. Although this low-density area does not generate a high proportion of transit today, in the long term the economic viability of the entire area will depend to a significant extent on achieving a balance between auto, truck, and transit access and service. The role and extent of ground transportation facilities serving the Airport and its surrounding area is the subject of a joint federal / provincial study now underway (1991).

3.6.2.2 Road

A hierarchical road network has evolved in Mississauga, under City, Regional, and Provincial jurisdictions (see Table 16). The highest level consists of the Provincial freeway system, of which four elements (totalling nearly 60 km) serve Mississauga and a fifth, Highway 407, is planned along the north and west perimeters of the City. Interchanges at key crossing roads allow access to the freeways; a Traffic Management System is in place on the eastbound QEW as well. The freeway system serves both interregional and local trips, and also accommodates long distance interprovincial trips.

The Region of Peel is responsible for a number of key arterial roadways, while the City is responsible for some arterials, as well as the collector road network and all local roadways. There are nearly 400 km of major roads and over 1,000 km of minor roads in the City. The municipal roads serve internal and cross-boundary trips by car and bus. The major road network as defined in the City of Mississauga Official Plan is nearly complete, and is expected to essentially be at "build-out" within a decade.

3.6.2.3 Rail

There are three major rail corridors crossing Mississauga: the 13.5 km long CN Rail Oakville Subdivision along the Lakeshore, the CP Rail Galt Subdivision crossing the city diagonally for 24 km from northwest to southeast, and a small portion (5 km) of CN Rail's Weston subdivision which passes through Malton in the city's northeast corner. The lakeshore line, in particular, is among Canada's busiest freight and intercity passenger rail routes. The other lines are also key elements of the Toronto area freight network, and all three corridors support GO Rail commuter service.

TABLE 16 - MAJOR GROUND TRANSPORTATION FACILITIES AND SERVICES IN MISSISSAUGA

Type	Quantity (1991)	Demand Volume / Road Capacity	Plans
Provincial Freeways	QEW 13.4 km, 6 interchanges 403 18.9 km, 6 interchanges 401 19.4 km, 6 interchanges 410 6.8 km, 2 interchanges Total 58.5 km, 20 interchanges	6,000 veh/h/dir 6,000 veh/h/dir 10,000 veh/h/dir (E. of 403) 6,000 veh/h/dir	none link to 410, widen to 8 lanes extend collectors west link to 403 construct 407 along city's N and W boundaries
Major Roads			
Region of Peel	85 km, 4/6 lanes	2,400 veh/h/dir (6 lanes)	complete network; widen to capacity
City of Mississauga	295 km, 4/6 lanes	1,600 veh/h/dir (4 lanes)	complete network; widen to capacity
Minor Roads			
City of Mississauga	995 km (1988 update)	650 veh/h/dir (2 lanes)	extend as required
Commuter Rail			
GO Rail	Lakeshore 13.5 km, 2 stations, 4 trains/h, all day service	6,590 passengers*	increase service
	Milton 24 km, 5 stations, 3 trains/h, 16 trains/day	4,070 passengers*	expand to all day service
	Georgetown 5 km, 1 station, 3 trains/h (peak only)	220 passengers* (*1989 p.m. egress count at Mississauga Stations)	expand to all day service
Public Transit			
Mississauga Transit	52 routes 300 buses 13 terminals	21,025,598 passengers / year (1990) 2,208,802 passengers / month (6/91) 94,101 passengers / day (6/91) 9,320 passengers / hour (p.m. peak, 6/91)	increase / expand / rationalize service; improve revenue / cost ratio
GO Bus	5 routes	154 passengers / hour to/from Mississauga (Spring 1988 p.m. survey)	eliminate Lakeshore route

3.6.2.4 Transit

Although there are several transit stations and terminals within the city, Mississauga does not have, as yet, any permanent linear infrastructure dedicated to local or intraregional transit use. To the east, both the Bloor Subway extension and Eglinton West Rapid Transit line are proposed to reach at least to Mississauga's boundary, while the long term transit strategy for Halton Region envisages a bus Transitway in the Highway 5 corridor linking to Mississauga from the west. Preliminary planning has taken place in order to identify and protect property for a Transitway (bus or LRT) in the Highway 407 right-of-way along the City's northern and western boundaries. Within Mississauga, planning to date has focused on the planning for a bus-only grade-separated Transitway in the Parkway Belt corridor across central Mississauga, and on the ultimate need for higher order transit-dedicated facilities in major north-south corridors such as Dixie, Hurontario, and Erin Mills.

All of these facilities are in various stages of planning, and no schedule, implementation funding, or prioritization has been assigned to any of them.

A High Occupancy Vehicle (HOV) lane is under construction on Dundas Street East (opening in 1992) to provide priority bus and 3+ carpool treatment between Dixie Road and Kipling Subway Station in Etobicoke. This is a new approach to enhancing the ability of transit to provide good service on congested roadways, and, following monitoring and successful operation, has the potential to become a link in an area-wide HOV network covering Metro Toronto, Mississauga, and elsewhere. Such a network is currently only in the discussion / preliminary planning stages, although Metro Toronto has prepared a draft HOV Network plan for its jurisdiction.

3.6.3 Transportation Services

There are several public transportation services which operate on the facilities described in the previous Section. These are mainly government-supported, although some commercial services also exist.

3.6.3.1 Municipal Transit

Mississauga Transit is by far the major provider of bus service to the city's residents and employees. The City department operates approximately 300 buses over 52 routes covering the entire city, and provides express service to the Islington station on the Bloor Subway in Metro Toronto. A mix of modern 12m and 18m articulated vehicles are used. A variety of fare arrangements is available, and a fare integration program with GO Transit promotes joint use of the two systems. Similar fare integration initiatives are being undertaken with other adjoining systems, including the Toronto Transit Commission, and would be expected to be in place within a few years, thereby reducing one of the current impediments to cross-boundary transit travel and operation.

Mississauga Transit's routes focus on several terminals located at shopping centres, and are evolving towards a grid-type network with high-frequency routes on the major

arterials, regular service on key collector routes, and various specialized local and industrial / office park services. The system's major passenger terminus is at Square One Shopping Centre, in the City Centre, while the buses are stored and maintained at two garages within the City.

Some relevant system parameters are given by the following figures, drawn from the performance characteristics of an average weekday in June 1991 for Mississauga Transit:

Total boardings:	94,101
Average fare per passenger	$0.82
Average cost of operation per revenue hour	$63.00
Total Revenue	$ 77,162.82
Total Operating Cost	$143,137.89
Net Operating Cost	$ 65,975.07
Revenue / Cost Ratio	0.54

The system-wide revenue / cost ratio, because of the relatively low density spread development pattern in the service area, diverse origin / destination travel patterns, high degree of auto dependency, and relatively good level of transit service provided, is lower than desired. The 46 percent of operating cost not recovered through the farebox is funded equally by the Province and the City through general tax revenue. It must be recognized that Mississauga is far from its mature development state, and the overall higher density resulting from future development and the emergency of major employment concentrations in specific areas will act to increase transit use, assuming the provision of a correspondingly good level of transit service.

Mississauga Transit, in 1990, served the eighth largest market in Canada amongst municipal transit operators, and although its share of the transportation market is relatively low (14th among the top 15 operators in terms of revenue passengers per capita), it is second only to the Toronto Transit Commission among the ten largest operators in terms of revenue / cost ratio. Thus the system appears to be well-run financially, and if a higher modal share could be achieved, operations could be made more efficient and cost-effective.

One indication of the way to success is to examine the performance characteristics of different types of Mississauga Transit routes. In comparison to the system-wide figures from June 1991 cited above, the following information is of relevance:

Route Type	Examples	Total Boardings	revenue / cost ratio
Express	81 Dundas Exp.	2519	0.64
	86 Burnhamthorpe Exp.	3471	0.96
	11 Malton Exp.	1843	0.68
Subway Connector	36 Burnhamthorpe East	6378	0.74
	3 Bloor	7331	0.74
	1 Dundas	9426	0.58
Major Grid	5 Dixie	4640	0.52
	2 Hurontario South	7549	1.15
	51 Tomken	1594	0.42
	42 Derry	815	0.23
Local Collector	4 Applewood	1484	0.37
	37 Ridgeway	528	0.41
	8 Cawthra - Lorne Park	2055	0.35

It is readily apparent that straight routes with strong demand generators and dense land use along their entire length are entirely capable of performing well, both operationally and fiscally. The popularity and efficient operation of the express routes produces revenue / cost ratios that are significantly better than the system average. The major grid routes vary in performance, depending on the land uses they serve, from the extraordinary performance of the Hurontario route serving high density residential and commercial nodes, to the low recovery rate of the Dixie and Tomken routes in industrial areas, and bottoming out with the Derry Route, which performs an essential linking function in the network yet does not serve enough of a developed area to sustain it financially. As its corridor is developed, its performance would be expected to improve significantly. The fourth group, that of local routes representative of feeder type trips through low density residential neighbourhoods, illustrates the fact that it is inherently difficult to generate enough ridership on a per-hour basis to support the frequency of service required in such areas.

The implications regarding the current undertaking are that the passenger attractiveness, operating efficiency, and fiscal performance of each Mississauga Transit route varies according to its context, and that there are significant opportunities on both an individual route and system-wide basis for major improvements in ridership and cost-efficiency through on-road priority treatment (e.g. HOV lanes), express service, and intensification of land use and trip-end generators.

The continued expansion of High Occupancy Vehicle (HOV) lanes will allow Mississauga Transit to retain a cost-effective service pattern and to encourage ridership through isolation from increasingly congested roadway traffic conditions.

Depending on the operational strategy chosen, future roadway congestion, future land use and development patterns / decisions, passenger demand, and transit-supportive facilities and programs, Mississauga Transit could expand in the future to operate double or triple its current number of buses.

The role of Mississauga Transit is extremely significant in Mississauga's transportation context, as it already carries about 15 per cent of peak hour person-trips in the city and would be required to carry approximately 30 percent of city-wide trips (and 50 percent of City Centre-oriented trips) in future peak hours if mobility within the city is to be improved, or at least maintained at an acceptable level. Ironically, the very growth in population and employment which generates the need for such a high a market penetration by transit simultaneously acts to constrain transit's ability to serve that role by generating more auto and truck traffic, thereby clogging the roads on which buses run. Under such growth conditions and in the knowledge that the existing road network is very close to completion, it is absolutely essential that the ability of transit vehicles to move freely be protected in key corridors. Signal priority systems, HOV lanes, and Transitways can be effective means of doing so, but their implementation must be balanced against funding constraints and auto use patterns. Transit mobility is both a significant and a sensitive issue, for it affects the overall cost-efficiency of Mississauga Transit and consequently its subsidy requirements which must be made up from other sources (principally provincial and municipal tax revenue).

Other municipal transit systems which serve parts of Mississauga are Oakville Transit (southwest corner), Brampton Transit (north Airport area), and the Toronto Transit Commission (Malton, Airport, Sherway, and various points along the Etobicoke / Mississauga boundary). As noted above, integration of fares, schedules, and services between all the systems is a short-term goal.

Within the City Centre, the local developers fund and operate a shuttle bus system for internal circulation.

3.6.3.2 Intercity Transit

a) Commuter Rail

GO Transit is a provincial agency which operates commuter rail services in seven corridors in the GTA, essentially providing high capacity peak direction express service in peak periods to and from Union Station in downtown Toronto. The Lakeshore line provides all-day two-way service between Burlington and Whitby, and expansion of all-day services to all GO corridors is part of a continual program.

GO Trains service Mississauga on three routes serving a total of seven stations (see Table 16), and more than 10,000 passengers enter the system in Mississauga every weekday morning, returning from Toronto in the evening. Very little passenger traffic currently occurs between stations within Mississauga (in the 1989 GO Rail survey, all three routes generated a total of less than 10 trips contained within Mississauga). Similarly, the passenger boardings which occur in the non-peak direction (i.e. away from Union Station in the morning, towards it in the evening) are a minuscule proportion of the overall volume except for special evening events in downtown Toronto.

Most of the GO Train stations in Mississauga support a significant park-and-ride lot, as driving to the station is the most common means of system access (see Table 17). The heavy emphasis on park-and-ride access to the GO system indicates a significant market opportunity for transit, given fare integration, service improvement, increased road congestion, and potentially the inability, in the long term, to maintain a free parking policy at all GO stations.

Similarly, the GO Rail / Subway park-and-ride lot at Kipling Station, although not located in Mississauga, had 55.4% of its 1582 spaces occupied by cars from Mississauga when surveyed in 1989, while 45.2% of the Islington Subway Station's 1680 spaces were occupied by Mississauga vehicles. These two lots alone thus produce over 1600 vehicle trips which could otherwise be taken by transit (noting that the subway is served by 12 Mississauga Transit routes, including express and peak period services).

TABLE 17 - GO RAIL PARK-AND-RIDE UTILIZATION

GO Rail Line	Station	Parking Capacity	% Occupied (spring 1991)	Station Access Mode		
				Walk	Bus	Auto
Lakeshore	Clarkson	2366	77-95%	18%	10%	57%
	Port Credit	1116	77-82%	26%	14%	57%
Milton	Meadowvale	539	83-102%	8%	9%	79%
	Streetsville	240	69-85%	17%	6%	69%
	Erindale	788	95-102%	13%	11%	72%
	Cooksville	1129	66-75%	18%	5%	74%
	Dixie	489	63-87%	5%	1%	89%
Georgetown	Malton	302	48-101%	8%	3%	83%

These characteristics indicate the significance of GO Transit's role in the Greater Toronto Area, and in Mississauga in particular. The opportunities for synergistic improvements to the attractiveness and integration of local bus and GO Transit systems are apparent. The fact that GO trains do not serve trips other than Toronto-oriented work trips, and that the commuter rail system is incapable of effectively serving intra-Mississauga trips, is also evident.

b) Interregional / Intercity Bus

GO Transit operates a number of bus routes in addition to its train service, either supplementing the train in off-peak periods or linking adjacent or outlying communities such as Oakville, Milton, Brampton, and others with Mississauga. All GO Bus routes carry on through Mississauga to terminals within Metro Toronto and make a limited number of stops in the city. Use of this system by Mississauga residents and workers is relatively low.

Mississauga is extremely poorly served by private intercity bus operators, with the Airport being the only destination of note within the city boundaries. There is currently no scheduled long distance intercity bus service at the Mississauga City Centre, while some carriers using the QEW make a stop at the Applewood Shopping Centre en route. Most Mississauga-based passengers wishing to make intercity bus trips would be assumed to use the various Toronto terminal facilities.

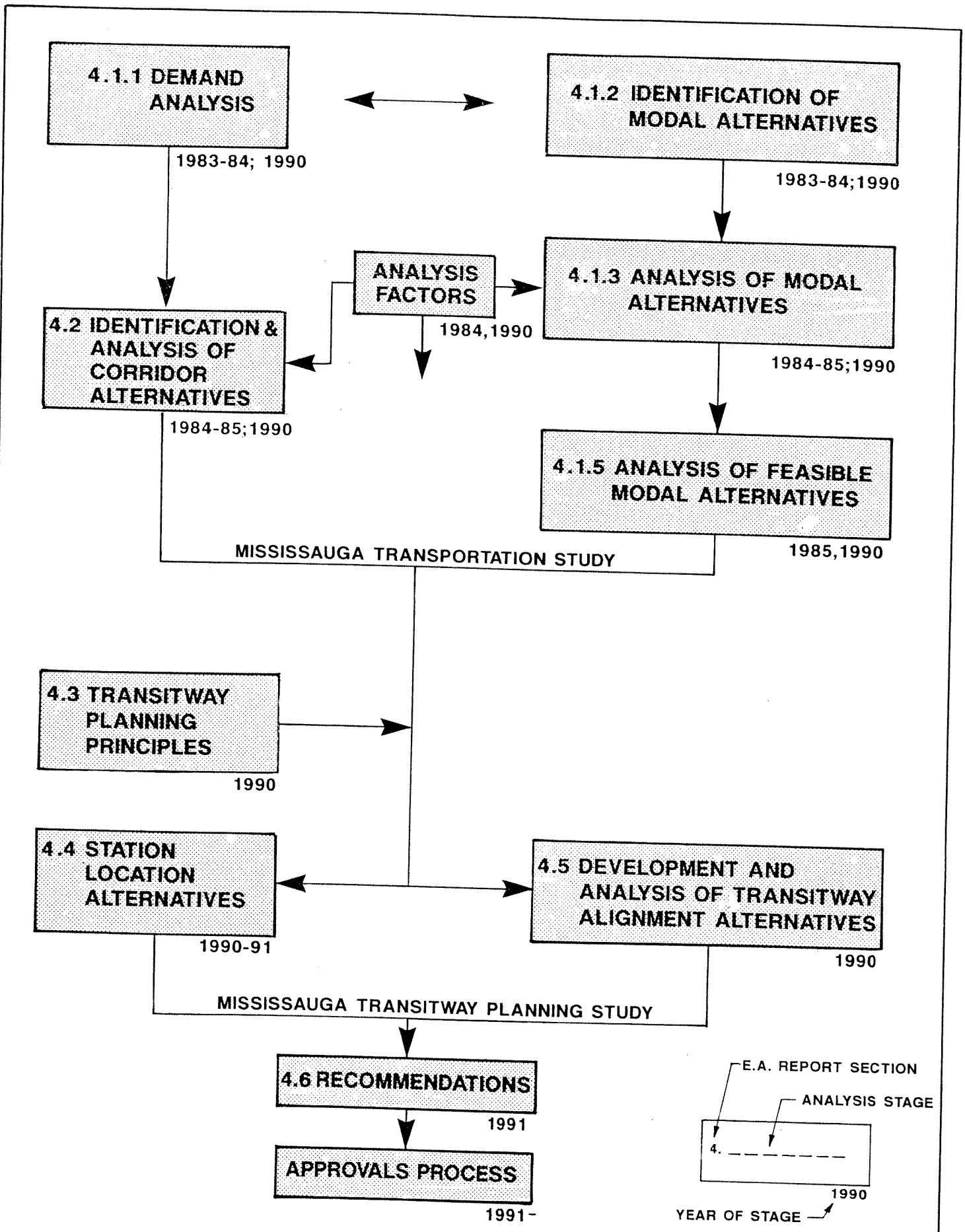
The interregional bus system thus plays a limited role in serving Mississauga's travel demands currently; it would therefore be sensitive to any improvements in physical or operational conditions which would support greater service levels. In particular, the definition and provision of a central intercity bus terminal in Mississauga would enhance the potential for intercity buses to take on a larger role in providing mobility to local residents and employees.

4. IDENTIFICATION AND ANALYSIS OF ALTERNATIVES

Exhibit 17 summarizes the process by which the identification and analysis of alternatives was undertaken. This process, as described in Table 7 in Section 2.3, has stretched over two decades. The need for an adequate transit system based on a number of high priority corridors was recognized from the earliest plans for Mississauga, and the benchmark Mississauga Transportation Study (1982-85) confirmed and quantified the need. It also made recommendations regarding mode and corridor. The current study provided an opportunity to first review and reconfirm the Transportation Study conclusions, then to move ahead with the functional planning and identification of required property for the Transitway.

Consequently, Sections 4.1 - 4.3, dealing with the need, alternatives, and corridor analysis, essentially recap the findings of the Mississauga Transportation Study, updated as required. Sections 4.4 onward provide new material relating to the design, alignment, and specific recommendations for the physical Transitway facility.

Exhibit 17 should be referred to as a guide to each stage described in Section 4.



MISSISSAUGA TRANSITWAY FUNCTIONAL PLANNING STUDY	EXHIBIT 17	OVERVIEW OF ANALYSIS PROCESS

4.1 Alternatives to the Undertaking

Mississauga, over the decades from 1970 to 2030, has been and will continue to be one of Canada's largest and most growth-oriented cities. The planned growth from just over 200,000 to 700,000 residents in that time, in combination with the 400% - 500% growth in employment opportunities and the immense changes underway across the entire Greater Toronto Area, have made it imperative that the City plan for and provide a transportation system capable of accommodating a high level of demand, flexible staging, rapid growth, and efficient operation. To this end, a number of comprehensive transportation planning exercises have been undertaken in the past, to serve as the basis for area- and facility-specific planning and implementation programs.

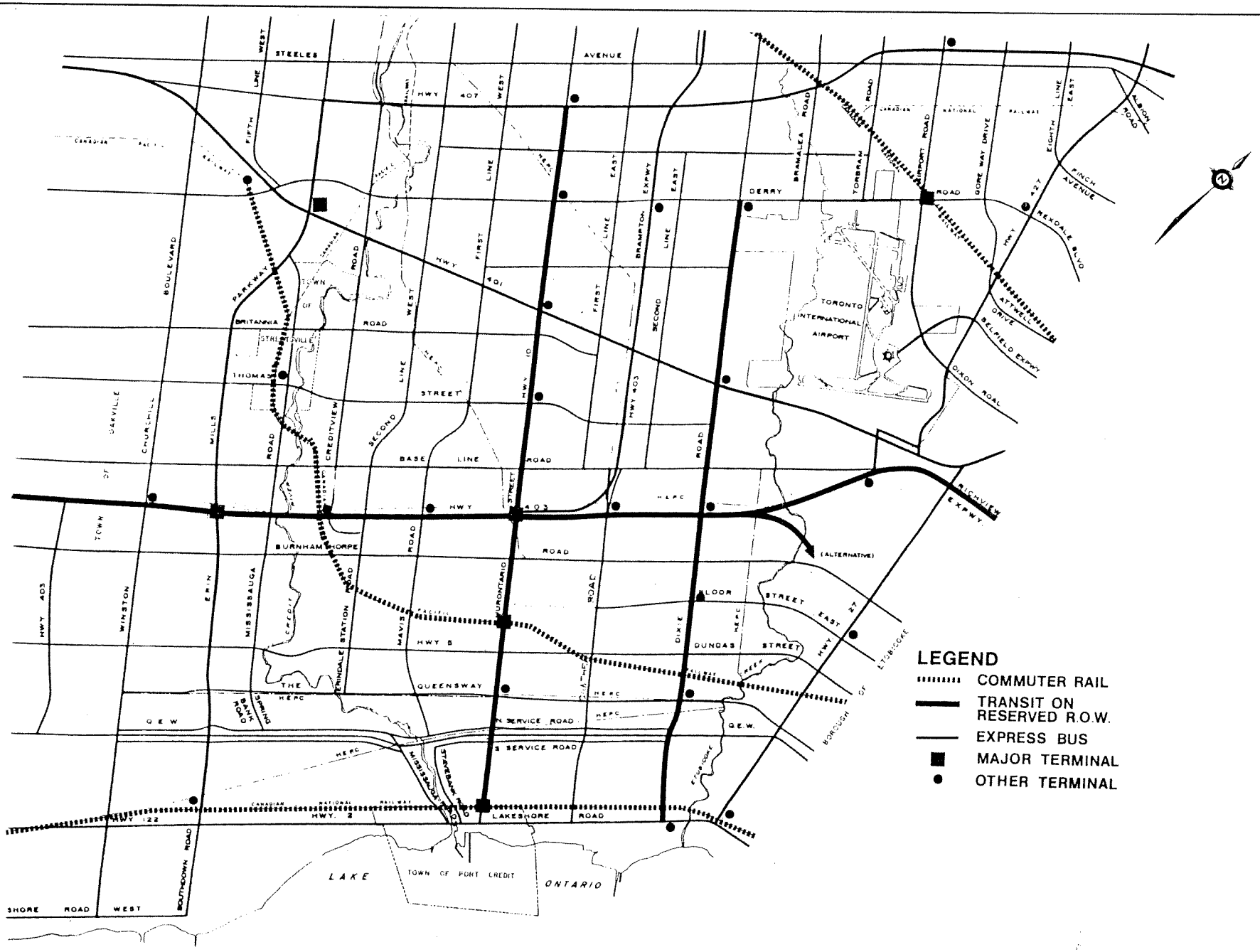
The idea of an east-west transit spine in central Mississauga has been put forward in transportation plans for the area since the Town of Mississauga's first Transportation Study in 1970 (see Exhibit 18). It has always been recognized that the demand for such a facility would not develop fully until near the ultimate level of development of the area, but that it would be prudent to protect property to ensure that implementation of a facility, when needed, would in fact be physically feasible.

The urban planning work in the mid-1970s at the time of formation of the City of Mississauga focused on locating the city core and balancing residential and employment zones in order to achieve a strong, self-sufficient city. This led to the City's first Official Plan; approved in 1981. In it, an Intermediate Capacity Transit System was identified in the Burnhamthorpe Road corridor, and property was subsequently protected on that basis (see Exhibit 19). The actual technology was unspecified, but in consideration of the focus on new advanced light rail technologies at that time it was assumed to be light rail. The Parkway Belt West Plan, as a senior government planning document governing use of the affected lands, was referred to in the Official Plan, and itself provided a 30m protected right-of-way for a future (unspecified) interurban transit line. Thus the Official Plan contains two identified Rapid Transit corridors across central Mississauga, with detailed planning and property protection to follow.

Following up on the Official Plan, with Mississauga growing rapidly and the need to assess the ability of the transportation system to accommodate the ultimate demands to be placed on it in evidence, the Mississauga Transportation Study was begun in 1982. The area-wide transportation demand analysis and assessment of alternative means of accommodating it carried out at that time provided a basis for all subsequent planning, up to and including the current study. The Mississauga Transportation Study was completed and its recommendations endorsed by City Council in 1985.

4.1.1 Demand Analysis

The identification of transportation alternatives is directly linked to the level of travel demand to be served. In order to assess the demand, computer trip models were run for eleven alternative transportation networks in the Mississauga Transportation Study (see Appendix I). The ultimate population and employment figures for complete City development as per its Official Plan were used in the models. The alternatives modelled at that time were:



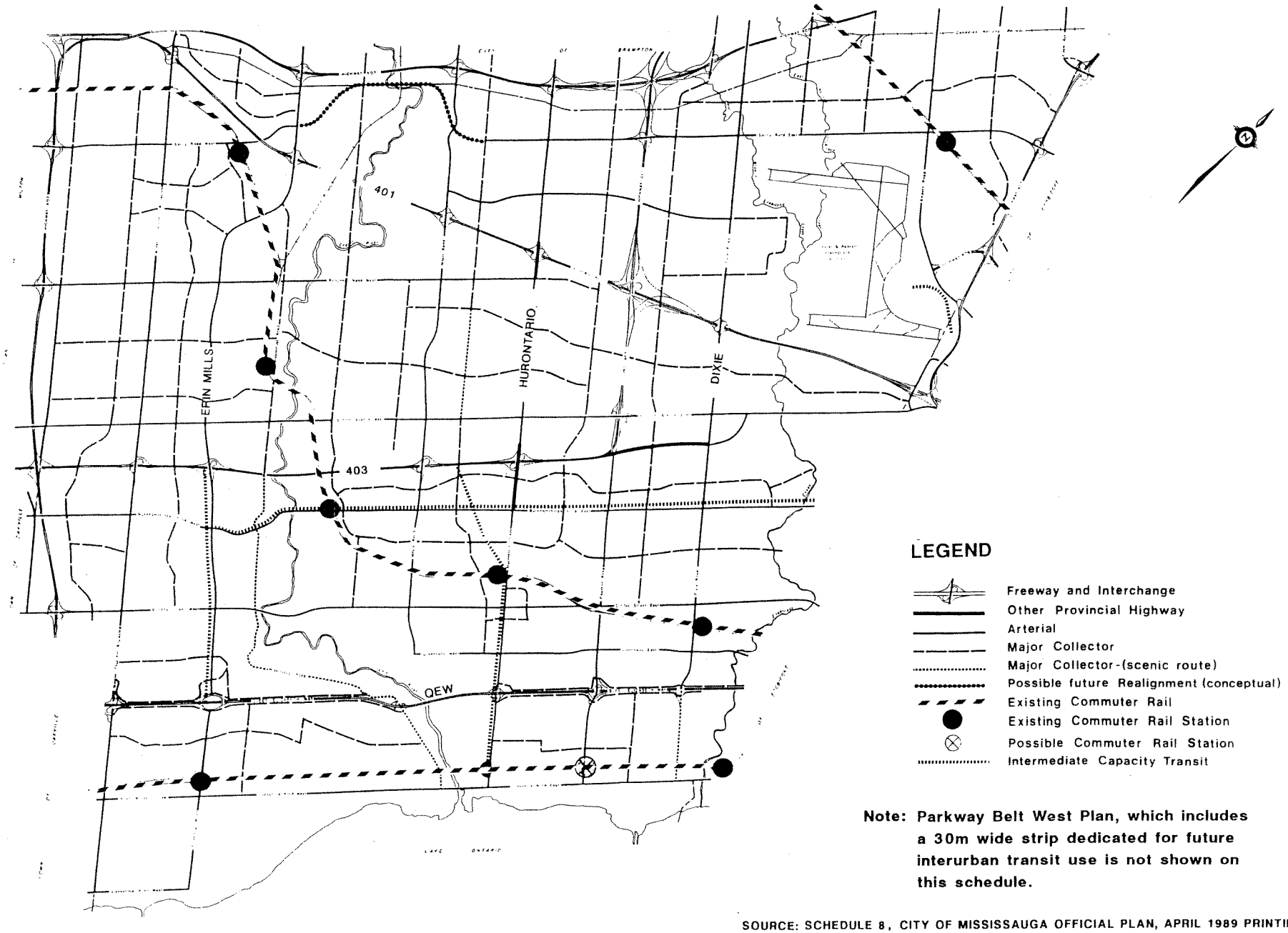
SOURCE: TOWN OF MISSISSAUGA TRAFFIC PLANNING STUDY, MAY 1970

MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 18

SCALE: 0 1 2 4 KM

MAJOR TRANSIT SYSTEM - 1970 CONCEPT



Note: Parkway Belt West Plan, which includes a 30m wide strip dedicated for future interurban transit use is not shown on this schedule.

SOURCE: SCHEDULE 8, CITY OF MISSISSAUGA OFFICIAL PLAN, APRIL 1989 PRINTING

MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 19

SCALE: 0 1 2 4 KM

MAJOR TRANSPORTATION SYSTEM - OFFICIAL PLAN

1. Existing (1985) Network: included as a base case; not analyzed in detail

2. Reasonably Expected Road Network: reflected City Official Plan; combined with a high level of surface bus transit

3. Physical Maximum Road Network: expanded network for testing purposes; combined with a high level of surface bus transit

4. Official Plan Network: similar to network 2, with the addition of Light Rail Transit in the Burnhamthorpe, Hurontario, and Erin Mills/Winston Churchill corridors. Metro Toronto LRT connection via Eglinton Avenue to a radial RT connection to the Bloor subway at Dundas West station

5. Rapid Transit Network (Eglinton): same as network 4, with Eglinton Avenue replacing Burnhamthorpe Road as the east-west LRT corridor

6. Rapid Transit Network (Highway 403): same as network 4, with Highway 403/Parkway Belt replacing Burnhamthorpe Road as the east-west LRT corridor

7. Metro Link to Finch/Sheppard: a Rapid Transit connection between any of networks 4, 5, and 6 to an extended Spadina subway via either the Finch or Sheppard corridors under study at the time

8. Metro link to Kipling Station: a Rapid Transit connection between any of networks 4, 5, and 6 to the Kipling Station on the Bloor subway, via the north-south hydro corridor in Etobicoke

9. Metro Link to Spadina: a Rapid Transit connection between any of networks 4, 5, and 6 to the Spadina subway via Eglinton Avenue

10. 1991 Network: a short term network including major roads planned for construction within ten years

11. Recommended Network: a combined network, based on elements of networks 2, 6, and 9; developed following analysis of networks 1-10.

In modelling travel demand for each of the eleven network alternatives, screenlines were used to determine where demand and capacity were critical. Screenlines measured the total system characteristics, not those of individual facilities. The resultant volume/capacity ratios for ultimate a.m. peak hour eastbound travel are summarized in Table 18. It should be noted that Networks 1 and 3 were used as test cases only and were not considered reasonable scenarios for implementation, and are not included in the summary. Network 1 would obviously be incapable of accommodating all of the projected growth, while Network 3 represented a socially and politically unacceptable road system in a number of its components. Networks 7, 8, and 9 are also not included, as they are subset variations on Networks 4, 5 and 6.

TABLE 18 - VEHICULAR VOLUME / CAPACITY RATIOS FOR EASTBOUND A.M. PEAK HOUR TRAFFIC CROSSING NORTH-SOUTH SCREENLINES IN CENTRAL MISSISSAUGA
(as modelled for the ultimate level of development in the Mississauga Transportation Study, 1985)

Screenline: / Network Alternative / Location:	West E. of Winston Churchill Blvd.	Credit Credit River	Cawthra East of Cawthra Road	East Mississauga/Etobicoke boundary
2. Road - reasonable maximum	1.03	1.52*	1.12	1.00
4. Official Plan (transit in Burnhamthorpe)	1.06	1.47	1.06	0.94
5. Rapid Transit in Eglinton	1.03	1.46	1.12	1.00
6. Rapid Transit in Parkway Belt	1.04	1.36	1.05	0.94
10. 1991 Network	0.71	0.96	0.94	0.82
11. Recommended	0.79	1.13	1.01	0.89

Volume / Capacity Ratio: the ratio of the number of vehicles using or projected to use a roadway to the capacity of the roadway, measured in vehicles per hour during the rush hour. A V/C ratio greater than 1.0 means that more vehicles wish to use the road than can be accommodated, resulting in severe congestion. A desirable level of service (smooth-flowing traffic with little delay while operating at high capacity) is normally indicated by a V/C ratio of 0.85 or less. Between 0.85 and 1.0 frequent congestion may occur. In the table above, the V/C ratios shown are the cumulative total for all roads crossing the screenlines.

Screenline: an imaginary line which all roads cross, normally located at a railway, river, or boundary line where a limited number of roads are present and traffic volumes crossing the screenline can be easily measured.

***Interpretation:** in the long term, with the City at its ultimate level of population and employment, and all reasonably acceptable road widenings and extensions complete, the number of vehicles in the a.m. peak hour wishing to travel east across the Credit River in Mississauga will be 52 percent more than the available capacity of all the roads which cross it.

It can be seen that the Credit River screenline is the critical barrier in east-west travel in central Mississauga, and that a severe capacity shortfall would ultimately occur there (as well as at virtually every other point in central Mississauga) if the transportation network were limited to any of options 2, 4, 5, or 6. In particular, the capacity shortfall is most evident in the central portion of the city at the Credit screenline; in the Lakeshore and Highway 401 segments of the screenline, adequate capacity is available to accommodate the long term demand.

The conclusion of the network modelling analysis was that a balanced network, consisting of the reasonable most extensive socially / politically acceptable road system plus a comprehensive rapid transit system would ultimately be required if the goals of the City Official Plan regarding land use, density, and mobility are to be reached.

Specific assumptions regarding road and transit facilities as used in Test 11 (the final computer run for the recommended transportation network) (see Exhibit 20) included:

Provincial Highways

- Highway 403 8 lanes
- Highway 401 8 lanes - 12 lanes
- Highway 407 6 lanes complete from Highway 403 to Highway 427
- Highway 410 8 lanes complete

Municipal Roadways

- physical maximum network of municipal roads
- all roads in the vicinity of the City Centre widened to 6 lanes

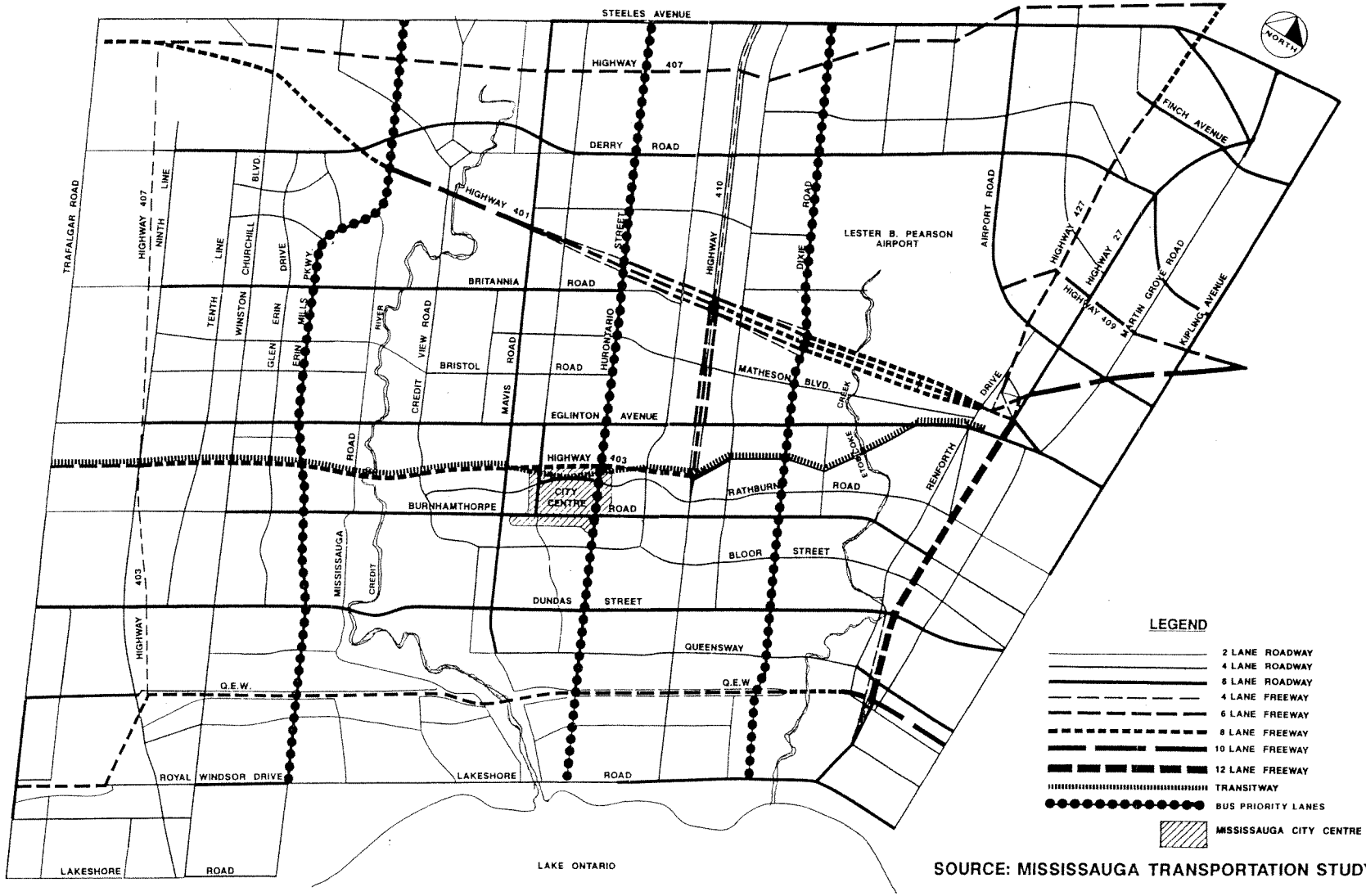
Rapid Transit

- GO-ALRT program not included
- 12 minute peak period headway on GO Train routes in Mississauga
- in Toronto, Eglinton West, Downtown (Dundas West - Donlands), and Sheppard (Spadina - Scarborough) Rapid Transit Lines
- a rapid transit line in the Highway 403 corridor between Oakville and the Eglinton RT line at the eastern City limit.

Surface Transit

- bus priority lanes on Erin Mills Parkway, Hurontario Street / Highway 10, and Dixie Road
- peak period bus leadways of 3 minutes on major lines (Erin Mills, Dundas, Hurontario, Derry, Burnhamthorpe, Eglinton, Dixie): 5 minutes for other main arterial routes; and 10 minutes for secondary routes.

It is of note that in all respects the transportation facilities and services modelled are more extensive and have greater capacities than the existing system.



SOURCE: MISSISSAUGA TRANSPORTATION STUDY (1985)

MISSISSAUGA TRANSITWAY **FUNCTIONAL PLANNING STUDY**	EXHIBIT 20	**2011 RECOMMENDED TRANSPORTATION NETWORK - 1985 CONCEPT**

Network 11, in representing the desired balanced network, still exhibited a capacity shortfall at the Credit River, which was rationalized through a reassessment of Highway 403 capacity (increasing it from 1,800 vehicles per hour per lane to 2,200 and widening from 6 to 8 lanes) and a "forced" diversion of auto trips to transit. The recommended ultimate road network from the Mississauga Transportation Study comprises Exhibit 20.

The demand that resulted for east-west rapid transit in the central corridor was approximately 11,000 passengers per hour in the ultimate (i.e. City population of 700,000 and employment level of 430,000) a.m. peak hour. Peak Rapid Transit line ridership would be expected to vary from approximately 3,100 a.m. peak hour eastbound at the Oakville boundary to 11,000 at the Mississauga City Centre to 9,800 at the eastern connection to the Eglinton RT. (see Exhibit 21).

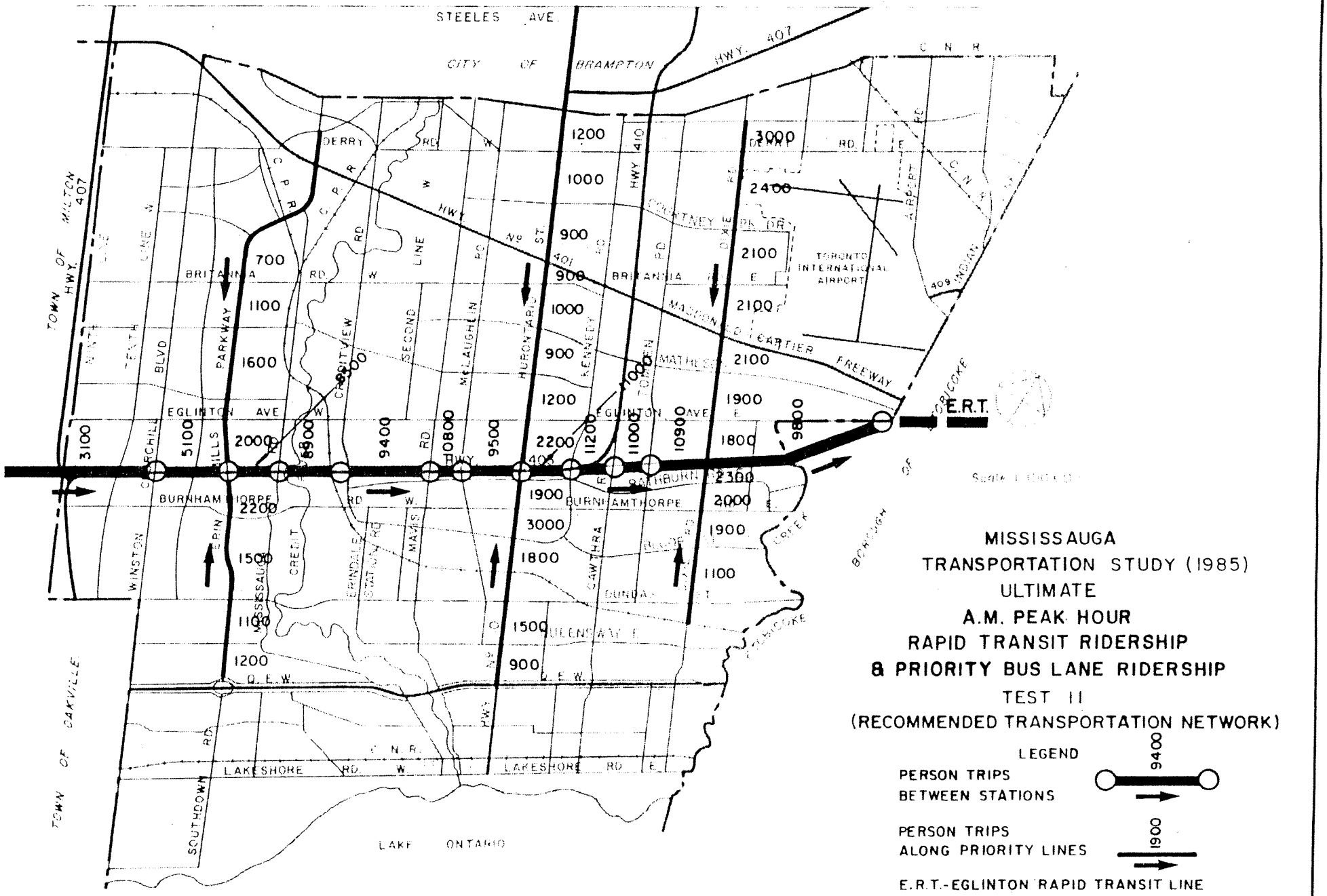
A parallel project, the Municipal Rapid Transit Service Study, assessed the level of demand in the short term, and concluded that a demand of between 3,100 and 5,000 trips would be present in the initial stages of a rapid transit line (assumed at that time to be in the early 1990's).

The current Mississauga Transitway Study reassessed the level of demand for a rapid transit facility in the Highway 403/Parkway Belt corridor. This work was undertaken in light of revisions to the City of Mississauga's development pattern and goals, continued growth, advances in both modelling technique and the database available, and a more complete knowledge of the nature of the facility under consideration. In particular, the 1986 Transportation Tomorrow Survey provided a new comprehensive area-wide transportation database for modelling purposes. The results are documented in Appendix I, which is the executive summary of a report entitled "Mississauga Busway Ridership Forecasts" (IBI Group, November 1990).

A variety of land use conditions and Transitway operating strategies were modelled, with the resulting range of a.m. peak hour peak point peak direction ridership demand being between 11,000 and 12,000 passengers eastbound. The equivalent westbound range was estimated at 5,500 to 7,500 passengers per hour.

These results confirm the order of magnitude of the earlier Mississauga Transportation Study forecasts (11,000 passengers per hour in the peak direction), and provide a more detailed understanding of the demand picture in the Highway 403 / Parkway Belt corridor.

It is of note that neither the Burnhamthorpe nor Eglinton corridors were modelled using the more recent data, as an overview of their potential revealed that property constraints, development plans, and travel patterns present in 1990-91 did not lend any greater support to their potential than when they had been set aside in 1985. Furthermore, the modelling of the Parkway Belt / Highway 403 rapid transit facility demand yielded results which were consistent with those of the earlier study; it was therefore not considered likely that further costly and time-consuming modelling of the other corridors would show significant increases in their relative demand figures or lead to a need to change the earlier recommendations.



MISSISSAUGA
TRANSPORTATION STUDY (1985)
ULTIMATE
A.M. PEAK HOUR
RAPID TRANSIT RIDERSHIP
& PRIORITY BUS LANE RIDERSHIP
TEST 11
(RECOMMENDED TRANSPORTATION NETWORK)

LEGEND

PERSON TRIPS BETWEEN STATIONS — 9400

PERSON TRIPS ALONG PRIORITY LINES — 1900

E.R.T.-EGLINTON RAPID TRANSIT LINE

MISSISSAUGA TRANSITWAY FUNCTIONAL PLANNING STUDY	EXHIBIT 21	TRANSIT DEMAND IN KEY CORRIDORS MISSISSAUGA TRANSPORTATION STUDY

It is also important to recognize that alternative land use and development scenarios were not part of the transportation modelling work, either in 1983 - 85 or 1990 - 91. The City of Mississauga has outlined in its Official and various Secondary Plans the growth-oriented development strategy it wishes to pursue through to the planned ultimate level of population, employment, and structure in the City. This is a long term goal, and although dates such as 2011 may be referred to as "ultimate" years for the purposes of modelling scenarios, the actual rate of growth and timing of achieving the "ultimate" goals remain flexible. All of the transportation modelling and planning of transportation facilities and services done to date has been undertaken on the basis of providing and protecting for an adequate transportation system to allow the City to achieve its stated development goals. The land use types, densities, concentrations of activity, and distribution of traffic-generating facilities throughout the City as defined in the Official Plan will produce a defined, predictable level of travel demand now and in the future; it is this modelled travel demand which generates the need for transportation service, against which various alternative scenarios have been tested to find the one which best accommodates the demand. In developing alternative scenarios, reference was constantly made to fiscal, physical, environmental, and operational costs, tradeoffs, and constraints to ensure that any option was in fact feasible and realistic.

Although all the demand modelling has pointed to the need for significant transportation capacity improvements in central Mississauga, the recommendation of a specific technology was not part of the demand analysis. Nevertheless, an understanding of the level and characteristics of the demand was a prerequisite to the selection of mode, and hence the type of facility. The analysis undertaken indicated that a mode that accommodates 5,000 persons per hour per direction in the short (10 year) term and 12,000 in the long term is required in Central Mississauga.

4.1.2 Identification of Alternatives to the Undertaking

The proposed undertaking is the Mississauga Transitway. The Environmental Assessment Act requires that the identification and analysis of all reasonable alternatives to the undertaking be documented so that the decision-making process which led to the choice of a recommended undertaking can be understood and assessed. Having defined the nature and extent of the problem in the previous section, this section and those following deal with the identification and analysis of the various alternatives which were considered in the Mississauga Transitway planning process.

4.1.2.1 Context

The Mississauga Transportation Study identified a projected shortfall in transportation system capacity at the planned ultimate development level of the City and surrounding areas. The ultimate demand picture has been confirmed by more recent modelling and analysis. Notwithstanding the fact that various alternative networks were tested in the Transportation Study, a subsequent overview of the problem yields several approaches to a solution. It is recognized that the entire transportation system must be considered, and that no single element of that system will be capable of, on its own, accommodating the diverse travel demands put on the system as a whole. However, the system comprises an interlocking web of distinct facilities, each with its own function and relationship to the whole.

Mississauga's major surface transportation facilities currently consist of roads used by cars and buses, and GO Train commuter rail. The system efficiency is regulated by facility and vehicle capacities, economic considerations, transit operation practices, and traffic control measures. Travel demand can be managed to some extent through the City and Regional planning processes so that new development does not overload the available system. Simultaneously, capacity and efficiency improvements have been constantly undertaken to expand the ability of the transportation system as a whole to meet the demands placed on it. Current City plans are for development to continue. Consequently, demand will grow and the transportation system's capacity and efficiency must increase as well. Furthermore, the transportation system in Mississauga cannot be isolated from the area context, as planning and growth decisions made outside the city's boundaries can significantly affect travel patterns within, to, and through Mississauga.

To some extent, any transportation system is self-regulating, as each system user seeks the fastest, more efficient, most convenient route and mode within the available system. If an acceptable level of service is not available, trips will be diverted to avoid the system and employers, residents, and retailers will begin to shift elsewhere to maintain accessibility.

This background is necessary to put into context the "alternatives to the undertaking" that are now being considered. Simply put, the following questions must be answered:

- Can existing facilities be expanded to accommodate the ultimate demand?
- Should new elements be introduced to the system? If so, what should they be?

The Mississauga Transportation Study in 1985, addressed a number of means of expanding the existing system components and found no solution capable of accommodating the total projected demand. However, further alternatives can be considered. The addition of new elements can obviously increase transportation system capacity; the question is whether they can be introduced in a cost-effective, nondisruptive way that also directly contributes to resolving the transportation problem. There may be limitations on system capacity that occur prior to full City development that should correspond to a development cap, even if only on a temporary basis before system expansion occurs.

4.1.2.2 Alternatives to the Undertaking

The Mississauga Transportation Study, and every other transportation analysis carried out in Mississauga, identified a transportation capacity shortfall in the east-west direction of travel in central Mississauga (i.e. between Dundas Street and Highway 401) under ultimate development conditions. Demand is focused on the City Centre and other major employment zones within the study area, and any facility must also serve as a conduit for trips to, from, and through central Mississauga having origins or destinations in Metro Toronto to the east and Halton Region to the west.

Given the demand and system context, the following alternatives were identified:

		(Analysis in Section)
1.	Expand Existing System	
A.	Widen Roads	4.1.3.1
B.	Bus-HOV Lanes	4.1.3.2
C.	Expand GO Train Service	4.1.3.3
D.	Increase Bus Service	4.1.3.4
E.	Transportation System Management	4.1.3.5
2.	Additional Elements	
A.	New Roads	4.1.3.6
B.	Bus Transitway	4.1.3.7
C.	Light Rail Transit	
C1	Streetcar	4.3.1.8
C2	Separate Facility	4.1.3.9
D.	Subway	4.1.3.10
E.	New GO Line	4.1.3.11
3.	Non-Transportation Options	
A.	Do Nothing	4.1.3.12
B.	Revise Land Use Plans	4.1.3.13

It is recognized that these alternatives are not mutually exclusive; a complete transportation system will contain elements of many or all of the options, and the analysis of alternatives will respect the role of each in an overall system. The identified alternatives include physical facilities, alternative modes, transportation management strategies and planning approaches in an effort to be comprehensive; this wide variation makes it extremely difficult to standardize a comparison between alternatives. The analysis will therefore assess alternatives under four broad categories:

- Transportation Service
- Social Environment
- Economic Environment
- Natural Environment

The major factors and their quantitative measures used to analyze alternatives under the four categories noted above are summarized in Table 19. The measures and indicators were applied as appropriate, and where adequate information was available. In general, as the alternatives were reduced in number and expanded in detail, the level of detail of analysis increased.

Transportation modes or approaches that were set aside from consideration as Alternatives to the Undertaking for reasons of inadequate capacity, infeasibility, and inappropriateness include: use of bicycles; air travel; walking; and advanced / unconventional technologies.

4.1.3 Analysis of Alternatives to the Undertaking

In reviewing the analysis of alternatives it is crucial to keep in mind that the determination of the level of ultimate demand, its location and its type has emerged from the Mississauga Transportation Study (and reconfirmed in 1990) on the basis of a system which included:

- the realistic maximum road network capable of being constructed within existing rights of way, including road widenings and completion of missing links where feasible;
- 12 minute peak period GO Train headway on all Mississauga GO routes (compared to 20 minutes today);
- extensive rapid transit improvements in adjacent communities;
- bus / HOV priority lanes in key road corridors;
- frequent peak period bus service (3-5 minutes) on all major routes; and
- state-of-the-art Transportation System Management techniques in place.

Under these circumstances there remained a demand for more than 10,000 persons per hour on a transit facility in central Mississauga.

In other words, although "Expand Existing System" produces the first five "alternatives to the undertaking" for the purposes of carrying out a comprehensive analysis under the terms of the Environmental Assessment Act, all five "alternatives" together are already represented in the projected base conditions. Previous technical work has shown that it would be unrealistic to further expand existing elements beyond the recommended level. Therefore, the overall Mississauga Transportation system, if the non-transportation options are not pursued must incorporate all of the alternatives discussed in Sections 4.1.3.1 - 4.1.3.5 plus one or more of the alternatives which follow in Sections 4.1.3.6 - 4.1.3.11.

4.1.3.1 Widen Roads

This alternative assumes the widening, wherever feasible, of the existing major roadways in Mississauga. No new roadways or links are considered; the intent of the analysis of this alternative is to determine the realistic maximum capacity of the existing road network and compare it with the ultimate service requirements to the placed on the system.

TABLE 19 - MASTER FACTOR LIST FOR ANALYSIS OF ALTERNATIVES

Category	Factor	Typical Measures
1. Transportation Service	Compatibility	1. Compatibility with existing and future transit network (descriptive).
		2. Compatibility with existing and future road operations / network facilities (descriptive).
	Accessibility	3. Pedestrian access (# of residents / employees within 300m walk of facility access point by year 2021).
		4. Transit access.
		5. Potential for private vehicle parking (park and ride).
		6. Potential for private vehicle drop-off.
	Service	7. Travel time (percentage increase over slowest alternative).
		8. Effects on local roads.
		9. Reliability (descriptive).
2. Social Environment	Noise	10. Number of residents experiencing 5+ dBA (Leq) increase in noise levels (based on modelling of existing and future ambient and projected Transitway levels).
	Cultural	11. Number and significance of historical sites or archaeological sites affected.
	Social	12. Number of properties from which land is required.
		13. Number of residences, businesses, community, cultural or recreational features disrupted or displaced.
		14. Number of properties with disrupted access.
		15. Number of residents whose day-to-day community and recreational activities are disrupted.
	Visual	16. Visual intrusion (length of facility at grade, elevated, below grade).
	Land Use	17. Compatibility with adjacent existing or future land uses.
	Construction Disruption	18. Number of existing residents temporarily affected by construction-related activity (traffic, noise, visual, etc.).
3. Economic Environment	Capital Cost	19. One time property acquisition costs.
		20. One time construction costs (e.g. percentage increase over least expensive alternative).
		21. Ability to stage construction costs.
	Operating Cost	22. On-going costs of operating and maintaining the facility and associated services.
		23. On-going land rental costs.
4. Natural Environment	Aquatic	24. Number of rare species affected.
		25. Amount and significance of wetlands disrupted or displaced.
		26. Increase in downstream erosion potential.
		27. Change in stream fisheries (e.g. migrative capability spawning sites).
	Terrestrial	28. Effect on wildlife (e.g. movement corridors, habitat removed).
		29. Amount and significance of vegetation affected.
		30. Number of rare species affected.
	Atmospheric	31. Air quality (description of impacts around station).

areas (i.e. Credit River crossings). Additional air pollution would result from wider roads and increased traffic. Road expansion and continued / increased reliance on auto use are incompatible with a sustainable natural environment from a global perspective (i.e. "greenhouse" gases, energy depletion, etc.).

e) Summary

Completion of the "reasonable" road network and widening of key roads within existing rights-of-way is essential to the growth of the City, but cannot accommodate the ultimate peak period demand in major high employment areas. Unless supplemented by additional transportation system capacity, significant negative social, economic, and natural environmental impacts will occur beyond the point of recurring peak period congestion. This is not a viable alternative to accommodate the ultimate transportation needs of the City. It is recommended that this alternative not be carried forward as an alternative to the undertaking. Elements of the alternative are viable on a "standalone" basis, and may be pursued in parallel with, or as stages of, the undertaking.

4.1.3.2 Bus-HOV Lanes

It is proposed to implement Bus / High Occupancy Vehicle (typically cars with three or more occupants) Lanes on the major arterial roadways in Mississauga, such as Derry, Eglinton, Burnhamthorpe, Erin Mills, Hurontario and Dixie. This alternative would make use of additional lanes for the most part, with one lane in each direction on key roads dedicated to HOV use during peak periods. Together with associated programs and facilities, this would act as an incentive for travellers to use buses and carpools, thereby utilizing the roadway more efficiently. A significant level of auto (non-HOV) congestion is assumed.

a) Transportation Service

If roads are to be widened, designation of the new lanes for bus or high occupancy vehicle (HOV) use only would maximize the transportation benefit in peak periods. System capacity is still constrained by traffic signals, at-grade intersections, and turning moves. HOV lanes do not increase system capacity unless carpools form and transit ridership increases. Lanes are essential to transit operation in key corridors and are recommended in the Mississauga Transportation Study for several roads on that basis. In some corridors, severe congestion for non-HOVs would result if existing lanes were converted to HOV use; however, non-HOV congestion provides a key incentive to switch to HOV use. Treatment would be limited to key arterial corridors; benefits would consequently limited. Since HOV operation would be constrained by at-grade intersections, system capacity would still be inadequate to accommodate peak period demand on approaches to major employment centres. Grade separation of street intersections is rarely a practical alternative, either physically or financially, while if an HOV lane were to be grade-separated over a considerable distance it would be considered identical to a Bus Transitway. Although HOV lanes are a useful interim strategy, ultimate auto demands may require full use of all roadway lanes,

a) Transportation Service

An extrapolation of the current system could provide adequate capacity for immediate future needs. However, the Mississauga Transportation Study analysis clearly showed that road widening alone is inadequate for ultimate demand levels, under either "realistic" or "physically maximum" widened road scenarios. Severe recurring congestion would occur on critical network links, such as City Centre approaches, Credit River crossings, and in major employment zones as demand continues to grow. Transit ridership would stagnate unless preferential treatment (i.e. dedicated lanes) was provided; however such lanes would minimize benefits of road widening to general traffic. Overall system capacity is still defined by signalized intersections; road widening cannot significantly improve intersection operation. Since most roads are already planned for 6 lane cross sections, further widening would produce a network of 8 lane roads; it is unacceptable to operate 8 lane roads (plus turn lanes) in an urban context due to impact on pedestrian movement, intersection operation, and right-of-way requirements.

b) Social Environment

Selected widenings would accommodate increased traffic, in either the short term or on a network basis. Maximum motorist convenience and mobility in off-peak periods would be offset by severe congestion in peak periods. Ultimately, development would be significantly constrained and employment goals would be unattainable. As main roads become congested, traffic would divert through neighbourhoods on collector roads, a major safety and social concern. Widening of some roads (i.e. Mississauga Road) and new river crossings (Credit River) have not been socially acceptable in the past, and both the demand for and resistance against widenings beyond those currently planned would be expected to intensify under future pressure.

c) Economic Environment

Significant capital construction and maintenance costs would result. However, as part of the City Official Plan, some road widenings will occur over time in any case to accommodate new development and any additional cost would be that due to accelerating construction. At the point of severe congestion, high costs would be generated through motorist delay, increased accident rates, wasted fuel, severe constraints on Transit operation, and wasted time by motorists and bus passengers. These costs would be ongoing and would overtake construction cost in the long term. Tax impact varies with staging: high taxes would result if industry/offices left the City due to decreasing mobility on the roads, while the cost of construction to overcome bottlenecks would become more onerous as feasible opportunities began to suffer from operational and physical constraints.

d) Natural Environment

Changes to the natural environment would occur due to roadway construction. Some key roadway constraints are coincident with sensitive / significant natural

4.1.3.3 Expand GO Train Service

The provision of all-day, two-way more frequent (min. 10 minute leadway vs. current 20 min.) GO Train service on the Georgetown, Milton, and Lakeshore West lines is the scenario considered.

a) Transportation Service

GO Trains are, and will continue to be, a major mode of transportation for central Toronto-destined work and recreation trips. Three corridors serve Mississauga (Milton, Georgetown and Lakeshore lines). Trips originating outside Mississauga account for much of the GO capacity, while trips from Mississauga to Toronto fill the remaining seats on existing trains. The ability to serve intra-Mississauga trips would therefore rely on GO expansion, by increasing frequency and/or expanding train size. The latter would require extending every platform on each line to accommodate a longer train; in some cases (Union Station) this is not physically possible. More frequent service, as well as two-way all day service, requires additional dedicated track, due to simultaneous use of the tracks by through freight traffic. It must be recognized that demand on GO Trains in Mississauga by external trips will continue to grow. Existing GO lines do not directly serve the vast majority of employment nodes in Mississauga; each home-to-work trip would therefore require a car or bus trip to the GO Train and a bus trip from the train, requiring at least two passenger transfers, walking time, and a considerable amount of out-of-way travel. All transit connections would have to be timed to meet GO trains. Improvements in fare integration, transit service, station accessibility, development integration, and marketing are planned, and would be expected to enhance the utility of both the GO train and local transit services. Connecting buses would use surface streets; corresponding improvements would ultimately be needed on the road system. This alternative is a valuable element in the transportation network but is incapable of, and unsuited to, accommodating the specific multi-nodal travel patterns of intra-Mississauga trips.

b) Social Environment

GO Transit service, in accommodating demand for trips destined to the downtown core of Toronto, acts to reinforce Mississauga's "bedroom community" social structure. The Toronto-centred radial configuration does not lend itself to serving Toronto-to-Mississauga work trips. In both these aspects, GO Trains do not support employment growth in the City. GO service expansion would in fact encourage even more long-distance commuting from beyond Mississauga to the Toronto CBD, thereby reducing the benefits to Mississauga residents. Increased noise due to train passbys could be a concern amongst adjacent residents.

c) Economic Environment

GO Trains are costly - about $15 m per ten car train - but since the need for expansion of service will continue regardless of Mississauga-based trips, only a limited amount of new investment would be assignable to the undertaking. New

while transit services will require grade separation in order to provide the level of service which is capable of generating the modal split to transit necessary for city development.

b) Social Environment

A significant shift to carpool and transit modes would be required to obtain full benefits of the HOV alternative. Conversion of existing mixed-flow lanes to HOV lanes would reduce single-driver mobility and could result in public protest. Since system capacity would be inadequate for ultimate development, it would act as a constraint on the ability to achieve the city's long term development goals.

c) Economic Environment

The costs are similar to those of road widening; since the alternative results in greater mobility, the economic benefits are greater than those of road widening. Significant benefits would accrue to the transit operational budget, however additional transit vehicles would be required to accommodate the increase in ridership and to provide a level of service which would act as a significant incentive to induce a modal shift from car use. Economic benefits accrue to residents if carpool and transit use significantly increase as a result of the provision of HOV lanes. Encouragement of HOV use would require additional marketing costs.

d) Natural Environment

Physical impacts on natural environment would be similar to the road widening alternative; reduced vehicle travel per capita would have environmental benefits, however in the long term the road network would still be operating at its vehicular capacity (noting that HOV lanes rely on non-HOV congestion as an incentive to use HOVs) so that the net benefit in terms of auto emissions would depend more on technical advances and legislative requirements in the auto industry than on a significant shift to HOV use.

e) Summary

The use of Bus and/or HOV lanes is a key method of optimizing the capacity and efficiency of a fixed transportation system. They are recommended for application on key links in Mississauga's road network. However, the wide spacing of the arterial network focuses traffic to key intersections, which will continue to be the constraint on the system capacity. Overall capacity would be inadequate to accommodate ultimate demands. Effectiveness is limited to key corridors and depends on significant changes in public attitudes. HOV lanes themselves are a component of a broad program of transit priority and HOV incentive measures acting together to induce greater HOV use. This alternative is (if used) more beneficial than the "Widen Roads" alternative, and elements are recommended to be pursued both independent of, and linked with, the undertaking. However, Bus/HOV lanes are not viable as a sole alternative to the undertaking, and the alternative is not recommended to be carried forward for further analysis.

c) Economic Environment

If buses in mixed flow were to be relied upon to serve the ultimate passenger travel demand in Mississauga, road congestion conditions would necessitate the acquisition, maintenance and operation of an extremely large bus fleet. Such a fleet would be more costly to buy and subsidize the operation of than one which utilized bus lanes or transitway facilities, and therefore has a more negative economic environmental impact. Fleet subsidy would require more provincial and local funding, and it is of note that, the larger the fleet the greater the number of buses sitting idle during off-peak periods. Expanded fleet storage facilities, maintenance costs and higher staff requirements would further increase expenses.

d) Natural Environment

Increased Bus Service would be a positive step with regard to minimizing air pollution impact of urban transportation and reducing the need for roadway widenings in sensitive areas. Increasingly stringent emission standards and technological advances in diesel buses, as well as the expansion of the Natural Gas powered portion of the Mississauga Transit fleet would be expected to minimize air pollution concerns in the near future; compared to the auto alternative the net emissions per capita from even existing diesel buses is significantly less.

e) Summary

Since there is less potential system-wide capacity to be gained through increased bus service than for the provision of bus / HOV lanes, the same rationale as used for the latter (see Section 4.1.3.2 (e)) implies the setting aside of the alternative. Bus Service increases are a useful, feasible, and necessary part of the overall transportation strategy for Mississauga but are incapable of accommodating the ultimate demands to be placed on the system.

4.1.3.5 Transportation System Management

This alternative includes various measures used to improve the operational efficiency of the existing transportation system.

Since Transportation System Management measures, such as traffic signal synchronization, ramp metering, High Occupancy Vehicle priority measures, and transit fleet management are inherent parts of any advanced transportation system, they are not considered to be alternatives to the undertaking. Rather, TSM is taken to be an integral component of the ultimate Mississauga transportation system and of all its components.

Experience elsewhere with the introduction of TSM measures in severely congested areas indicates a potential for reduced congestion, increased safety, and improved operation. In areas such as Mississauga where advanced signal timing techniques are already in use, the ability of future TSM advances to significantly affect system-wide capacity (e.g. by more than 10 - 20 percent) is unlikely. It is therefore incapable, as a

trackage, if requiring property acquisition or major structural expansion, is potentially extremely costly. The fare structure is significantly more costly to the passenger compared to local buses. A comprehensive fare integration plan would be required between Mississauga Transit and GO Transit.

d) Natural Environment

Direct environmental impact would be limited to existing rail corridors. Air quality, energy, and noise issues would also be limited to adjacent properties. Net environmental benefits in comparison with other alternatives would be minimal, since car and bus use of roads would ultimately reach saturation levels in any case.

e) Summary

GO Trains have a specific interregional / commuter role to play in Greater Toronto Area travel and are incapable of simultaneously serving as Mississauga's rapid transit system. Capacity is (and will be) unavailable, operation is not appropriate, and routes are not suited, for the significant increases in ridership to accommodate the City's ultimate demands. Expansion of GO Trains service is a valid initiative on its own merits, but the option is not recommended to be carried forward as a viable alternative to the undertaking.

4.1.3.4 Increase Bus Service

More frequent (3 minute headways in key corridors) and convenient bus service, utilizing HOV lanes where possible and in mixed flow elsewhere, represents a foreseeable extrapolation of the current transit operational structure. This scenario considers use of existing / widened roads only and does not include new transit-dedicated facilities.

a) Transportation Service

The Mississauga Transportation Study (1985) simulated a very frequent bus service (3 minute headways) on reserved bus lanes in key corridors at the ultimate demand level, with the result that a severe capacity shortage was identified at several screenlines. Increased bus service, using dedicated lanes to as great an extent as possible, will be a key element of the ultimate Mississauga transportation system. Constraints, however, will remain due to signalized intersection capacity and operational requirements, that preclude the ability of expanded surface bus service, on its own, to ever accommodate the ultimate travel demand in the City.

b) Social Environment

The general impact on the social environment of increased bus service and subsequent usage would be positive, as buses are among the most fuel-efficient and cost-effective means of urban transport.

c) Economic Environment

The capital cost of a new grade-separated roadway would be significant, however operating efficiencies which accrue to transit operators using the facility would reduce annual operating costs, reduce the number of buses needed, and reduce vehicle storage and maintenance needs compared with the no-Transitway alternative. Tax impact varies with staging; stages can be readily deferred to match funding availability. Capital cost per person of capacity is lower than Light Rail and similar to roadway improvements. The capacity, however is far higher than an equivalent road lane and similar to higher-order LRT systems.

d) Natural Environment

Physical impacts on the environment are restricted to the single facility corridor and are therefore similar to Light Rail, while being significantly less than the net impact of several road widenings. In utilizing a limited number of vehicles to meet demand, air pollution is minimized; increased emission standards, alternative bus fuels, and efficient bus operation will reduce emissions further in the future.

e) Summary

A Bus Transitway is well-suited to the demands anticipated to be placed on the central Mississauga transportation system in the future. It can be implemented in a cost-effective, staged manner which reflects both demand levels and available funding. In terms of net social and natural environmental impact, a Bus Transitway does not exhibit major drawbacks. It is recommended that the Bus Transitway alternative be carried forward for more detailed analysis and comparison with other viable alternatives. This further analysis follows in Section 4.1.5.

4.1.3.8 Light Rail Transit - Streetcar

For the purposes of analysis, this alternative is taken to consist of a streetcar or tram system operating on a street at grade, either in mixed traffic or on a dedicated lane, either in the median or at the side of existing roads. The Harbourfront LRT or Bathurst Street routes in Toronto would be analogous systems.

a) Transportation Service

Due to the constraints placed on streetcar operation at grade, with frequent stops, no overtaking opportunities, crossing traffic, and passenger loading, maximum practical capacity of on-street operation is approximately 4,000 - 5,000 passengers per hour per direction. This takes into account advances such as larger entrained vehicles and signal priority technology. This capacity is inadequate for the ultimate level of demand under consideration in central Mississauga east-west travel, considering that an assumed high level of transit service on dedicated HOV lanes on major east-west arterials still left up to 12,000 passengers per hour of

standalone alternative, of generating the required level of new capacity in central Mississauga.

4.1.3.6 New Roads

The opportunity to construct major new roads or road links to expand the existing Mississauga transportation network is considered in developing this alternative.

The only east-west roadway in central Mississauga across the Credit River remaining to be completed is Bristol Road, and it has been assumed to be completed for the purposes of the demand projections which indicate the need for additional person-movement capacity in the study area. No new road crossings of the Credit River are planned. There are no other corridors protected, nor are there any available through the currently built up or committed development areas. Given the lack of feasible opportunities and the unacceptably high social and economic costs of creating them, this alternative is set aside.

4.1.3.7 Bus Transitway

A grade-separated roadway with stations at key points, dedicated to bus transit use, (analogous to Ottawa's Transitway system) is the alternative considered.

a) Transportation Service

A grade-separated Transitway used by bus technology is capable of accommodating the ultimate travel requirements in an east-west direction in central Mississauga. Stations would be required at major crossing roadways to allow for the transfer of passengers and efficient routing of buses. Minimal interference with traffic on local roads; good accessibility by car or local transit routes to Transitway. Stations can be located at key arterials and be integrated into high density commercial development to enhance pedestrian accessibility, but limited potential demand within walking distance in low density residential areas. A Bus Transitway has flexible staging potential and can operate in a manner compatible with systems in adjoining municipalities. Level of bus service can be readily varied to match demand and travel patterns.

b) Social Environment

Potentially significant impact on adjacent residents in the areas of noise and visual intrusion, however mitigation measures such as berms, barriers, profile adjustment, and use of advanced vehicles are readily available. Requirement for grade separation and separate alignment restricts the corridor opportunities, however the capacity of a Transitway is similar to that which would otherwise require the widening of several roads or the provision of HOV lanes in three or four corridors. The net social impact compared to the alternatives is limited and more easily mitigated. A Transitway does not impact existing road users.

4.1.3.9 Light Rail Transit - Separate Facility

A grade-separated, high-capacity LRT system is considered, with the Vancouver Skytrain or the former GO-ALRT proposal as relevant examples. Low-capacity LRT systems such as the Scarborough Rapid Transit line are not considered, as they are physically indistinct from high capacity LRT facilities yet have capacities no greater than advanced streetcar lines on at-grade rights-of-way, as discussed in Section 4.1.3.8.

a) Transportation Service

An LRT Transitway is similar in principle to a Bus Transitway, and exhibits a similar capacity and physical configuration. LRT operation requires passenger transfers to and from feeder buses, and there is less operational flexibility than bus technology, but high-capacity vehicles offer some operating efficiency. Linkage to TTC varies; very poor to Bloor subway due to multiple transfers required, and compatibility with Eglinton West Rapid Transit Line depends on the chosen mode.

Grade separation would minimize interference with operation of local roads; station locations and development integration opportunities are identical to Bus Transitway. The level of service can vary to match demand, but LRT staging is far more constraining than Bus Transitway, as a significant linked portion of the route must be in place prior to operation.

b) Social Environment

Potentially significant visual and noise impact of new facility on existing areas. LRT passby noise levels slightly less than buses, but increased bus activity at stations (since all passengers must transfer) would compensate. LRT preferable to road-widening alternatives and, with mitigation, net social impact is relatively minor.

c) Economic Environment

LRT construction costs are greater than for a Bus Transitway, as much the same physical infrastructure is required, with the addition of rails, power lines, switching / signalling systems, and dedicated on-line storage and maintenance facilities. The net cost of vehicle acquisition would also be significantly greater than that of an all-bus system, as LRT vehicles are more expensive on a per seat basis than buses, while the system-wide operating efficiencies offered by flexible bus routing can not be realized. As a permanent physical facility, an LRT line would be anticipated to attract development interest to its service area, however the requirement to build the majority of the system before operation can be initiated would place a significant financial burden on existing taxpayers (rather than deferring construction to such time as the demand and development is present).

excess demand in the forecast figures. A high frequency of streetcar operation would disrupt the flow of other roadway traffic. Passenger service, however, could readily be integrated with crossing bus routes (although a significant increase in the number of vehicle transfers required per trip would be a consequence). Use of the road right-of-way would also limit the ability to widen that road to accommodate future auto demand growth, although the presence of LRT could act to focus growth on the transit system rather than in autos.

b) Social Environment

As a relatively quiet, visually-attractive mode, streetcars are generally a positive influence on the community environment. However, the road widenings and traffic disruption that would be entailed by the introduction of streetcar service on major east-west roads in central Mississauga would produce negative impacts by bringing cars and trucks closer to homes and reducing roadway mobility. Due to lack of capacity, the alternative would ultimately generate constraints on development, traffic congestion, traffic diversion, and a mismatch between residents and employment opportunities. In the city-wide context, there would be resultant negative social impacts of this alternative. The aesthetic (visual) impact of the required overhead wires on the streetcar route(s) would be significant.

c) Economic Environment

Infrastructure, vehicle acquisition, storage, and maintenance costs would be high, particularly since this would introduce a new vehicle type with unique operational requirements to the Mississauga Transit system. Operating costs in the corridor would be lower than an equivalent level of surface bus service, due to the larger vehicle and reduced fuel/power needs, but system-wide operational cost efficiency would be limited by the need to maintain a strict grid network of crossing routes. Although no structures or retaining walls would be required, a significant amount of road widening would ensue in order to maintain current traffic carrying capacity. In effect, this alternative must be combined with the "widen roads" alternative (sections 4.1.3.1) to assess the total impact.

d) Natural Environment

The natural environment impact would stem mainly from the required road widenings rather than the streetcar facility itself. As an electric-powered system, there would be no vehicular exhaust emissions associated with a streetcar system.

e) Summary

As a clean, quiet, attractive system, use of advanced streetcar technology to address central Mississauga's transportation problems has some appeal. However, the reality is that the mode's inherently limited capacity, its impact on existing road rights-of-way and their traffic-carrying capability, and net economic and social impact due to associated road widening requirements lead to the conclusion that it is not an appropriate alternative to pursue farther.

d) Natural Environment

Physical impacts on the environment are restricted to the single facility corridor and are therefore significantly less than the net impact of several road widenings. As an electric-powered system, there would be no exhaust emissions directly due to the vehicles, however intensification of bus idling at stations due to transfer requirements would be of greater impact than a Bus-only Transitway in those localized areas.

e) Summary

Light Rail technology has an appropriate capacity range, would not result in major negative social and natural environmental impacts, and is a feasible alternative to address the identified problem. There are operational, financial, and technical drawbacks associated with the alternative, but LRT remains worthy of more detailed study and is recommended to be carried forward as a viable alternative.

This further analysis follows in Section 4.1.5.

4.1.3.10 Subway

A grade-separated heavy rail subway facility, similar in concept to the Toronto subway, has been suggested as an alternative to the undertaking.

a) Transportation Service

Comments on operation and service are identical to those for LRT on a Separate Facility (Section 4.1.3.9(a)), with the exception of the operating characteristics of the route itself. Since a subway train passenger capacity is approximately sixteen times that of an articulated bus, subway headways would correspondingly be ten to fifteen times that of bus service if operating cost efficiency were to be maintained, which would in fact be a significant decrease in the level of service available to the passenger. Correspondingly, if subway service was as frequent as bus service, operating costs would be extremely high and there would be a significant amount of excess capacity. Essentially, the subway capacity of 25,000 - 35,000 passengers per hour per direction significantly exceeds the ultimate demands projected for the Transitway corridor. Furthermore, extension of subway use across the Eglinton West corridor in Metro Toronto would be required to link a Mississauga subway to the TTC network; the demands in that corridor do not support use of subway technology and several other corridors within Metro would claim higher priority for provincial funding and implementation support. To link a Mississauga subway to the Bloor Street subway (potentially extended from Kipling Station), apart from being physically challenging, would not address the key travel demand patterns, as Mississauga trips to downtown Toronto would be faster by GO Train, Eglinton RT, or car than via the Bloor Subway. Furthermore, there is no available downstream capacity for the Bloor corridor to absorb a significant number of new downtown Toronto-destined trips. A subway would accommodate Toronto-to-Mississauga work trips as well as Etobicoke-Mississauga

trips, however the projected demands for those trips fall well below the threshold of subway economic and operational viability.

b) Social Environment

Same comments as for LRT on a separate facility (see Section 4.1.3.9(b))

c) Economic Environment

Subway is the most costly public transportation mode to construct and operate, which is the main factor restricting its use to corridors of exceptionally heavy demand. If built in cut-and-cover in an existing roadway corridor, costs typically rise to the $100m per kilometre range, decreasing only to $60m per kilometre in open (exposed) cut. The vehicles themselves are also costly, (at $1.4m per car involving up to $200m in capital cost for a Mississauga system) and dedicated on-line storage and maintenance facilities are also more costly than any other alternative. Net system-wide operating costs would be similar in magnitude to Bus or LRT-Bus systems.

Like LRT, a Subway line requires complete pre-building before operation, with the financial impact leading ridership and development rather than being tied to it. The implications to existing taxpayers in the City would much be more significant than for a more readily staged alternative.

In areas of development potential, subways have often been successful in generating high density residential and employment concentrations. In Mississauga, however, most of the study area is newly developed and unlikely to be redeveloped to higher intensity in the short - medium term, while there are few constraints on the ability to develop currently vacant property in any case.

d) Natural Environment

Same comments as for LRT on a separate facility (see Section 4.1.3.9(d)). Storage yard requirements for subway trains are slightly larger and more restrictive in layout, thereby holding the potential for greater impact on the natural and economic environment.

e) Summary

In summary, use of subway technology to address Mississauga's transportation problems is inappropriate due to its high cost, limited flexibility, excess capacity, and operational characteristics. Only if there were unlimited funding available or an intent to develop a GTA-wide subway-type network would use of a subway be appropriate to consider further. In order to not preclude an ultimate subway network development in the next century, a Transitway facility could be designed and built to subway-type geometric standards, but there is no call for subway implementation in the foreseeable future (up to Mississauga's ultimate development). Accordingly, it is not recommended that the Subway alternative be carried further.

4.1.3.11 New GO Train Line

Construction of a new commuter rail line or use of an existing line not already served by GO Train may be considered as an alternative.

There is GO Train service on all of the existing main rail lines within Mississauga, with expansion potential as described in Section 4.1.3.3. A review of the remaining transportation corridors in central Mississauga did not reveal any suitable corridor to accommodate a new heavy rail route, hence this alternative was set aside. The cost, social impact, and operational characteristics of such an alternative were therefore not considered, although it is readily apparent that there would be major negative impacts if the provision of a new GO Rail route were to be pursued.

4.1.3.12 Do Nothing

The "Do Nothing" option illustrates the effects of maintaining the transportation facilities and services within Mississauga at their current (1991) level into the foreseeable future. Essentially, this would be a "freeze" on the existing system of roads, highways, buses, and GO Trains.

a) Transportation Service

Existing congestion, committed future growth inside and outside Mississauga, and every transportation forecast made for the City all confirm the fact that the existing transportation facilities in the City are incapable of accommodating growth beyond the turn of the century. If nothing is done, the level of transportation service available in the City, particularly during peak periods, would deteriorate to an unacceptable unsafe level. Transit, auto, goods movement, and commuter rail systems would be loaded to their maximum capabilities under deteriorating conditions.

b) Social Environment

The breakdown of the City's transportation service which would follow from a "do nothing" approach could have potentially severe social implications; personal mobility, commuting time, and overall quality of life would suffer if significant future growth were to be imposed on a static transportation network. Only a massive shift to transit and HOV use would be able to maintain mobility in Mississauga; a more likely outcome is that new employers and residents would tend to choose locations elsewhere in the GTA where there was greater mobility, thereby placing a significant constraint on the ability of the City to achieve its development goals.

c) Economic Environment

As always, the "Do Nothing" alternative is the least costly in terms of capital expenditures. However, the net operating cost of an inefficient, congested transit service, along with increased energy use under congested conditions would

accumulate. Furthermore, the City would become less able to attract investment in employment and housing, and a potentially significant impact on property taxes could result (given that the City plans to rely extensively on development levies to fund necessary future work).

d) Natural Environment

There would be no additional physical impact on the environment under the "Do Nothing" case, but the least desirable air pollution scenario would likely develop, with a severely congested auto-based transportation network. This could be mitigated with a significant shift to transit, but the ability of transit to compete for modal share under congested conditions would be extremely limited.

e) Summary

The option of doing nothing exists for a few years, but the continued growth within and beyond Mississauga will inevitably overload the existing transportation system, with severe negative consequences in all areas of life in the City. Only a major voluntary shift to transit would be able to mitigate the problem, but the existing transit system is incapable of accommodating such a shift. In fact the more likely scenario is development stagnation and a city-wide deterioration in personal mobility and quality of life. The "Do Nothing" alternative is not a viable or attractive long term scenario for Mississauga.

4.1.3.13 Revise Land Use Plans

The need for improvements to Mississauga's transportation system in the future stems from the existing and planned land use patterns both within the City and throughout the surrounding Greater Toronto Area. If current land use plans were to change in Mississauga, the need for transportation facilities would also change. This alternative is subject to the Official Plan process, and must recognize that intense urban development has already occurred or is committed to occur in most of the City.

Any land use revision would not eliminate the need for transportation improvements, for even a freeze on development would not affect trips to, from, and through Mississauga by residents of rapidly-growing adjacent municipalities (in fact, such a freeze would lead to increased traffic in the City as employees in Mississauga would increasingly commute from adjacent cities). Any land use changes, if they were to occur, would be in all likelihood be towards greater density and hence support the need for transit improvements rather than road widenings.

In summary, revising land use plans cannot be considered an alternative to the undertaking; in fact, transportation facilities and services are inherent parts of the land use plan and cannot be separated from it. An overall transportation system flexible enough to accommodate changes within the overall land use plan and support the achievement of that plan is the goal of Mississauga.

4.1.4 Summary of Analysis of Alternatives to the Undertaking

In Section 4.1.3, a brief assessment of the appropriateness of each of the identified alternatives to the undertaking was documented. Table 20 summarizes that analysis, and indicates that only two alternatives should be carried forward for more detailed analysis - Bus Transitway, and LRT on a separate facility. The Good - Fair - Poor characterizations used in Table 20 are based on the previous analysis and are only intended to provide a quick overview of the situation. Section 4.1.3 should be referred to for the analytical text.

It must be recalled that the identified need (unaccommodated travel demand) has been modelled through several scenarios which include the "reasonable maximum" network of municipal and provincial roads, (both in width and extent), a 12 minute headway on GO Train service in Mississauga, all key proposed TTC rapid transit facilities, bus priority lanes on major arterials in Mississauga, and peak period bus headways of 3 or 5 minutes on all major Mississauga Transitway routes. It is thus clear that most of the "alternatives to" the undertaking are in fact already included in the base condition; thus only Bus Transitway, LRT, Subway, and new GO line are even conceptually feasible, and Section 4.1.3 demonstrates that it would be inappropriate to pursue the latter two alternatives any further.

This summary does not deny the value of most of the other alternatives in potentially addressing specific problem areas or in broad application as part of the overall transportation system serving Mississauga. However, in the context of the planned land use, defined study area, expected level of demand to be accommodated, travel patterns, and existing conditions, none of the other alternatives were capable, on a standalone basis, of addressing the needs satisfactorily. Alternatively, the net impact on the environment if the alternatives were to be expanded to the extent that they could accommodate the demand would be far worse than either of the alternatives to be carried forward. For example, 22 lanes of new roadway would have to be constructed to accommodate the projected level of demand under the "widen roadways" option (over and above the road widenings already assumed); the impact on all aspects of the environment are obviously so massive as to preclude serious consideration of such an option.

4.1.5 Analysis of Feasible Modal Alternatives

Although the Bus Transitway alternative was identified as having significant advantages over the LRT option in general terms, further assessment of the comparative value and net environmental impact of the two approaches was appropriate before finalizing a recommendation. This comparison, documented in this Section, cannot be considered entirely in isolation from the actual corridor in which the recommendations would apply.

It should be read, therefore, in conjunction with the description and analysis of corridor alternatives in Section 4.2.

TABLE 20 - SUMMARY OF ANALYSIS OF ALTERNATIVES TO THE UNDERTAKING

ALTERNATIVE	TEXT SECTION	ANALYSIS CATEGORY				SUMMARY	CARRY FORWARD FOR DETAILED ANALYSIS
		TRANS. SERVICE	SOCIAL ENVIRON.	ECONOMIC ENVIRON.	NATURAL ENVIRON.		
EXPAND EXISTING SYSTEM							
WIDEN ROADS	4.1.3.1	○	○	○	○	– Expansion beyond Base Case not feasible	Base Case includes expansion of all elements of existing system to reasonable maximum
BUS–HOV LANES	4.1.3.2	◒	○	◒	○	– Not viable as standalone alternative	
GO TRAIN	4.1.3.3	○	○	◒	◒	– Does not serve internal Mississauga needs	
BUS SERVICE	4.1.3.4	◒	◒	○	◒	– Incapable of accommodating ultimate demand	
TRANSPORTATION SYSTEM MGMT.	4.1.3.5	–	–	–	–	– Considered an integral part of all alternatives	
ADDITIONAL ELEMENTS							
NEW ROADS	4.1.3.6	–	–	–	–	– No viable corridors	
BUS TRANSITWAY	4.1.3.7	●	◒	◒	●	– Viable alternative; preferred over LRT	✓
STREETCAR	4.1.3.8	◒	○	○	◒	– Insufficient capacity yet requires major road widenings	
LRT	4.1.3.9	●	◒	◒	●	– Viable alternative	✓
SUBWAY	4.1.3.10	◒	◒	○	●	– Inappropriate technology for demand level	
GO RAIL	4.1.3.11	–	–	–	–	– No viable corridors	
NON–TRANSPORTATION							
DO NOTHING	4.1.3.12	○	○	◒	◒	– Severe long–term drawbacks	
REVISE LAND USE	4.1.3.13	–	–	–	–	– Not considered an alternative "to" the undertaking; integral component of all alternatives	

● GOOD / MOST PREFERRED ◒ FAIR ○ POOR / LEAST PREFERRED

The feasibility of either alternative is conditional on the provision of a dedicated grade-separated facility, as it is only when transit vehicles are separated from mixed auto flow that a capacity adequate for the ultimate needs of Mississauga can be attained. A further consideration in the conceptual design of any facility is the protection, if feasible, for possible ultimate use of it by subway technology.

To some extent therefore, the question of technology is less important than the design of a facility that can accommodate all viable modes. Clearly, if a facility is provided based on subway-type geometric and functional standards, it would be capable of use by Bus or LRT modes, which have less stringent geometric requirements. However, there are implications of the use of either mode which extend beyond the physical envelope of a common facility.

The analysis of Transitway modes was thus undertaken for the purpose of determining which technology (Bus or LRT) is appropriate for Mississauga. This comparison between Bus and LRT technology for a Transitway-type facility has been undertaken in many cities around the world. Since local conditions vary, it is not a case of one mode being the consistent alternative of choice; the importance of selecting a system which is tailored to the needs of the community is thus emphasized. Table 21 provides an overview of the rationale used to select one mode or the other in recent planning work in a number of similarly-sized (Toronto excepted) municipalities.

Table 21 provides a useful backdrop to the current study, and illustrates LRT's advantages when adapting an existing rail corridor to mass transit use compared to the benefits of the Bus approach in the areas of operational and construction flexibility.

In analyzing the alternatives, the factors outlined in Table 19 (Section 4.1.2) were used, with more specific application of the analytical measures than was required for the initial screening of alternatives. The comparative analysis of each mode is summarized in Table 22. The analysis focused on differences between the alternatives in order to understand the tradeoffs which may be present and the rationale for choosing between the modes; detailed analysis of the net environmental impact is not shown in those areas where the impact of each of the alternatives is identical, as the net impact of either alternative has already been shown to be less than any of the other possible options.

It may be seen from a review of Table 22 that there are potentially significant cost and transportation service benefits to be gained by Bus use, and very few areas in which LRT holds a distinct advantage. On balance, considering the comparative net environmental impacts of each alternative, use of Bus technology on a dedicated Transitway is significantly superior to the equivalent LRT system in the central Mississauga context. Accordingly, the Bus Transitway alternative is recommended.

TABLE 21 - TRANSITWAY MODE CHOICE IN OTHER JURISDICTIONS

SYSTEM	TRANSITWAY MODE	RATIONALE
Ottawa, Ontario	Bus	lower cost, higher level of service (no transfers), readily staged (buses operate on street in downtown), can defer construction of costly central section
Toronto, Ontario (Eglinton West)	under study	mode which matches ultimate demand preferred
Pittsburgh, Pa.	Bus	Efficient feeder service, no transfers, operation matches demand
	LRT	reconstructed streetcar line; operating speed lower than bus due to frequent stops, heavy park and ride access to avoid transfer
Calgary, Alberta	LRT	higher capacity, use of existing rail corridor, convertible to downtown subway, higher speed, lower labour cost
Portland, Oregon	LRT	lower operating cost, higher development potential, greater public support for rail, safety, speed, reliability, pollution, noise, downtown congestion, promotional opportunity, use of existing rail corridor
Rochester, N.Y.	LRT (not implemented)	flexibility in meeting future demand with high-capacity vehicles
Halton, Ontario	under study	ability to stage, operational flexibility, and support of development / land use goals favour Bus
Adelaide, South Australia	Bus	Capital cost 50% of LRT; capacity equivalent to LRT and in excess of future demand; economic merit similar to LRT; no passenger transfer needed; no need for new construction in city centre (LRT would require tunnel; bus could operate on street); overall travel time superior to LRT (due to no transfers)

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TABLE 22 - ANALYSIS OF VIABLE ALTERNATIVES TO THE UNDERTAKING

Factor	Indicator	Measure	Alternative		Preference
			-Bus Transitway	Light Rail - Separate Facility	
1. Transportation Service	Compatibility	1. Compatibility with existing and future transit network	1. Fully compatible; flexibility of operation allows different carriers (Mississauga Transit, TTC, GO Transit, Brampton, Oakville, intercity buses) to use facility; linkage to future Eglinton West Rapid Transit line would be most compatible if bus mode used on both facilities, but transfer facility can accommodate any modal combination	1. Compatible, but less so than Bus alternative unless Eglinton West route uses high capacity LRT. Introduction of new technology to Mississauga Transit would require complete standalone infrastructure and operating procedures; other carriers would have to link to LRT facility rather than operate on it. LRT would be preferred only in the event of an areawide (GTA) consistent technology commitment; since the cancellation of the GO-ALRT program, this has not been a stated goal	Bus
		2. Compatibility with existing and future road operations / network facilities	2. Fully compatible, due to grade separation and off-road stations	2. Fully compatible, due to grade separation and off-road stations	None
	Accessibility	3. Pedestrian access	3. Similar to LRT	3. Similar to Bus Transitway	None
		4. Transit access	4. Full transit access for all carriers; buses can access and egress facility at most stations, or can transfer passengers at stations in accordance with demand.	4. Full transit access to stations for all carriers, but non-LRT vehicles cannot use guideway. Express buses (GO, intercity) would continue to operate on parallel congested roadways .	Bus
		5. Potential for private vehicle parking (park-and-ride)	5. Good park-and-ride potential at key sites	5. Good park-and-ride potential at key sites	None
		6. Potential for private vehicle drop-off	6. Good drop-off potential at stations	6. Good drop-off potential at stations	None
	Service	7. Travel time	7. On Transitway, actual vehicle operating speeds similar to LRT. Significant total time benefits compared to LRT are possible on most trips for two reasons: local buses can be routed along Transitway, then off to a destination, eliminating the need for at least one and potentially two transfers (and associated unloading, waiting, and loading times); and express routes can bypass frequent stop routes on the Transitway, maintaining an 80 km/hr speed over long segments. Both advantages are essential in providing an alternative mode to the auto which is fast enough to induce a significant modal shift to transit. Hypothetical trip time for 15.0 km trip from Erin Mills Station to Renforth Station at 80 km/hr by express bus, with minimum stop at City Centre: 12.25 minutes	7. Average passenger trip speed lower than bus, due to transfers and mandatory stops. Trip time for 15.0 km trip from Erin Mills Station to Renforth Station at average speed (with stops) of 50 km/hr and a 3-minute passenger transfer period at each end: 24.0 minutes (nearly double Bus time). Due to larger vehicles / trains, average headway would be greater than for Bus service, thereby increasing waiting times.	Bus
		8. Effects on local roads	8. Similar to LRT	8. Similar to Bus Transitway	None
		9. Reliability	9. Extremely reliable; safe in operation; flexibility to replace a vehicle in service or to divert buses in the event of a problem; maintenance can be carried out on facility without disrupting service. Conventional snow / ice removal practices may be used in adverse weather.	9. Reliable and safe in operation. Less flexibility than Bus in the event of maintenance, power failure, or on-track incident. Good operation in adverse weather	Bus
2. Social / Cultural Environment	Noise	10. Number of residents experiencing 5+dBA (Leq) increase in noise levels	10. Vehicle noisier than LRT but net environmental impact is not significant in any case due to predominance of road-based noise sources in all alternative corridors	10. Lower noise generation than bus technology, with no significant impact when applied in the context of existing and future road-based noise in central Mississauga	LRT
	Cultural	11. Number and significance of historical sites or archaeological sites affected	11. Same as LRT	11. Same as Bus Transitway	None
	Social	12. Number of properties from which land is required	12. Similar to LRT on route itself; slightly smaller stations possible; total vehicle storage requirements are slightly greater than LRT in size but yards can be located in low-cost, low-impact areas and in a number of locations spread throughout the City	12. Slightly larger station areas due to greater local / feeder bus activity; significant amount of property required in corridor for on-line vehicle storage and maintenance facility	Bus
		13. Number of residences, businesses, community, cultural or recreational features disrupted or displaced	13. Similar to LRT	13. Similar to Bus Transitway	None
		14. Number of properties with disrupted access	14. Similar to LRT	14. Similar to Bus Transitway	None
		15. Number of residents whose day-to-day community and recreational activities are disrupted	15. Similar to LRT	15. Similar to Bus Transitway	None
	Visual	16. Visual intrusion	16. Readily blends in to landscape due to similar visual character to adjacent roadways; opportunity to vary station designs to produce desired visual impact	16. More distinct visually than Bus Transitway, but with similar net impact; overhead catenary wires are drawback but LRT has better public "image" than bus	None
	Land Use	17. Compatibility with adjacent existing or future land uses	17. Flexible integration potential with adjacent development	17. Integration with adjacent development potentially more constrained than Bus (due to geometric needs and more bus activity at station). LRT has stronger image in terms of attracting commercial development but ultimate Mississauga development would occur in any case	None
	Construction Disruption	18. Number of existing residents temporarily affected	18. Similar to LRT	18. Similar to Bus Transitway	None

TABLE 22 (Cont.) - ANALYSIS OF VIABLE ALTERNATIVES TO THE UNDERTAKING

Factor	Indicator	Measure	Alternative		Preference
			Bus Transitway	Light Rail - Separate Facility	
3. Economic Environment	Capital	19. One time property acquisition costs	19. Similar to LRT for property costs for route; less cost for vehicle storage as yards can be dispersed, smaller, utilize existing facilities, and be located in areas of lower property cost	19. Higher property costs due to requirement for large contiguous storage / maintenance yard adjacent to route in central Mississauga; the high densities and land use patterns which generate LRT ridership in a corridor simultaneously make property costs in that same corridor very high	Bus
		20. One time construction costs	20. Capital construction costs in the order of $500m and vehicle acquisition costs in the order of $50 million are both substantially less than LRT	20. Similar construction costs to Bus for basic infrastructure (excavation, grading, structures, stations, drainage, etc.) but with significant additional costs due to signalling / power supply / vehicle control systems ($100m), track vs. asphalt roadbed ($30m) and storage / maintenance facilities ($80m). The total construction cost for the physical plant would be in the order of 30% - 50% greater than for a Bus Transitway, at $650 - $800 million. Vehicle acquisition costs would be very high (in the order of $200 m, or 3 - 4 times the bus cost) but could be written off over a longer term (e.g. 40 years) than for buses (18 years)	Bus
		21. Ability to stage construction costs	21. Outstanding ability to stage construction costs by advancing or deferring segments in order to match demand and constraints. Buses can operate in mixed flow, on dedicated lanes, or on dedicated roads between unconnected Transitway segments, thereby allowing complete staging flexibility. High-cost segments such as City Centre area can be deferred until development is in place to generate both demand and tax / levy revenue	21. Extremely constrained staging ability, both physically and fiscally. Facility must be built in a long and continuous initial segment to serve initial demand, well in advance of future development, ultimate demand, and tax / levy revenue. This would place a much higher load on existing taxpayers than the Bus alternative. Most of the capital cost would be "sunk" long before it could be confirmed that adequate demand and tax revenue would be generated to pay for it.	Bus
	Operating	22. On-going costs of operating and maintaining the Transitway and associated facilities	22. System-wide operating costs would be similar in magnitude to LRT, although net cost could be in the order of 30 percent lower due to: improved ability to match ridership demand patterns with service levels; less extensive and less specialized vehicle and facility maintenance; and lower debt servicing charges. This would offset the costs due to more vehicle operators than for LRT	22. LRT potential operating costs benefits stem from moving a large concentration of trips over medium distances with few stops, with walk-in / walk-off origins and destinations. This pattern is typical of a radial route serving a downtown, and describes some of the potential Mississauga trips but the diversity of travel patterns in Mississauga limits the potential operating cost savings. Overall, annual operating costs for an LRT Transitway would be in the order of $30 - $40 million, or typically 30 percent more than for a Bus system.	Bus
		23. On-going land rental costs	23. Similar to LRT	23. Property rental costs are in proportion to overall property acquisition costs, and would be similar to Bus	None
4. Natural Environment	Aquatic	24. Number of rare species affected	24. Similar to LRT	24. Similar to Bus Transitway	
		25. Amount and significance of wetlands disrupted or displaced	25. Similar to LRT	25. Similar to Bus Transitway	None
		26. Increase in downstream erosion potential	26. Similar to LRT	26. Similar to Bus Transitway	None
		27. Change in stream fisheries	27. Similar to LRT	27. Similar to Bus Transitway	None
	Terrestrial	28. Effect on wildlife	28. Similar to LRT	28. Similar to Bus Transitway	None
		29. Amount and significance of vegetation affected	29. Similar to LRT	29. Similar to Bus Transitway	None
		30. Number of rare species affected	30. Similar to LRT	30. Similar to Bus Transitway	None
	Atmospheric	31. Air quality	31. Vehicle emissions on Transitway greater than LRT; future more stringent standards for emissions will reduce the difference. Potential use of natural gas, inboard electric, or alternative fuel propulsion systems for buses	31. No vehicle emissions on route due to electric operation; some increase in associated bus emissions in areas of stations, since all feeder buses would terminate routes, transfer passengers, and layover. The net impact would still be less than the Bus Transitway alternative	LRT

The technology recommendation notwithstanding, it is appropriate to protect for the ultimate use of the Transitway by another mode at some point in the unforeseeable future. The physical implications of protection for all three possible modes - Bus, LRT, and Subway - will be considered in Section 4.3.1. The costs of conversion from bus to some other mode would be significant, and would require separate approval under the Environmental Assessment Act at such time as demand, funding, or area-wide system integration needs generate such a proposal.

4.1.6 Alternatives to the Undertaking - Public Involvement

Most of the "Alternatives to the Undertaking" phase was carried out in 1983-84 as a key element of the Mississauga Transportation Study, with broad public acceptance of the city-wide transportation concept. The previous recommendations were revisited in 1990 using updated demand modelling and current (revised) land use plans. Public support for the Bus Transitway was again evident from the verbal and written comments made during the Public Information Centres in March and June, 1990 (see Appendices A-D).

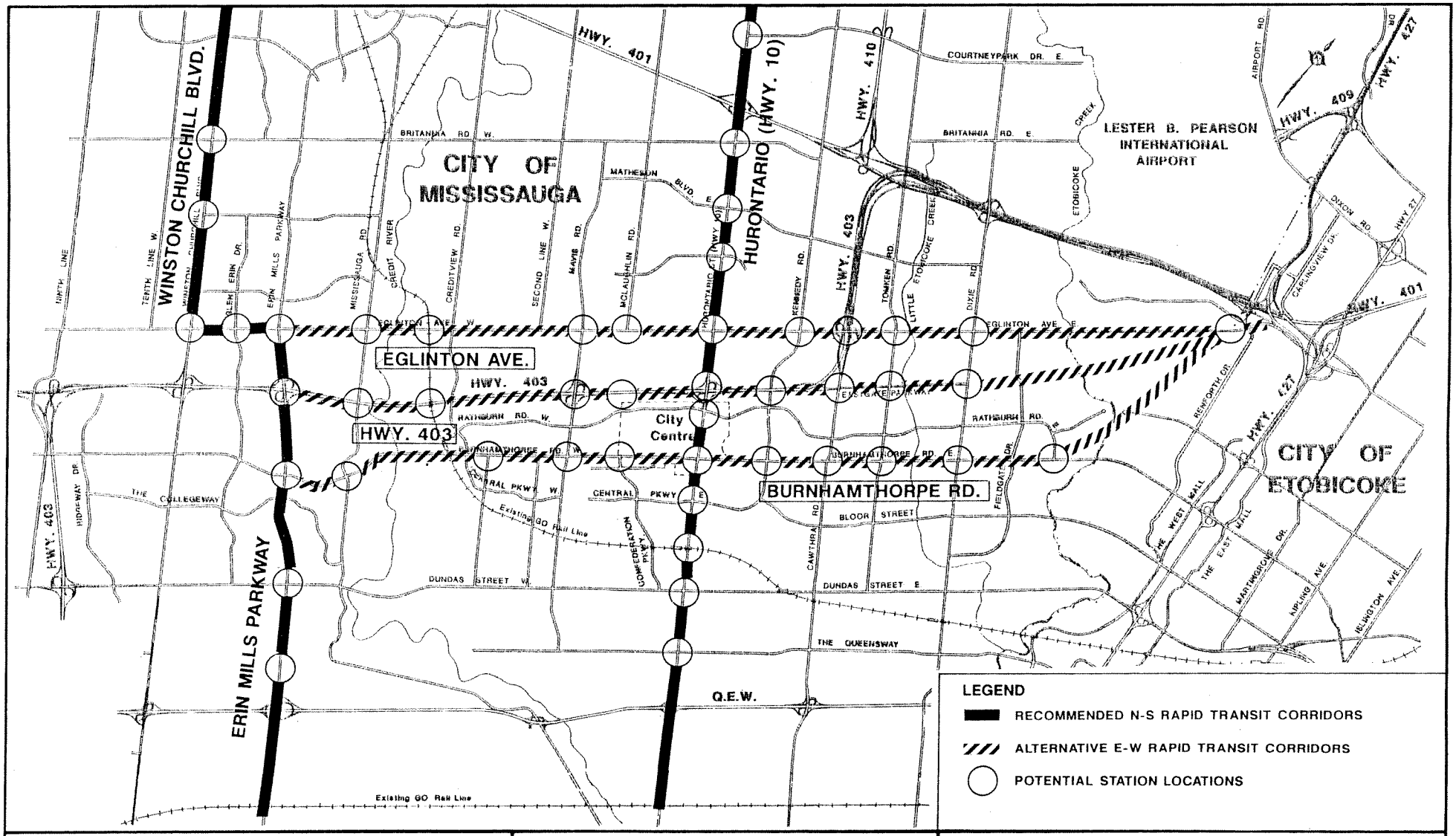
At the City Operation and Works Committee meeting in March, 1991, some corridor residents questioned Council on the need for the facility, the technology of bus vs. LRT, and the ability of various other approaches (expanded GO Rail, HOV lanes, etc.) to address the future transportation demand. These questions were revisited and addressed to the satisfaction of Council prior to it approving the recommended alternative on September 23, 1991. The discussion of these issues is documented in the minutes of the meeting in Appendix F-2.

4.2 Corridor Alternatives

4.2.1 Background

The 1985 Mississauga Transportation Study travel demand modelling assessed a variety of future development and facility scenarios, and identified a capacity shortfall in the long term for east-west trips in Central Mississauga; since this was done on a screenline basis, the recommendation of a specific corridor for any new facility was subject to further analysis. In the previous section, the adequacy and appropriateness of a bus-only rapid transit facility (the Mississauga Transitway) to serve the ultimate needs of the City was defined. In this section, the corridor in which the actual physical facility should be located will be determined. It should be noted that the original corridor analysis did not distinguish between bus or LRT modes, as the Transitway would be similar in impact for either.

The three feasible east-west rapid transit corridors in central Mississauga are the Burnhamthorpe corridor (as identified in the Official Plan), the Eglinton corridor and the Highway 403/Parkway Belt corridor. Each is illustrated in Exhibit 22. The demand forecasts for each of the three corridors (Networks 4, 5, and 6 in Section 4.1.1) showed that each attracted comparable ($\pm$ 20%) transit ridership. Consequently, other factors had more influence on the evaluation of the corridors. These included service to the City Centre; social environment; natural environment; cost; development strategy; system design and potential ridership. Development strategy refers to the degree to which one or other corridor would support future urban development initiatives in the near and long term.



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 22

0 2,000 4,000 6,000m

SCALE

RAPID TRANSIT CORRIDOR ALTERNATIVES
AS MODELLED IN THE MISSISSAUGA TRANSPORTATION STUDY (1985)

In assessing the corridors, basic assumptions were made regarding the design approach and criteria. It is fairly straightforward to determine the need for depressing the grade of any Transitway below that of the adjacent roadway: in the context of the low-to-medium density residential development along much of each corridor, at-grade intersections would interfere with the congested arterial road system and therefore preclude the ability of the Transitway to achieve an adequate level of service, while an elevated system would be extremely visually disruptive and costly. A Transitway in open cut, passing under all crossing roads was therefore the preferred concept for the purposes of this comparative analysis.

Assuming a minimum available corridor right-of-way width of approximately 45 metres, shared between an ultimate 6 lane arterial road and the rapid transit facility, the 'depressed' transitway which would underpass all crossing roadways would have to be walled over most of its length. In difficult areas such as underpassing the Cooksville Creek on Burnhamthorpe Road or underpassing the Mullett Creek on Eglinton Avenue, the rapid transit facility would have to be constructed by means of cut and cover.

Exhibit 22 highlights the fact that, in considering the east-west corridor alternatives during the Mississauga Transportation Study, the analysis was done in the context of the recommendation for (ultimately) north-south rapid transit service in key corridors).

4.2.1.1 Burnhamthorpe Road Corridor

Burnhamthorpe Road is a major four to six lane arterial spanning the width of central Mississauga, and as such has been the subject of extensive analysis and speculation regarding its potential role as a Rapid Transit corridor. It passes through the south part of the City Centre (where current development is focused) but is bordered by low density residential areas throughout most of the rest of the corridor. Some retail plazas exist along the route.

The strongest attraction of this route is the presence of a basic 50m wide right-of-way east of Erin Mills Parkway, within which a 12m wide strip along the north side has been preserved in most parts for public transit purposes on the basis of its identification in the Official Plan as a possible alignment for an Intermediate Capacity Transit System.

The ability of the corridor to serve City Centre-oriented demand is the source of most of its benefits: in doing so, development within the City Centre is supported and potential ridership is among the highest of the alternatives. However, there are major constraints on the ability to actually construct an effective Transitway in the corridor. Available right-of-way notwithstanding, the significant extent of directly abutting low density residential areas on the route, frequent cross streets, and confined corridor would require the facility to be below grade in walled cut. This would entail a significant cost premium and the ability to mitigate noise and visual intrusion would be severely constrained. Furthermore, the physical and fiscal ability to provide effective stations and transfer facilities at each key intersection on the route is questionable at this point; costly property acquisition and compromised designs would be entailed at many station sites.

In terms of natural environmental impact, the main concerns are at the various creek / river crossings; the Credit River / Mullett Creek crossing is in an extremely sensitive area, while in the east the Etobicoke Creek corridor would be one of the few options to link the Burnhamthorpe route with the Metro Toronto rapid transit network. This highlights another major problem with the Burnhamthorpe Corridor: there is no continuity at the City's eastern boundary to allow an effective link to either the Bloor Subway or the future Eglinton West Rapid Transit line in Etobicoke. Burnhamthorpe Road in Etobicoke is a four lane arterial in an established residential area, with insufficient right-of-way available for a transit facility unless an extremely expensive subway approach is chosen. Either buses would have to use surface routes, such as bus lanes on Dixie Road and Dundas Street, to reach the subway, or the Transitway would have to be routed through the Etobicoke Creek valley to the Eglinton or Dundas Corridors. Neither option is desirable.

Overall, the Burnhamthorpe Road corridor is inappropriate for a grade-separated transit facility, as it would involve high cost and significant social / environmental impact while being constrained both at station sites and in its ability to effectively link with the Metro Toronto transit network.

4.2.1.2 Highway 403 / Parkway Belt Corridor

As a broad publicly-owned linear right-of-way across central Mississauga, the Parkway Belt West currently contains Ontario Hydro lines, pipelines, Highway 403, and Eastgate Parkway. Sufficient right-of-way remains, including two continuous 30m wide strips, to accommodate a rapid transit facility, future pipelines, or other linear utilities. The corridor is bounded mainly by low density residential areas, but the corridor also borders the two major employment nodes in central Mississauga - the City Centre and the Airport Corporate Centre - and there are some adjacent properties still slated for future development.

In providing a direct link to the City Centre, the route would support the development aspirations and passenger demand of the area. Although development is currently focused on the southern part of the City Centre, this is actually somewhat of an advantage to the Parkway Belt route, as a Transitway in that corridor would be able to shape ridership patterns and integrate with future development to a much greater extent than if it were to be retrofit in an established office area.

In that the Parkway Belt corridor is the widest available path, it holds the potential to carry a facility which is least costly (since the need for depressed walled sections and cross street entrances would be minimized) and by far the least intrusive of the options on existing residents in terms of noise, visual intrusion, and proximity. Even within the corridor it is feasible to maintain a minimum 30m wide buffer zone between the Transitway and any residential property line and to buffer views through screens and/or berms.

Space is readily available within the corridor for station development with access from major cross roads, as well as potential parking facilities. The natural environmental impact is less than that of the Burnhamthorpe route at the key river crossings (mainly

due to narrower valleys to cross), but some woodlots remain adjacent to Highway 403 which could be affected by an additional facility such as a Transitway.

In the east, the route would have to swing north to the Eglinton corridor to link with the future Eglinton West Rapid Transit corridor in Etobicoke, but numerous opportunities for such a transition exist east of Fieldgate Drive since that area has not yet been fully developed. The route would be capable of direct connection to a rapid transit link to Pearson International Airport and its surrounding development from the Eglinton / Renforth area.

The potential ridership modelled for the route in the Mississauga Transportation Study was 20 percent less than that of the Burnhamthorpe corridor, but subsequent increases in planned employment of both the City Centre and Airport Corporate Centre areas combined with residential growth north of Highway 403 would be expected to increase demand to a greater extent in the Parkway Belt corridor than along Burnhamthorpe. More recent modelling has indicated a shift in ultimate peak point ridership demand west towards the Milton GO crossing at nearly 11,800 passengers per hour in the peak direction. All forecasts remain in the range of Transitway capacity.

In summary, the Highway 403 / Parkway Belt corridor is preferred in most respects over the alternative corridors available, even though some drawbacks are associated with the low density of much of the adjacent land use (e.g. social impact, limited development integration opportunities outside the two commercial core areas etc.). The ridership question can be resolved through transit operating strategies which make optimum use of the corridor.

4.2.1.3 Eglinton Avenue

Eglinton Avenue, like Burnhamthorpe Road, is a major east-west arterial route across central Mississauga. However, a transit right-of-way has never been protected in the Eglinton Avenue corridor and recent development has intensified to the point where cost-effective opportunities for Transitway provision are few. At the time of the Mississauga Transportation Study (1982-85), enough opportunities remained for the Eglinton Avenue corridor to be considered for the Transitway. Even at that time it would have been a costly project due to the constraints on right-of-way and station sites, but there was some potential to intensify land use and integrate future development with stations in the corridor.

The major drawbacks of the alternative were its decreased potential to service the City Centre compared to the other routes and the potential impact of a Transitway on the social environment in the heavily-residential corridor. It was rejected at that time in deference to the Highway 403 / Parkway Belt corridor and consequently no property protection occurred (except as part of the Parkway Belt east of Etobicoke Creek), leaving the alternative essentially physically infeasible at this time.

4.2.2 Analysis of Corridor Alternatives

Table 23 summarizes the analysis of alternative corridors for the proposed Transitway, as discussed in Section 4.2.1. As noted, neither the Burnhamthorpe nor Eglinton corridors are appropriate candidates given previous land use decisions, and consequent constraints and potential impacts associated with a new Transitway. The Highway 403 / Parkway Belt corridor is markedly superior to the alternatives in the fundamental areas of cost, social impact, and system design in any case. The Highway 403 / Parkway Belt corridor is recommended for further development of the functional Transitway plan.

TABLE 23 - SUMMARY OF ANALYSIS OF ALTERNATIVE EAST-WEST TRANSITWAY CORRIDORS

FACTOR	BURNHAMTHORPE		HIGHWAY 403/PARKWAY BELT		EGLINTON	
	ANALYSIS	RATING	ANALYSIS	RATING	ANALYSIS	RATING
SERVICE TO CITY CENTRE	Direct Connection to City Centre	●	Direct Connection to City Centre	●	Out-of-way travel; increased City Centre - Toronto travel time	◒
SOCIAL ENVIRONMENT	Mainly low-medium density residential development adjacent to r.o.w.	○	Buffered from adjacent residential development	◒	Mainly low-medium density residential development planned for corridor	○
COST* (1985 est.)	$555m	○	$325m	●	$525m	○
NATURAL ENVIRONMENT	Routing via Etobicoke Creek; sensitive crossings of Mullett Creek and Credit River	○	Minimum impact of Creek crossings	◒	Minimum impact of Creek crossings	◒
DEVELOPMENT STRATEGY	Supports City Centre development	◒	Supports City Centre; early rapid transit service to City Centre	●	Supports City Centre; potential for intensifying future corridor land use	●
SYSTEM DESIGN	Alignment constraints, construction impacts, difficult station integration difficult link to TTC	○	Few constraints or construction impacts; more space and flexibility for Stations	●	Alignment constraints, construction impacts, difficult station integration	○
POTENTIAL RIDERSHIP**	> 10,000 peak hour, peak direction trips	●	> 10,000 peak hour, peak direction trips; efficient station layout enhances demand.	●	> 10,000 peak hour, peak direction trips	●
OVERALL		○	Recommended	●		◒

● GOOD/ MOST PREFERRED ◒ FAIR ○ POOR/ LEAST PREFERRED

* Order of magnitude comparative cost only

* As modelled in the Mississauga Transportation Study; figures do not reflect subsequent land use changes and City Centre intensification

4.2.3 Corridor Alternatives - Public Involvement

The analysis of corridor alternatives was presented at Public Information Centres in 1984, and revisited during the March, 1990, and June, 1990 public review periods. The recommended corridor was generally supported, although during the course of the study some residents, both adjacent to the recommended corridor and elsewhere, suggested the facility be located in either the Burnhamthorpe or Dundas corridors in order to serve the concentration of existing demand. The information reviewed with the public and the comments generated by it are attached as Appendices A-D.

In general, there is relatively little public concern over the choice of corridor, as it is the broadest corridor and hence easiest in which to fit a new transportation facility with minimum impact. There remains, however, some unease as to the attractiveness of the corridor to riders, both compared to other routes and in an absolute sense. Much of this concern, however, is based on the current corridor conditions, and can be addressed through City Centre growth, transit operating strategies, linkage of external and internal transit routes and facilities to the corridor, and staged construction of the Transitway.

4.3 Transitway Facilities - Overview of Planning Principles

4.3.1 Design Criteria

Prior to the identification of alternative alignments, the basic elements and facilities to be included in the Transitway plan were determined.

Fundamental to the planning of the Mississauga Transitway was the selection of planning and design standards in accordance with the following goals:

- physically feasible
- adequate to provide a high level of service
- safe
- comfortable
- cost-effective
- able to convert to another mode
- flexible
- minimum impact on surroundings

These goals are consistent with those of the Ottawa Transitway, and the bulk of the design criteria used in Mississauga was based on the Ottawa experience. However, recognizing the potential for an ultimate expansion of subway-type technology to all Toronto-area rapid transit corridors, Toronto Transit Commission subway and light rail standards were also examined.

The resultant criteria used in planning the Mississauga Transitway, as summarized in Table 24 (and Appendix Q) ensure a facility capable of operating effectively as a high-capacity bus-only route and, in the long term, as a rail system. It should be noted that conversion to rail would involve reconfiguring and partial reconstruction of all Transitway stations, but that the basic alignment and structures would be unchanged.

In considering alternative criteria, it was found that little economy would be achieved by reducing standards to the minimum feasible for bus use. The only significant standard affected was the minimum horizontal radius for the Transitway, where 160 m is required for Subway and desirable for Light Rail and Buses, but either of the latter can operate at reduced speeds around a 90 m radius curve. Given that a tight curve would only likely be required in a constrained area such as the City Centre where upgrading from 90 m to 160 m in the future would be an extremely costly, if not impossible task, it was felt to be appropriate to plan for a 160 m standard radius as a minimum.

TABLE 24 : SUMMARY OF KEY TRANSIT SYSTEM DESIGN CRITERIA

DESIGN CRITERIA	MISSISSAUGA TRANSITWAY
GEOMETRIC DESIGN	
DESIGN SPEED - MAINLINE - STATIONS	80 km/h 50 km/h
MINIMUM RADIUS (STANDARD)	250 m
MINIMUM RADIUS (PRACTICE)	160 m Transitway
MAXIMUM GRADIENT - ONLINE - OFFLINE - IN STATION	3.5% Transitway 6% Ramps (5% Desirable) 0.5% Min.; 1% Max.
GRADE SEPARATION	Initial
TURNING TEMPLATE (BUS) - LOCAL PLATFORMS INTERSECTIONS, ETC...	B12R - Gateway Stations B12 / 16.8 Elsewhere
CROSS - SECTION	
VERTICAL CLEARANCE	4.7 m
LANE WIDTH	3.75 m Rural / 4.0 m Urban
RAMP WIDTH	5.0 m One Lane / 7.0 m Two Lanes
MINIMUM SECTION WIDTH (2 lanes + Shoulders)	13.0 m
SECTION WIDTH AT STATION (4 Lanes + 6m Wide Platforms)	29.0 m
FLEXIBILITY	
CONVERSION TO OTHER MODE - GOVERNING DESIGN CRITERIA	Vertical: Light Rail Horizontal: Subway Structural: Subway
STATIONS	
PLATFORM LENGTH	55 m Typ/78 m if Required
PLATFORM WIDTH - SIDE - CENTRE	4.35 m Std. / 6 m - Gateway
FARE COLLECTION	On - Bus (Possibly Off - Bus at Gateways)
VEH. / PED. GRADE SEPARATION	Transitway - Yes Local Platform - Goal
LOCAL BUS PLATFORM	Size per operational needs
TANGENT LENGTH AT STATION	150 m
VEHICLE CAPACITY (DESIGN)	90 persons
OTHER	
DESIGN CRITERIA NOT LISTED ABOVE	See Appendix Q; for details refer to Ottawa Transitway Design Manual (Jan. 1990 Draft Version)

4.3.2 Station Features and Planning Principles

4.3.2.1 Principles

The purpose of a Transitway station is to provide a convenient access and transfer point for passengers and Transitway vehicles. Stations are therefore functional in design, and are dedicated to the most efficient possible use.

In some instances, the integration of a station with buildings and nearby development is highly desirable, allowing a greater number of potential users direct access to the Transitway, while in other circumstances a large parking area can be provided as an incentive for drivers to park their cars and take transit.

The establishment of station features for the Mississauga Transitway was an iterative process, as desirable or feasible features were somewhat site-specific. Following are the basic principles underlying the station plans.

Passengers

- Kiss-and-ride (drop-off area) provisions where possible
- Sheltered waiting areas with easy access
- Passenger information facilities (display boards, electronic signage)
- Passenger safety and security
- Access provisions for physically disabled users.

Operations

- Efficient bus access to and from station
- Minimum conflicts between traffic and pedestrians
- Provision for turnarounds and layover
- Bus access to/from Transitway where possible
- Dedicated stopping areas for each connecting route
- Minimum impact on existing road system.

Physical

- Capacity to handle the passenger and operating demands for the next 30 years
- compatible with surroundings (aesthetics, adjacent development, traffic operations, environment impact, adjacent residents)

- Economic to construct (station and property cost, ability to stage)
- Capable of conversion to another mode of operation

It is important to recall that the intent of the current study is to establish a property envelope within which a Transitway system may be developed in the future. In order to do so, station locations must be identified and the property envelope defined on the basis of a realistic functional plan. Therefore, alternative functional plans were prepared for each station site and a recommended plan selected; these plans are included in the overall recommendations in Section 6 of this report. However, it is crucial to note that these plans were developed only in order to define the property envelope required, and that further refinement and development of the specific station layouts shown is expected to occur over the course of preliminary design, detail design, consultation with local residents, interaction with adjacent developers and property owners, and future involvement of the Mississauga Transitway Community Advisory Committee.

4.3.2.2 Operating Strategies

The Transitway will be an important addition to the City's transit system. It will provide a high speed east-west spine on which the bus routes can be focused for fast access to the City Centre, Central Etobicoke, Airport Area, and the Bloor Subway. The ridership levels, operating costs, and bus requirements of the Transitway will depend to a significant degree on the general operating philosophy of Mississauga Transit.

There are three general ways in which the Transitway can be operated: "through operations", "co-ordinated operations", and a hybrid called "integrated operations".

i) Option 1: Through Operations

In this option, the Transitway would be operated as an integral part of the bus route network with service on the Transitway provided by regular services which move between the Transitway and the arterial and collector street network. The bus route network would be restructured to take maximum advantage of the Transitway through the addition of new routes, and the branching or diversion of existing routes. The extent to which the bus routes can be restructured will depend on the demand and on the City's transit service strategies and standards.

The main advantages of this option are that it will reduce passenger transfers in the travel corridors containing the transitway, and will enable Mississauga Transit to have the flexibility to tailor its service levels (headways) to the demand. The main disadvantages of this option are that the service levels on the Transitway are dependent on what routes are to the Transitway (a function of the demand), and how they are to be blended to given an even spacing of buses (a function of the route structure and schedule); in the early stages while the demand is building, there could be a considerable variance in the headways within the Transitway corridor. There is also a potential problem of a lack of clarity of the route structure to occasional users; they may not know how far a bus goes along the Transitway.

ii) Option 2: Co-ordinated Operations

In this option, the Transitway would be operated separately and the arterial bus route network would be co-ordinated with it. Transitway operation would consist of one or more Transitway routes operating exclusively on all or a portion of the Transitway route on a convenient transfer basis but the major routes would cross the Transitway. In this respect the Transitway would function in a similar manner to a subway or light rail type of facility.

The main advantage of this option is that passenger waiting times will be reduced because the Transitway routes will need to provide a high frequency of service (5 minutes or better). A disadvantage of this option is that the high frequency of service might not enable Mississauga Transit to meet its service standards, particularly during the early stages while the demand is building. In addition, almost all passengers would have to transfer to and from the Transitway.

If the Transitway operates through more than one jurisdiction (such as Mississauga and Metropolitan Toronto), Mississauga Transit and the TTC would not need to integrate their operations as would be the case for Option 1. It would also act as a precursor to a line-haul rapid transit system such as an LRT line or subway extension.

iii) Option 3: Integrated Operations

Under this option the separate Transitway route or routes would provide a base service. Overlaid on top of this will be a number of routes branching on and off the Transitway; these branches on and off may be more important during the peak period than for the all day service. Some of the branching routes may operate express.

An advantage of this option is that many passengers will gain the advantages of a through ride. The overlaying of routes will also permit the capacity to be built up along the sections of highest demand. The disadvantages of this option is that, because of the combination of routes using various sections, the headway provided and the degree of loading of buses will show a variation.

iv) Preliminary Evaluation of Options

A preliminary comparison of these three options, focusing strictly on their operational merits, indicates that integrated operation is the approach most worth pursuing:

- **compatibility with grid system:** Mississauga Council has approved a basic operating strategy to provide a grid of routes within the City of Mississauga so that routes between all origins and destinations are served rather than just certain central areas. The concentration of bus routes on to the Transitway under Option 1 would take away from this concept. Option 3, Integrated Operations, would only have buses branching on and

off the Transitway where the demand was high enough so as not to degrade the operation of the grid routes.

- **number of transfers required:** Option 1 will minimize the number of transfers required. Option 2 will ensure that most passengers will have to transfer. Option 3 will be between the two.

- **matching of service to demand (operating efficiency):** Option 1 will be best in this case in that only routes meeting the service standards will be operating on the Transitway whereas some arbitrary service standards will be required under Options 2 and 3. However, it is probable that an acceptable relationship between demand and service can be reached in all scenarios.

- **consistency of service:** the integration of a large number of different routes under Option 1 will produce an inconsistency of service compared to Option 2 where the Transitway routes can be much more highly co-ordinated. Option 3 is a compromise between these two.

This is only an initial comparison of the operating strategies but it appears that Option 3, Integrated Operations, has the most promise. It is also useful to note that this is essentially the option that Ottawa has settled on, with a basic service being provided by a Transitway route overlaid by additional routes and by express operations during the peak hour. In Ottawa, a special funding arrangement with the Provincial government has been designed in order to provide a trunk Transitway service at a higher frequency than demand would otherwise warrant; this is intended to support the focus of development around the Transitway and increase its attractiveness, and has been a notable ridership success.

The implications of the various operating strategies were considered in developing the Transitway station planning principles.

4.3.2.3 Station Types

Appendix Q goes into some detail regarding the design and operation factors which were applied in the development of the Transitway stations. The key point is that a three-level hierarchy was developed to reflect the various demands placed on the stations. This stems from operational considerations, and segregated station types into major nodes, or "Gateways"; major arterial crossing locations; and minor Transitway access points.

The operational characteristics of each situation define the physical needs, and are outlined as follows:

<u>"Gateway" Type Stations</u>

The "Gateway" type stations may be assumed to have all routes, be they on the Transitway or on crossing roadways, stop at the station to allow either passenger or

route transfer between major corridors. The possibility that routes would terminate at the "Gateway" sites must be considered in developing a flexible station layout. Protection for ultimate introduction of high-order transit service on intersecting arterial corridors is required, as "Gateway" stations will each be key nodes for high-demand facilities.

"Arterial" Type Stations

"Arterial" type stations would function differently from "Gateway" stations in that some Transitway routes would skip various arterial stations while travelling express to the "Gateways", and no Transitway routes would be expected to terminate at an "Arterial" station. The frequent Line Haul Transitway service would, however, stop at each "Arterial" station. Access between the Transitway and the arterial crossing road would be necessary to allow arterial routes to travel express to and from "Gateway" stations via the Transitway. Meanwhile, all arterial routes would stop at the Transitway, then either continue on the arterial, turn around, or enter the Transitway system.

"Intermediate" Type Stations

The "Intermediate" type stations would see the Line Haul route on the Transitway stop at the station, then continue on after collecting passengers from buses using the crossing roadway. It is possible that the local route would terminate at the Transitway station, although more often it would carry on across the Transitway on the crossing roadway. No routes would enter or leave the Transitway at an intermediate station.

4.3.2.4 Functional Requirements

The operational requirements noted above translate into the functional requirements summarized in Table 25. Some other planning principles which are of note in assessing the rationale for the proposed functional station layouts are:

Relationship Between Transitway and Arterial

The Transitway will be built physically separated from all crossing roadways and railways. There is, however, a functional requirement that the two transportation systems be closely linked wherever they intersect. It is logical that Transitway stations be located in close proximity to intersecting roads, but the integrity and operation of the road system should not be compromised by the operation of the Transitway, just as the Transitway is designed to provide a transit facility free from interference from mixed traffic.

TABLE 25 - TRANSITWAY STATION FUNCTIONAL REQUIREMENTS

ELEMENT	STATION TYPE		
	GATEWAY	ARTERIAL	INTERMEDIATE
TRANSITWAY STOPS	YES	YES	YES
TRANSITWAY EXPRESS (BYPASS) LANE	YES	YES	YES
BUS MOVE BETWEEN TRANSITWAY AND LOCAL PLATFORM	YES	YES	NO
TURNAROUND ON TRANSITWAY	YES	NO	NO
TURNAROUND AT LOCAL PLATFORM	YES	YES	NO
BUS LAYOVER	YES	YES	NO
EXTERNAL BUS OPERATORS	YES	NO	NO
PARK AND RIDE	YES (EXCEPT CITY CENTRE STATIONS)	NO	NO
KISS AND RIDE	YES	YES	YES
STAFF FACILITIES (driver/inspector room, washroom, lockers, staff parking)	YES	NO	NO

A detailed analysis shows that, wherever physically feasible, Transitway station and ancillary facilities such as bus bays and passenger drop-off lots should not be located on the crossing arterial, even though a time penalty could result for those passengers on through north-south arterial bus routes which have to divert into the Transitway station.

Relationship Between Transitway Station and Surrounding Area

Although the Transitway roadway itself is to be physically separated as much as possible from all other facilities, the Transitway stations will become very much a part of their surroundings.

Those stations located in whole or in part outside the Parkway Belt have the potential to be physically integrated in the future development. Although in most cases it may be impossible to define the actual shape or use of the development, consideration of possible future station development needs is appropriate. This could include elements such as pier locations for air rights construction, integration of entrances to parking garages, pedestrian passages to below-, at-, or above-grade office or retail structure, and drainage / utility treatment.

Internal Station Layout

Property availability, adjacent development, roadway layout, and bus operation patterns vary at each station site, but the station's internal layout will be driven by the need to be flexible, functional, cost-effective, while being capable of accommodating the ultimate demands that may be put on it.

Flexibility refers to both the operation and to the potential in the long term to convert Transitway operation to Light Rail or Subway technology, or even to some other technology currently unforeseen. It should be a guiding principle of station layout for Arterial and Gateway-type stations that all bus routes entering the station have the ability to leave the station by any bus route. In a transit system such as Mississauga's that will evolve and possibly change considerably over the decades ahead, it is appropriate to protect for full routing flexibility. Bus layover areas and turnaround loops are other features that build operational flexibility into the system.

While in the station, passengers should be well-informed, feel safe, and feel proud of pleasant, clean surroundings. Architectural treatment of building materials, openness of plan, light penetration, landscaping, and minimizing of hidden or dark corners or passages are typical means of addressing these passenger needs, but consideration should be kept in mind throughout the station planning process of the user's needs. For example, short direct walking routes and minimizing use of pedestrian tunnels could be considered. The introduction of commercial or retail services in the Gateway stations (i.e. bank machines, day care centres, etc.) it is further possibility.

Passengers within the station, being dropped off or picked up, or walking to the site should be protected to as great an extent as possible from inclement weather such as snow, rain, wind, cold and heat. This implies the need for covered or enclosed pedestrian passages and waiting areas wherever feasible.

4.3.3 Parking

One of the key issues in planning a rapid transit system such as Mississauga's is the provision and extent of parking associated with it. On the one hand, the construction of a Transitway designed expressly to provide fast, convenient transit service, supplemented by an efficient grid network of surface bus routes, should result in the elimination of the need for any portion of an east-west trip in Central Mississauga to be taken by car. The elimination of parking would encourage patrons to use transit for the entire trip. This policy has been effective when applied to the Ottawa Transitway.

On the other hand, Mississauga's travel mode choices are currently dominated by the car and will continue to be so for the foreseeable future. Any measure, such as parking at stations, that makes it more convenient to get to and use transit, will be popular. As well, a significant portion of the trips entering Mississauga are by car, and should be intercepted by the transit system before the vehicles clog the roads and parking spaces at their destinations in the City. In Adelaide, the experience was that the high frequency of Transitway service compared to lower frequency feeder bus service acted as an inducement to drive to the Transitway station for system access.

In Mississauga, a further consideration is the cost-effectiveness, physical feasibility, and traffic / access impact of parking lots. The ability to provide large parking areas in the Parkway Belt depends on the availability of land already designated for another primary use, and property outside the Parkway Belt near the stations is generally prime development land (hence expensive or unavailable). The ability to access these properties without causing traffic problems, particularly in the proximity of Highway 403 interchanges, is another key issue.

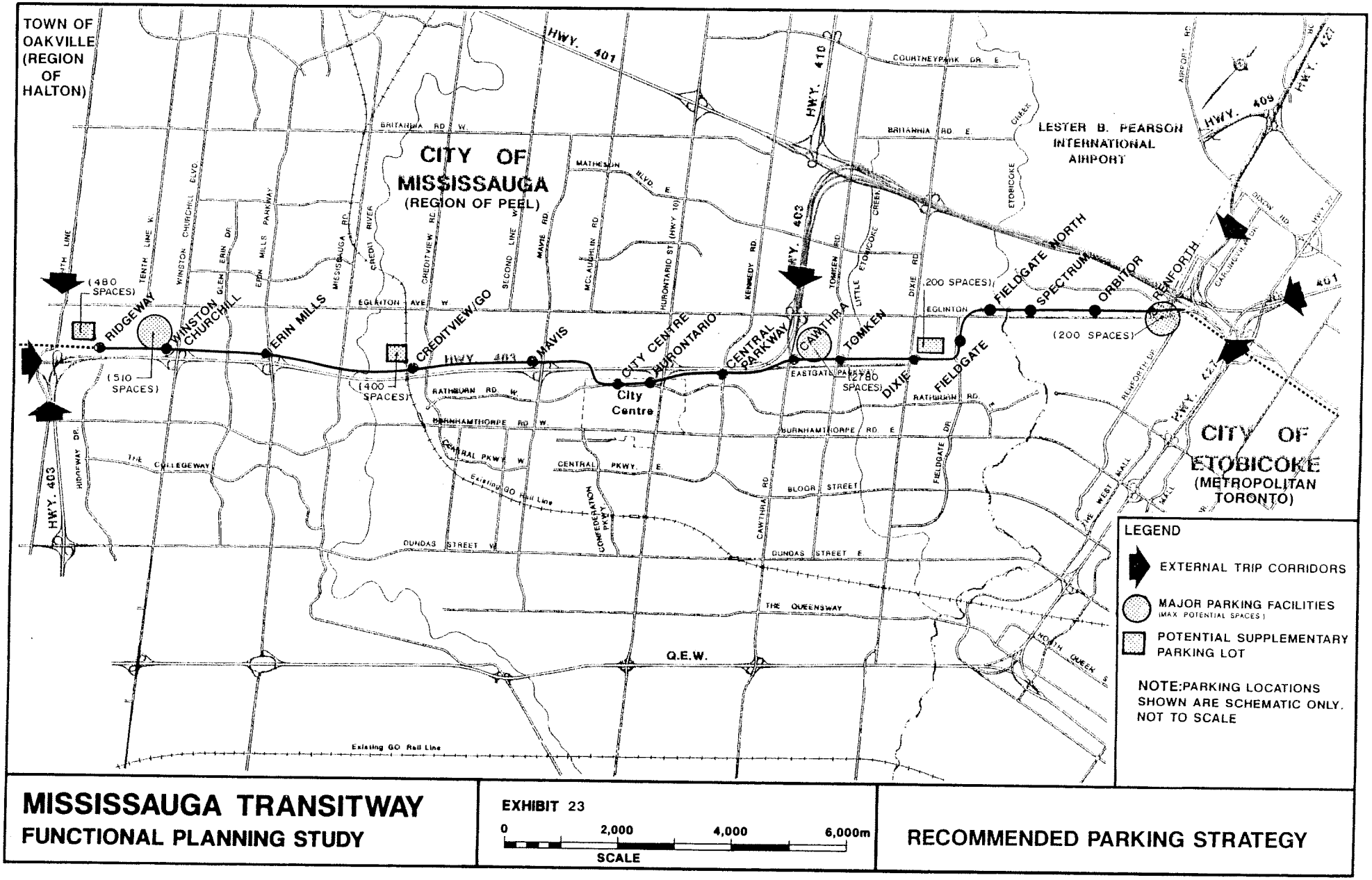
The approach taken to resolve these issues was to identify a property envelope at each station site capable of accommodating a parking area, and to assess each individually as to their merit and feasibility. Those sites deemed appropriate were incorporated in the overall Transitway plan for which approval is being sought, so that the required property is protected. Their implementation for parking use, however, would be subject to demand, policy, and cost review at the time of system operation.

Table 26 is an overview of the parking potential, analysis, and recommendations for each station site. The recommended parking strategy, as shown on Exhibit 23, comprises major parking facilities at the three key "gateways" to the Transitway, and two additional sites at which parking facilities can be protected for.

It should be noted that the demand for parking may, under some circumstances, exceed the available capacity. There are a number of ways of managing this demand, including the provision of remote lots with shuttle bus service, raising parking fees, and expanding local bus service. With these tools available, it is not expected that additional parking facilities within the Transitway corridor will be required.

TABLE 26 - PARKING ANALYSIS

Station	Potential Parking Site			Parking Analysis	Parking Recommendation
	Location	No. of Spaces (<300m from stn.)	Property Owner		
Ridgeway	Parkway Belt	620	MGS, Ontario Hydro	potential Gateway	protection required
Winston Churchill	Parkway Belt	760	MGS, Ontario Hydro, MTO	Gateway stations; major access point from Hwy. 403	protection required; may ultimately combine with Ridgeway parking
Glen Erin	N/A	N/A	N/A	Station not recommended	do not protect
Erin Mills	Parkway Belt	N/A	N/A	major transit station	do not protect; may be subject to future study
Mississauga Rd.	Parkway Belt	N/A	N/A	Station not recommended	do not protect
Creditview	Parkway Belt	N/A	N/A	parking required if GO Station relocated to connect with Transitway	do not protect at this time; reassess if GO relocation occurs
Mavis	Parkway Belt	N/A	Ontario Hydro	too close to City Centre	do not protect
Confederation	Parkway Belt	N/A	Ontario Hydro	Station not recommended	do not protect
City Centre	Square One	N/A	Hammerson	incompatible with high density urban core area	do not provide (potential remains for commercial parking on/near site)
Hurontario	Rathburn / City Centre	N/A	Hammerson, MTO	incompatible with high density urban core area	do not provide (potential remains for commercial parking on/near site
Central Pkwy.	Parkway Belt N. of 403	N/A	MGS, Ontario Hydro	minor station in residential area with no freeway access	do not protect
Cawthra	NE quadrant of 403 / Cawthra / Eastgate Parkway	2,500±	MGS, Ontario Hydro	major opportunity to focus car trips from north via 401 and 410/403; intercept City Centre-destined trips; ample property available	protect property and access; phase in according to demand
Tomken	Parkway Belt/Tomken	-	Ontario Hydro	limited land available	parking not recommended at this location. Do not protect
Dixie	Parkway Belt/Dixie	200-300	Ontario Hydro	open space available under Hydro towers	parking recommended at this location. Protect
Fieldgate	East of Fieldgate South of Eglinton	-	McClennan	land to be developed	parking not recommended at this location. Do not protect
Fieldgate North	East of Fieldgate North of Eglinton	-	McClennan	land to be developed	parking not recommended at this location. Do not protect
Spectrum Way	Spectrum / Eglinton	-	Hewlett Packard	high density development planned	parking not recommended at this location. Do not protect
Orbitor Drive	Spectrum / Eglinton	-	Dodge Suites Penreal Dev. Griffin Dev.	adjacent land developed. No surplus land	parking not recommended at this location. Do not protect
Renforth	Renforth / Eglinton	1000-2000	MGS Baif Dev. Ontario Hydro	major transit location and Gateway	reserve for parking



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 23

0 2,000 4,000 6,000m

SCALE

RECOMMENDED PARKING STRATEGY

4.3.4 Planning Principles - Public Involvement

Public involvement in the area of basic planning principles focused on the three rounds of Public Information Centres in 1990 - March, June, and November. With illustrations and videotapes of stations and facilities in other jurisdictions, as well as displays outlining the rationale for specific Mississauga recommendations, a good level of public understanding was achieved. Some who supported LRT or subway use but who realized that demand did not warrant near-term rail facilities had their concerns allayed by the recommendation for geometric standards capable of accommodating a different mode in the future.

A significant area of public concern is existing operating characteristics of Mississauga Transit (routes, frequency, reliability); the shift towards transitway-based service patterns was viewed positively. Full accessibility of stations to disabled users was supported, particularly by older residents who in some cases rely on public transit for mobility. The provision of off-line platforms, rather than bus stops on crossing arterials, was supported.

Overall, the planning principles used to develop the Transitway were accepted as being appropriate; no significant unresolvable public concerns were registered.

4.4 Station Location Alternatives

Although specific station layouts are assessed in conjunction with the alignment alternatives in the following Section, a preliminary review of the desirability of each station site is documented here so that any subsequent analysis is considered in its proper context.

4.4.1 Stations Not Recommended

The station planning principles outlined in Section 4.3.2 considered each point where a roadway crossed the Transitway corridor as a potential station site. In reviewing the sites, there were three locations where protection of property for a station is not recommended at this time. This does not necessarily preclude the stations from ever being built, since in the long term, a combination of operational requirements, passenger demands, public support, property availability, and cost-effectiveness could generate a separate recommendation to provide a station at any point along the Transitway. Such an application would be subject to the necessary approvals processes at the time. However, as part of the current recommendations, protection of property for station purposes is not recommended at the following sites:

Glen Erin Drive: the proximity to the Winston Churchill and Erin Mills major Transitway stations would obviate the need for a third station at Glen Erin Drive. Furthermore a station in that location is opposed by area residents due to the perceived potential for noise, visual, and vehicular impact. In order to protect for operational flexibility in linking the Erin Mills Town Centre and South Common Mall to the Transitway via bus routes on Glen Erin Drive, however, it is recommended that the ability to construct a bus-only ramp linking Glen Erin Drive with the Transitway be protected.

Mississauga Road: protection for a station was identified at this location throughout the public involvement process for the reason that, as a major road crossing the Transitway, Mississauga Road carries bus routes serving Streetsville and Erindale College which it would be appropriate to protect for their ability to interface with Transitway routes. However, Mississauga Road is two lane roadway, designated in part as a Scenic Route, and public concerns focused on the risk of the station attracting car and increased bus traffic. In view of the alternative routes available on Erin Mills Parkway and Creditview Road, City Council, in approving the overall Transitway alignment (September 23, 1991), specifically deleted the protection for the Mississauga Road station.

Confederation Parkway: following a detailed analysis of station opportunities and requirements in the Mississauga City Centre area (see Section 4.7.4.3 ii.) it was determined that a station at Confederation Parkway would be unnecessary to serve future transit demands. Consequently it was deleted from the plans, although the recommended alignment in the vicinity of Confederation Parkway does not preclude the ability to provide an on-line station in the long term if patterns develop in such a way that it does become desirable.

4.4.2 Key Features of Recommended Stations

The next analysis step involved applying the planning principles outlined in Section 4.5.2 to the various remaining Station sites. First, the quantifiable operational requirements at each site were determined (see Table 27), then the key features to be consequently included at each station, if physically feasible, were defined (see Table 28). These tables form the crucial input into the development and analysis of the overall Transitway alignment alternatives in the following Section 4.7.

It should be noted that these tables were developed and modified over the course of the study, and as shown here only refer to station sites which are included in the recommended plan. Thus stations on alternative alignments (in particular between Fieldgate Drive and Orbitor Drive) are not included, although they were developed and treated as Intermediate stations (similar to Central Parkway or Spectrum sites) during the analysis process.

4.4.3 Station Location Alternatives - Public Involvement

The question of station location, and more importantly, potential impact on adjacent areas, was a key issue throughout 1990 and 1991, extending over the four rounds of public involvement and the municipal approvals process. Every potential station site was subject to intense scrutiny by adjacent and affected property owners, and the recommendations reflect their input.

It was generally agreed that stations would be required at each major arterial and in the City Centre. The two areas where questions arose were on secondary arterials and

TABLE 27 - MISSISSAUGA TRANSITWAY STATION DESIGN CHARACTERISTICS

Busway Station	Likely Passenger Demand Characteristics at Busway Station[1]				Expected Characteristics of Connecting Routes[2]			Platform/Bus Stop Requirements by Direction [3]				Desirable Station Type[4]
								Mississauga Transit		Other Carriers		
	Through Demand Across Busway	Transfer Demand between Connecting	Demand To/From Busway Corridor	Potential Walk-in Demand	Operate Across Busway	Turnaround at Busway	Operate onto Busway	Connecting Routes	Busway Routes	Connecting Routes	Busway Routes	
Ridgeway	Low	Low	Medium	Medium	Possibly	Yes	Possibly	1	1			On or off street
Winston Churchill	Low	Low	Medium	Medium	Yes	Yes	Yes	2	2	2	1	Off street
Erin Mills Parkway	Medium	Low	High	Low	Yes	Yes	No	2	3			Off street
Erindale/Creditview	Low	High	Medium	Medium	Unlikely	Yes	Yes	3	5			On or off street
Mavis	Low	Low	Low-Med	Low	Yes	Yes	Possibly	1	3			On or off street
City Centre	n.a.	High	High	High	No	Yes	Yes	20	10	2	1	Off street
Hurontario	High	High	High	High	Yes	No	Yes	2	3	1		Off street
Central Parkway	Low	Low	Low	Low	Yes	No	No	1	3		1	On street
Cawthra	Low	Low	Medium	Low	Yes	Yes	Yes	1	3	2	1	Off street
Tomken	Low	Low	Medium	Low	Yes	Yes	Yes	1	3			Off street
Dixie	Medium	Medium	Medium	Medium	Yes	Yes	Yes	2	3	1	1	Off street
Fieldgate	Low	Low	Low	Medium	Yes	No	No	1	3			On or off street
Fieldgate North	Low	Low	Medium	Medium	No	No	Yes	1	3	—	—	On street
Spectrum	n.a.	n.a.	Medium	High	No	No	No	1	3			On street
Orbitor	n.a.	n.a.	Medium	High	No	No	No	1	3			On street

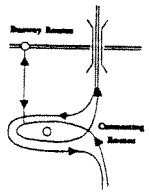
(1) Passenger demand characteristics are the estimated passenger volumes during the AM peak hour for the year 2021 expressed as:

Low under 500 passengers/hour on the buses, under 100 walk-ins/hour
Medium 500-2,000 passengers/hour on the buses, 100-200 walk-ins/hour
High over 2,000 passengers/hour on the buses, over 200 walk-ins/hour

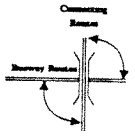
(2) The buses on the connecting routes at the busway station would stop at the station. Depending on the demand, some buses would proceed across the busway to other destinations, some buses would turnaround at the station, and some buses would operate onto the busway.

(3) The platform or bus stop requirements are the facilities for accommodating passengers boarding and alighting the buses on the connecting routes (either passing through or terminating at the station) and on the busway routes (either passing through or branching on to the busway at the station).

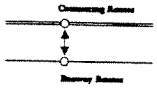
(4) Desireable station types include:



Off Street Station



On Street Station (Crossing Routes)



On Street Station (Parallel Routes)

TABLE 28 - MISSISSAUGA TRANSITWAY DESIRABLE STATION FEATURES

	Kiss & Ride Area	Parking Area	Busbays on Local Street	Off street Bus Turnaround and Layover Area	Ramp to and from Busway
Ridgeway	Yes(1)	Yes(1)	Yes	Yes	Yes
Winston Churchill	Yes(1)	Yes(1)	No	Yes	Yes
Erin Mills Pkwy.	No	No	No	Yes	Yes
Creditview	Yes	Yes	Yes	Yes	Yes
Mavis	Yes	No	No	Yes	Yes
City Centre	No	No	No	Yes	Yes
Hurontario	No	No	Yes	Yes	Yes
Central Parkway	No	No	Yes	No	No
Cawthra	Yes	Yes	No	Yes	Yes
Tomken	Yes	No	Yes	Yes	Yes
Dixie	Yes	Yes	Yes	Yes	Yes
Fieldgate	Yes	No	Yes	Yes	Yes
Fieldgate North	No	No	Yes	No	No
Spectrum	No	No	Yes	No	No
Orbitor	No	No	Yes	No	No
Renforth	Yes	Yes	No	Yes	Yes

Notes

(1) Because of the proximity of the Ridgeway and Winston Churchill Stations, only one parking facility would be required for both stations.
(2) Depends on the location of the station.

station locations within the two major employment concentrations. In consultation with local residents, the Glen Erin station was dropped prior to the Public Information Centre in 1991, while City Council responded to local residents' concerns by deleting the Mississauga Road Station from the recommended plan in September 1991. The number and location of stations in both the City Centre and Airport Corporate Centre areas were mainly a function of the Transitway alignment and physical feasibility, but extensive consultation with developers and property owners in both areas occurred in order to generate acceptance, understanding, and support. The flexibility of stations to respond to future development initiatives is a key to their success in the two major centres on the route. The role of the Renforth Station in relationship to a potential link to the Airport, and in providing an interface between the Mississauga and Metro Toronto systems is still under study; the station's final layout will depend on external input, timing, and the ability to capitalize on development integration opportunities.

4.5 Development and Analysis of Transitway Alignment Alternatives

4.5.1 Background

Alternative alignments, or at least corridor options, for the Mississauga Transitway have been considered for two decades, and advance planning was carried out in some parts of the recommended corridor from the early 1980s onward in response to local needs (e.g. City Centre and Eastgate Parkway areas). This section brings together the previous work along with the development of alternatives throughout the remainder of the corridor, so that the analysis of alternatives may be presented in a comprehensive way.

It must be recognized that, within the recommended corridor, it is not simply a case of "north of 403" versus "south of 403"; there are in fact distinct segments of the Transitway, each to a significant degree independent of the alignments of the adjoining sections. This is because each segment is connected to the next at a station, which acts as a common node. Since there are generally far greater constraints on station locations than there are on the Transitway alignment between stations, and, from a user's point of view, the stations "are" the Transitway, station siting played a large role in the development and analysis of alternative alignments.

There are seven distinct Transitway segments to consider when reviewing the first set of alignment concepts put forward:

1) Ridgeway Drive to Mavis Road
2) Mavis Road to Confederation Parkway
3) City Centre
4) Hurontario Street to Cawthra Road
5) Eastgate Parkway (Highway 403 Arterial Extension)
6) Fieldgate Drive to Orbitor Drive
7) Orbitor Drive to Renforth Drive

Segments 3) and 5) were subjects of previous separate studies, and it should be noted that their respective recommendations were known prior to the development of alignment alternatives in the remainder of the corridor.

4.5.2 Preliminary Alignment Concepts

4.5.2.1 Alternative Alignments

In the Parkway Belt West corridor, there are several alignment possibilities to consider. These range from utilizing available linear strips of property such as the designated "Utility" and "Transit" corridors (per the Parkway Belt West Plan) to joint use of corridors occupied by existing facilities such as Highway 403 and Ontario Hydro. Additional opportunities beyond the Parkway Belt limits occur in the City Centre area and east of Fieldgate Drive.

The following Exhibits 24 to 29 illustrate the alignment concepts first developed and reviewed by the public at Information Centres in March 1990. The plans are interspersed with the analysis tables for each segment, as described in the next Section 4.5.2.2.

4.5.2.2 Analysis of Alternatives

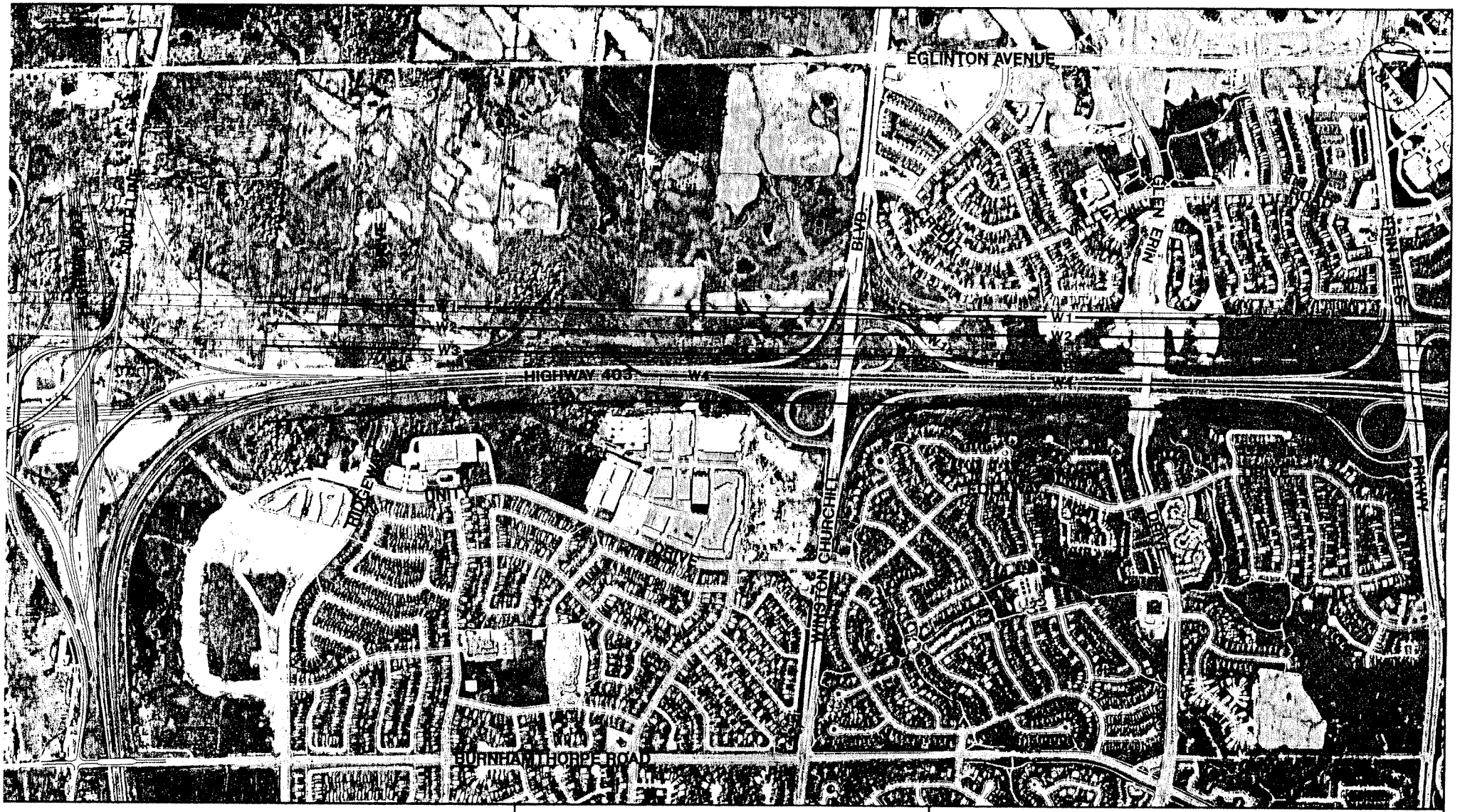
The analysis of the alternative conceptual alignments was necessarily carried out at an "overview" level of detail. It was intended to use the analysis only to screen out fundamentally infeasible or inappropriate routes and to identify those which were worth carrying forward to a more detailed level of analysis. The analysis was not used at this stage to compare one alternative against another or to prioritize options. As part of a consistent approach to analyzing alternatives, the same factors as were used to compare modes were applied (see Table 19 in Section 4.1.2). However, the different issues present and the different scope / level of detail of the analysis implied using the factors in a slightly different manner.

To that end, broad analysis categories were used:

- Transportation Service
- Natural Environmental
- Social - Cultural Environment
- Land Use / Development Opportunities
- Cost

The method of tabulating the analysis varied slightly in each area, reflecting the unique conditions and issues present in each section. The land use category was made a distinct category at this level of the analysis in order to focus on the land use and development issues specific to the recommended corridor.

A "key issues" column was included in the analysis tables in order to provide a focus on the basic rationale to set aside or carry forward an alternative. The analysis tables follow (Tables 29 to 33), corresponding to the section plans shown in Exhibits 24 to 29.



MISSISSAUGA TRANSITWAY

EXHIBIT 24

0 250 500 750 1000

SCALE

ALTERNATIVE ALIGNMENTS

NINTH LINE – ERIN MILLS PARKWAY

MISSISSAUGA TRANSITWAY

EXHIBIT 25

0 250 500 750 1000

SCALE

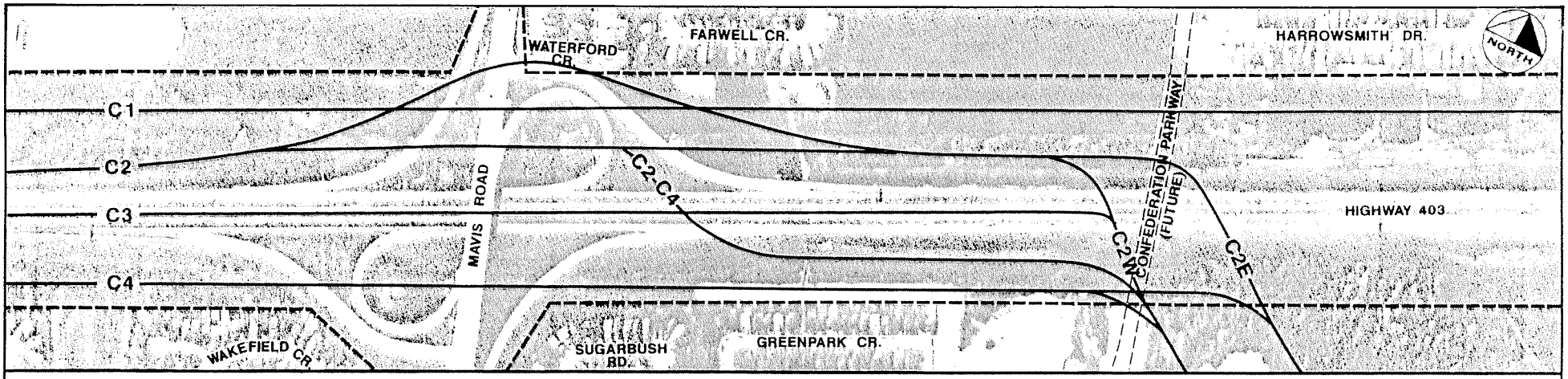
ALTERNATIVE ALIGNMENTS

ERIN MILLS PARKWAY – MAVIS ROAD

TABLE 29 - ANALYSIS OF ALTERNATIVE CONCEPTUAL ALIGNMENTS - NINTH LINE TO MAVIS

NINTH LINE TO MAVIS (SEE EXHIBITS 24 AND 25)

Alignment Alternative		Analysis Factor							
		Transportation Service			Natural/Social Environment	Land Use and Development	Cost (order of magnitude construction cost for comparison purposes only	Key Issues	Carry Forward
No.	Description	Transit Service	System Design	Staging					
W1	Transportation Corridor	• good online service • conveneint station location • convenient access to residential development • good traansfer opportunities between local and transitway services	• constrained station locations • impact on interchange ramps • alignment W1 coincident with W3 east of Mississauga Road	• easily staged	• adjacent to residential development • high perceived noise and visual impact • impact on Mullet Creek • impact on Credit River and Credit River Valley	• integrated station development at Winston Churchill • maximum impact on adjacent residential development Winston Churchill to Mississauga Road	• $135m (including Glen Erin Drive Station)	• proximity to residences	Yes
W2	Hydro Corridor	• good online service • fair station location and access • good transfer opportunities between local and transitway services	• good horizontal alignment geometry for transitway • poor vertical alignment geometry will impact on Hydro tower foundations • additional structures required at interchange ramps	• some opportunities	• major disruption to Ontario Hydro's existing and future operations • limits Ontario Hydro's flexibility • visible in open cut • perceived noise impact • impact on Mullet Creek • impact on Credit River and Credit River Valley	• limited opportunity for development • location of station building constrained by overhead high tension cables	• no detailed cost estimate • cost range between those of alignments W1 and W3	• major impact on Ontario Hydro (not acceptable to Ontario Hydro) • proximity to residences	No
W3	Utility Corridor	• good online service • good transfer opportunities between local and transitway services	• flexibility for station location • similarity with alignment of Hwy. 403 localises/mitigates impacts • additional structures, required at interchange ramps • grade separation of ramps/ transitway determine profile	• some opportunities • must be coordinated with operation of Hwy. 403 ramps	• removed from residential development but visible at certain locations • adjacent to Hwy. 403, localises impacts at Mullet Creek and Credit River bridge • impact on Mullet Creek • impact on Credit River and Credit River Valley	• limited opportunity for development	• $176 m (including Glen Erin Drive station) • requires additional ramp structures • requires deeper profile in order to cross under ramp structures • requires extensive rataining walls	• impact on interchange ramps • cost	Yes
W4	Hwy. 403 Median	• good online service • poor access to transitway • poor transfer opportunities between local and transitway services • poor kiss and ride and parking opportunities • buses cannot be easily "short-turned"	• required crossing of Hwy. 403 • difficult to provide stations • affects MTO plans to widen highway • kiss and ride and parking would be remote (200-250m) from transitway	• easily staged (if MTO does not want to maintain potential for widening)	• removed from residential development • least incremental noise and visual impact • least impact on Mullet Creek and Credit River	• no opportunity for development	• no detailed cost estimate • cost range between those of alignments W1 and W3	• MTO flexibility • transitway operation	No
W5	South side of Hwy. 403	• good online service • station locations and access difficult to provide • convenient walk in location • poor kiss and ride and parking opportunities • buses cannot be easily "short-turned"	• constrained station locations • difficult to provide stations • kiss and ride and parking would be remote (220-300m) from transitway • conflict with planned service road - Mavis to City Centre	• some opportunities • must be coordinated with operation of Hwy. 403 ramps	• adjacent to residential development • major perceived noise and visual impact • major impact on vegetation • impact on Mullet Creek, Credit River and Credit River Valley	• limited opportunity for development • in conflict with existing land use	• no detailed cost estimate • cost range between those of alignments W1 and W3	• proximity to residences • environmental impact • imcompatible with planned service road - Mavis to City Centre	No



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 26

0 250 500m

Scale 1:5000

LEGEND

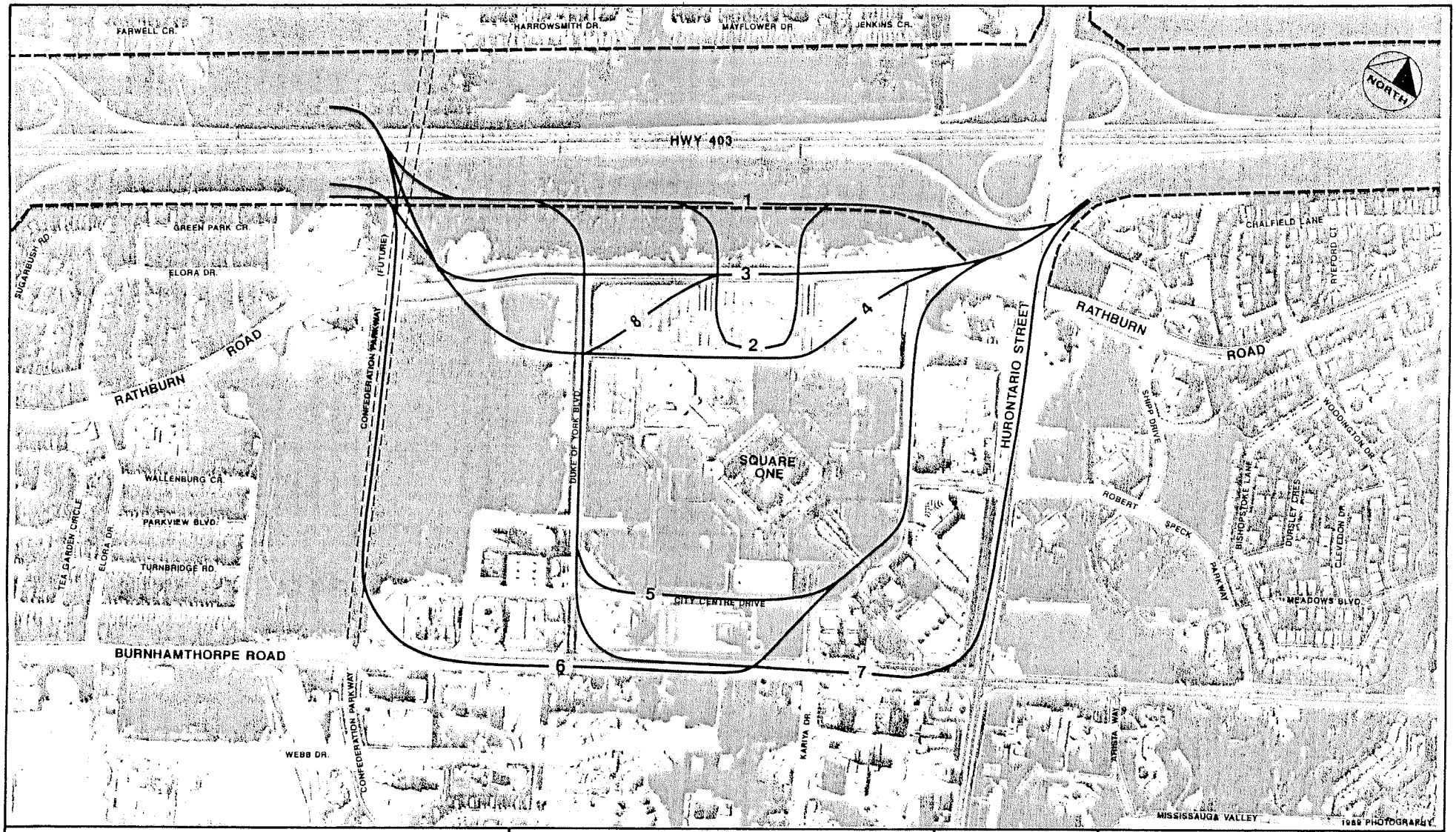
— ALTERNATIVE ALIGNMENTS

-- PARKWAY BELT

ALTERNATIVE ALIGNMENTS
MAVIS ROAD TO CONFEDERATION PARKWAY

TABLE 30 - ANALYSIS OF ALTERNATIVE CONCEPTUAL ALIGNMENTS - MAVIS TO CONFEDERATION (SEE EXHIBIT 26)

ALIGNMENT ALTERNATIVE		ANALYSIS FACTOR						CARRY FORWARD
NO.	DESCRIPTION	TRANSPORTATION SERVICE	NATURAL ENVIRON.	SOCIAL-CULTURAL ENVIRONMENT	LAND USE AND DEVELOPMENT	COST	KEY ISSUES	
C1	Ontario Hydro Corridor	- Interferes with Confederation and Mavis interchanges - Station cannot be located in overhead Hydro corridor - Constrained Transitway alignment	- Avoids woodlot	- Close to single-family residences; need noise / visual barrier	- Major disruption of Ontario Hydro property	- High property cost - Hydro tower / oil pipeline relocation	- Hydro disruption - proximity to residences	No
C2	Adjacent to north side of Highway 403	- Alignment suits situation locations at Mavis and Confederation - Potential interference with interchange operation	- Partial loss of woodlot	- As far as possible from existing homes - Can provide berm barrier - Disruption to parts of Ontario Hydro property only	- Low impact	- Property cost minimized - Potential impact on pipelines	- Transitway Station minimized - operation and layout at interchanges	Yes
C2W	Highway 403 crossing west of Confederation Parkway	- Transitway station on Confederation Pkwy. nearly precluded; station location would be at Rathburn / Prince of Wales intersection - If no station, sharp curves are located in high-speed Transitway segment	- No significant issues	- Proximity of future high density residential south of Hwy. 403 / west of Confederation Pkwy.	- Impact on ability to develop property south-west of Highway 403 / Confederation	- Additional length of covered Transitway in City Centre - Property severance at Rathburn Rd.	- High cost - No station at Confederation Parkway	Yes
C2E	Highway 403 crossing east of Confederation Parkway	- Transitway station may be located at Confederation north of Highway 403 - Station would serve only Confederation bus transfers and area north of Highway 403	- No significant issues	- Proximity of station to residential area north of Highway 403	- Impact on future development parcels at Prince of Wales Drive	- Realign planned Prince of Wales to minimize block severance - Minimize length of covered Transitway in City Centre - Additional structures at Confed. inter.	- Need for a station at Confederation Parkway	Yes
C3	Highway 403 Median	- Transitway access very difficult for buses and pedestrians - Station functions must be split or eliminated - Significant impact on freeway interchanges	- Partial loss of woodlot with highway relocation	- Highway shifted closer to homes	- Major impact on Highway 403	- Reconstruction of half of Hwy. 403 and all crossing structures - High cost of construction Transitway	- Cost - Stations - No benefits compared to alternatives	No
C4	South of Highway 403	- Station at Mavis Road infeasible; no property available and no access possible	- Loss of woodlot and berm	- Immediately adjacent to residential areas; noise barrier required - Conflict with acceptance of South Service Road	- Major impact	- No utility interference - No highway crossing cost - High cost of Mavis structures - Very high cost if Mavis Station to be provided	- Inability to provide Mavis Station - Proximity to residences	No
C2 - C4	Highway 403 crossing east of Mavis Road	- Improvement on C4 - Mavis Station is provided - No station feasible at Confederation Pkwy. - Constrained alignment for freeway crossing	- Avoids woodlot	- Proximity to existing homes south of Highway 403 - Would remove berm; noise barrier required	- Minor impact	- Back-off alternative if Hydro-pipeline costs for C2 are too high	- Proximity to residences	Yes



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 27

0 250 500m

SCALE

LEGEND

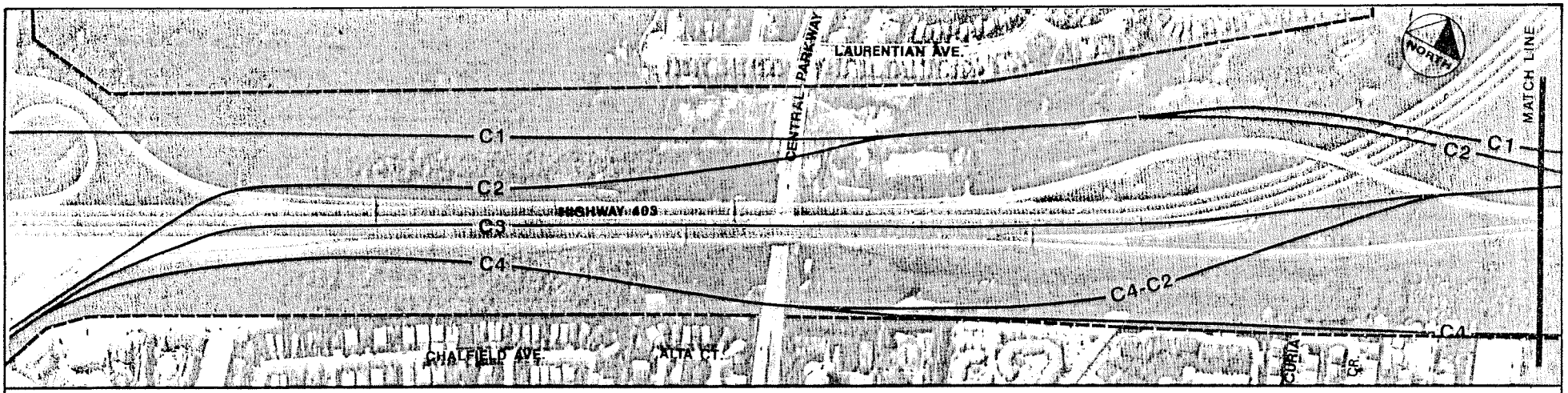
— ALTERNATIVE ALIGNMENTS

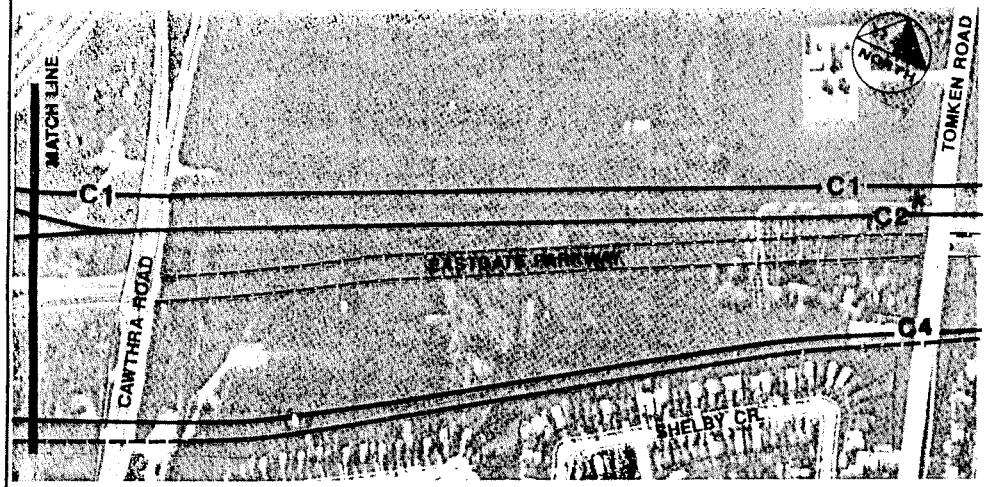
– – PARKWAY BELT

ALTERNATIVE ALIGNMENTS
MISSISSAUGA CITY CENTRE

TABLE 31 - ANALYSIS OF ALTERNATIVE CONCEPTUAL ALIGNMENTS - MISSISSAUGA CITY CENTRE (SEE EXHIBIT 27)

ALIGNMENT ALTERNATIVE		ANALYSIS FACTOR							CARRY FORWARD?
		TRANSPORTATION SERVICE			Natural/Social Environment	Land Use and Development	Cost (order-of-magnitude construction cost, for comparison purposes only)	Key Issues	
No.	Description	Transit Service	System Design	Staging					
CC1	403 Corridor	• 25% of City Centre jobs within 300m • 50% of jobs within 600m • high shuttle use required	• good for Transitway • poor for surface transit • severely constrained Hurontario station	• readily staged	• minor impact • potential for some visibility and noise impact in open cut	• minimum disruption • minimum positive impact on fringe of City Centre	• $20m • Highest cost for supplementary surface transit shuttle	• inadequate service to City Centre	NO
CC2	403 Loop	• 27% of jobs within 300m • 53% of jobs within 600m	• restrictive Transitway geometry • severely constrained Hurontario Station	• some opportunities	• potential for some visibility and noise impact in open cut area	• significant property impact in high density zone • some development integration opportunities	• $50m	• High cost entailed for a minor improvement on Alt. 1 station location	NO
CC3	Rathburn	• 31% of jobs within 300m • 56% of jobs within 600m • direct link to Square One extends walk-in area • balances through and local demand	• flexible alignment at west end • fair Transitway geometry	• some opportunities	• route covered and in undeveloped area; construction impact minor	• Few constraints • significant opportunities for integrated development	• $65m	• Optimum balance between City Centre-destined and through needs	YES
CC4	Square One	• 32% of jobs within 300m • 63% of jobs within 600m • increased diversion of through trips	• similar to Alt. 3	• some opportunities	• route covered and in undeveloped area; construction impact minor	• Some property severances • significant opportunities for integrated development	• $75m	• Property impact unacceptable	NO
CC5	Duke of York / City Centre Drive	• 30% of jobs within 300m • 86% of jobs within 600m • good service to City Centre but significant diversion of through trips	• constrained alignment • role of citywide Transitway compromised by diversion • duplicates Hurontario corridor	• limited opportunities	• significant construction disruption in developed areas	• some constraint on development opportunities due to existing development	• $100m	• high cost and diversion of through traffic	NO
CC6	Confederation / City Centre Drive	• 4 stations required to serve City Centre • good service to entire City Centre; shuttle needs diminished • significant diversion of through trips	• constrained alignment • role of citywide Transitway compromised by diversion • duplicates Burnhamthorpe / Hurontario services	• limited opportunities	• significant construction disruption in developed areas	• significant opportunities for integrated development	• significantly greater than $100m	• high cost and diversion of through traffic • duplication of transit corridors	NO
CC7	Duke of York / Hurontario	• Good service to entire City Centre; shuttle needs diminished • significant diversion of through trips	• constrained alignment • possible link with Hurontario transit corridor • duplicates Burnhamthorpe / Hurontario service	• Limited opportunities	• Significant construction disruption in developed areas	• significant opportunities for integrated development	• greater than $100m	• high cost and diversion of through traffic • duplication of transit corridors	NO
CC8	Rathburn South (4/3)	• combination of alts. 3 and 4	• constrained alignment	• some opportunities	• route covered and in undeveloped area; construction impact minor	• some property severances • significant opportunities for integrated development	• $75m	• property impact unacceptable • service little different from alt. 3	NO





*NOTE: ALIGNMENT C2 PREVIOUSLY RECOMMENDED EAST OF CAWTHRA ROAD.
(Highway 403 Arterial Extension Planning Study, 1988)

MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 28

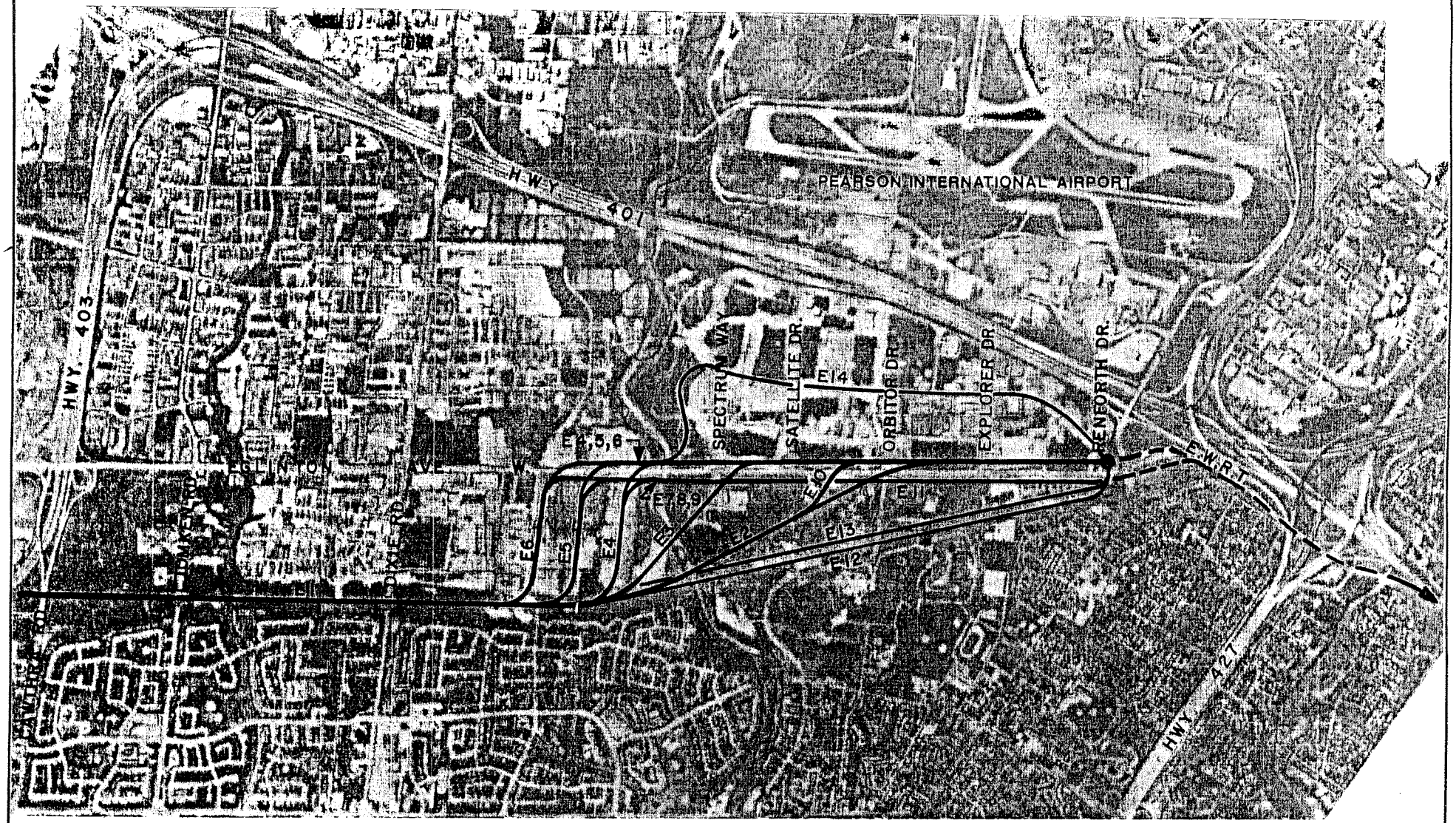
0 250 500m

LEGEND
- ALTERNATIVE ALIGNMENTS
- PARKWAY BELT

ALTERNATIVE ALIGNMENTS
HURONTARIO STREET TO CAWTHRA ROAD

TABLE 32 - ANALYSIS OF ALTERNATIVE CONCEPTUAL ALIGNMENTS - HURONTARIO TO CAWTHRA (SEE EXHIBIT 28)

ALIGNMENT ALTERNATIVE		ANALYSIS FACTOR						CARRY FORWARD
NO.	DESCRIPTION	TRANSPORTATION SERVICE	NATURAL ENVIRON.	SOCIAL-CULTURAL ENVIRONMENT	LAND USE AND DEVELOPMENT	COST	KEY ISSUES	
C1	Ontario Hydro Corridor	- Station cannot be located in Ontario Hydro at Central Parkway - Creates maximum envelope for Hwy. 403 collector basketweaves - Constrained Transitway alignment	- Avoids woodlot	- Close to single-family residences; need noise / visual barrier	- Major disruption of Ontario Hydro property - Impact on pipeline corridor	- High property cost - Hydro tower / oil pipeline relocation	- Hydro disruption - proximity to residences	No
C2	Adjacent to north side of Highway 403	- Provides good alignment and station potential at Central Parkway - Skirts property envelope required for Hwy. 403 collector basketweaves	- Impact on woodlot on north side of freeway	- Visibility from homes north of Hydro corridor, berm / barrier may be required	- Impact on pipeline corridor - Major constraint on future Highway 403 expansion	- Two freeway crossings required	- Protection for collector roadways - Freeway crossings	Yes
C3	Highway 403 Median	- Difficult to provide a station at Central Pkwy. - Minimizes constraints on Higwhay 403 collector basketweaves - Affects freeway alignment	- Loss of woodlot and berm due to Highway relocation	- Highway shifted closer to homes	- Major impact on Highway 403	- High cost for reconstruction of half of Hwy. 403 - High cost of Transitway construction - Two skewed freeway crossings required	- Lack of benefit relative to alternatives - High cost	No
C4	South of Highway 403 crossing east of Confederation Parkway	- Constrained alignment & station at Central Pkwy. due to Highway 403 collector basketweaves	- Loss of woodlot and berm	- Close proximity to residences in vicinity of collector if basketweave required - Barrier required	- Low impact	- No utility interference - No freeway crossings - Cost in section minimized	- Lowest Cost - Closest proximity to residences - Woodlot protection	Yes



LEGEND ● STATION LOCATION
E.W.R.T.-EGLINTON WEST RAPID TRANSIT (PROPOSED)

MISSISSAUGA TRANSITWAY FUNCTIONAL PLANNING STUDY	EXHIBIT 29	ALTERNATIVE ALIGNMENTS CAWTHRA ROAD TO RENFORTH DRIVE EAST SECTION

TABLE 33 - ANALYSIS OF ALTERNATIVE CONCEPTUAL ALIGNMENTS - CAWTHRA TO RENFORTH

(SEE EXHIBIT 29)

ALIGNMENT ALTERNATIVE		ANALYSIS FACTOR						CARRY FORWARD
NO.	DESCRIPTION	TRANSPORTATION SERVICE	NATURAL ENVIRON-MENT	SOCIAL-CULTURAL ENVIRONMENT	LAND USE AND DEVELOPMENT	COST	KEY ISSUES	
E1	Utility Corridor • Cawthra to Fieldgate between Eastgate Rd. and Hydro Corridor	• During the Hwy. 403 Arterial Extension (Eastgate Dr.) studies a variety of options were evaluated in detail and subjected to an exhaustive public consultation process. A preferred alignment was selected and no new alternatives have been considered.						Yes
E2	• North side of transportation corridor to north side of Eglinton.	• Follows protected transportation corridor to Renforth Gateway. • Limited service to Airport Corporate Centre.	• Partial loss of major woodlot.	• Slight impact on Centennial Golf Course. • Medium proximity to residences south of Hydro Corridor.	• Limited impact on private property. • Slight impact on Centennial Golf Course.	• Low-Medium property cost. • Shorter alignment.	• Woodlot impact. • Impact on Golf Course. • Proximity to residences.	Yes
E10	• Similar to E2 to north side of Eglinton west of gas station.	• Follows protected transportation corridor to Renforth Gateway. • Provides medium service to Airport Corporate Centre.	• Partial loss of major woodlot.	• Medium proximity to residences south of Hydro Corridor.	• Limited impact on private property.	• Low-Medium property cost. • Shorter alignment.	• Woodlot impact. • Proximity to residences.	Yes
E3	• Diagonally NE from Fieldgate/ Hwy. 403 corridor through vacant land to north side of Eglinton.	• Provides good service to Airport Corporate Centre.	• partial loss of major woodlot.	• Medium proximity to residences south of Hydro Corridor.	• Medium impacts on private property. • Splits lots currently undeveloped.	• Medium property cost. • Medium alignment length more costly.	• Woodlot impact. • Property impact. • Proximity to residences.	Yes
E4 E5 E6	• North from Hydro corridor parallel to Fieldgate to north side of Eglinton. Three locations indicate flexibility within vacant lands.	• Good service for Airport Corporate Centre. • Station can be provided to serve future development on vacant land.	• Minimal.	• E4 in medium proximity to residences south of Hydro corridor.	• Property required to accommodate busway. • Can be designed to fit the development.	• Longer alignment more costly. • Higher property cost.	• Acquisition of private property.	Yes
E7 E8 E9	• North from Hydro corridor parallel to Fieldgate to south side of Eglinton. Three locations indicate flexibility within vacant land.	• Good service for Airport Corporate Centre. • Station can be provided to serve future development on vacant land.	• Minimal.	• E7 in medium proximity to residences south of Hydro Corridor.	• Property required to accommodate busway. • Can be designed to fit in development.	• Longer alignment more costly. • Higher property cost.	• Acquisition of private property.	Yes
E11	• South side of Eglinton Avenue to Renforth in combination with other options E3, E4, E5, E6, E2, E10.	• Limited to good service to Airport Corporate Centre depending on combination of alignments.	• Partial loss of major woodlot if E2, E10, E3 selected.	• Medium proximity to residences if E2, E10, E3, E4 selected.	• Major impacts on existing and proposed development.	• Longer alignment, somewhat more costly.	• Impacts on development.	No

Table 33 Continued on Page 158

TABLE 33 (Cont.) - ANALYSIS OF ALTERNATIVE CONCEPTUAL ALIGNMENTS - CAWTHRA TO RENFORTH

(SEE EXHIBIT 29)

ALIGNMENT ALTERNATIVE		ANALYSIS FACTOR						CARRY FORWARD
NO.	DESCRIPTION	TRANSPORTATION SERVICE	NATURAL ENVIRON-MENT	SOCIAL-CULTURAL ENVIRONMENT	LAND USE AND DEVELOPMENT	COST	KEY ISSUES	
E12	• Ontario Hydro corridor from Fieldgate to Renforth.	• Poor service to Airport Corporate Centre. Poor connections to Gateway site. • Stations cannot be located in the Hydro corridor.	• Minimal.	• Major impact on Centennial Golf Course. • In close proximity to residences south of Hydro Corridor.	• Existing tower alignment will not accommodate busway.	• Shorter alignment less costly.	• Service. • Impacts on development, Golf Course. • Connection to and development of Gateway.	No
E13	• North side of Hydro corridor from Fieldgate to Renforth.	• Poor service to Airport Corporate Centre. Poor connection to Gateway site.	• Minimal.	• Major impact on Centennial Golf Course. • In medium proximity to residences south of Hydro Corridor.	• Major impact on Centennial Centre development.	• Shorter alignment less costly.	• Service • Impacts on development, Golf Course. • Connection to and development of Gateway.	No
E14	• In combination with E4, E5, and E6 and north parallel to Etobicoke Creek to Matheson Blvd. and east to Renforth.	• Good service to Airport Corporate Centre. Difficult to accommodate in available R.O.W.	• Minimal.	• Minimal.	• Major impact on private property immediately west of Etobicoke Creek. • Property impacts at station locations.	• Longer alignment more costly.	• Impacts on private property.	No

As described in Section 4.5.5, the entire "analysis of alternatives" process was carried out in the public forum, with the issue being the focus of most attendees' attention at the Public Information Centres (see Appendices A-D) and in correspondence and meetings with community groups. From the public's perspective, issues related to the proximity of alternatives to existing homes warranted by far the highest priority, in some cases to the exclusion of the other factors. In major commercial areas such as the City Centre and Airport Corporate Centre, Land Use and Development Opportunities were most heavily weighted by property owners, while within the Parkway Belt itself the existing users (Hydro, MAO, pipelines) required their interests to be protected. Thus the outcome of the analysis process in each section was a preferred alternative which best balanced these sometimes competing requirements and desires.

4.5.2.3 Summary of Analysis of Preliminary Concepts

The screening-level analysis of the preliminary alignment concepts is summarized in Table 34, using the analytical information presented in Section 4.5.2.2. For ease and simplicity of review, a "most preferred - least preferred" comparative rating is assigned to each alternative under each factor, based on the information in Tables 29 to 33.

The analysis of alternative concepts may readily be summarized under three categories:

- Rejected Concepts;
- Previously Determined Concepts; and
- Alternative Concepts Carried Forward for more detailed analysis.

A brief summary of each category follows.

i) Rejected Concepts

To set the overall context for the analysis, a brief overview of key considerations which resulted in the elimination of several of the preliminary concepts is provided. The alignment identification number is included for reference to subsequent tables (W = West, C = Centre, CC = City Centre, E = East sections).

Ontario Hydro Alignment (W2, C1, E12)

Ontario Hydro stated that a Transitway running longitudinally within their Parkway Belt right-of-way posed unacceptable constraints on the ability to maintain, expand or reconfigure their high voltage tower lines. For this reason, alternatives utilizing the Ontario Hydro corridor were set aside. Ontario Hydro did not rule out crossings of their property by the Transitway or access ramps, or the possibility of secondary use of the Hydro corridor by station facilities, stormwater detention ponds, or other facilities.

TABLE 34 - SUMMARY OF ANALYSIS OF PRELIMINARY ALIGNMENT CONCEPTS

SECTION	ALT.	DESCRIPTION	ANALYSIS FACTOR					SUMMARY	CARRY FORWARD
			TRANSPORTATION SERVICE	NATURAL ENVIRONMENT	SOCIAL-CULTURAL ENVIRONMENT	LAND USE/ DEVELOPMENT	COST		
NINTH LINE TO MAVIS ROAD	W1	TRANSPORTATION CORRIDOR	◒	◒	◒	N/A	●	◒	YES
	W2	ONTARIO HYDRO	○	○	◒	N/A	●	◒	NO
	W3	UTILITY CORRIDOR	●	○	●	N/A	●	●	YES
	W4	HWY 403 MEDIAN	○	●	●	N/A	○	◒	NO
	W5	SOUTH SIDE	○	○	○	N/A	◒	○	NO
MAVIS ROAD TO CONFEDERATION PARKWAY	C1	ONTARIO HYDRO	◒	●	○	○	◒	◒	NO
	C2	UTILITY CORRIDOR	●	◒	●	◒	●	●	YES
	C2E	CROSS 403 E. OF CONFEDERATION	◒	●	◒	●	◒	◒	YES
	C2W	CROSS 403 AT CONFEDERATION	●	●	◒	◒	◒	◒	YES
	C3	HWY 403 MEDIAN	○	◒	●	○	○	○	NO
	C4	SOUTH SIDE	○	○	○	○	◒	○	NO
	C2-4	CROSS 403 E. OF MAVIS	●	●	○	○	●	◒	YES
CITY CENTRE	CC1	HWY 403 CORRIDOR	◒	●	○	○	●	◒	NO
	CC2	HWY 403 / LOOP	○	●	◒	○	◒	○	NO
	CC3	RATHBURN	●	●	●	●	◒	●	YES
	CC4	SQUARE ONE	◒	●	●	◒	◒	◒	NO
	CC5	DUKE OF YORK / CITY CENTRE DR.	◒	●	◒	◒	○	◒	NO
	CC6	CONFEDERATION/CITY CENTRE DR.	○	●	○	◒	○	○	NO
	CC7	DUKE OF YORK / HURONTARIO	○	●	○	◒	○	○	NO
	CC8	RATHBURN SOUTH	◒	●	○	◒	◒	◒	NO
HURONTARIO STREET TO CAWTHRA ROAD	C1	ONTARIO HYDRO	○	●	○	○	○	○	NO
	C2	UTILITY CORRIDOR	●	◒	◒	◒	◒	◒	YES
	C3	HWY 403 MEDIAN	○	◒	●	○	○	○	NO
	C4	SOUTH SIDE	●	◒	◒	◒	●	◒	YES
CAWTHRA ROAD TO FIELDGATE DRIVE	E1	NORTH SIDE OF EASTGATE PARKWAY	N/A	N/A	N/A	N/A	N/A	PREVIOUS STUDY REC	YES
FIELDGATE DRIVE TO RENFORTH DRIVE	E2	PARKWAY BELT TO RENFORTH	○	○	○	◒	●	○	YES
	E3	DIAGONAL TO EGLINTON	◒	○	○	○	◒	○	YES
	E4	NORTH SIDE EGLINTON-EAST	●	◒	◒	●	○	◒	YES
	E5	NORTH SIDE EGLINTON-MID	●	●	●	●	○	●	YES
	E6	NORTH SIDE EGLINTON-WEST	●	●	●	●	○	●	YES
	E7	SOUTH SIDE EGLINTON-EAST	●	◒	◒	◒	○	◒	YES
	E8	SOUTH SIDE EGLINTON-MID	●	●	●	◒	○	◒	YES
	E9	SOUTH SIDE EGLINTON-WEST	●	●	●	◒	○	◒	YES
	E10	PARKWAY BELT TO ORBITOR	◒	○	○	◒	●	○	YES
	E11	SOUTH SIDE EGLINTON	◒	●	◒	○	○	○	NO
	E12	ONTARIO HYDRO	○	●	○	○	●	○	NO
	E13	NORTH SIDE OF HYDRO	○	●	○	○	●	○	NO
	E14	MATHESON	◒	●	●	○	○	○	NO

● GOOD/ MOST PREFERRED ◒ FAIR ○ POOR/ LEAST PREFERRED

Highway 403 Median Alignment (W4, C3)

The other major Parkway Belt tenant, the Ministry of Transportation, did not explicitly state that a Transitway alignment in the median of Highway 403 west of Cawthra Road was unacceptable, but analysis showed that it would clearly be a far more expensive option than an alignment north or south of the highway. Stations would be extremely constrained, if not impossible to build, all existing structures would have to be replaced and interchanges altered, and such a route would preclude the Ministry's ability to expand the capacity of the freeway by adding median lanes as planned. Furthermore, the total envelope of property occupied by the freeway and Transitway would not be reduced by locating the Transitway in the freeway median; in fact a significantly greater impact on the adjacent community would likely result from the shifting of high-speed high-volume freeway traffic lanes closer to existing homes in order to fit a Transitway in the median of Highway 403. East of Cawthra Road, locating the Transitway in the median of Eastgate Parkway or Eglinton Avenue would be equally inappropriate. In view of the more feasible alternatives available and the immense negative impact of a Highway 403 median alignment, this alternative was also set aside at an early stage.

Alignment South of Highway 403 - West of City Centre (W5, C4)

The third alternative concept that was quickly set aside was an alignment south of Highway 403 west of the Mississauga City Centre. An initially attractive concept, its major flaw is the inability to provide a feasible Transitway station at any of the Highway 403 interchanges (Mavis Road, Erin Mills Parkway, Winston Churchill Boulevard). Due to the interchange layout requirements and the lack of property within the Parkway Belt, neither access to the Transitway nor appropriate stops for north-south buses would be feasible south of Highway 403. Without one or all of these key stations, the feasibility of the entire Transitway would be in jeopardy. The fact that feasible alternatives were available north of Highway 403 helped confirm the decision to set this alternative aside. On the north side, the 85m wide Ontario Hydro right-of-way and the other property reserved in the Parkway Belt provides the opportunity to build and access stations that is unavailable on the more constrained south side.

Major Land Use Impacts - East Section (E11, E13, E14

The fourth group of conceptual alignments which were set aside, specifically relating to the section east of Fieldgate Drive (see Exhibit 29), were those having major impacts on land use and development.

Property on the north side of Eglinton Avenue between Orbitor Drive and Renforth Drive had previously been reserved for transit purposes through the Parkway Belt West Plan. Because of this reserve, development on the south side was allowed and consequently eliminates any feasible south side Transitway options (such as E11) in this area.

Alternative E13 would locate the Transitway immediately adjacent to and along the north side of the Ontario Hydro Corridor. The rationale for considering this option was to investigate an alternative which was perceived to have low land use impacts in view of its proximity to an existing facility (the Ontario Hydro Corridor). This option would, however, significantly damage the Centennial Park Golf course and have a very significant impact on the Centennial Centre Business Park buildings on the south side of Eglinton Avenue, west of Renforth Drive. In addition, the alternative would not readily access the protected Renforth Gateway Site. Since this alternative had significant disadvantages and no over-riding advantages, it was set aside from further study.

Alternative E14 would have located the Transitway within the Matheson Boulevard right-of-way, in an effort to serve the major employment area known as the Airport Corporate Centre.

The right-of-way for Matheson Boulevard was not designed to include protection for an exclusive transit facility. Consequently, existing and planned commercial development along Matheson Boulevard essentially precludes the construction of a Transitway in this location. In addition, as is noted elsewhere, feasible alignment options along the north side of Eglinton Avenue together with possible intermediate station sites in this corridor can provide a good level of transit service to the Airport Corporate Centre.

Consequently, Alternative E14 was rejected from further study.

ii) Previously Determined Concept

Eastgate Parkway Corridor

The section of the Transitway Corridor between Cawthra Road and Fieldgate Drive is unique, in that it was subject to an intensive alignment analysis prior to the remainder of the Transitway being planned, by virtue of the development of the adjacent and parallel Highway 403 Arterial Extension (see Section 2.6.2).

In the process of planning Eastgate Parkway (formerly known as the Highway 403 Arterial Road Extension) between Cawthra Road and Fieldgate Drive, fifteen alternative configurations of Ontario Hydro, the Transitway, the Roadway, and the Utility Corridor within the Parkway Belt were considered. Four alternatives were carried forward for detailed analysis, and the recommended alignment for Eastgate Parkway was identified. Associated with the recommended roadway alignment was a commitment by City Council to an alignment for the Transitway north of the roadway and south of the Ontario Hydro right-of-way. This process is documented in two reports:

1) Design and Construction Report, Highway 403 Arterial Extension - Cawthra Road to Dixie Road, McCormick Rankin for the Ministry of Transportation of Ontario, December 1988

2) Environmental Study Report, Highway 403 Arterial Extension - Dixie Road to Eglinton Avenue, M.M. Dillon for the City of Mississauga, April 1990

Eastgate Parkway was built in 1990 between Cawthra Road and Dixie Road and is now operational. The alignment for the Transitway is therefore fixed in this corridor, and no further review of alternative alignments was undertaken as part of the current study.

iii) Alignment Concepts Carried Forward

Several alternative alignment concepts remained in contention following the preliminary analysis, as can be seen from Table 34. Table 35 consolidates those alternatives recommended to be carried forward for more detailed analysis, and highlights the key issues in each section which the analysis will be required to address. These issues highlight the tradeoffs required between the various factors affecting an alignment. The detailed analysis follows in Section 4.5.3.

4.5.3 Detailed Evaluation of Alternative Alignments

In this Section, the alternative alignment concepts carried forward from the initial screening (see Table 35) are developed in greater detail and compared to each other. The intent is to generate a complete recommended alignment comprised of the preferred alternatives in each segment of the corridor.

Each alternative was developed in plan at a 1:1000 scale and reviewed by the public at Information Centres in June and November, 1990. The evaluation associated with each alternative was also reviewed and public comments were taken into account in finalizing the recommendations (see Appendices B and C).

The corridor segments where detailed evaluations were carried out were:

- Ninth Line to Mavis Road (Section 4.5.3.1)
- Mavis Road to Confederation Parkway (Section 4.5.3.2)
- Mississauga City Centre (Section 4.5.3.3)
- Hurontario Street to Cawthra Road (Section 4.5.3.4)
- Fieldgate Drive to Orbitor Drive (Section 4.5.3.5)

TABLE 35 - ALIGNMENT CONCEPTS CARRIED FORWARD

Section	Alt.	Description	Key Issues for Detailed Evaluation
Ninth Line to Mavis Road	W1 W3	Transportation Corridor Utility Corridor	Detailed comparison required of cost vs. neighbourhood impact.
Mavis Road to Confederation Parkway	C2E C2W C2-4	Cross to south at Prince of Wales Cross to south at Confederation Cross to south east of Mavis	Highway 403 crossing analysis required for alt.C2; related to results of City Centre functional design and North Collector plan.
City Centre	CC3	Rathburn Road	Numerous design issues and alternatives exist within recommended Corridor; functional design required to determine property requirements.
Hurontario Street to Cawthra Road	C2 C4	Utility Corridor South Side	Development of functional plans for Highway 403 future collector roadways required; subsequent detailed comparison of Transitway routes depends on collector-related constraints.
Cawthra Road to Fieldgate Drive	-	North of Eastgate Parkway	See Highway 403 Arterial Extension reports for detailed analysis of viable alternatives.
Fieldgate Drive to Orbitor Drive	E6 E10	North Side Eglinton - West Parkway Belt to Orbitor	Functional planning, cost, natural environment and property impact comparison required.
Orbitor Drive to Renforth Drive	-	North of Eglinton Avenue	Functional design issue of property requirements vs. cost.

4.5.3.1 Ninth Line to Mavis Road

Three alternative alignments for the Transitway were carried forward from the initial screening as shown on Exhibits 30 and 31.

Alternative W1, the north alignment, is located on the corridor designated for transit use in the Parkway Belt West Plan (north of the Ontario Hydro transmission line corridor) between Ninth Line and Mississauga Road. From Mississauga Road east to Mavis Road, Alternative W1 shifts to the corridor designated for utility lines in the Parkway Belt West plan, between the Ontario Hydro right-of-way and Highway 403.

Alternative alignment W3, the south alignment, uses the 30 m wide corridor currently protected for utility use in the Parkway Belt West Plan between the Ontario Hydro Corridor and Highway 403. This alignment is continuous from Ninth Line to Mavis Road, and is the recommended alternative from the east side of the Erin Mills Parkway interchange easterly.

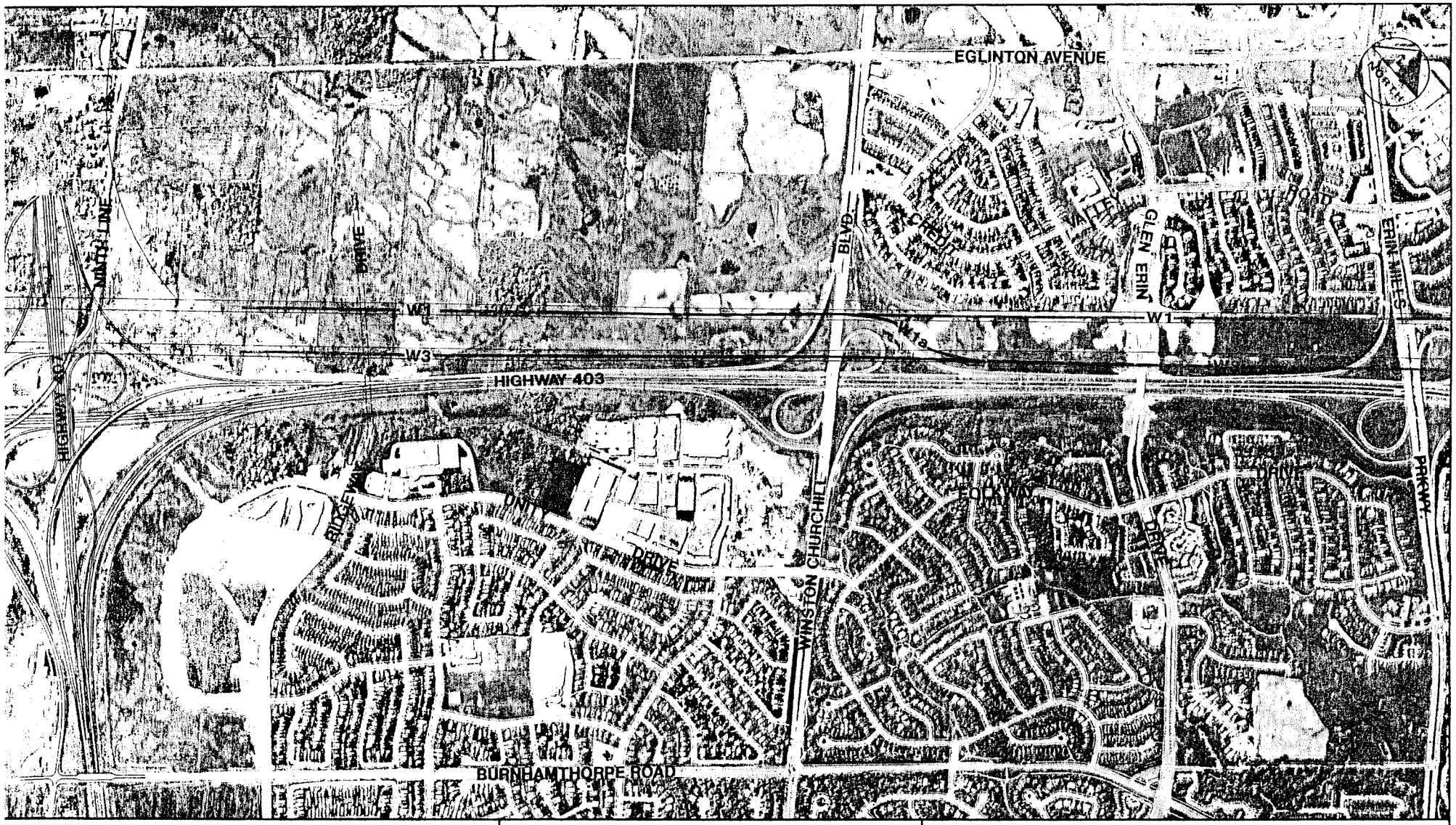
Alternative alignment W1a, the hybrid alignment, is located on the north side of the Parkway Belt West on the designated transit corridor between Ninth Line and Winston Churchill Boulevard. East of Winston Churchill Boulevard, the W1a hybrid alignment crosses the Ontario Hydro corridor diagonally to join the south alignment W3 in the vicinity of Glen Erin Drive.

The evaluation of these alternatives is summarized in Table 36 and discussed in the following text.

Alternative alignment W1 is located in the designated Parkway Belt West Plan transit corridor west of Mississauga Road. Between Ninth Line and Winston Churchill Boulevard, the land abutting this corridor on the north side is vacant and undeveloped. Because of this, future development of the abutting lands could be harmonised with the close proximity of the Transitway. The location of Winston Churchill Boulevard Station on this alignment encourages the incorporation of the station into the future development of the abutting lands. Alignment W1 is strongly preferred over W3 in this area as a consequence.

Between Winston Churchill Boulevard and just west of Mississauga Road, the existing development which abuts alternative alignment W1 on the north side consists of single family residential dwellings. The negative impacts as perceived by the residents, such as visual intrusion, noise, vibration and a deterioration in the air quality, have been strongly expressed at various public meetings. The crossing of Mullett Creek by this alignment just west of Mississauga Road, would also sever a homogenous wooded area into two parts.

The hybrid alignment, alternative W1a, minimizes the potential negative impacts of W1 by crossing to the south side of the Ontario Hydro right-of-way upon entering the residential area east of Winston Churchill Boulevard. The consequences are mainly higher costs due to the need to pass through, rather than around, the Erin Mills Parkway / Highway 403 interchange. The improvement in social impact was taken to outweigh the additional cost, approximately $15 million, and as a result the shift of alignment



MISSISSAUGA TRANSITWAY

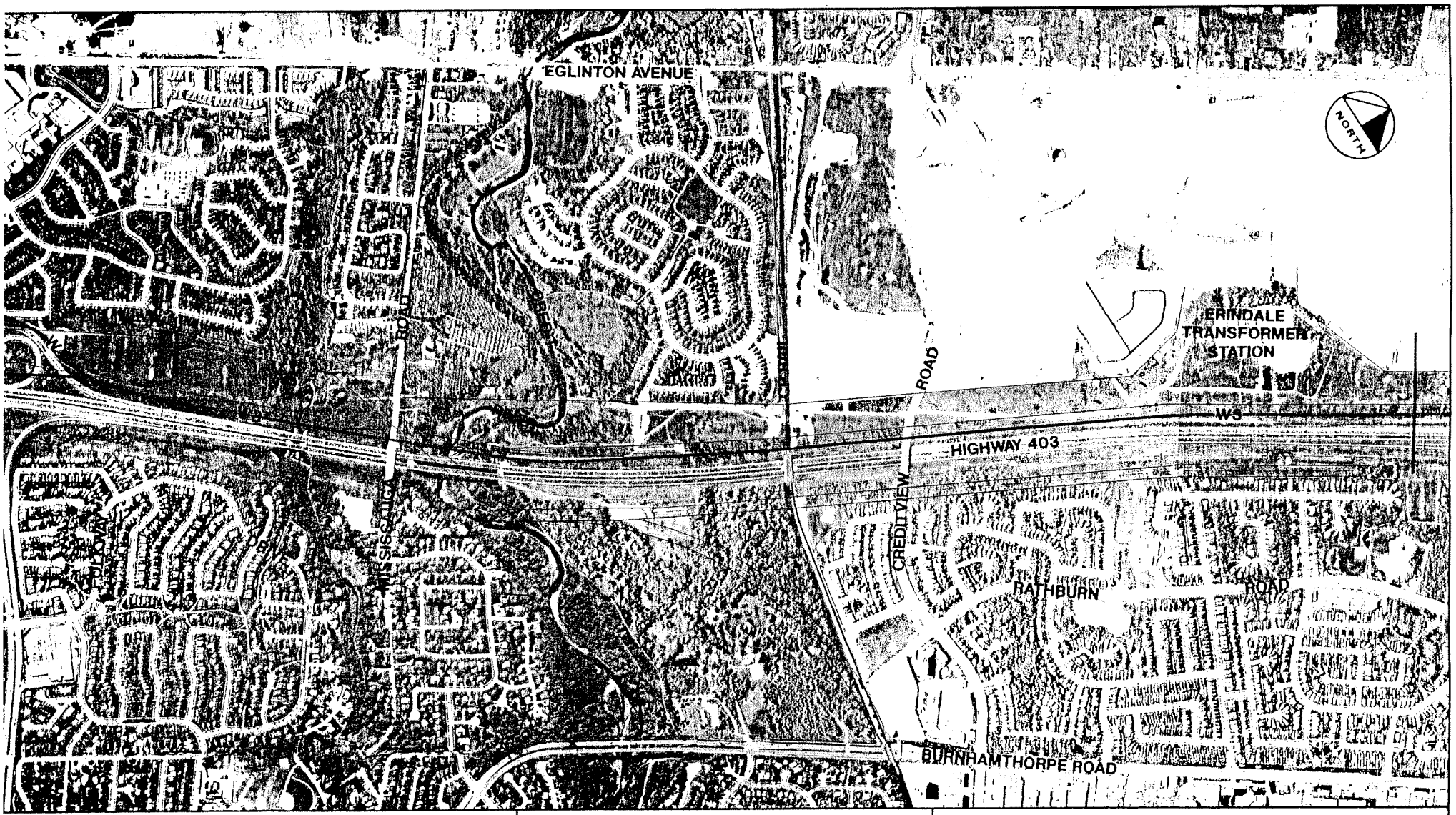
EXHIBIT 30

0 250 500 750 1000

SCALE

ALIGNMENTS CARRIED FORWARD

NINTH LINE – ERIN MILLS PARKWAY



MISSISSAUGA TRANSITWAY

EXHIBIT 31

0 250 500 750 1000

SCALE

ALIGNMENTS CARRIED FORWARD

ERIN MILLS PARKWAY – MAVIS ROAD

TABLE 36 - EVALUATION OF ALTERNATIVE ALIGNMENTS - NINTH LINE TO MAVIS

ALTERNATIVE / FACTOR	NORTH ALIGNMENT W1 ON NORTH SIDE OF HYDRO CORRIDOR		SOUTH ALIGNMENT W3 BETWEEN HYDRO CORRIDOR AND HIGHWAY 403		HYBRID ALIGNMENT W1a BETWEEN HYDRO CORRIDOR AND HWY. 403 EAST OF WINSTON CHURCHILL BLVD. ON NORTH SIDE TO WEST	
	ANALYSIS	PERFORM-ANCE	ANALYSIS	PERFORM-ANCE	ANALYSIS	PERFORM-ANCE
TRANSPORTATION PERFORMANCE	• Further from Highway 403, more flexibility for highway operations. • Stations closer to north side development.	◒	• Adjacent to Hwy. 403, restricts flexibility somewhat. • Stations slightly further from development.	◒	• Adjacent to Hwy. 403 from Winston Churchill east • Two of four stations further from development	◒
SOCIAL/ CULTURAL	• Busway adjacent to houses on north side of corridor, will require mitigation. • Removes access to two soccer fields. • Visual intrusion ot adjacent houses.	○	• Busway 150m further from houses on north side, reduces noise impacts. • Disruption with two existing soccer fields is avoided. • Reduced visual intrusion in area already developed.	●	• 150m further from almost all houses (compared to W1) with reduced noise impacts. • Disruption with two existing soccer fields is avoided. • Reduced visual intrusion in area already developed.	●
NATURAL ENVIRONMENT	• Passes through some wooded area.	○	• Some trees in 403 corridor affected.	○	• Some trees in 403 corridor affected.	○
COST	• Construction costs $150 million	●	• Construction cost $177 million. • More bridges required	○	• Construction cost $165 million	◒
SUMMARY	Least cost but has greatest impact as it is closest to houses.		Further away from houses, less impact but most costly.		Further away from existing built-up area and therefore has less impacts, intermediate costs. Recommended.	

LEGEND:

● Good/Most Preferred

◒ Fair

○ Poor/Least Preferred

across the Ontario Hydro corridor near Winston Churchill Boulevard (W1a) was preferred over crossing east of Erin Mills Parkway (W1).

East of the Erin Mills Parkway interchange, alternative alignment W3, located as close as possible to Highway 403, is preferred due to the need to be in that corridor to attain a feasible crossing of the Credit River and due to the lack of an available right-of-way strip elsewhere north of Highway 403 east of Mississauga Road (see Exhibit 31).

4.5.3.2 Mavis Road to Confederation Parkway

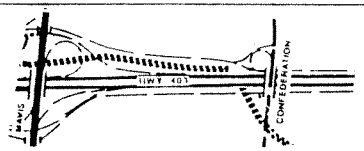
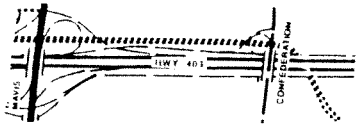
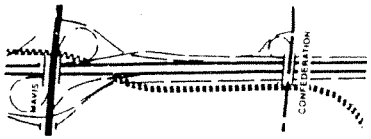
In order to fully assess the viability of the Transitway alternatives at Mavis Road, the ultimate collector roadway system for Highway 403 must be considered. To date, plans for the North Collector have not been developed fully, while the South Service Road has undergone extensive study (documented in an Environmental Study Report). This meant that several North Collector / Transitway conceptual functional plans had to be developed before the analysis of Transitway options could be completed. It must be recognized that any plan shown for any Highway 403 Collector Roadway in this report, apart from the preliminary design for the South Service Road between Mavis Road and Hurontario Street, has been prepared only in order to define constraints on the location of the Transitway. The plans have been developed to a satisfactory level of detail for that purpose and have been reviewed by the Ministry of Transportation Planning and Design Section for acceptability, but they do not constitute a planned, recommended, or committed Ministry undertaking. The Collectors will be subject to a separate environmental study, considering their need, justification, layout and impact at some future date.

Table 37 summarizes the more detailed evaluation of the alternative freeway crossings east of Mavis Road that was presented to the public for review. The use of relative "performance" ratings provided a visual summary of the analysis. Alternative C2E, with the Transitway alignment north of Highway 403 until a crossing at Prince of Wales Drive, is recommended.

4.5.3.3 Mississauga City Centre

Within the recommended Rathburn Road corridor, there are a great number of options as to the initial and ultimate layout and operation of the Transitway, its stations, and Rathburn Road itself. There are also significant constraints and a number of factors with unquantifiable effects. A summary listing follows:

TABLE 37 - EVALUATION OF ALTERNATIVE ALIGNMENTS - MAVIS TO CONFEDERATION

ALTERNATIVE / FACTOR	ALTERNATIVE C2W		ALTERNATIVE C2E		ALTERNATIVE C2-4	
						
	ANALYSIS	PERFORMANCE	ANALYSIS	PERFORMANCE	ANALYSIS	PERFORMANCE
TRANSPORTATION PERFORMANCE						
Compatibility	- Splits Highway 403 express/collector lanes. - Requires additional grade separation (Busway/N. Collector) to link with Recommended Mavis Station Alternative.	○	- Maintains integrity of Highway 403 express/collector lanes.	◒	- Minimizes impact on Highway 403 except at crossing.	◒
Accessibility	N/A		N/A		N/A	
Service	- All equivalent		- All equivalent		- All equivalent	
NATURAL ENVIRONMENT						
Aquatic	- Mary Fixx Creek culvert	◒	- Mary Fixx Creek culvert	◒	- Mary Fixx Creek diversion	◒
Terrestrial	- Low impact from Busway but North Collector forced into woods.		- Direct impact from Busway but no future impact by North Collector.		- No forest impact	
Atmospheric						
SOCIAL/CULTURAL						
Noise	- Busway depressed, easily mitigated. - Still noise impact from North Collector.	◒	- Busway depressed, easily mitigated-protects Highway noise for benefit.	●	- Significant potential impact;barrier required.	○
Cultural	- N/A		- N/A		- N/A	
Social	- N/A		- N/A		- N/A	
Visual	- Least visible alternative. - Reflects proximity		- Least disruption to Highway density residental West of Confederation Parkway.		- Proximity problem already raised by residents.	
Land Use	- Forces North Collector to use utility strip. - Greatest impact on City Centre property.		- Uses North side utility strip. - Least impact on City Centre property.		- Avoids North side utility strip; retains transit strip as well on South side.	
COST						
Capital	- $25.5 Million	◒	- $27 Million	◒	- $27.5 Million - Largest freeway crossing	◒
Operating	- All equivalent		- All equivalent		- All equivalent	
SUMMARY	- Not outstanding in any area; greater impact on surroundings than Alternative C2E		- Recommended; minimum impact on residents and City Centre.		- Similar function as Alternative C2E but with greater impact on residents.	

● GOOD/ MOST PREFERRED ◒ FAIR ○ POOR/ LEAST PREFERRED

Options	Constraints	Factors
• Transitway profile integration	• available property	• development
• Transitway alignment	• geometric standards	• development staging
• tunnel vs. open cut	• cost	• urban design
• number of stations	• environment	• transit system
• station locations	• bus operation	• flexibility
• station layouts	• demand	• "Gateway" elements
• shuttle distribution method	• utilities / services	• land use patterns
• station operation	• traffic operation	• facility users

Due to the number and complexity of the issues involved, a brief written, rather than tabular, summary of the alternatives and their evaluation follows. For a more detailed review of the issues and opportunities in the City Centre area, refer to Appendix O, the Technical Status Report for the City Centre Busway / Gateway Planning Study carried out in 1988-90.

i) **Transitway Profile**

An efficient, high-volume Transitway operation is incompatible with mixed traffic operation and conflicts on city streets. Grade separation is ultimately required, and since an elevated option is costly, complex, and unacceptable in terms of urban design impact on the City Centre, protection for a below grade Transitway is recommended within the City Centre. It should be noted, however, that this ultimate requirement does not preclude the ability to operate buses for an interim period on surface streets to gain access to the Transitway and stations.

ii) **Number of Stations**

A key issue in the City Centre portion of the Transitway is whether two or three stations are appropriate. Originally conceived of as a major Centre Station with supplementary east (Hurontario) and west (Confederation) "satellite" stations, the evolution of the Transitway planning process has resulted in a reassessment of the station concept. With increasing demands on the Hurontario corridor and the availability (and necessity) of a major north-south - east-west transit interface near Hurontario Street, the role of the east station has been strengthened. The Centre Station maintains its vitality as the focal point of City Centre-related passenger activity, and with the proposed increase in density and employment in the City

Centre, the importance of the Centre Station is magnified. Meanwhile, the potential west (Confederation) Station was found to be constrained by development activity in the area, the geometric and physical requirements of the Transitway, and the shift in planned land use emphasis in the Station area away from office and mixed use to residential uses.

The difficulties in providing a physically feasible station that would have a satisfactory interface with Confederation Parkway buses while not impacting adjacent development, combined with a desire from a development interface viewpoint to locate the Centre Station immediately east of Duke of York Boulevard, call into question the appropriateness of a third station in the west part of the City Centre.

A Confederation Station would have significant cost and development impact, would result in delays to most Transitway passengers (either on through trips or destined elsewhere in the City Centre), and would be inappropriate (due to close spacing between stations) for use by an LRT or subway if ultimately converted. Furthermore, two stations are capable of accommodating the ultimate passenger movement demand in the City Centre.

Mississauga Transit has not identified a need for a station at Confederation Parkway in the City Centre, since north-south surface bus routes would be expected to serve the major City Centre Station directly in any case. In fact, because of the steep grade of Confederation Parkway between Rathburn Road and its future overpass of Highway 403, an on-street bus stop at the Transitway crossing would be operationally unfeasible. With the only feasible interface within the City Centre being located in the Rathburn / Prince of Wales area, it may be seen that a Confederation Station in the City Centre would add very little to the transportation service of the area.

For these reasons, it is recommended that a two-station system be used in the City Centre portion of the Transitway.

iii) Station Locations

Station locations are a function of available property, operational needs, number of stations, adjacent development, and Transitway alignment needs.

Since the property bounded by Hurontario Street, Rathburn Road and City Centre Drive is largely publicly owned, at the intersection of two key transit corridors (east-west Transitway and Hurontario Street), has limited development potential otherwise, and is physically capable of accommodating a variety of Transitway station functions, it is recommended as a major City Centre station site. Access, drainage, and area constraints are recognized but there is no suitable alternative to serve the eastern half of the City Centre as well as to provide the key interface between major transit corridors. The site is capable of accommodating not only the Mississauga Transitway but, as may be needed in the long term to cope with demand in the corridor, a higher-order transit system along Hurontario Street and its associated interface facility needs.

The City Centre station is intended to act as the focal point of both the Transitway system and of the high-capacity surface bus network feeding and operating within the City Centre. A Central facility will optimize access to all parts of the City Centre for bus passengers and just as importantly allow efficient transfer of passengers between routes and between surface and transitway systems. Following development of several alternative functional plans and direct consultation with the affected property owner / developer and architect, it was determined that the most appropriate location for the City Centre Station is in the quadrant of the Rathburn Road / Duke of York Boulevard intersection.

Both the Centre and Hurontario Stations are capable of incorporating a number of "Gateway" elements. Apart from being major nodes for several local and interregional transit services, the sites can have kiss and ride areas, access for taxis, special transit services, shuttle bus routes, and particularly at the Centre Station, convenience services within the station. The ability to provide direct passenger links with adjacent development is a feature of both stations, and the potential exists for the Centre Station to be developed as part of a high-density multi-level mixed use office / commercial facility.

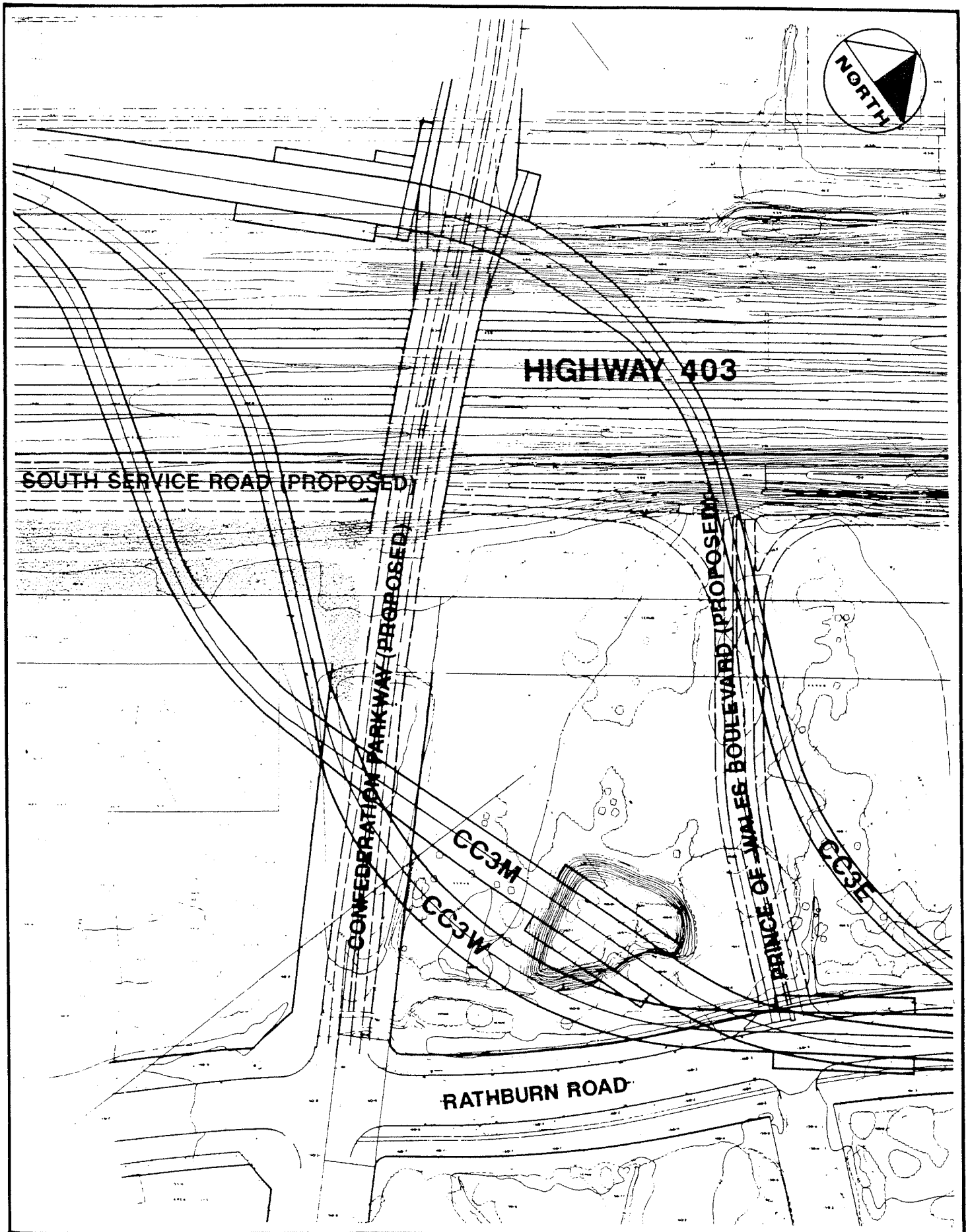
iv) Transitway Alignment

The alignment of the Transitway within the Rathburn Road corridor is the one aspect subject to the most constraints, and is most interrelated with other option decisions. An alignment that enters the City Centre from the west side of the Confederation Parkway alignment south of Highway 403, then curves to the east at a 160 m radius into the Rathburn Road right-of-way, then angles back up to the Highway 403 corridor under the Hurontario Street / Sherwoodtowne Boulevard / Highway 403 interchange is most appropriate.

There are two significant alignment issues within the City Centre area: the location of the linkage between the Rathburn Road corridor and the recommended Transitway alignment north of Highway 403 west of Confederation Parkway; and the configuration of the Transitway within the Rathburn Road right-of-way itself. At the east end of the City Centre, there is essentially no choice in alignment but to underpass Hurontario Street near the Sherwoodtowne Boulevard intersection.

a) Highway 403 Crossing

Exhibit 32 illustrates the three conceptual approaches to this crossing. It may be noted that the ability to provide / protect for a Transitway station is shown for each alternative, even though subsequent analysis (see Section 4.6.4 (ii)) did not substantiate the need for such a station but they do illustrate the flexibility of the Transitway concept; if in fact long-term unforeseeable development conditions are such that a station is desired in the subject area, the ability to provide it need not be precluded at this early planning stage.



MISSISSAUGA TRANSITWAY FUNCTIONAL PLANNING STUDY	EXHIBIT 32 NOT TO SCALE	HIGHWAY 403 CROSSING ALTERNATIVES

As a subset of recommended alternative alignment CC3, the three options may be referred to as CC3W(est), CC3M(id), and CC3E(ast). Table 38 summarizes the analysis which led to the recommendation of option CC3E.

In the linkage of the Transitway across Highway 403, various options are possible, but a basic criterion is to minimize the impact on developable property. This results in the alignment being contained within existing road allowances to the greatest extent possible, and the desirability of developing adjacent property in complete integration with the Transitway. A series of discussions occurred with affected property owners in which the analysis was reviewed and support for the recommended route was generated. The joint design of the adjacent facilities - Transitway and Prince of Wales Boulevard - between Rathburn Road and the South Service Road will be pursued to ensure a cost-effective, integrated plan.

b) Rathburn Road Corridor

Within the Rathburn Road corridor itself, the urban design, cost and development integration issues are key aspects. Alternative cross-section concepts are illustrated in Exhibit 33. Although, for cost reasons it would be desirable to have the Transitway run either north or south of Rathburn Road in open cut, underpassing the surface streets, such an option is incompatible with the City Centre Secondary Plan's goals for Rathburn Road as the major high density office and commercial artery in the City Centre. An open Transitway would create a "moat" effect and would prevent the effective development of one side of Rathburn Road. The impact on developable property would be significant, and the plans for the property on the south side of Rathburn Road west of Duke of York Boulevard are already so advanced as to eliminate the potential routing of the Transitway through those blocks.

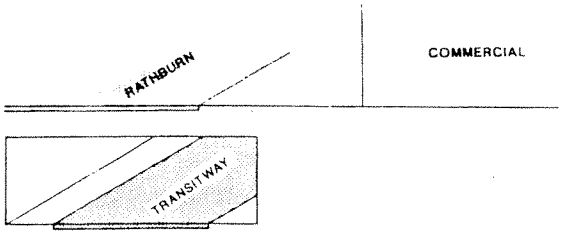
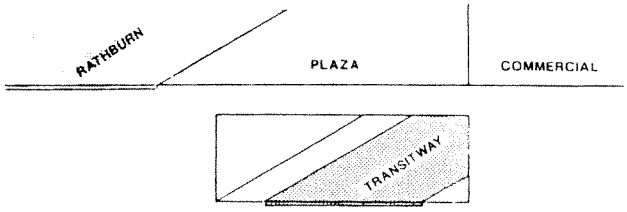
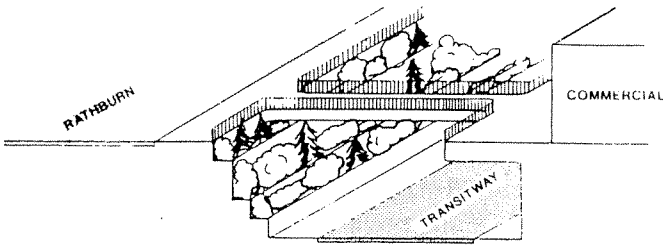
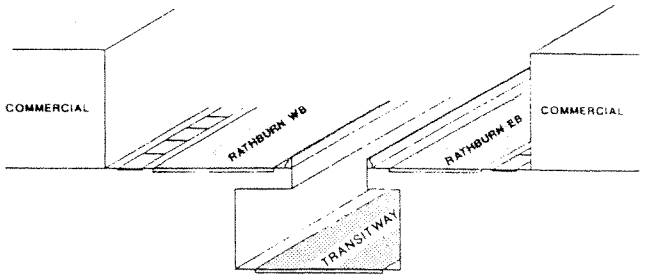
Within the Rathburn Road right-of-way, then, the Transitway may be in cut and cover tunnel, or partially open in a widened roadway median. The high cost and operational / ventilation concerns with the tunnel alternative are significant, and given that a feasible alternative which improves on those areas exists, Option 4 is the recommended concept. This concept would entail a wider Rathburn right-of-way but it would be capable of preserving the function and urban design values of the corridor at street level while allowing the Transitway to share the transportation right-of-way.

v) Design Issues

The preceding Sections have summarized the analysis process which led to recommendations in the areas of Transitway Profile, Alignment, and Station locations within the City Centre area. There remain some design and operational issues that are either beyond the scope of the current property protection/functional planning study or will be dealt with in Section 5 as part of the description of the

TABLE 38 - EVALUATION OF ALTERNATIVE HIGHWAY 403 CROSSING LINKS

Factor	Alternative Alignment (see Exhibit 32)		
	CC3W	CC3M	CC3E
Location	**Confederation Parkway**	**Mid Block**	**Prince of Wales Drive**
Transportation Performance	Poor; Station cannot be located at Confederation Parkway due to curve, while only feasible alternative is at Prince of Wales, too close to City Centre Station	Poor; Station cannot serve Confederation Buses and is very close to City Centre Station	Good; both Confederation Bus interface and distance from City Centre Station are better than alternatives
Property Impact	Moderate; creates difficulty in developing key Confederation / Rathburn intersection	Major; however route and Station have potential to be fully integrated in block development	Minimum; can align parallel to Prince of Wales to minimize severance of developable property; least property required within City Centre
Social Environment / Land Use	Little impact on residential area west of Confederation	Greater potential impact (visual / noise) on residential area west of Confederation	No negative impact south of 403; Station would be hidden within interchange and not impact future residents north of 403
Cost	Similar to CC3M; slightly more than CC3E due to greater length in structure and in City Centre	Similar to CC3W	Least costly; less structure and property requirements
Natural Environment	No significant issues	No significant issues	No significant issues
Summary	Cannot serve Confederation Parkway corridor effectively, therefore no advantage; not recommended	Development potential outweighed by property impact; not recommended	Minimum cost, minimum impact and maximum potential service option; recommended

ALTERNATIVE	COMMENT/CONCLUSION
1. TUNNEL UNDER RATHBURN 	● HIGH COST ● VENTILATION/LIGHTING PROBLEMS ● SIGNIFICANT DISRUPTION DURING CONSTRUCTION ● NO IMPACT ON SURFACE/URBAN DESIGN ● NO ADDITIONAL R.O.W. REQUIRED ■ HIGHEST COST; NO SIGNIFICANT ADVANTAGE OVER ALT. 4; NOT RECOMMENDED
2. TUNNEL SOUTH OF RATHBURN 	● HIGH COST ● VENTILATION/LIGHTING PROBLEMS ● INTRODUCES OPEN PLAZA SPACE ● REQUIRES ADDITIONAL R.O.W. ● LESS DISRUPTIVE TO RATHBURN AND UTILITIES ■ SIGNIFICANT PROPERTY IMPACT; NOT RECOMMENDED
3. OPEN CUT SOUTH OF RATHBURN 	● LOWEST COST ● ALTERS URBAN DESIGN OF RATHBURN CORRIDOR ● REDUCED VENTILATION/LIGHTING CONCERNS ● REQUIRES ADDITIONAL R.O.W. ● LESS DISRUPTIVE TO RATHBURN AND UTILITIES ■ SIGNIFICANT PROPERTY/URBAN DESIGN IMPACT; NOT RECOMMENDED
4. TUNNEL - OPEN RATHBURN MEDIAN 	● HIGH COST ● REDUCED VENTILATION/LIGHTING CONCERNS ● WIDENS ROADWAY CORRIDOR - INTRODUCES MEDIAN ● SIGNIFICANT DISRUPTION DURING CONSTRUCTION ● MINOR INCREASE IN R.O.W. WIDTH REQUIRED ■ IMPROVEMENT OVER TUNNEL OPTION; RECOMMENDED

MISSISSAUGA TRANSITWAY FUNCTIONAL PLANNING STUDY	EXHIBIT 33	ALTERNATIVE TRANSITWAY CROSS SECTION CONCEPTS IN RATHBURN ROAD CORRIDOR

undertaking. Although a great number of alternative station layouts and designs were prepared and reviewed over the course of the study, they do not constitute "recommended" plans but rather demonstrate the functional feasibility of providing a recommended facility within an identified property envelope. Station designs will evolve over the preliminary design process, and may be altered to a significant extent by whatever development integration plans emerge over time. For these reasons, the development and functional design of the City Centre stations are not dealt with in detail in this Environmental Assessment Report, nor is approval being sought for any specific station design.

Regarding alternative bus operating strategies, these are not subject to the Environmental Assessment Act, and hence were considered in this study only as technical input to the identification of the functional requirements of Transitway stations. The issue of a "people-mover" system or equivalent shuttle service within the City Centre has been identified as a subject of further, future study by the City of Mississauga and the City Centre property owners; any City Centre station design concept will need to accommodate the potential interface between the Transitway, surface bus, and shuttle systems.

4.5.3.4 Hurontario Street to Cawthra Road

Two alternative conceptual alignments for the Transitway between Hurontario Street and Cawthra Road were carried forward from the initial screening; one option north of Highway 403 and a second south of the freeway. However, any consideration beyond the conceptual stage of the Transitway alignment in this area is inextricably bound to the ultimate requirements for eastbound and westbound collector roadways on Highway 403.

Since the collector roads have not yet been programmed for construction, and are dependent to a significant degree on the extent and rate of development of the Mississauga City Centre, no plans or preliminary designs exist for the roads. In the course of this study, however, the need for the Transitway to be located as close as possible to Highway 403 in order to minimize the perceived impact on immediately adjacent homes was clearly identified as a significant issue. Correspondingly, the need to protect property for the ultimate Highway 403 requirements was stated by the Ministry of Transportation.

As a result, a great deal of effort went into developing alternative plans for the collectors, integrating Transitway alternatives in the corridor, technical and policy review with Ministry of Transportation Planning and Design staff, and consultation with adjacent residents. The analysis and recommendations in this section have been reviewed and concurred with by all those involved in the process.

The collector roads, being part of a system of ultimate Highway 403 improvements which could stretch from west of Mavis Road to Highway 401, could not be considered solely between Hurontario Street and Cawthra Road; in fact, the feasibility of the proposed collector road concept over the entire 8 kilometre affected segment of Highway 403 had to be established before the analysis of Transitway alternatives could

be completed. The associated transfer ramps and interchange modifications were of particular concern, as was the physical separation between facilities.

It must be noted that, although the Ministry of Transportation has accepted the recommended Transitway alignment in recognition of the protection it has for the ability to provide a feasible ultimate collector road system, any collector roadway plans developed during this study do not constitute a preliminary design, recommended configuration, or committed layout for any Ministry of Transportation roadway. The actual need, rationale, functional plan, and preliminary design for the collector roads will be subject to an entirely separate study at some future date prior to their construction.

With this background, a total of eight Transitway alternatives were developed to a 1:2000 scale level of detail; two north of the freeway and the remainder to the south. Exhibit 34 shows the alternative alignments and the associated collector road conceptual configurations. The subsequent evaluation of the alternatives comprises Table 39; it may be seen that two options were set aside after an initial screening, and that a detailed comparison of the remaining alternatives yielded as a recommendation that which maintained the greatest distance from existing homes yet remained on the south side of the freeway. It may be noted that "distance" and "barrier" factors were also used as surrogate measures for potential noise impact (since noise level is proportional to distance). The appropriateness of this approach was subsequently confirmed by detailed noise analysis of the recommended route, which showed that it would not result in a significant impact on noise levels in adjacent areas.

TABLE 39 - EVALUATION OF ALTERNATIVE TRANSITWAY LOCATIONS IN HIGHWAY 403 CORRIDOR BETWEEN HURONTARIO STREET AND CAWTHRA ROAD

ALTERNATIVE		INITIAL SCREENING		ANALYSIS								RECOMMENDATION
				COST		TRANSPORTATION SERVICE (COLLECTOR)	STAGING	PROXIMITY TO RESIDENTS				
		ANALYSIS	DECISION	TRANSITWAY ($ million)	COLLECTOR ($ million)			DISTANCE TO P.L. TRANSITWAY	DISTANCE TO P.L. COLLECTOR	TREES	BARRIER	
A	North of 403 in Hydro Corridor	Impact on Ontario Hydro unacceptable.	Rejected by Ontario Hydro NOT RECOMMENDED									
B	North of 403 in Utility Corridor	Feasible design but costly.	Carry forward for analysis	43M+	15% premium over base cost (no transitway)	Substandard geometric design	403 crossings very disruptive; otherwise good.	92m	115m	4.8 acres 1.9 ha	Berm impossible due to Hydro; wall required.	High cost, minimal benefit. NOT RECOMMENDED
C	South of 403 Adjacent to 403	Attractive initial Stage; Preferred location for Transitway if no Collectors needed.	Carry forward for analysis	32M+	25% more than H	Good service; moves are separated as much as possible Cawthra Interchange protected.	Very poor; entire Collector system must be built at the same time as Transitway.	68m	27m	5.8 acres 2.3 ha	Full berm possible throughout utility corridor.	Poor staging. Collector has greater impact than Transitway on homes. NOT RECOMMENDED
D	South of 403 Split Collector	Hybrid arrangement offers no significant advantages over simpler layouts.	SET ASIDE									
E	South of 403 no Basketweave	Extension of Collector allows shift of Basketweave away from homes.	E,F,G, are conceptually similar (Transitway South of Collectors); preference for one over the others depends on MTO Carry forward for analysis	30M+	7% more than H	E provides optimum service; increased weaving and geometric constraints on F and G.	Good – Transitway can use Collector as initial stage Collector itself is more readily staged with F or G.	30m	55m	5.3 acres 2.1 ha	Full berm in utility corridor.	Feasible but greater impact than H. SECOND CHOICE
F	South of 403 Basketweave – Inner Transfer	Minor modification of G in an attempt to minimize property impact.						16m	43m		Berm/wall combination.	Proximity to homes and impact on parkway belt 30m strip undesirable.
G	South of 403 Basketweave – Outer Transfer	Standard design approach – identified to residents as functional preference – "worst case".							38m			NOT RECOMMENDED
H	South of 403 Hurontario ramps extended	Functional plan with minimal impact.	Carry forward for analysis	30M+	least costly south side alternative	Cawthra interchange less feasible. Widened 403 would be 6 lanes in parts. Good traffic operation – weaving nearly eliminated.	Very good	47m	78m	3.3 acres 1.4 ha	Full berm in utility corridor.	Good operation; minimum impact. RECOMMENDED

4.5.3.5 Fieldgate Drive to Renforth Drive

The Parkway Belt West Plan east of Fieldgate Drive provides for a 200 ft. right-of-way to accommodate a road as well as a rapid transit line. However, existing and proposed development within the area led to a decision to consider other possible alignments which might better serve the development.

As a result fourteen additional alignment alternatives were originally developed, with varying degrees of impacts on the surrounding areas (see Table 33 in Section 4.5.2.2). Because the alignments would have to cross in part through private property, certain of the alignments were developed to allow flexibility for integration within possible development. Of those alignments carried forward for more detailed evaluation, five distinct groups were formed (see Exhibit 35).

- E1 - Ontario Hydro Corridor
- E2, E10 - Transit Corridor, Parkway Belt
- E3 - Diagonal Connection - Fieldgate to Eglinton North
- E4, E5, E6 - McClennan Lands/Eglinton North
- E7, E8, E9 - McClennan Lands/Eglinton South

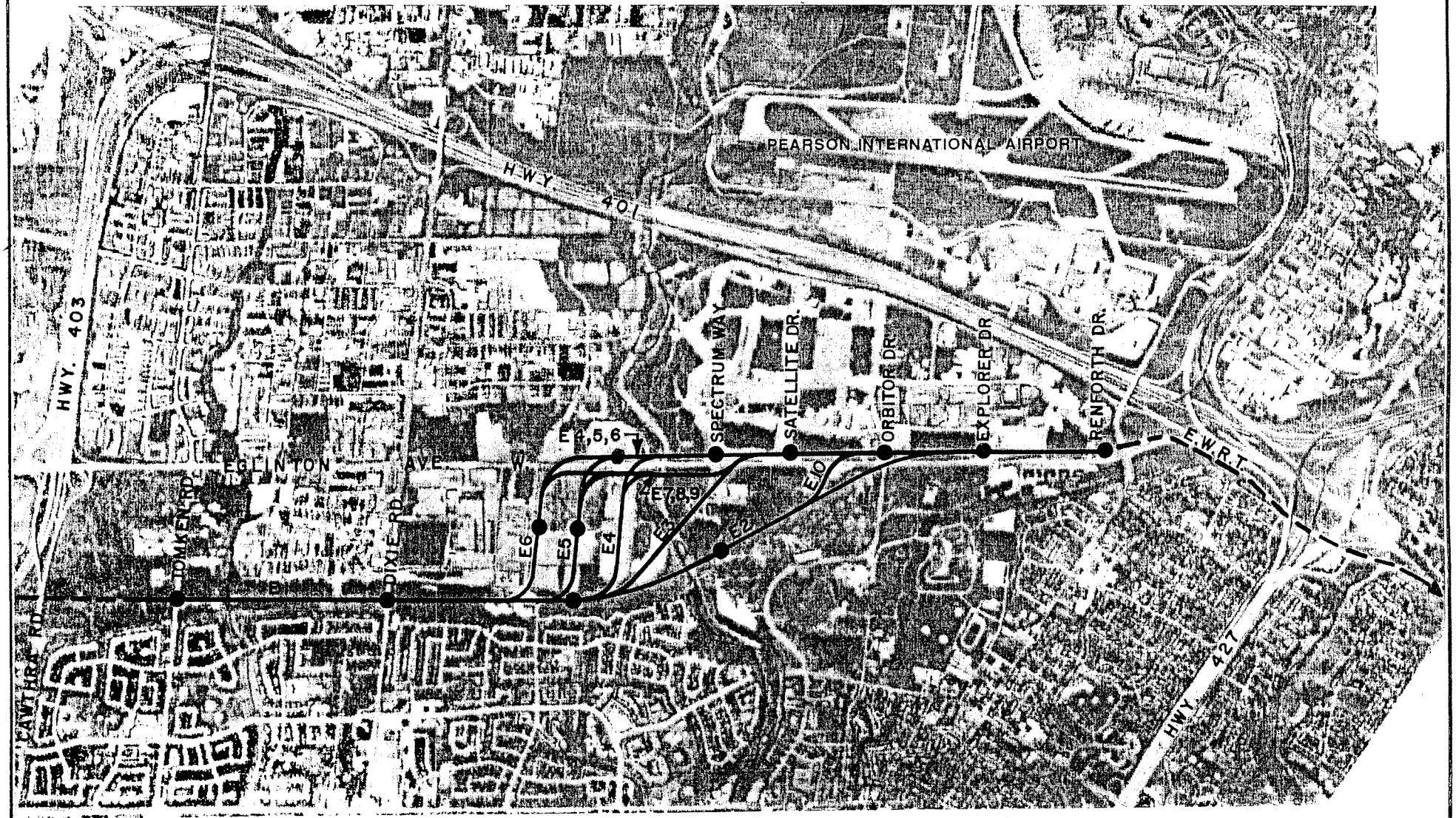
The evaluation of these ten conceptual alternatives is contained in Table 40.

The conceptual evaluation determined that two alternatives required further review to resolve a tradeoff between service provided and capital costs. Alternative E10 would be substantially cheaper than E6 due to proposed at-grade construction in the transit corridor. Alternative E6, however, could provide superior transit access to the high density development proposed for Airport Corporate Centre (see Exhibit 36).

For this reason, alternative design features were reviewed to determine the feasibility of reducing the capital cost of option E6. This was found possible through the use of open-cut construction rather than full retaining walls. However, additional property would be required for this option and it is impossible to determine, at this stage, the magnitude of the property costs (if any).

Table 41 outlines the detailed and direct comparison between alignment E6 and E10. Alignment E6 through the Airport Corporate Centre is preferred in all areas except cost. As outlined above, the difference in estimated construction costs can be reduced to $5 million (pending property arrangements). The benefits of the E6 alignment were considered to outweigh the difference in costs.

The two options were presented at a meeting of affected property owners. No negative comments were received regarding the additional property requirements for E6.



LEGEND ● STATION LOCATION
E.W.R.T.-EGLINTON WEST RAPID TRANSIT (PROPOSED)

MISSISSAUGA TRANSITWAY FUNCTIONAL PLANNING STUDY	EXHIBIT 35	**ALIGNMENTS CARRIED FORWARD** **CAWTHRA ROAD TO RENFORTH DRIVE** EAST SECTION

TABLE 40 - EVALUATION OF ALTERNATIVE ALIGNMENTS - CAWTHRA TO RENFORTH (SEE EXHIBIT 35)

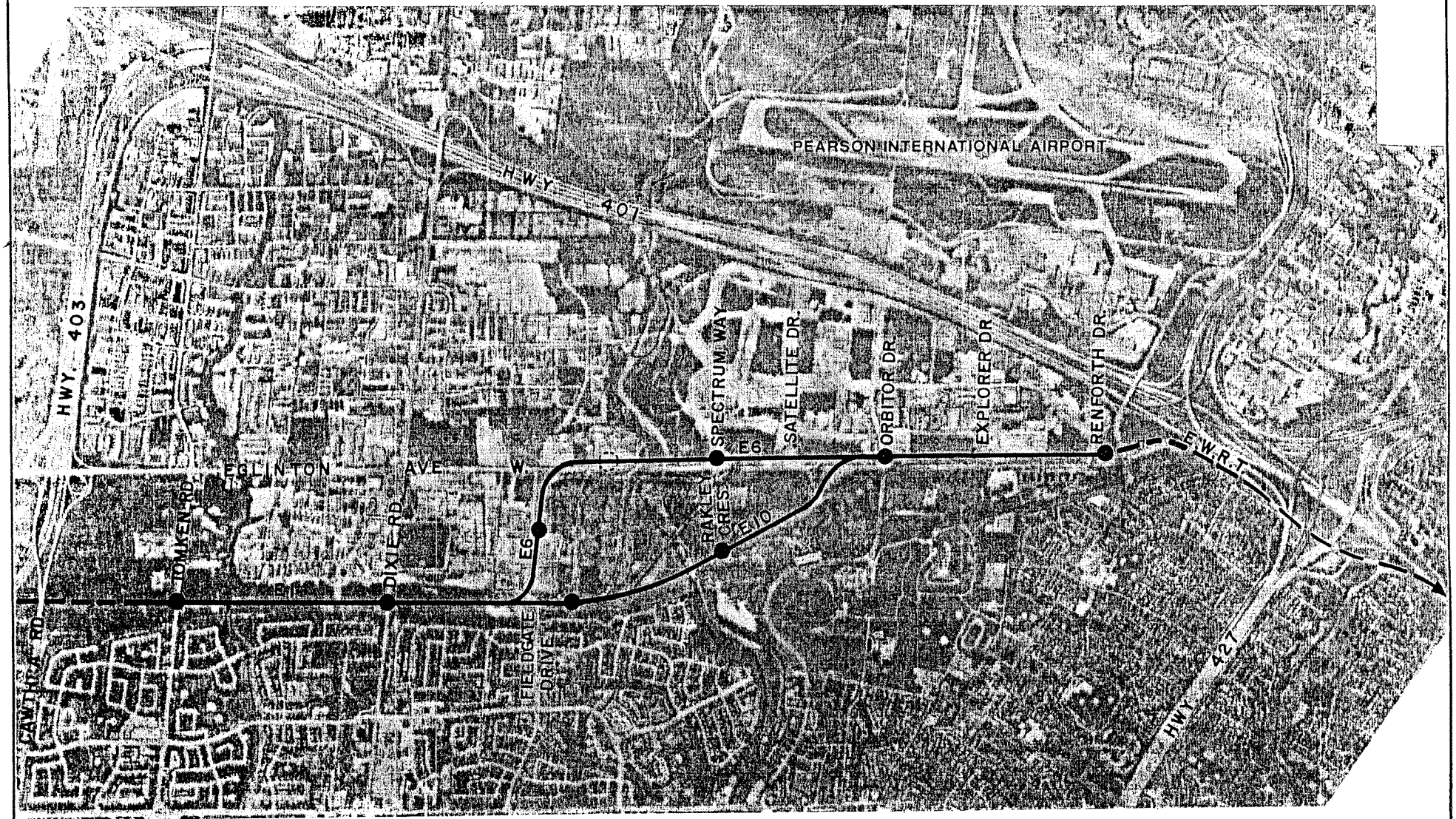
ALIGNMENT ALTERNATIVE		TRANSPORTATION PERFORMANCE	NATURAL ENVIRONMENT	SOCIAL-CULTURAL	LAND USE AND DEVELOPMENT	COST	SUMMARY
No.	DESCRIPTION						
E2	Like E10 but along Parkway Belt to Eglinton and crosses to north side	• low flexibility to connect to future north/south arterial west of Etobicoke Creek • least flexibility to accommodate possible future Transitway link to airport, east of Etobicoke Creek • 2,850 residents within 300m radius of stations by 2021 • 6,640 employees within 300m radius by 2021 • shortest travel time	• low erosion potential at creek bank; no erosion of valley walls likely • 250m bisecting major Etobicoke Creek forest; 100m through edge of small forest; 100m through treed hedgerow near Eglinton Ave.	• most potential for noise level increases from proposed station at Rakely Boulevard • most potential for noise level increases from proposed stations at Tomken, Fieldgate, Renforth; at grade near residential area • highest potential for heritage or archaeological sites due to creek crossing at new location • 1750m at-grade; most visual impact, crosses creek at a new location	• land required from 11 private, 12 public properties • low potential for joint development on lands along alignment • abuts Centennial Golf Course • least service to Airport Corporate Centre	• construction cost approx. $171 million • purchase of 16 public hectares, 4 private hectares • rental of 15 hectares of Hydro land	• significantly less expensive but less service to Airport Corporate Centre, and most visual and noise impacts Not Carried Forward
E3	Tomken to Fieldgate, diagonally to Spectrum, north side of Eglinton	• low flexibility to connect to north/south arterial west of Etobicoke Creek • least flexibility to accommodate possible future Transitway link to airport, east of Etobicoke Creek • 2,787 residents within 300m radius of stations by 2021 • 8,663 employees within 300m radius by 2021 • 1.6% longer than fastest travel time	• low erosion potential at creek bank; erosion of west valley wall likely • 200m bisecting major Etobicoke Creek forest; 100m through edge of small forest	• most potential for noise level increases from proposed Fieldgate station • highest potential for heritage or archaeological sites due to creek crossing at new location • 250m at-grade; least visual impact	• land required from 10 private, 11 public properties • least potential for joint development on lands along alignment	• construction cost approx. $194 million • purchase of 11 public hectares, 8 private hectares • rental of 15 ha of Hydro land	• marginally less service to Airport Corporate Centre, and less service to developable lands west of Etobicoke Creek, and bisects developable parcel east of Etobicoke Creek Not Carried Forward
E4	Tomken to Fieldgate, north along west side of Etobicoke Creek, east along north side of Eglinton	• low flexibility to connect to north/south arterial west of Etobicoke Creek • most flexibility to accommodate possible future Transitway link to airport, east of Etobicoke Creek • 2,787 residents within 300m radius of stations by 2021 • 8,663 employees within 300m radius by 2021 • 3.6% longer than fastest travel time	• low erosion potential at creek bank; erosion of west valley wall likely • 200m bisecting small forest; 200m through oak hedgerow	• medium potential for noise level increases from proposed Tomken, Fieldgate, Renforth stations; alignment below grade • high potential for heritage archaeological sites; crossing creek at site of existing bridge on Eglinton Ave. • 250m at-grade; least visual impact	• land required from 10 private, 11 public properties • medium potential for joint development on lands along alignment • best service to Airport Corporate Centre	• construction cost approx. $199 million • purchase of 11 public hectares, 9 private hectares • rental of 17 ha of Hydro land	• good service to Airport Corporate Centre, but less service than E5 and E6 to developable lands west of Etobicoke Creek Not Carried Forward

TABLE 40 (Cont.) - EVALUATION OF ALTERNATIVE ALIGNMENTS - CAWTHRA TO RENFORTH (SEE EXHIBIT 35)

ALIGNMENT ALTERNATIVE		TRANSPORTATION PERFORMANCE	NATURAL ENVIRONMENT	SOCIAL-CULTURAL	LAND USE AND DEVELOPMENT	COST	SUMMARY
No.	DESCRIPTION						
E5	Tomken to Fieldgate, north through private property, east along north side of Eglinton	• medium flexibility to connect to north/south arterial west of Etobicoke Creek • most flexibility to accommodate possible future Transitway link to airport, east of Etobicoke Creek • 1,946 residents within 300m radius of stations by 2021 • 8,731 employees within 300m radius by 2021 • 3.8% longer than fastest travel time	• low erosion potential at creek bank; erosion of west valley wall likely • 200m through small treed hedgerow	• medium potential for noise level increases from proposed Fieldgate station; alignment swings away from residential area • high potential for heritage archaeological sites; crossing creek at site of existing bridge on Eglinton Ave. • 250m at-grade; least visual impact	• land required from 10 private, 10 public properties • good potential for joint development on lands along alignment • best service to Airport Corporate Centre	• construction cost approx. $206 million • purchase of 11 public hectares, 13 private hectares • rental of 13 ha of Hydro land	• second best overall, but most expensive ($35 million more) **Not Carried Forward**
E6	Tomken to Fieldgate, north along Fieldgate, east along north side of Eglinton	• most flexibility to connect to north/south arterial west of Etobicoke Creek • most flexibility to accommodate possible future Transitway link to airport, east of Etobicoke Creek • 1,946 residents within 300m radius of stations by 2021 • 8,731 employees within 300m radius by 2021 • 3.9% longer than fastest travel time	• low erosion potential at creek bank; erosion of west valley wall likely • minimum individual tree specimens	• least potential for noise level increases from proposed Fieldgate station; alignment swings furthest away from residential area • high potential for heritage archaeological sites; crossing creek at site of existing bridge on Eglinton Ave. • 250m at-grade; least visual impact, follows existing road corridors	• land required from 11 private, 10 public properties • highest potential for joint development on lands along alignment • best service to Airport Corporate Centre	• construction cost approx. $201 million • purchase of 10 public hectares, 13 private hectares • rental of 13 ha of Hydro land	• marginally best overall, but second most expensive ($30 million more) **Carried Forward**
E7	Like E4 but east along south side of Eglinton to Spectrum and then along the north side	• low flexibility to connect to north/south arterial west of Etobicoke Creek • less flexibility to accommodate possible future Transitway link to airport, east of Etobicoke Creek • 2,787 residents within 300m radius of stations by 2021 • 8,663 employees within 300m radius by 2021 • 3.5% longer than fastest travel time	• low erosion potential at creek bank; high erosion potential along valley walls south of Eglinton Ave. • 200m through edge of Etobicoke Creek forest; 200m bisecting small forest; 200m through oak hedgerow	• medium potential for noise impacts from proposed Fieldgate station; alignment below grade • high potential for heritage or archaeological sites; crossing creek at site of existing bridge on Eglinton Ave. • 250m at-grade; least visual impact	• land required from 11 private, 11 public properties • good potential for joint development on lands along alignment • better service to Airport Corporate Centre	• construction cost approx. $195 million • purchase of 12 public hectares, 9 private hectares • rental of 5 hectares of Hydro land	• marginally more environmental impact and less service than E4 **Not Carried Forward**

TABLE 40 (Cont.) - EVALUATION OF ALTERNATIVE ALIGNMENTS - CAWTHRA TO RENFORTH (SEE EXHIBIT 35)

ALIGNMENT ALTERNATIVE		TRANSPORTATION PERFORMANCE	NATURAL ENVIRONMENT	SOCIAL-CULTURAL	LAND USE AND DEVELOPMENT	COST	SUMMARY
No.	DESCRIPTION						
E8	Like E5 but east along south side of Eglinton to Spectrum and then along the north side	• medium flexibility to connect to north/south arterial west of Etobicoke Creek • less flexibility to accommodate possible future Transitway link to airport, east of Etobicoke Creek • 1,946 residents within 300m radius of stations by 2021 • 8,731 employees within 300m radius by 2021 • 3.7% longer than fastest travel time	• low erosion potential at creek bank; high erosion potential along valley walls south of Eglinton Ave. • 200m through edge of Etobicoke Creek forest; 200m through small treed hedgerow	• medium potential for noise impacts from proposed Fieldgate station; swings farthest away from residential area • high potential for heritage or archaeological sites; crossing creek at site of existing bridge on Eglinton Ave. • 250m at-grade; least visual impact	• land required from 11 private, 11 public properties • good potential for joint development on lands along alignment • better service to Airport Corporate Centre	• construction cost approx. $197 million • purchase of 11 public hectares, 11 private hectares • rental of 13 hectares of Hydro land	• marginally less service and more environmental impact than E5 Not Carried Forward
E9	Like E6 but east along south side of Eglinton to Spectrum and then along the north side	• most flexibility to connect to north/south arterial west of Etobicoke Creek • less flexibility to accommodate possible future Transitway link to airport, east of Etobicoke Creek • 1,946 residents within 300m radius of stations by 2021 • 8,731 employees within 300m radius by 2021 • 3.8% longer than fastest travel time	• low erosion potential at creek bank; high erosion potential along valley walls south of Eglinton Ave. • 200m through edge of Etobicoke Creek forest	• least potential for noise impacts from proposed Fieldgate station; swings farthest away from residential area • high potential for heritage or archaeological sites; crossing creek at site of existing bridge on Eglinton Ave. • 250m at-grade; least visual impact	• land required from 11 private, 11 public properties • highest potential for joint development on lands along alignment • better service to Airport Corporate Centre	• construction cost approx. $198 million • purchase of 10 public hectares, 11 private hectares • rental of 13 hectares of Hydro land	• marginally less service and more environmental impact and less service than E6 **Not Carried Forward**
E10	Along Parkway Belt diagonally from Fieldgate around west side of gas station to Orbitor, along north side of Eglinton	• low flexibility to connect to future north/south arterial west of Etobicoke Creek • less flexibility to accommodate possible future Transitway link to airport, east of Etobicoke Creek • 2,850 residents within 300m radius of stations by 2021 • 6,640 employees within 300m radius by 2021 • shortest travel time	• low erosion potential at creek bank; no erosion of valley walls likely • 250m bisecting major Etobicoke Creek forest; 100m through edge of small forest; 100m through treed hedgerow	• most potential for noise level increases from proposed station at Rakely Boulevard • most potential for noise level increases from proposed stations at Tomken, Fieldgate, Renforth; at grade near residential area • highest potential for heritage or archaeological sites; crossing creek at site of existing bridge on Eglinton Ave. • 1750m at-grade; most visual impact, crosses creek at a new location	• land required from 13 private, 11 public properties • low potential for joint development on lands along alignment; divides property owned by Joluk Construction • least service to Airport Corporate Centre	• construction cost approx. $171 million • purchase of 16 public hectares, 5 private hectares • rental of 15 hectares of Hydro land	• significantly less expensive but less service to Airport Corporate Centre, and most visual and noise impacts **Carried Forward**



LEGEND ● STATION LOCATION
E.W.R.T.-EGLINTON WEST RAPID TRANSIT (PROPOSED)

MISSISSAUGA TRANSITWAY FUNCTIONAL PLANNING STUDY	EXHIBIT 36	ALIGNMENTS SUBJECT TO DETAILED ANALYSIS CAWTHRA ROAD TO RENFORTH DRIVE EAST SECTION

TABLE 41 - SUMMARY OF DETAILED ANALYSIS OF ALTERNATIVES

FIELDGATE DRIVE TO RENFORTH DRIVE

	ALTERNATIVE E6 Tomken to Fieldgate, north along Fieldgate, east along north side of Eglinton		ALTERNATIVE E10 Follow Parkway Belt diagonally from Fieldgate around west side of gas station to Orbitor, along north side of Eglinton	
Factors	**Analysis**	**Performance**	**Analysis**	**Performance**
TRANSPORTATION SERVICE	• most flexibility to connect to north/south arterial west of Etobicoke Creek • most flexibility to accommodate possible future Transitway link to airport, east of Etobicoke Creek • 1,946 residents within 300m radius of stations by 2021 • 8,731 employees within 300m radius of stations by 2021 • 3.9% longer than fastest travel time	●	• low flexibility to connect to future north/south arterial west of Etobicoke Creek • least flexibility to accommodate possible future Transitway link to airport, east of Etobicoke Creek • 2,850 residents within 300m radius of stations by 2021 • 6,640 employees within 300m radius of stations by 2021 • shortest travel time	◒
NATURAL ENVIRONMENT	• low erosion potential at creek bank; erosion of valley walls likely • minimum individual tree specimens	●	• low erosion potential at creek bank; no erosion of valley walls likely • 250m bisecting major Etobicoke Creek forest; 100m through edge of small forest; 100m through treed hedgerow	○
SOCIAL-CULTURAL ENVIRONMENT	• least potential for noise level increases from proposed Fieldgate station; alignment swings furthest away from residential area • 250m at-grade; least visual impact, follows existing road corridors • high potential for heritage or archaeological sites; crossing creek at site of existing bridge on Eglinton Avenue	●	• most potential for noise level increases from proposed station at Rakely • 1750m at-grade; most visual impact, crosses creek at a new location • most potential for noise level increases from proposed stations at Tomken, Fieldgate, Renforth; at-grade near residential area • highest potential for heritage or archaeological sites due to creek crossing at new location	○
LAND USE & DEVELOPMENT	• land required from 11 private, 10 public properties • highest potential for joint development on lands along alignment; best service to Airport Corporate Centre	●	• land required from 13 private, 11 public properties • low potential for joint development on lands along alignment; divides property owned by Joluk Construction; least service to Airport Corporate Centre	○
COST	• construction cost approx. $176 million • purchase of 10 public hectares, 22 private hectares • rental of 13ha of Hydro land	◒	• construction cost approx. $171 million • purchase of 16 public hectares, 5 private hectares • rental of 15ha of Hydro land	●
SUMMARY	• slightly more expensive but provides best service and has fewer social-cultural and natural environment impacts RECOMMENDED		• less expensive but less service and most visual and natural environment impacts	

● Good / Most preferred ◒ Fair ○ Poor / Least preferred

Based on the evaluation, the E6 alignment serving the newly developing areas along Eglinton Avenue and particularly the Airport Corporate Centre was recommended. It is assumed that suitable negotiations can be completed with the major property owners affected to provide the additional lands required. If a suitable agreement cannot be completed alignment E10 would be recommended.

The E6 alignment includes a connection between Eglinton Avenue and the Transitway from the Fieldgate (future Eastgate Parkway) and Eglinton intersection. This connection enhances the performance of the E6 alignment by allowing what is likely to be a heavy bus service on Eglinton Avenue to access the Transitway and provide service the Airport Corporate Centre stations while avoiding signals and traffic congestion on the portion Eglinton east of Fieldgate. Mississauga Transit had specifically requested that this connection be provided.

The Renforth / Eglinton area has been proposed as the location for a major gateway for transportation mode integration. It is intended that the Transitway connect to some form of rapid transit in Metropolitan Toronto at this location. A study of the Eglinton Corridor within Metro is currently underway during which a preferred technology and alignment will be selected. While the horizontal (plan) configuration for the Transitway can be set at this time, the vertical options will be dependent on the Eglinton decision on technology and other possible transit connections. The Renforth terminal would also be a candidate for an anchor to a potential future rapid transit link to the Lester B. Pearson International Airport immediately to the north. This link has been studied in the past, and is an element in the current federal / provincial study of the airport area's long term ground transportation needs.

4.5.4 Summary of Evaluation of Transitway Alignment Alternatives

Within the recommended Transitway corridor, specific alignment alternatives were developed and evaluated, with technical, public, economic, and environmental factors taken into consideration. A two-phase process was used, first consisting of an overview-level screening of all identified alternatives to establish which were feasible and attractive, and second the detailing, refinement, and direct comparative evaluation of those alternatives carried forward from the first phase. The involvement of technical agencies and local residents throughout this process resulted in recommendations generally satisfactory to the interested participants.

This process may be traced with the help of Exhibit 17 at the start of Section 4. For each Transitway section, the screening process (Table 34, Section 4.5.2.3) and the detailed analysis of viable alternatives (Tables 29-33, Section 4.5.3) can be readily followed. Table 42 (also included as Table 3 in Executive Summary, Section 1) provides a brief summary of the rationale for the alignment recommendation in each Transitway section.

TABLE 42 - SUMMARY OF EVALUATION OF ALIGNMENT ALTERNATIVES

Ninth Line to Winston Churchill Blvd.	Winston Churchill Blvd. to Erin Mills Parkway	Erin Mills Parkway to Mississauga Road	Mississauga Road to Mavis Road	Mavis Road to City Centre	City Centre	Hurontario Street to Cawthra Road	Cawthra Road to Fieldgate Drive	Fieldgate Drive to Orbitor Drive	Orbitor Drive to Renforth Drive
The recommended location for the Transitway is in the transit corridor.[1] A draft Secondary Plan for the land north of the Transitway has been prepared and is currently undergoing public review; there is a possibility that the future plan for the area could be adjusted to strengthen usage of the Transitway by integrating it into the development. Possible conflict with Ontario Hydro is minimized.	The recommended Transitway alignment makes a transition from the designated transit corridor[1] to the designated utility corridor[1] east of Winston Churchill Blvd. This alignment shifts the Transitway away from the existing residential development located adjacent to the designated transit corridor[1]. This alignment is preferred over an alignment south of Highway 403 because of its lesser impact on the Winston Churchill / Highway 403 interchange. An alignment south of Highway 403 would also impact on the residential development on the south side of the Parkway Belt, and there is insufficient room to provide a station and station ancillaries with south side alignments.	The recommended Transitway alignment is in or just south of the utility corridor.[1] This alignment is approximately equi-distant from the residential development on the north and south edges of the Parkway Belt. An alignment in the designated Parkway Belt transit corridor[1] would directly border the adjacent low density residential development. An alignment in the Highway 403 median would limit MTO's plans to widen Highway 403. Providing a station and its ancillaries on the south side of Highway 403 would impact significantly on the adjacent low density residential development.	The recommended alignment of the Transitway is in or just south of the designated utility corridor[1]. An alignment in the designated transit corridor[1] would directly border the adjacent residential development. There is also insufficient space to fit a station and station ancillaries in the transit corridor[1]. An alignment in the Highway 403 median would limit MTO's plans to widen Highway 403 to its ultimate 8 lane cross section.	The only feasible Mavis Station location was in the northwest quadrant of the interchange. A crossing of Highway 403 was therefore required to reach the City Centre. In choosing between a route located between Highway 403 and Ontario Hydro, and one south of Highway 403, the former is preferred. The reasons include a greater separation from existing homes at an equivalent cost, an optimum crossing of Highway 403, and a minimum length of costly underground Transitway within the City Centre area.	Since the Transitway as a whole is premised on the provision of good service to the City Centre, a route which penetrates the core of the area as much as possible is preferred. However, at some point the balance of additional service and extra cost is reached. In assessing demand and cost for a great number of options, a Transitway route which would leave the Parkway Belt east of Confederation Parkway and use the Rathburn Road corridor eastward to Hurontario Street was considered optimum.	A route within Ontario Hydro r.o.w. is unacceptable to Ontario Hydro. Highway 403 ultimate collector lane requirements need protection. A choice remains between a route immediately south of Ontario Hydro and one between the freeway and the south limit of the corridor. The north route is $15m more costly, and although farthest from homes south of Highway 403, would be very visible. The south route would maintain a 30-50m gap from the adjacent residential property line, place few constraints on Highway 403, minimize woodlot damage, and could be readily blended into the landscape. Upon extensive review with area residents and all agencies, a south side route was recommended.	The recommended location for the Transitway is in the utility corridor[1] between the Hydro corridor Eastgate Parkway. This alignment was selected after a comprehensive review and extensive public involvement during the Highway 403 Arterial Road (Eastgate Parkway) Preliminary Design Study.	The choice between a route in the designated transit corridor[1] and a route following the 403 Arterial to the north side of Eglinton Avenue provided a trade-off between better service to the area and least cost. The transit corridor[1] alignment was less costly ($30m) but provided inferior service to the Airport Corporate Centre and involved significantly greater impacts to the natural environment. The cost of the Eglinton alignment could be reduced by providing an open cut cross section. With the reduced cost the Eglinton alignment is preferred.	The recommended location is in the corridor[1] protected for transit in the Parkway Belt West Plan on the north side of Eglinton Avenue. This option connects the preferred north side Eglinton option to the proposed Renforth Gateway station. Public property is available at the Renforth location to develop a full facility gateway station. Other options on the south side of Eglinton affect the Transitway development and do not provide the same opportunity for the Gateway development.

[1] currently designated in the Parkway Belt West Plan

4.5.5 Analysis of Alternatives - Public Involvement

Public input to the analysis of alternatives stage of the Mississauga Transitway Planning Study focused squarely on the physical layout of the facility within the recommended corridor. The concerns expressed were almost exclusively those of existing residents adjacent to the corridor, and were directed towards minimizing potential impacts by locating the Transitway as far away from residential properties as possible. In doing so, concerns about the potential impact on existing vegetation (where wood lots exist) were highlighted. Commercial developers, on the other hand, desired alignments which maximized accessibility to all properties within the City Centre and Airport Corporate Centre.

4.5.5.1 Adjacent Residents and Businesses

Over the entire Transitway route, the direct involvement of major interested agencies such as Ontario Hydro, Ministry of Transportation, City of Etobicoke, and many others was ensured through regular review at tri-weekly meetings of the Technical Co-ordinating committee and through individual meetings and correspondence.

Ninth Line to Credit River

In the section west of the Credit River, it was generally accepted that the Transitway should be north of Highway 403, but north side residents were extremely active in pressing for a route adjacent to the freeway and as far away from, and buffered from, existing homes as possible. Since a significant cost premium was involved, several alternatives were developed and the final recommendation is for an alignment which is in all cases separated from existing residential properties by the Ontario Hydro corridor or another buffer strip. Station impacts varied little no matter what route was chosen north of Highway 403, and specific mitigation measures regarding noise and visual intrusion were incorporated in the final recommendations for each site. Although some residents in the area still question the need for the facility, most recognize that the recommended layout is the optimum achievable in the corridor. West of Winston Churchill Blvd., where property is undeveloped, concern has been expressed about the potential location of future homes adjacent to the Transitway; the City is committed, through the process of developing a Secondary Plan for the area, to ensuring that the location of the Transitway and the land use types adjacent to it are fully compatible.

Credit River to Confederation Parkway

East of the Credit River, the major period of public interest in the alignment selection process involved residents south of Highway 403 east of Mavis Road during the South Service Road Planning Study in 1988-89. When the technical analysis for the Transitway showed a preference for a route north of Highway 403 west of Confederation Parkway, those residents who came to the Information Centres to ensure that it was not south of the freeway were relieved and supportive of the alignment. Because the route is buffered from adjacent residents on the north side by the broad Ontario Hydro corridor, and there is currently no development near the Mavis Road Station, there was little other public concern evident in this segment.

Mississauga City Centre

Within the City Centre, the alignment of the Transitway was a major concern of property owners / developers, particularly in the Burnhamthorpe Road corridor. A number of meetings and presentations occurred with all City Centre property owners, and the major landowner (part of whose property would be required for the construction of any alternative), Hammerson Canada Inc., was directly involved in the portion of the study within the City Centre. With a reassurance that the ultimate internal transit circulation system within the City Centre would afford equitable access to all parts of the Centre, general acceptance of the recommended alignment was achieved. The involvement of all property owners was enhanced by the fact that the review was carried out as a component of the City Centre Secondary Plan updating process.

Hurontario Street to Cawthra Road

Between Hurontario Street and Cawthra Road, the constraints within the corridor strongly supported an alignment south of Highway 403, while the adjacent residents pressed for a northern alignment, or at least one which was immediately adjacent to the freeway and as far as possible from the homes. Property owners on the north side of the corridor are fewer and were less vocal, but did not support a route north of the freeway. A tripartite process involving the City of Mississauga, the Ministry of Transportation, and the local residents evolved through 1990, with the continued development of alternative configurations of the Transitway and ultimate Highway 403 technical review by Ministry staff, and meetings with the local City Councillor and the local residents (both as a group and as a representative committee). Residents also held their own gatherings on the issue. The result was a plan which, in February 1991, met with the approval of all the parties involved in the process. Although some residents would still prefer to see the route north of the freeway, the rationale for the south side route is generally accepted as being sound and one which is the optimum attainable under the constraints present. A three-dimensional topographic scale model of the affected section was made by the City in order to help the parties understand the potential impact of the recommended route; it proved a valuable aid in the review, and remains available for viewing.

Cawthra Road to Fieldgate Drive

East of Cawthra Road, the public involvement process occurred during the Highway 403 Arterial Extension project in 1987-88. This was an extraordinarily extensive program, including public meetings of up to several hundred local residents and the formation of a Community Advisory Committee which met several times to provide community input to the study. These activities and results are documented in Section 3.3, and in the Environmental Study Report prepared by the City for the Arterial project. With this intense public input as recent history in the area, subsequent public interest in the Mississauga Transitway Planning Study itself was limited and produced no significant changes to the initial plan.

Fieldgate Drive to Renforth Drive / Airport Corporate Centre

East of Fieldgate Drive, public involvement in the study mainly took the form of individual meetings and correspondence with the developers and property owners in this commercial area. Interest was mainly in station locations and system accessibility; a key issue is the amount and location of property requirements for the facility. There is strong support for the project amongst Airport Corporate Centre developers, while there are no firm plans in place for property in the Fieldgate area. The points of concern which still exist are not those which can be resolved at the functional planing stage; further consultation throughout the preliminary design process will be required.

4.5.5.2 Public Opinion Poll

In order to gain a fuller understanding of city-wide public awareness and concerns regarding the Transitway proposal, a decision was made to carry out a poll of City residents.

In December, 1990, following the extensive city-wide publicity effort associated with the third round of public review, the City commissioned Environics, Ltd. to add a number of Transitway-related questions to the December Metropoll telephone survey. A random selection of 807 phone interviews with Mississauga residents 15 years of age and older produced the following results:

- 30% of Mississauga's residents were aware of the City's plans to build a Transitway (ranging from 13% among teens up to 45% among those over 45)

- information sources for those who were aware of the Transitway were: 59% newspaper articles, 18% flyers, 13% television, and 11% friends / neighbours.

- support was greatest in Ward 9 (Meadowvale) and opposition greatest in Ward 3 (Dixie / Burnhamthorpe). This would appear to reflect the relative utility of the Transitway to residents of the different areas - average trip length to the City Centre or to Metro is significantly less among Ward 3 residents, therefore the potential benefits are less than for Wards where longer distances are travelled.

- those who oppose the Transitway feel that it would only benefit special groups (i.e. they would be paying for a facility which others would benefit from). This reflects the difficulty experienced during the project of explaining the role of the Transitway in the city's overall transportation context, and of the benefits which a balanced transportation system would provide to all Mississaugans. Also, since 85 percent of travel in Mississauga is currently by car, it is reasonable to expect that publicly-funded transit improvements would be viewed by most residents as serving "others".

- benefits of the Transitway cited included removing cars from the road (30%), increasing transit service (14%) and speed (11%), meeting community transit needs (10%) and connecting with other GTA transit systems (8%). It is of note that, even with the high profile given environmental issues in the media and

transit's clear advantage over other modes in this area, only 4% of respondents cited "less harm to the environment" as a Transitway advantage. The perception of "removing cars from the roads" would appear once again to be based on the idea that "other" people would use the Transitway, thereby clearing the roads for the existing car drivers to maintain their travel patterns.

- the biggest problem cited with the Transitway is its cost, at 25% of respondents; no other single problems were identified by more than a small proportion of respondents. This is a particular issue with those who oppose the Transitway; 41% of them used cost as an argument against it.

- after being read a description of the proposed Transitway, and having commented on the potential benefits and problems, overall support for the construction of a Bus Transitway registered 68%. 22% were opposed.

Overall, there appears to be strong support among the broad community for the Transitway, particularly among those who see themselves as benefitting from its implementation. It is also evident that a great deal of ground remains to be covered in marketing the city-wide benefits of transit use and increasing support among those who do not use transit. The ability to phase the implementation cost in accordance with need, and a quantification of the impact on the individual taxpayer are useful measures in responding to the concerns about the cost of the facility, as is the comparison of Transitway economic considerations with those of the alternatives to it. These issues were addressed with City Council during its deliberations on the Transitway recommendations on September 23, 1991 (see Appendix F).

4.6 Summary of Rationale for the Recommended Alternative

The recommended plan for the Mississauga Transitway represents the culmination of several years of study and analysis. The rationale for the Transitway, its location, and its alignment is well established:

Need: continued planned growth in Mississauga must be supported by a balanced transportation network consisting of a variety of modes, facilities and services, of which the Mississauga Transitway forms an essential part. In particular, the Transitway addresses a significant future demand for east-west travel in central Mississauga, and can act as the entire City's east-west transit spine.

Mode: the provision of a Transitway dedicated to bus operation is the most cost-effective, flexible, efficient rapid transit concept for application in Mississauga. GO Trains do not serve intra-Mississauga travellers, subways are far more expensive to construct, and neither Light Rail nor Subway modes offer the operational and staging flexibility of a bus-based system.

Corridor: the use of the Highway 403 / Parkway Belt corridor is the least costly, least disruptive, yet most effective route for the Transitway, when compared to the Eglinton and Burnhamthorpe alternative corridors. An adequate right-of-way for transit use has been protected in the corridor by the Parkway Belt West Plan.

Alignment: the recommended Transitway alignment has been developed on a segment-by-segment basis which reflects the unique conditions and issues present along discrete portions of the route. Each portion of the route has been subject to refinement, review, analysis, and public involvement, and has gained support in all areas. The Transitway can be buffered from all existing homes backing on the Parkway Belt, while the plan protects all other existing and future users of the Parkway Belt. The Transitway will run as close as possible to existing roadways throughout its entire route east of Winston Churchill Boulevard.

In summary, for Mississauga to grow in the way it is planned, it requires a Transitway. It is recommended that the Transitway use bus operation and be located within the Highway 403 / Parkway Belt corridor on the specific alignment shown in this report.

4.7 Endorsement of Recommendations

Mississauga City Council, on September 23, 1991 approved the recommended Transitway plan as documented in the current Environmental Assessment Report. The Report to Council and the Resolution endorsing its adoption are included in this report as Appendix F. Alterations to the plan as originally presented in the Mississauga Road area have been reflected in the current report. Council also authorized the Commissioner of Planning and Development to prepare an Official Plan Amendment for the Mississauga Transitway. Commitment to a continued public involvement process carrying through to the completion of the Transitway was also made.

5. DESCRIPTION OF THE PROJECT

5.1 General Description

Following the identification and analysis of alternatives, a recommendation was made that the Transitway be generally located in the Parkway Belt West corridor. A two lane grade-separated Transitway was subsequently developed, with stations at all major crossing roads. The design of the project satisfies a number of goals:

- function;
- flexibility;
- minimal intrusion on existing adjacent properties;
- cost effectiveness;
- adequate capacity for ultimate needs;
- minimum impact on the environment (as defined in Section 3.2); and
- safety of operation.

The recommended plan for which Environmental Assessment approval is being sought comprises all of the physical elements required in the ultimate time frame to ensure the greatest possible effectiveness of the Transitway as shown in Section 5.2.1. A property envelope has been identified, within which it is capable to develop the Transitway to its fullest extent. It is recognized that some Transitway elements may be implemented many years after the first piece, but the property must be protected as early as possible to ensure that future Transitway provisions are not precluded.

5.2 Mississauga Transitway Recommended Plan

5.2.1 Recommended Transitway Alignment

The recommended Transitway plan is summarized in the following Exhibits (37 to 71), while Appendix R contains a complete set of plans and roadway profiles. The Transitway is proposed to stretch from a westerly terminus (pending linkage to a possible future Halton transit facility) near Ridgeway Drive north of Highway 403. The Transitway route will stay north of Highway 403 all the way to Confederation Parkway near the City Centre, running as close as possible to Highway 403 past existing residential areas and crossing the Credit River on a new bridge. The Transitway will underpass all north-south roads in this segment of the route, but at Confederation Parkway the route dips into a semi-tunnel more than 1,150 m in length in order to pass under Highway 403 and Rathburn Road. Upon crossing under the freeway to the south side, the Transitway will be in the highest-density part of the developing City Centre.

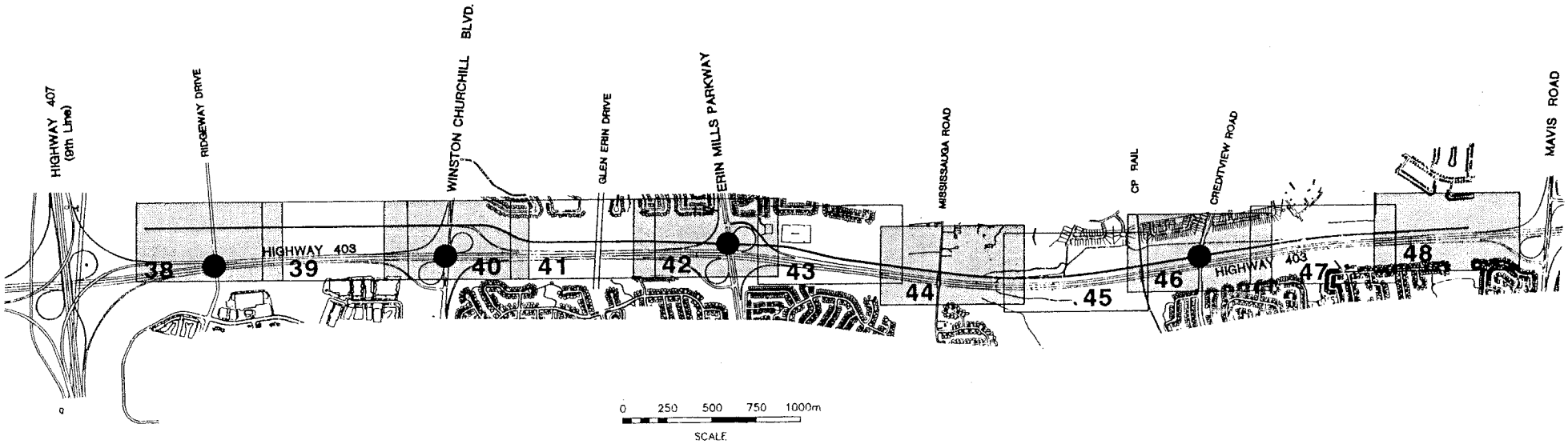
The route, in order to preserve long-term operational viability in what will be an increasingly congested area, is proposed to go directly under Rathburn Road utilizing a widened, open median.

The Transitway is proposed to cross under Hurontario Street, and will stay to the south side of Highway 403 to a point approximately 400 m west of Cawthra Road. At this point, the transition back to the northern part of the corridor must occur in order to correspond with the Transitway alignment determined during the Highway 403 Arterial Extension Study. By passing under two ramps and Cawthra Road, the Transitway will enter an alignment immediately north of Eastgate Parkway (passing under crossing roads) easterly to Fieldgate Drive. The transitway will then swing one-half a concession north along the east side of Fieldgate Drive, joining a corridor on the north side of Eglinton Avenue 625m west of Etobicoke Creek. The entire section along Eglinton Avenue will be in cut, with a series of on-line stations providing direct and convenient access for a great number of employers within the Airport Corporate Centre.

The ability to provide a station is protected for at each major crossing roadway, with the exception of Glen Erin Drive, Mississauga Road, and Confederation Parkway. Although physically feasible station opportunities currently exist at each of these sites, they do not form part of the recommended Transitway plan.

Access ramps to the Transitway for buses travelling on local roads will be provided at each major station. In addition, bus-only ramps at Glen Erin Drive and in the Eglinton/future Eastgate Parkway area will provide additional operational flexibility.

It may be noted that in no case does the recommended Transitway alignment pass adjacent to existing residential areas without a significant permanent buffer zone or utility corridor being located between the two.



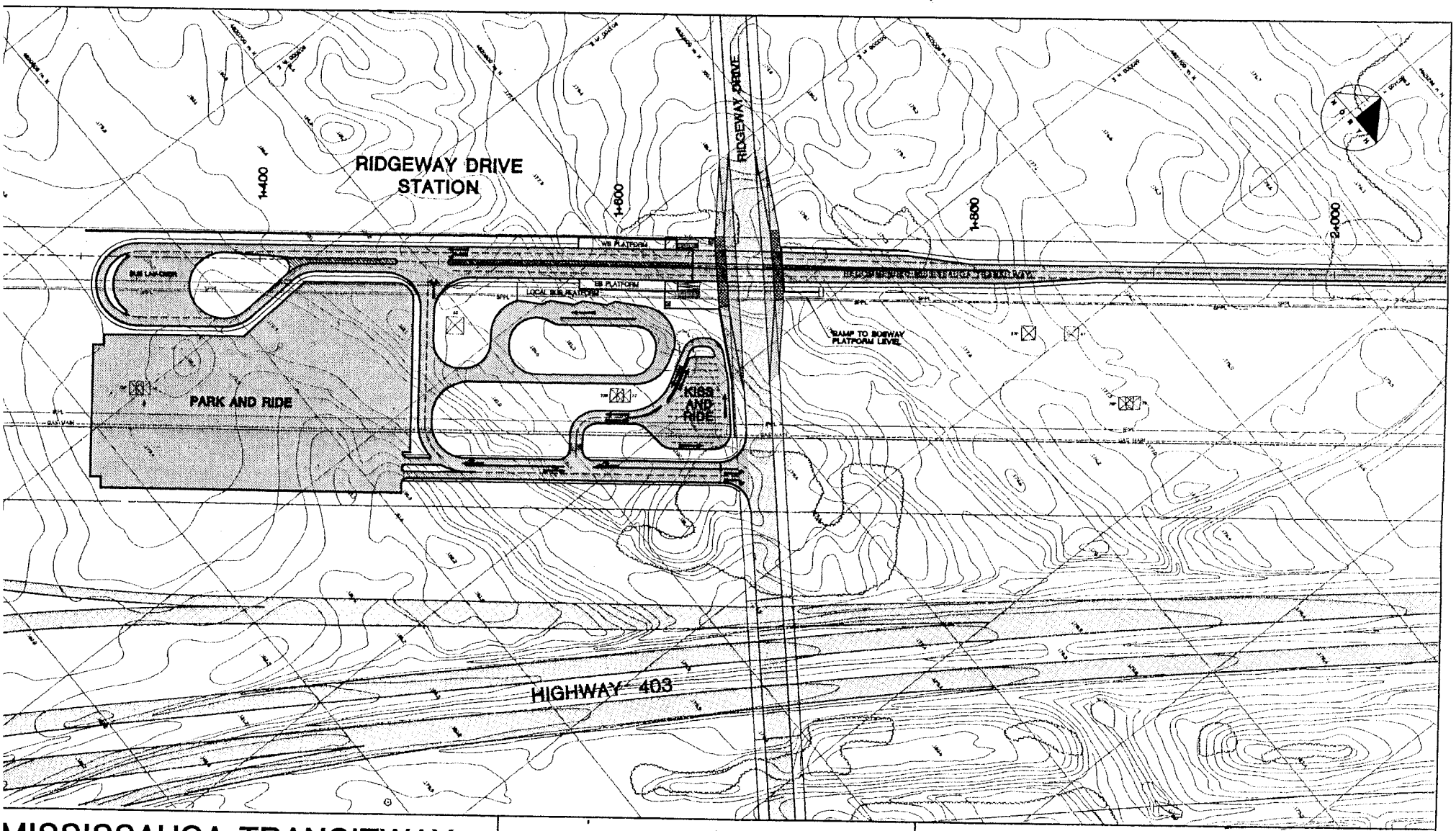
RECOMMENDED MISSISSAUGA TRANSITWAY — STATION

RECOMMENDED PLAN EXHIBIT No. 46

MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 37

KEY PLAN
NINTH LINE TO MAVIS ROAD



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

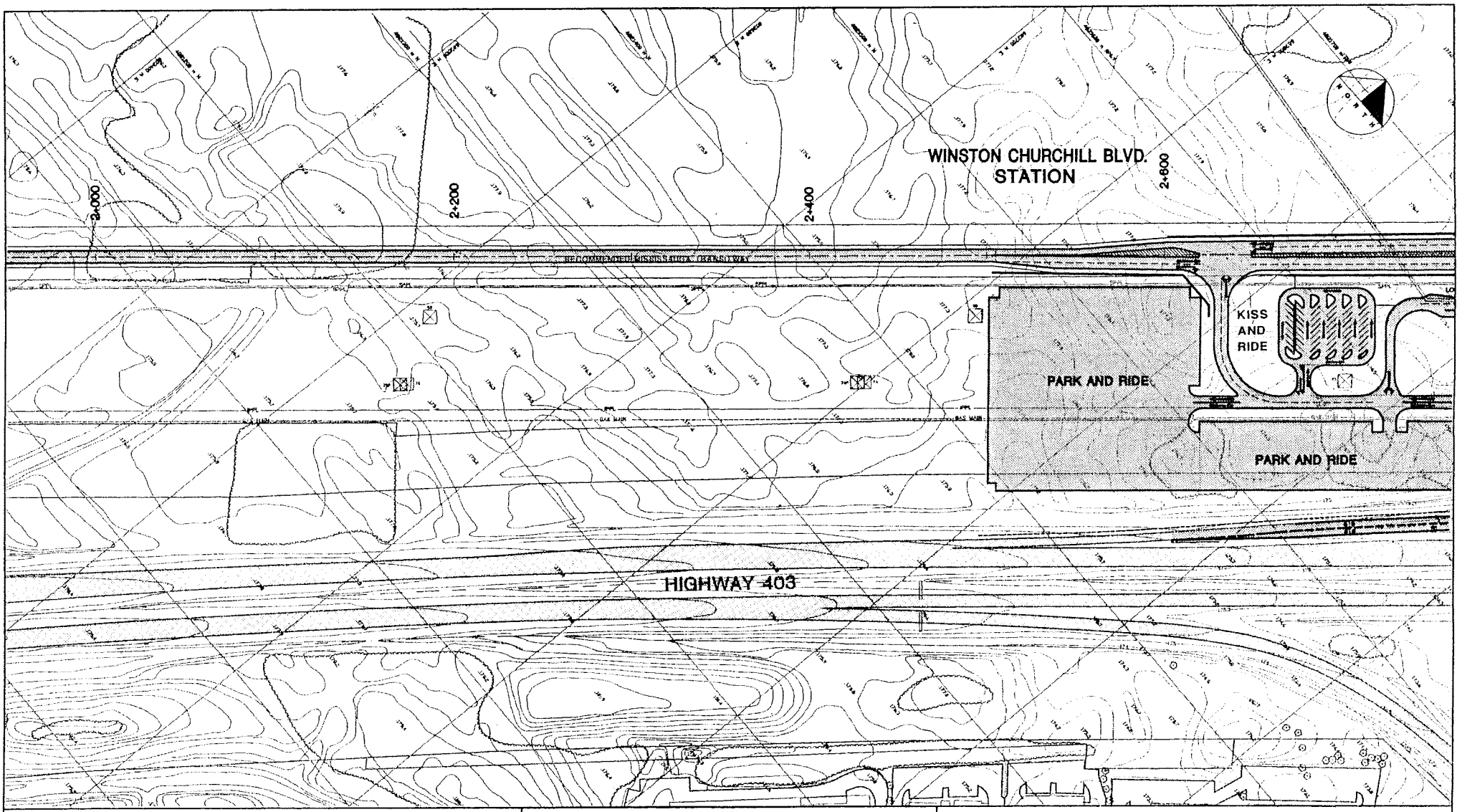
EXHIBIT 38

0 50 100 150 200

SCALE

RECOMMENDED PLAN

Sta. 1+300 to Sta. 2+000



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

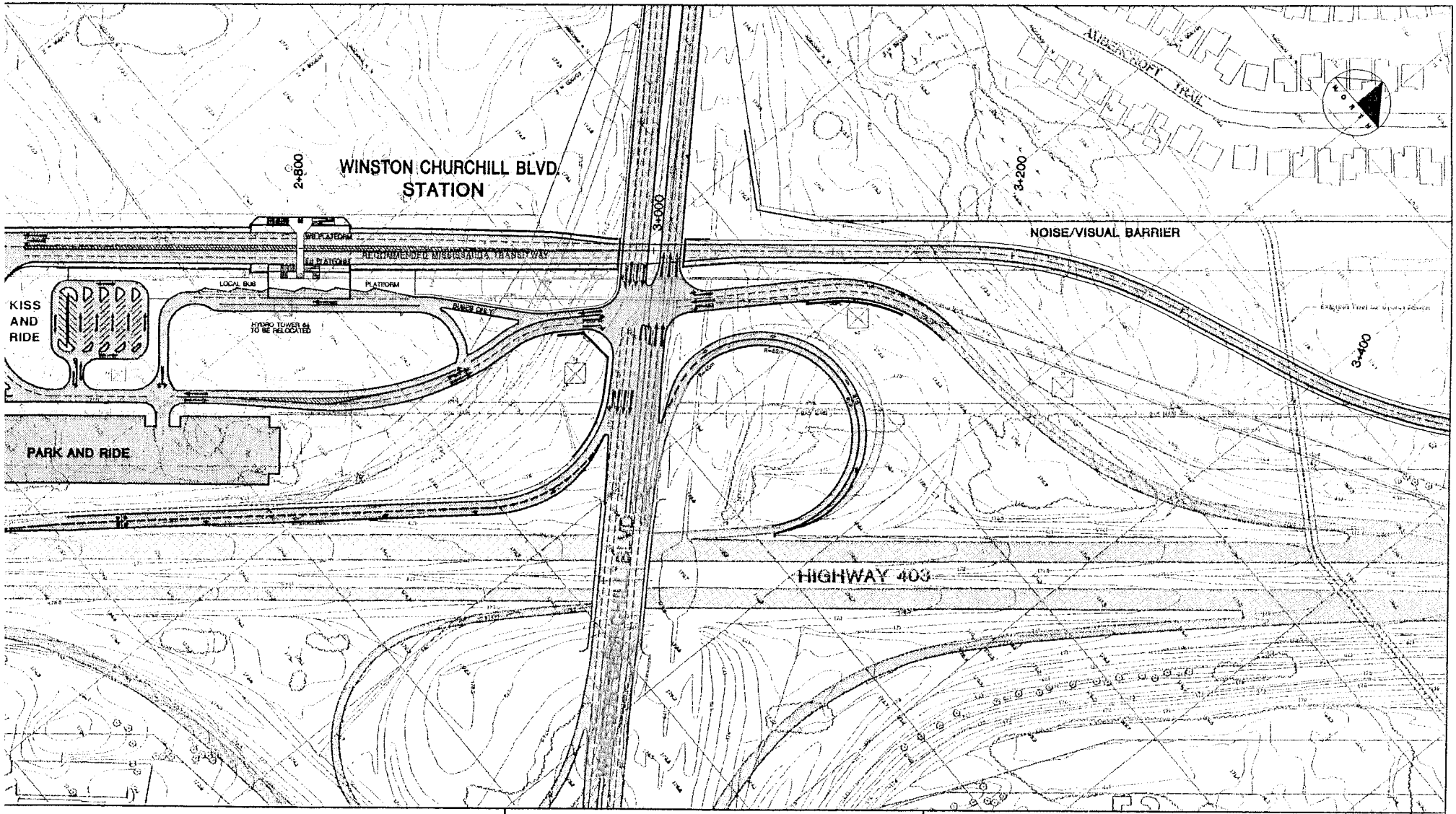
EXHIBIT 39

0 50 100 150 200

SCALE

RECOMMENDED PLAN

Sta. 2+000 to Sta. 2+700



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

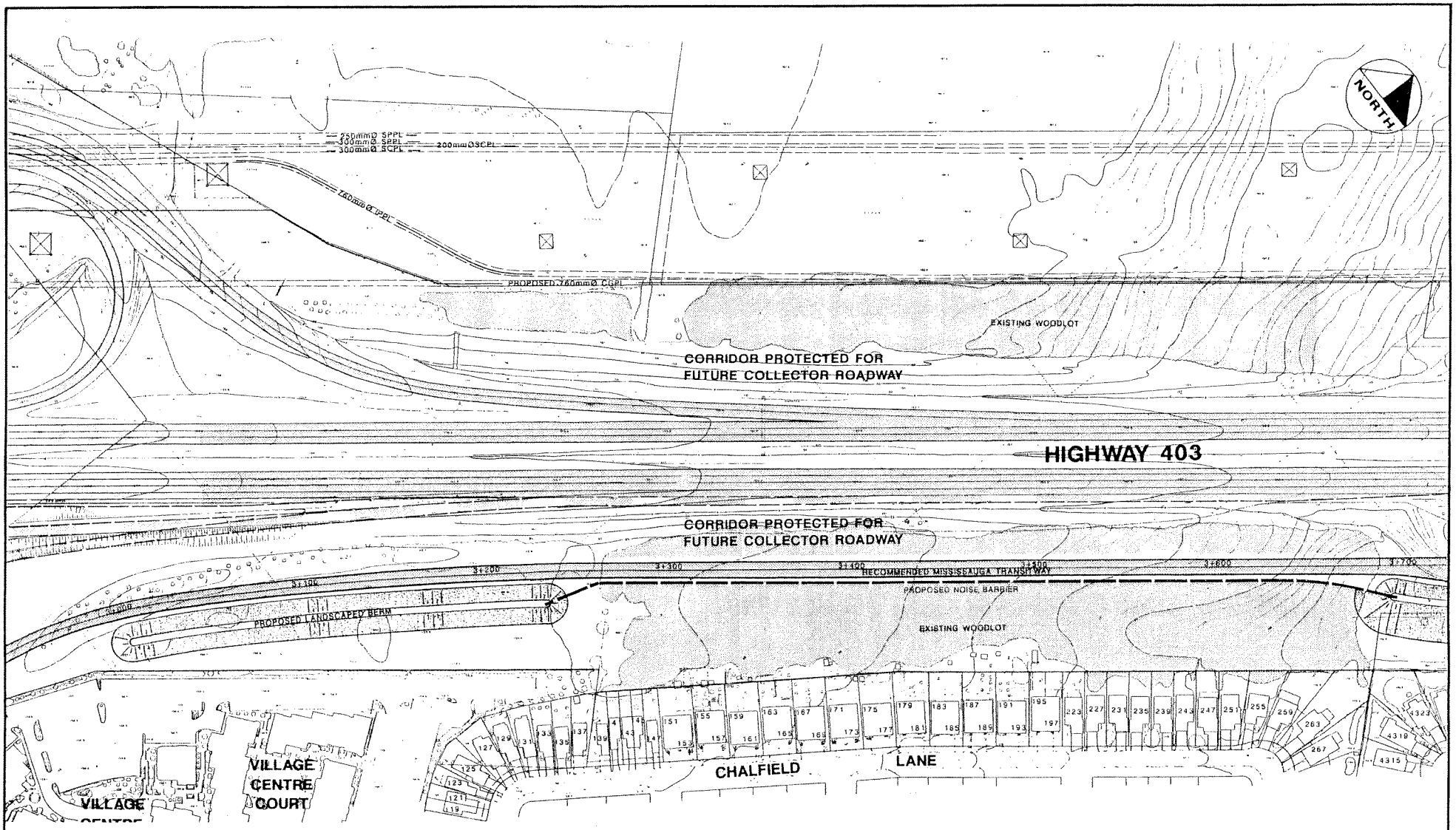
EXHIBIT 40

0 50 100 150 200

SCALE

RECOMMENDED PLAN

Sta. 2+700 to Sta. 3+400



MISSISSAUGA TRANSITWAY

FUNCTIONAL PLANNING STUDY

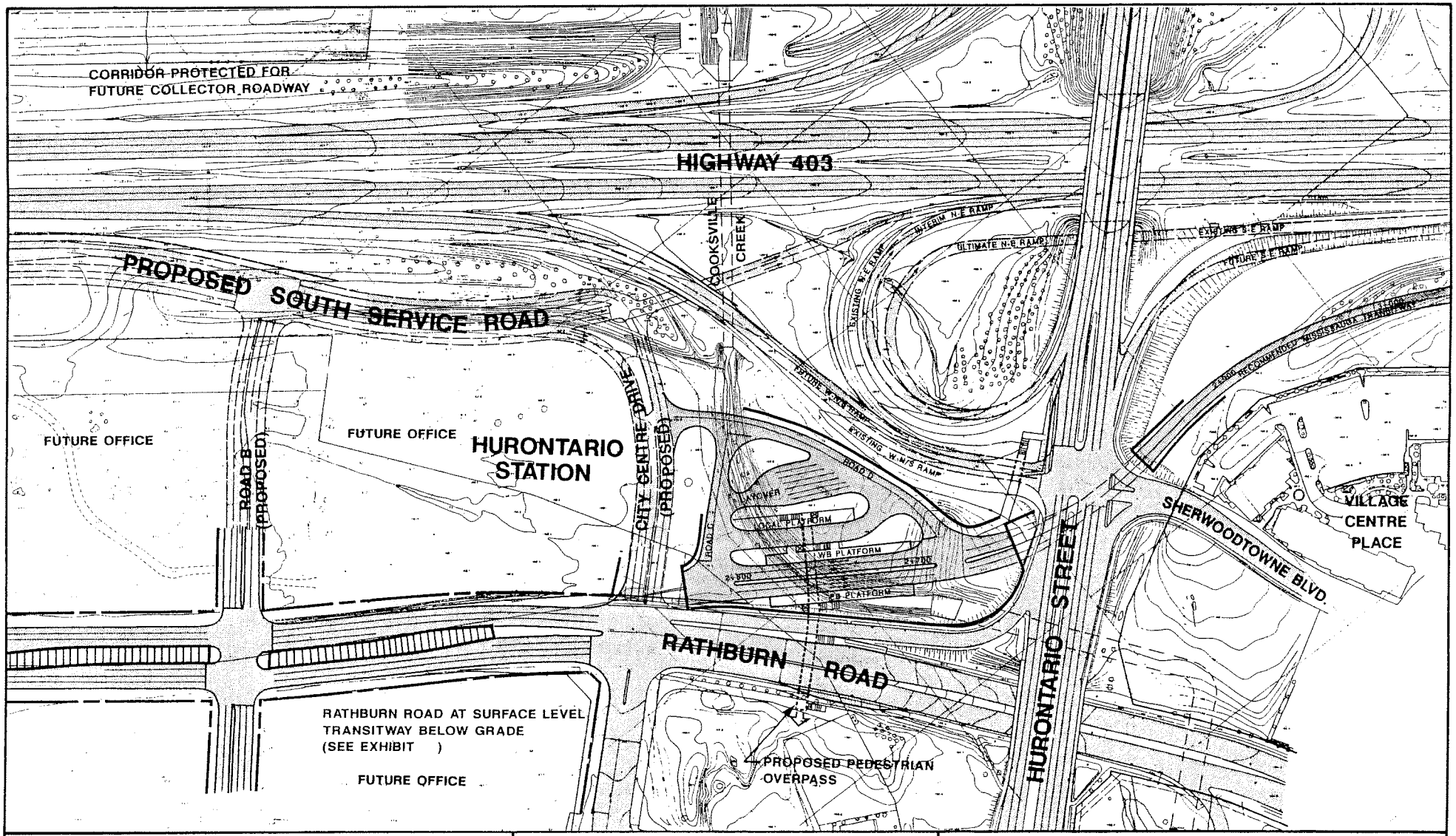
EXHIBIT 56

0 50 100 150 200m

SCALE

RECOMMENDED PLAN

Sta. 2+966 to Sta. 3+726



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

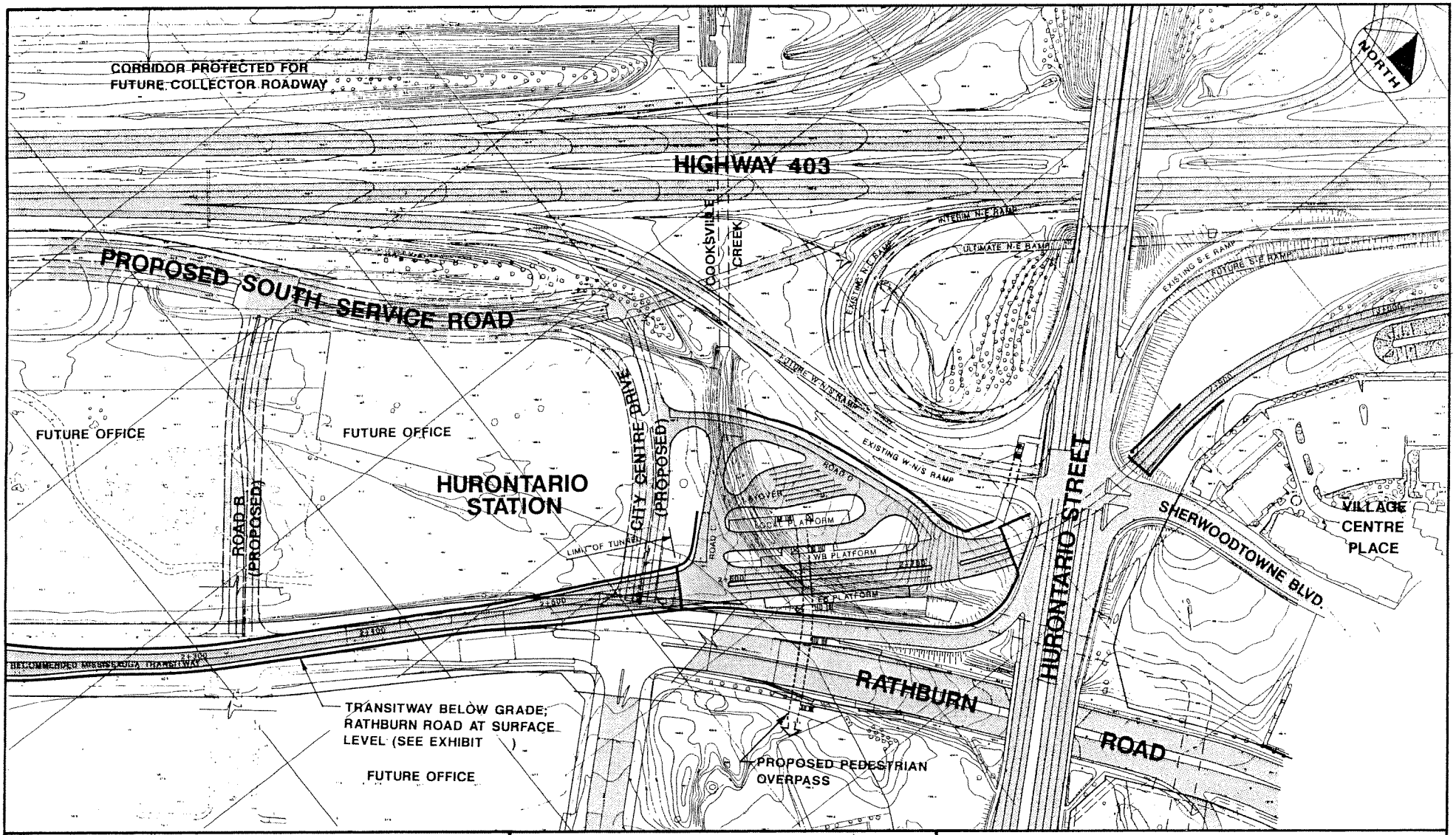
EXHIBIT 55

0 50 100 150 200m

SCALE

RECOMMENDED PLAN (SURFACE)

Sta. 2+200 to Sta. 3+035



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

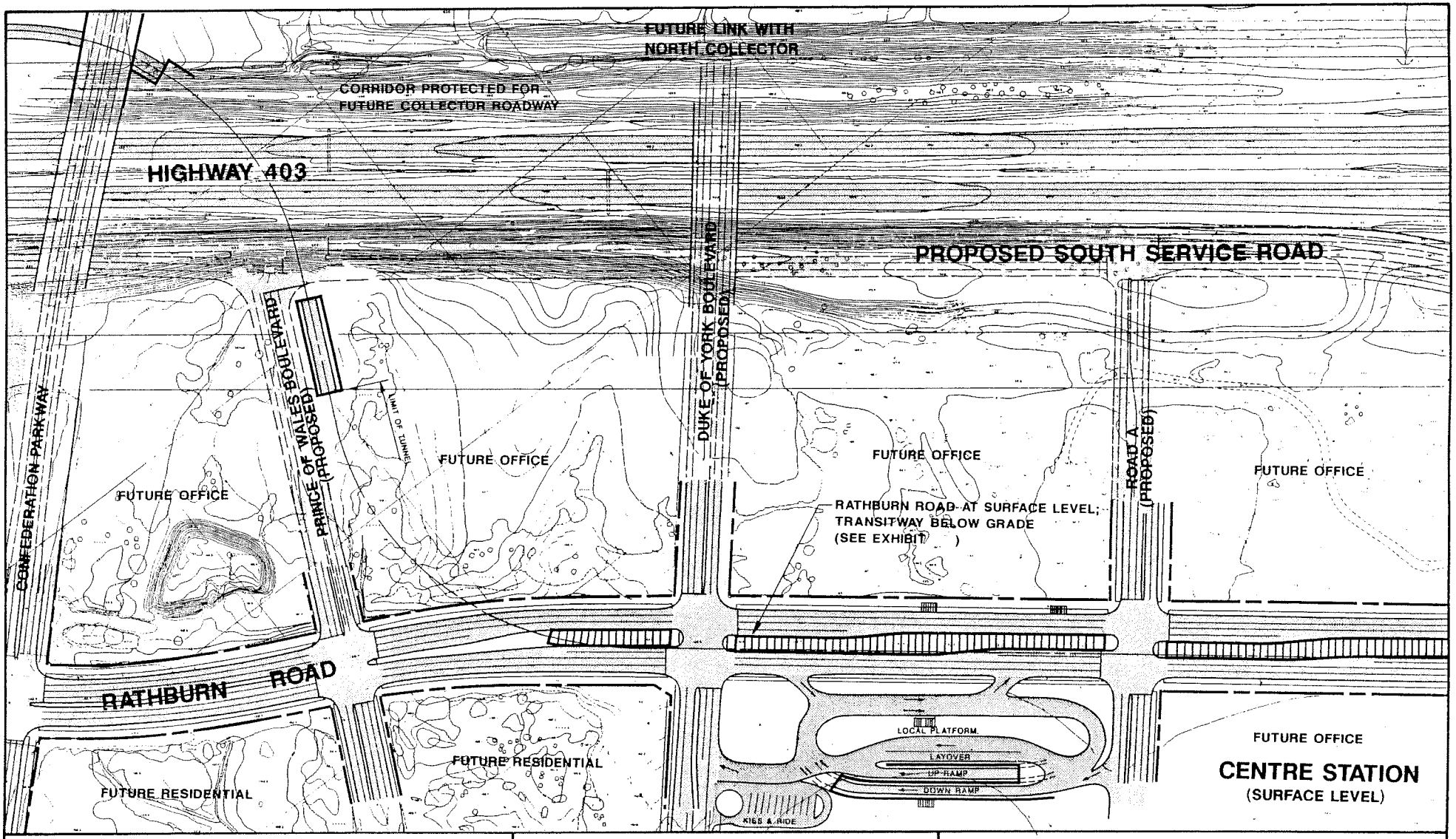
EXHIBIT 54

0 50 100 150 200m

SCALE

RECOMMENDED PLAN (TRANSITWAY)

Sta. 2+200 to Sta. 3+035



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

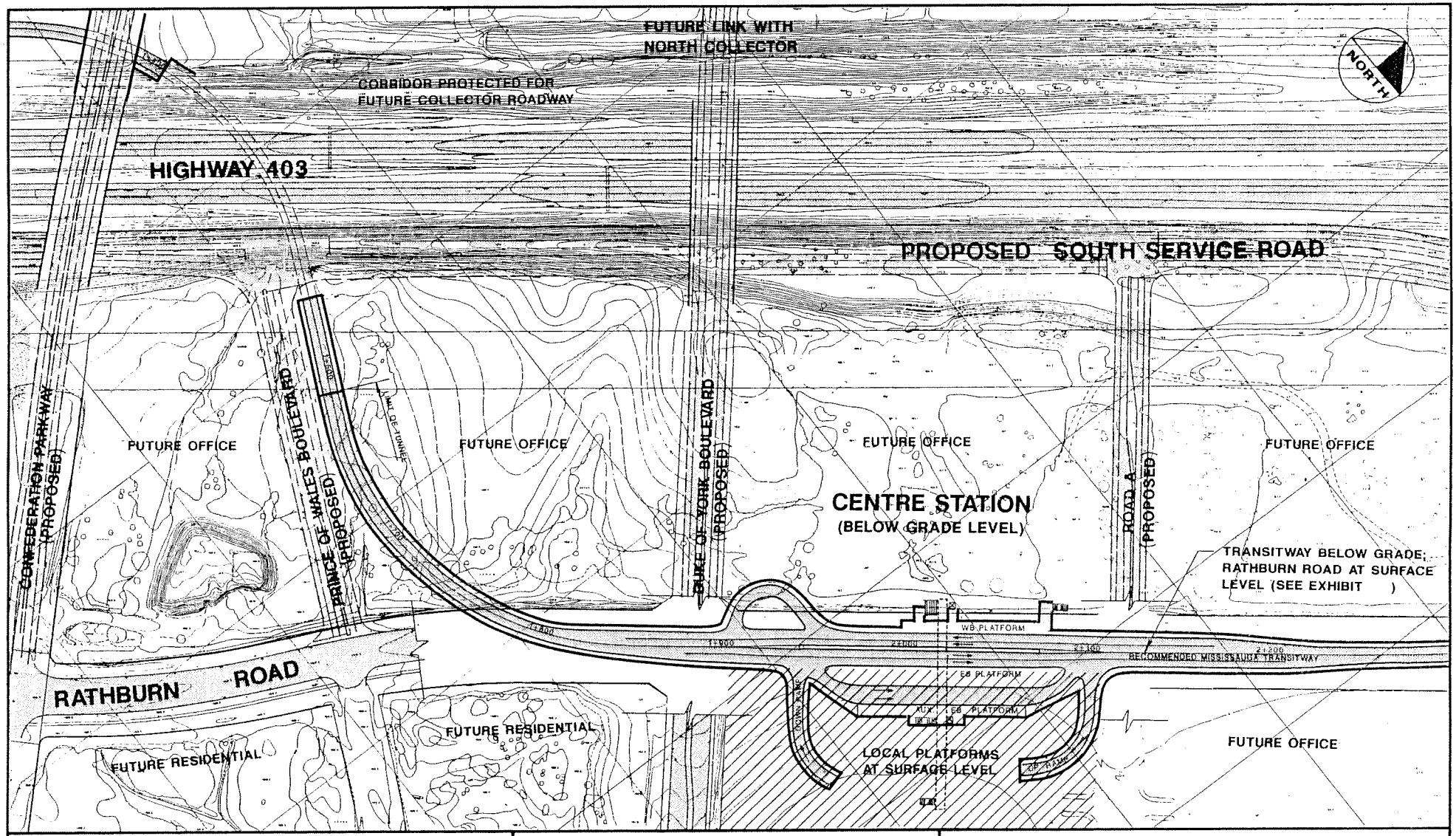
EXHIBIT 53

0 50 100 150 200m

SCALE

RECOMMENDED PLAN (SURFACE)

Sta. 1+320 to Sta. 2+300



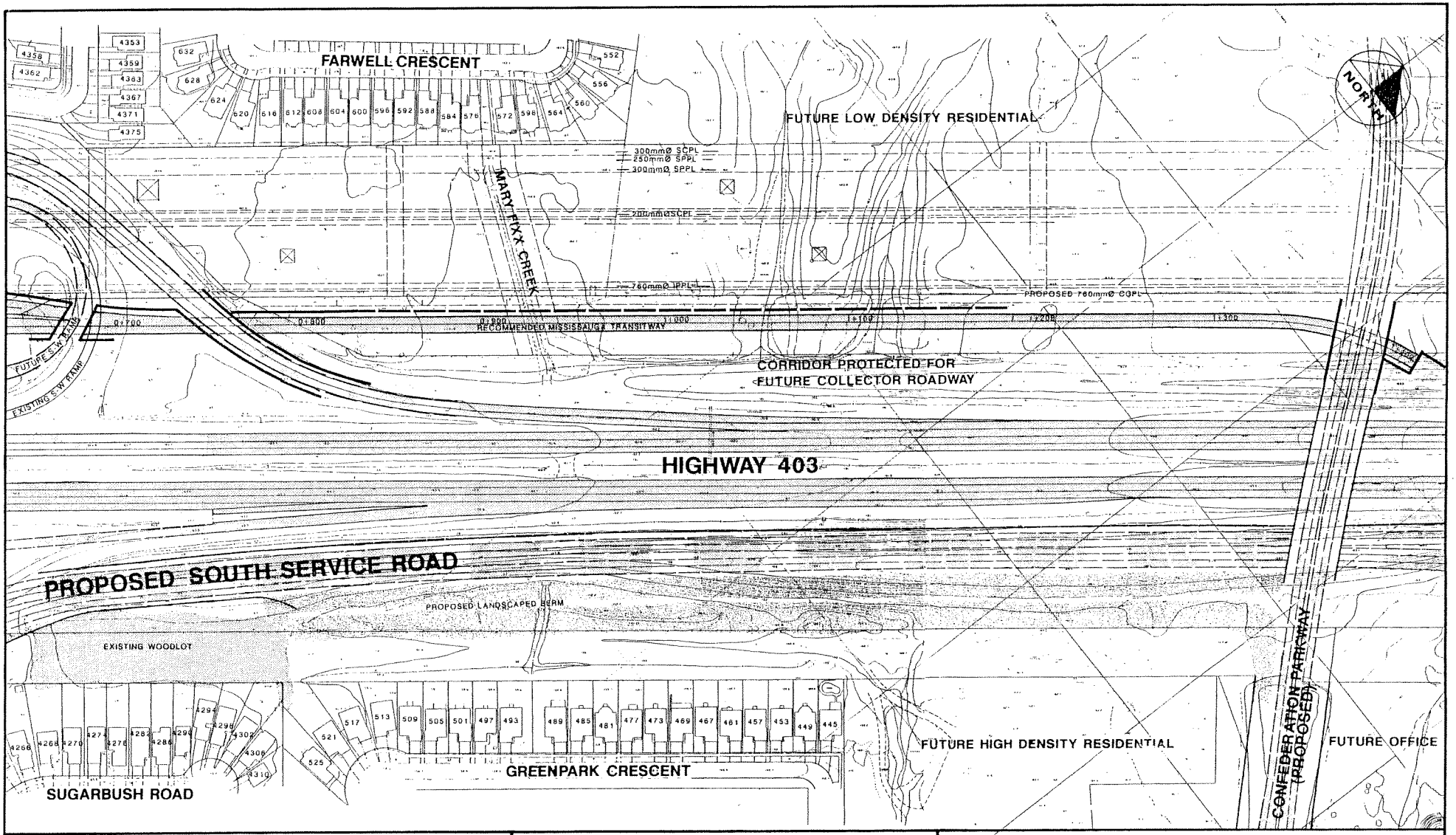
MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 52

0 50 100 150 200m

SCALE

RECOMMENDED PLAN (TRANSITWAY)
Sta. 1+320 to Sta. 2+300



MISSISSAUGA TRANSITWAY

FUNCTIONAL PLANNING STUDY

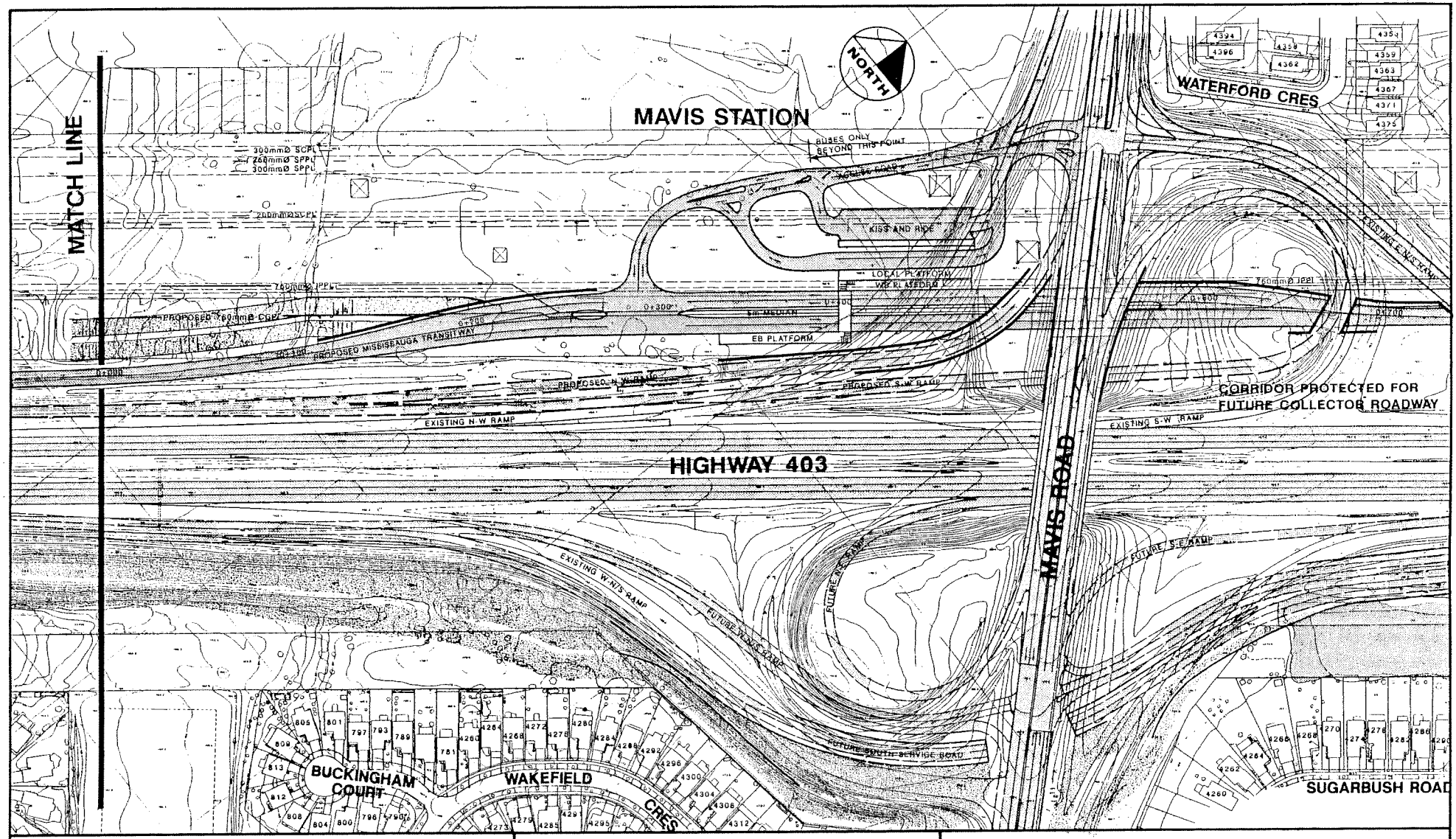
EXHIBIT 51

0 50 100 150 200m

SCALE

RECOMMENDED PLAN

Sta. 0+640 to Sta. 1+430



MISSISSAUGA TRANSITWAY

FUNCTIONAL PLANNING STUDY

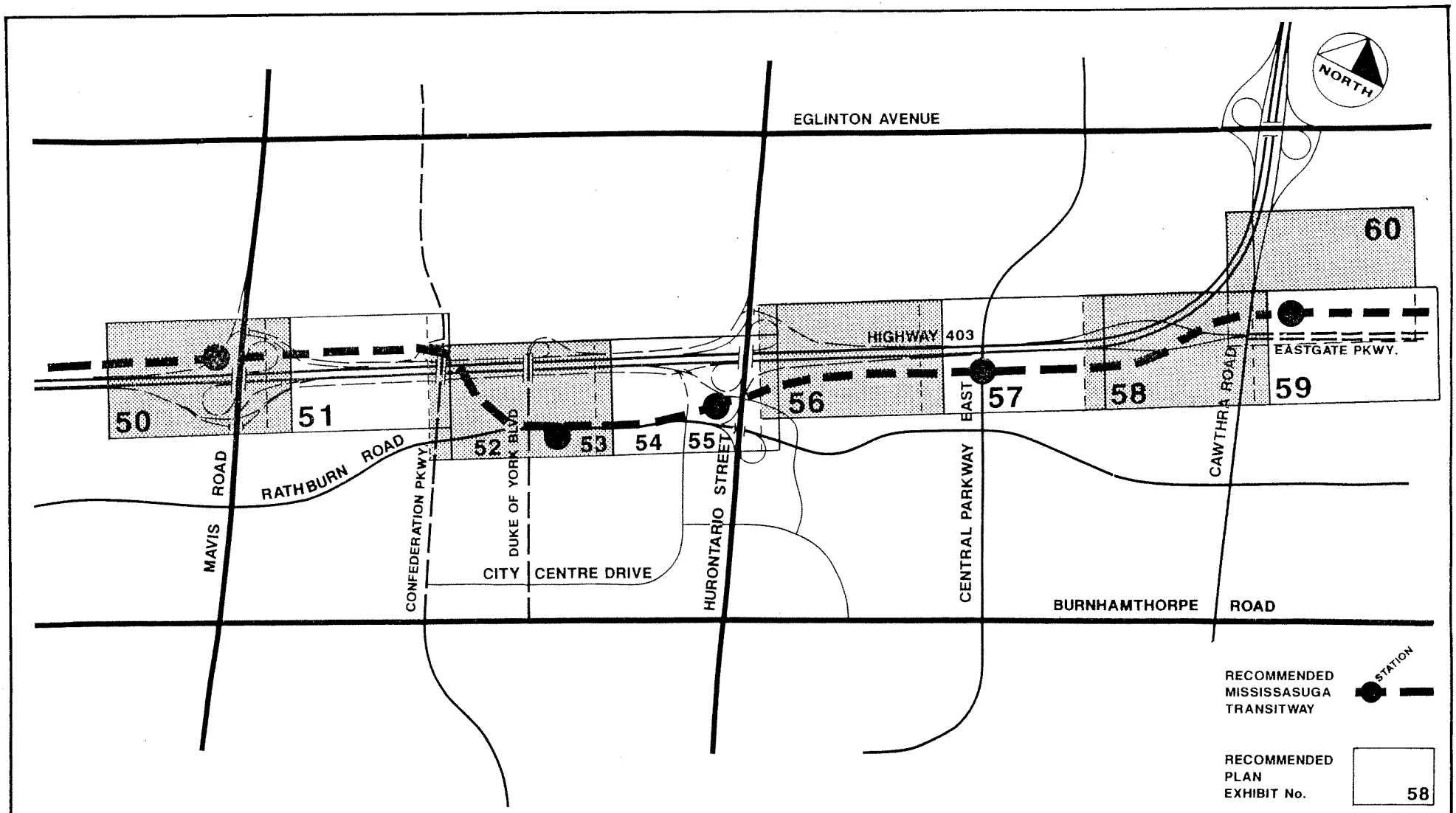
EXHIBIT 50

0 50 100 150 200m

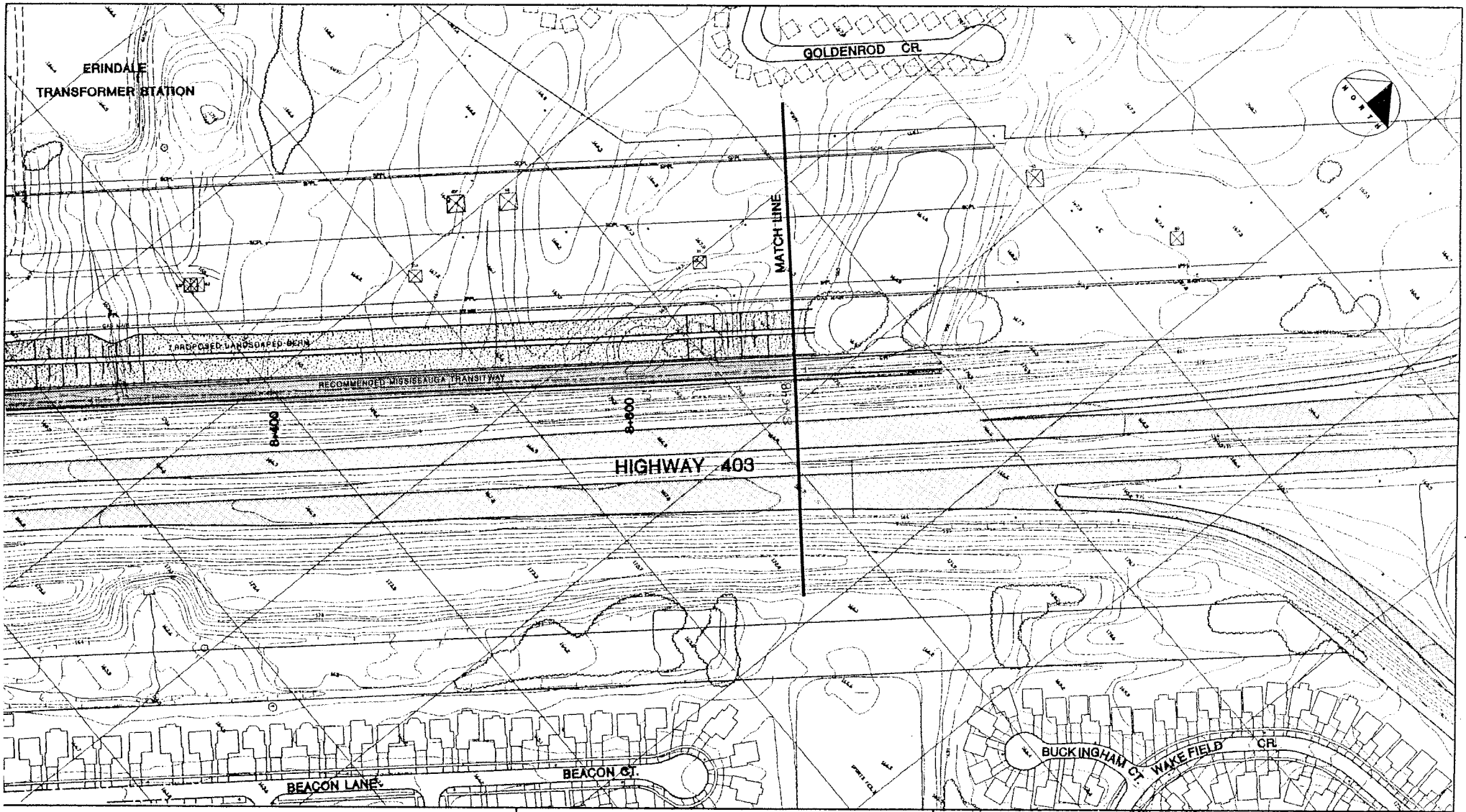
SCALE

RECOMMENDED PLAN

Sta. 0+000 to Sta. 0+736



MISSISSAUGA TRANSITWAY **FUNCTIONAL PLANNING STUDY**	EXHIBIT 49 (PLAN NOT TO SCALE)	**KEY PLAN** MAVIS ROAD TO CAWTHRA ROAD



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

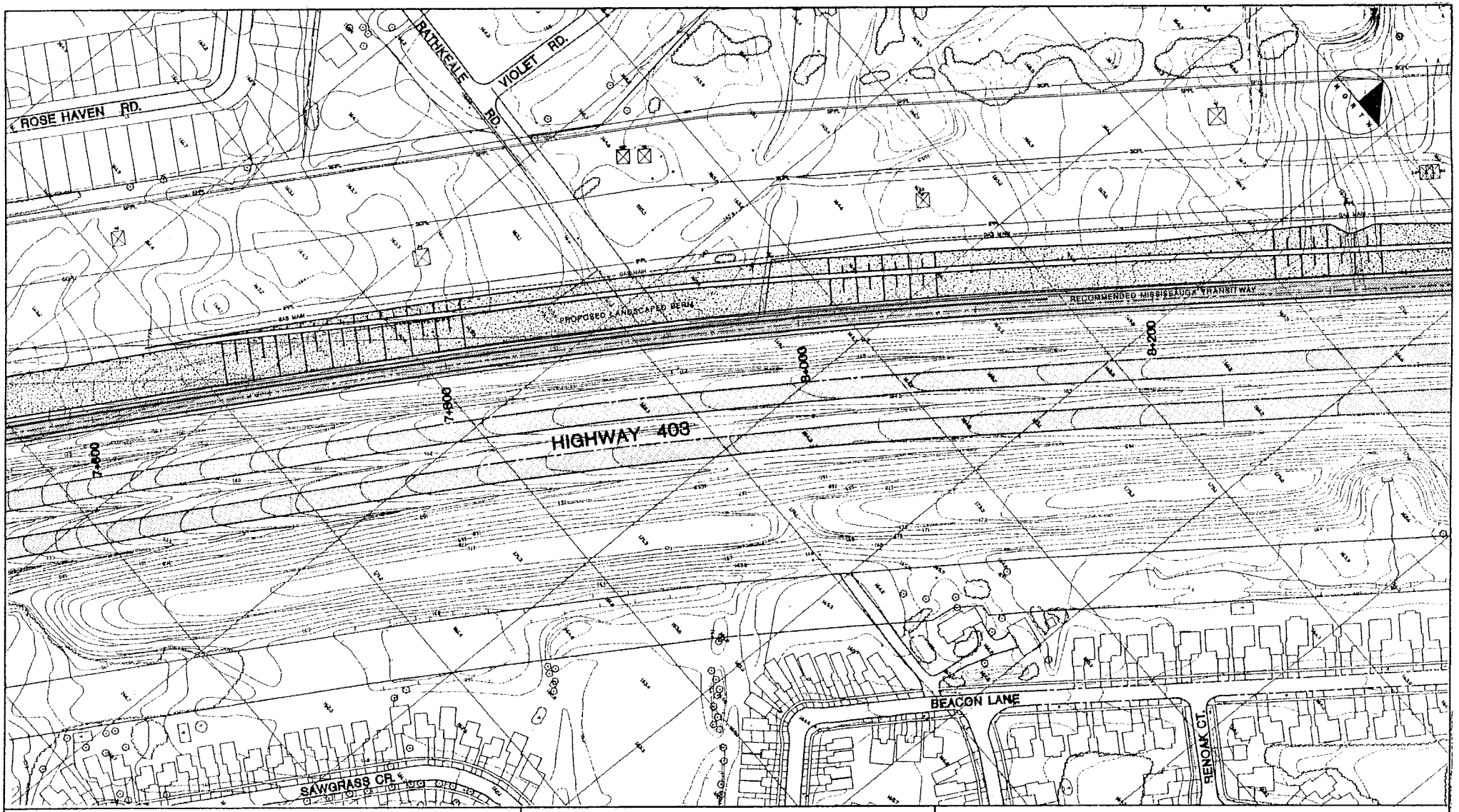
EXHIBIT 48

0 50 100 150 200

SCALE

RECOMMENDED PLAN

Sta. 8+300 to Sta. 9+000



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

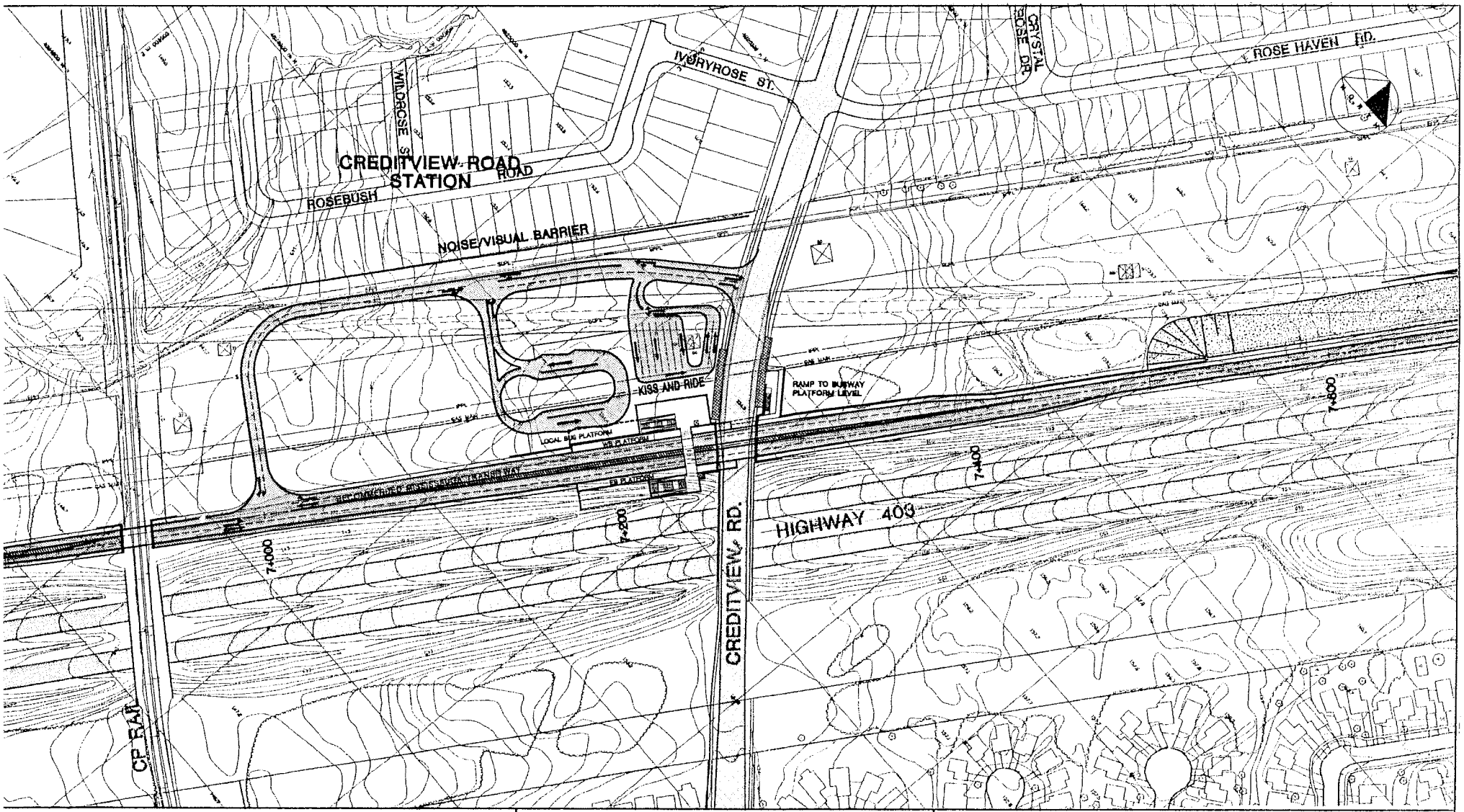
EXHIBIT 47

0 50 100 150 200

SCALE

RECOMMENDED PLAN

Sta. 7+600 to Sta. 8+300



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

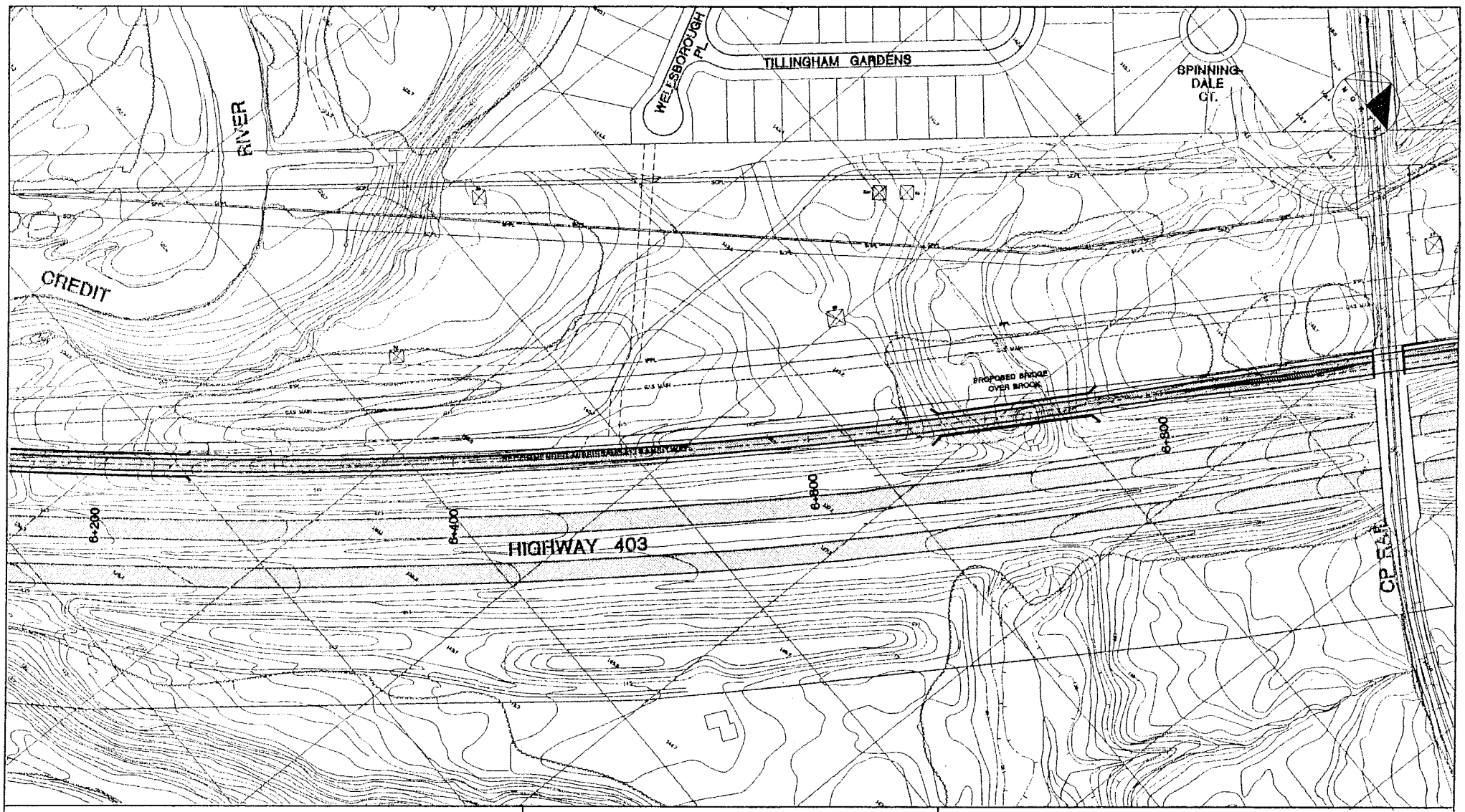
EXHIBIT 46

0 50 100 150 200

SCALE

RECOMMENDED PLAN

Sta. 6+900 to Sta. 7+600



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

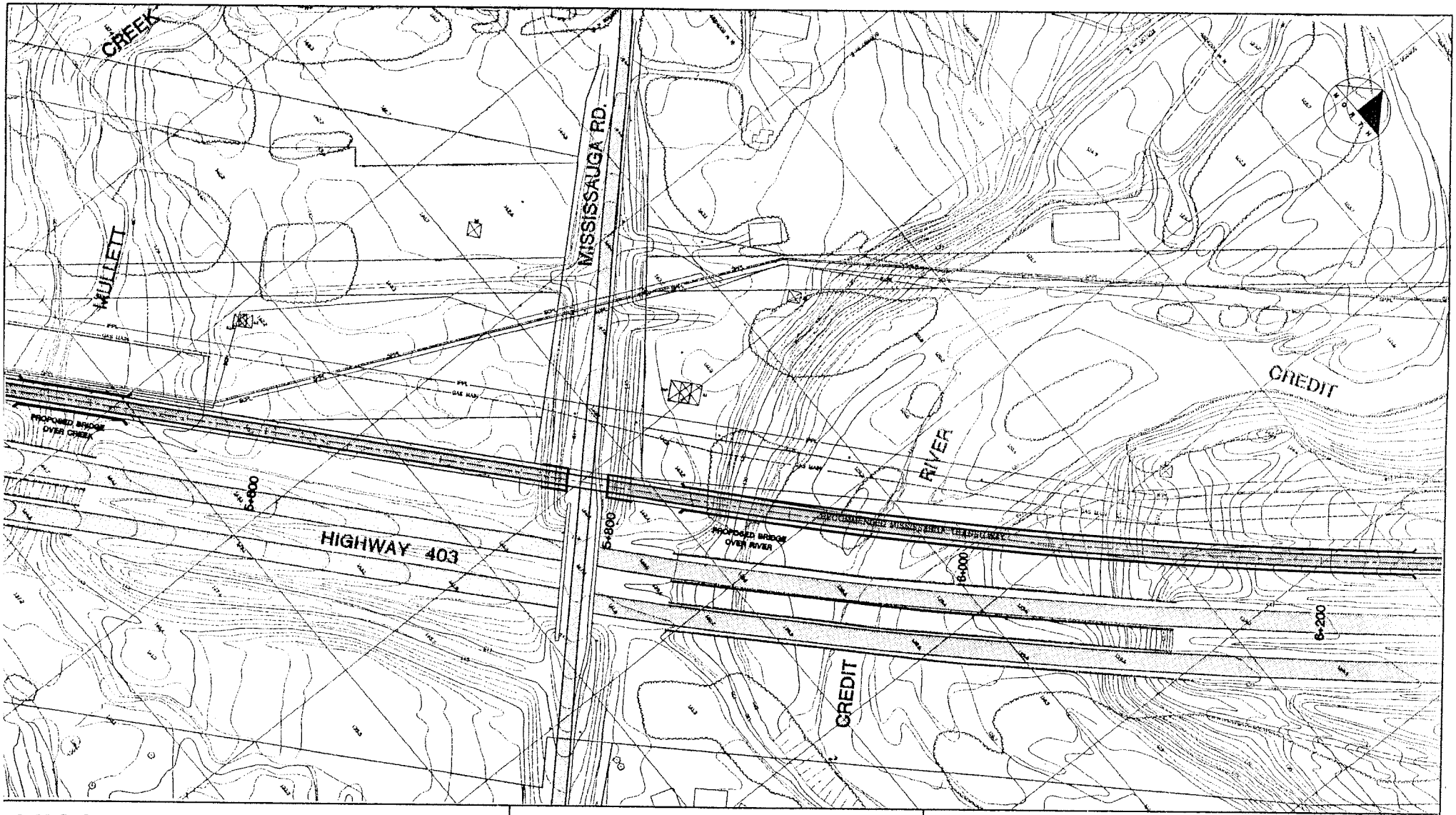
EXHIBIT 45

0 50 100 150 200

SCALE

RECOMMENDED PLAN

Sta. 6+200 to Sta. 6+900



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

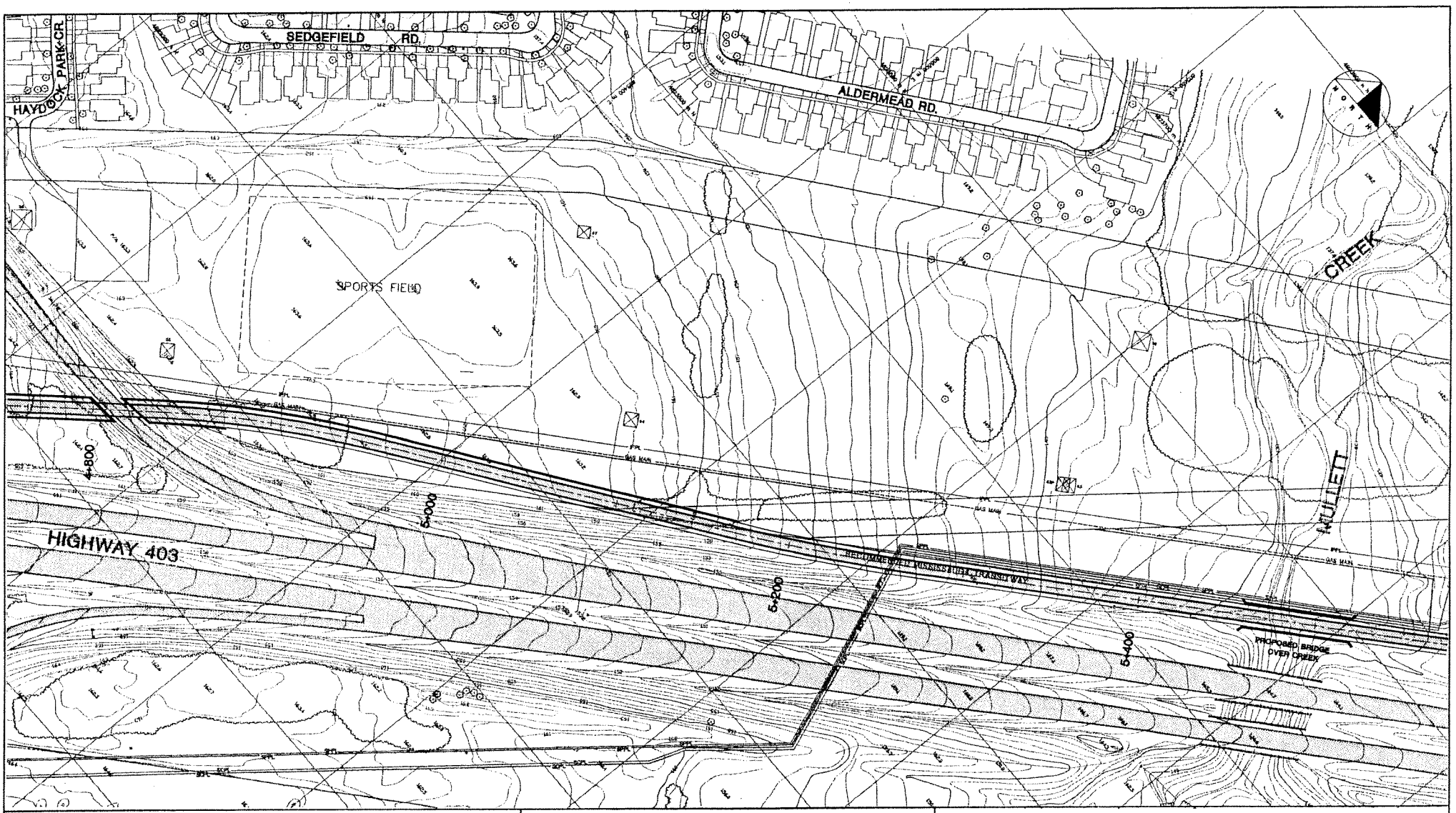
EXHIBIT 44

0 50 100 150 200

SCALE

RECOMMENDED PLAN

Sta. 5+500 to Sta. 6+200



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

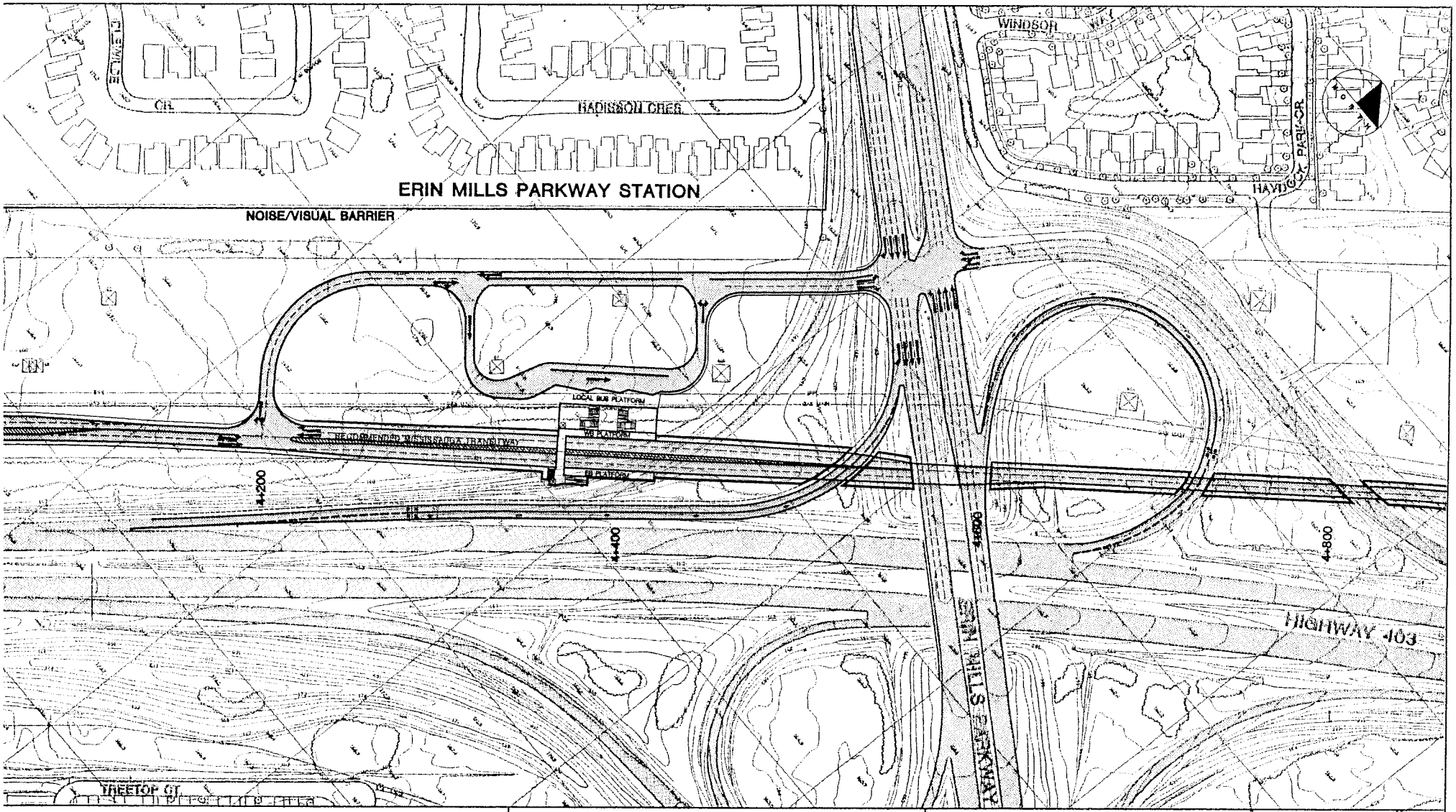
EXHIBIT 43

0 50 100 150 200

SCALE

RECOMMENDED PLAN

Sta. 4+800 to Sta. 5+500



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

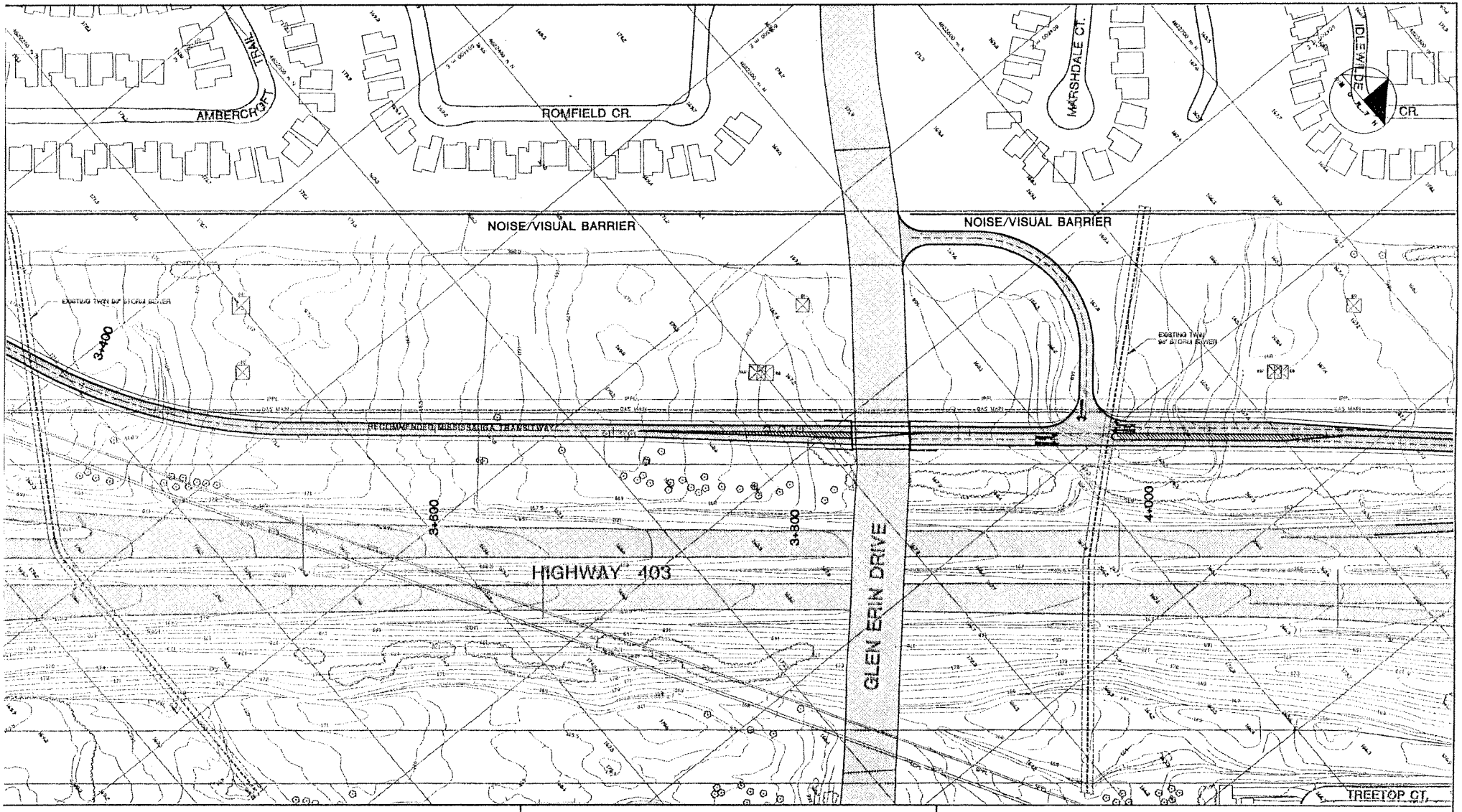
EXHIBIT 42

0 50 100 150 200

SCALE

RECOMMENDED PLAN

Sta. 4+100 to Sta. 4+800



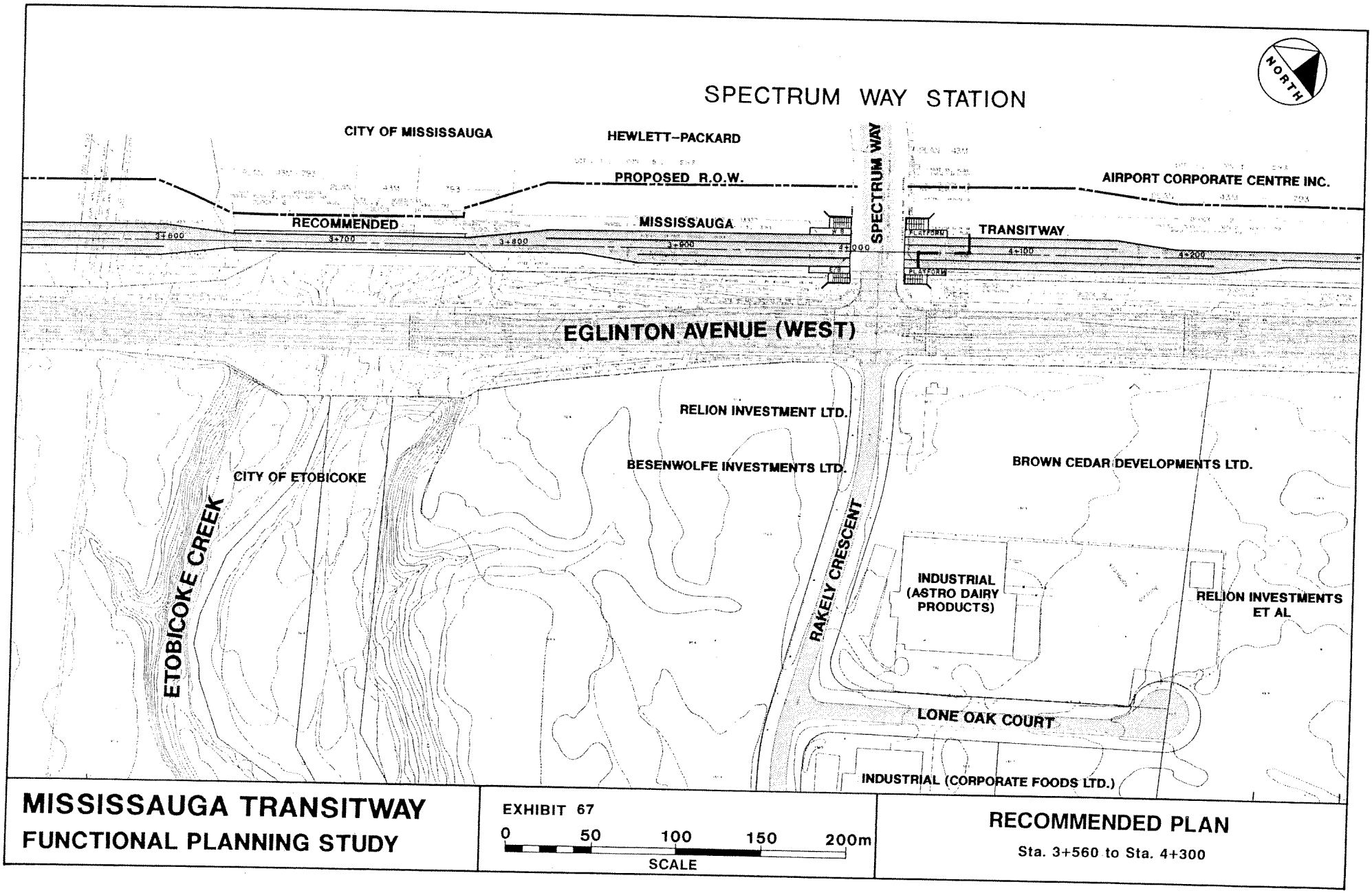
MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 41

0 50 100 150 200

SCALE

RECOMMENDED PLAN
Sta. 3+400 to Sta. 4+100



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

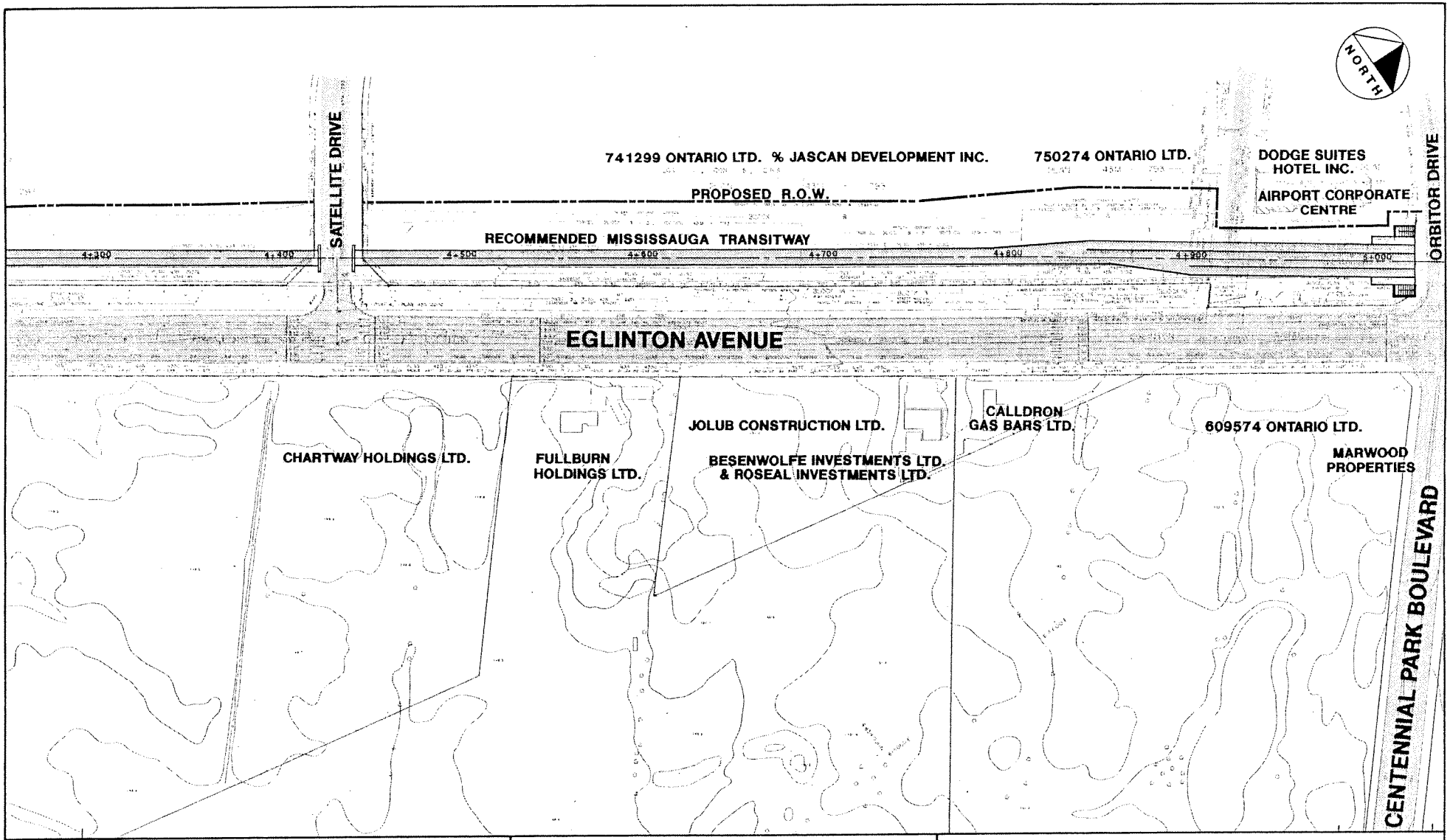
EXHIBIT 67

0 50 100 150 200m

SCALE

RECOMMENDED PLAN

Sta. 3+560 to Sta. 4+300



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

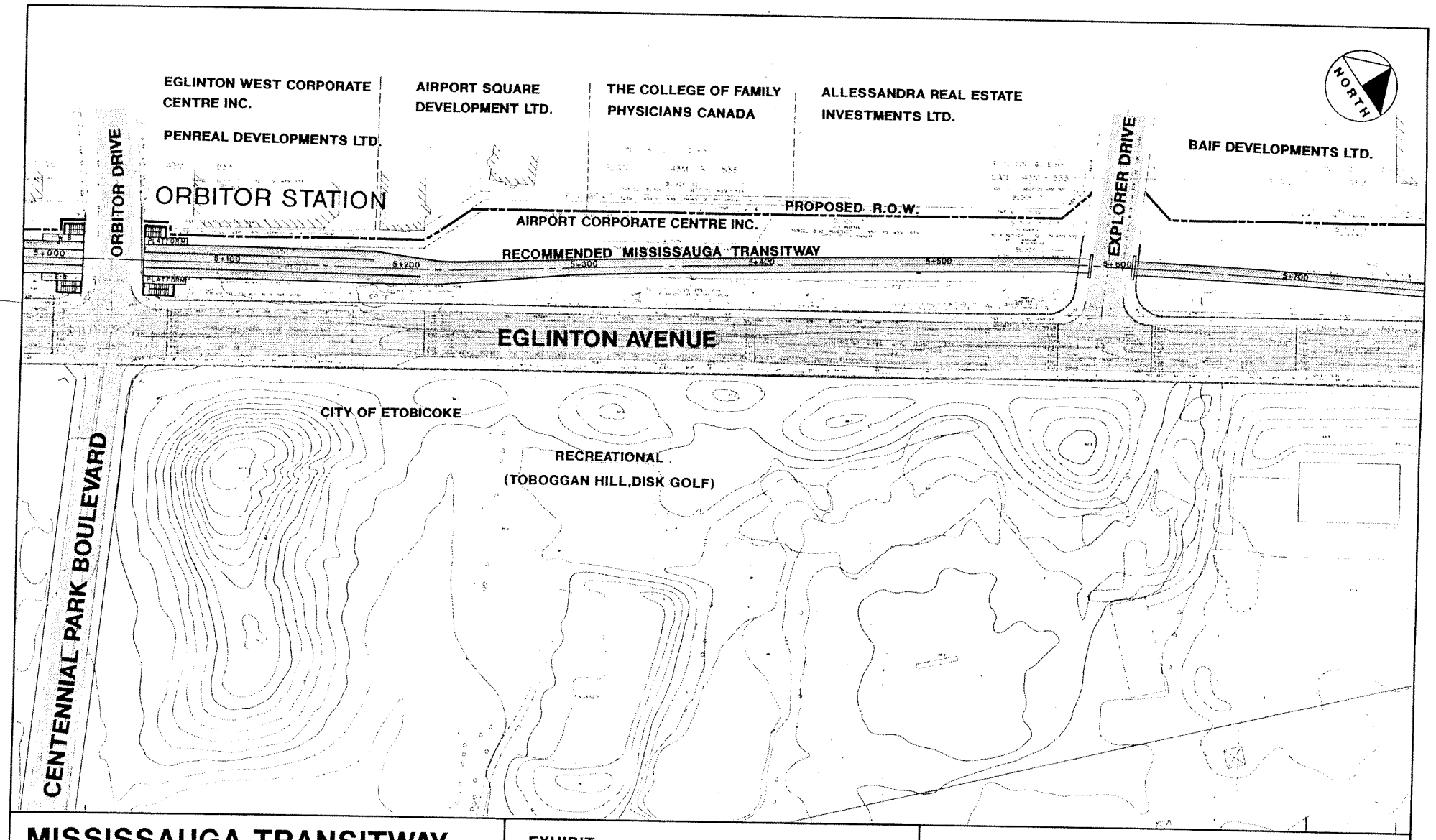
EXHIBIT 68

0 50 100 150 200m

SCALE

RECOMMENDED PLAN

Sta. 4+300 to Sta. 5+000



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

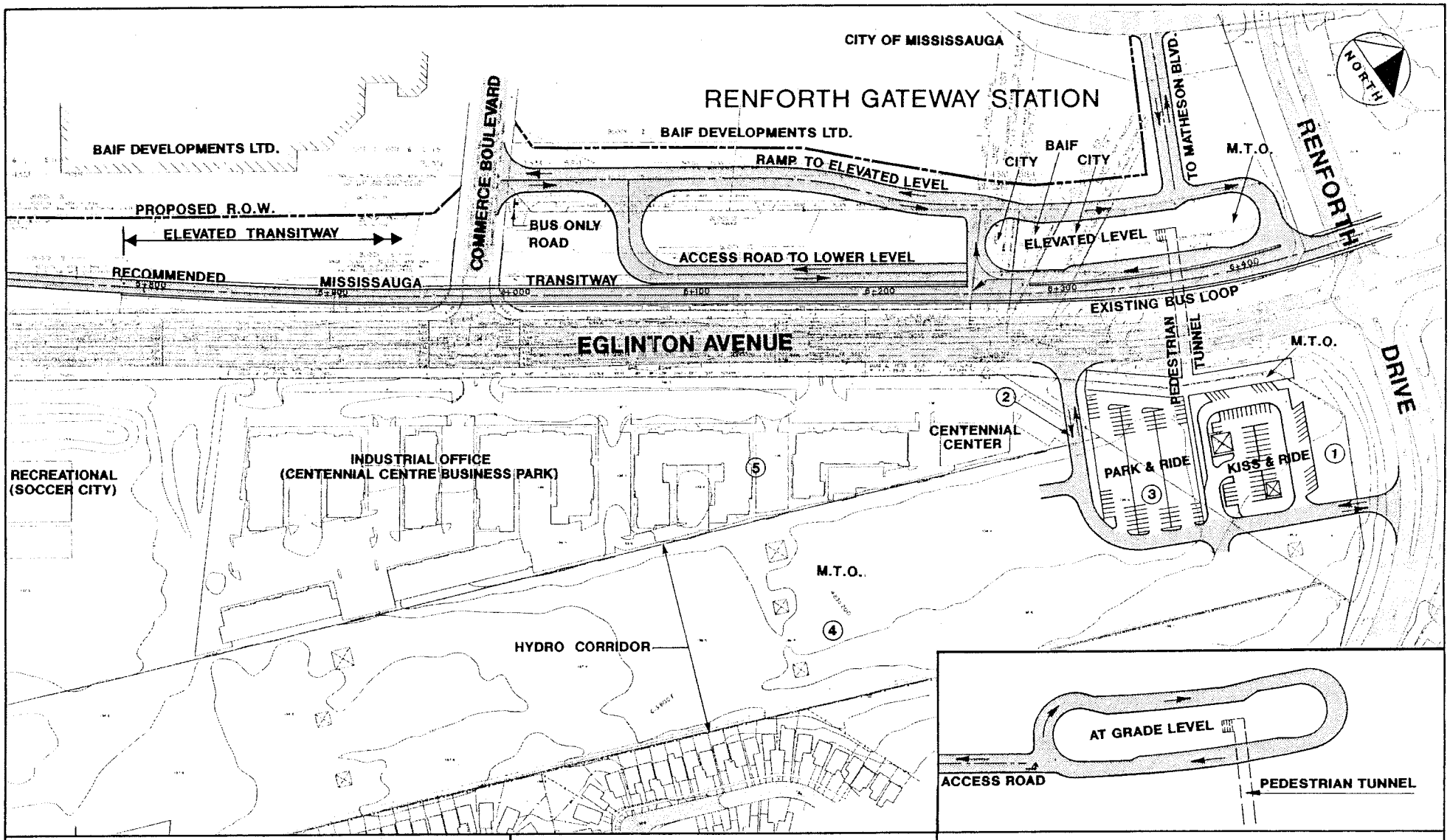
EXHIBIT 69

0 50 100 150 200m

SCALE

RECOMMENDED PLAN

Sta. 5+000 to Sta. 5+740



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

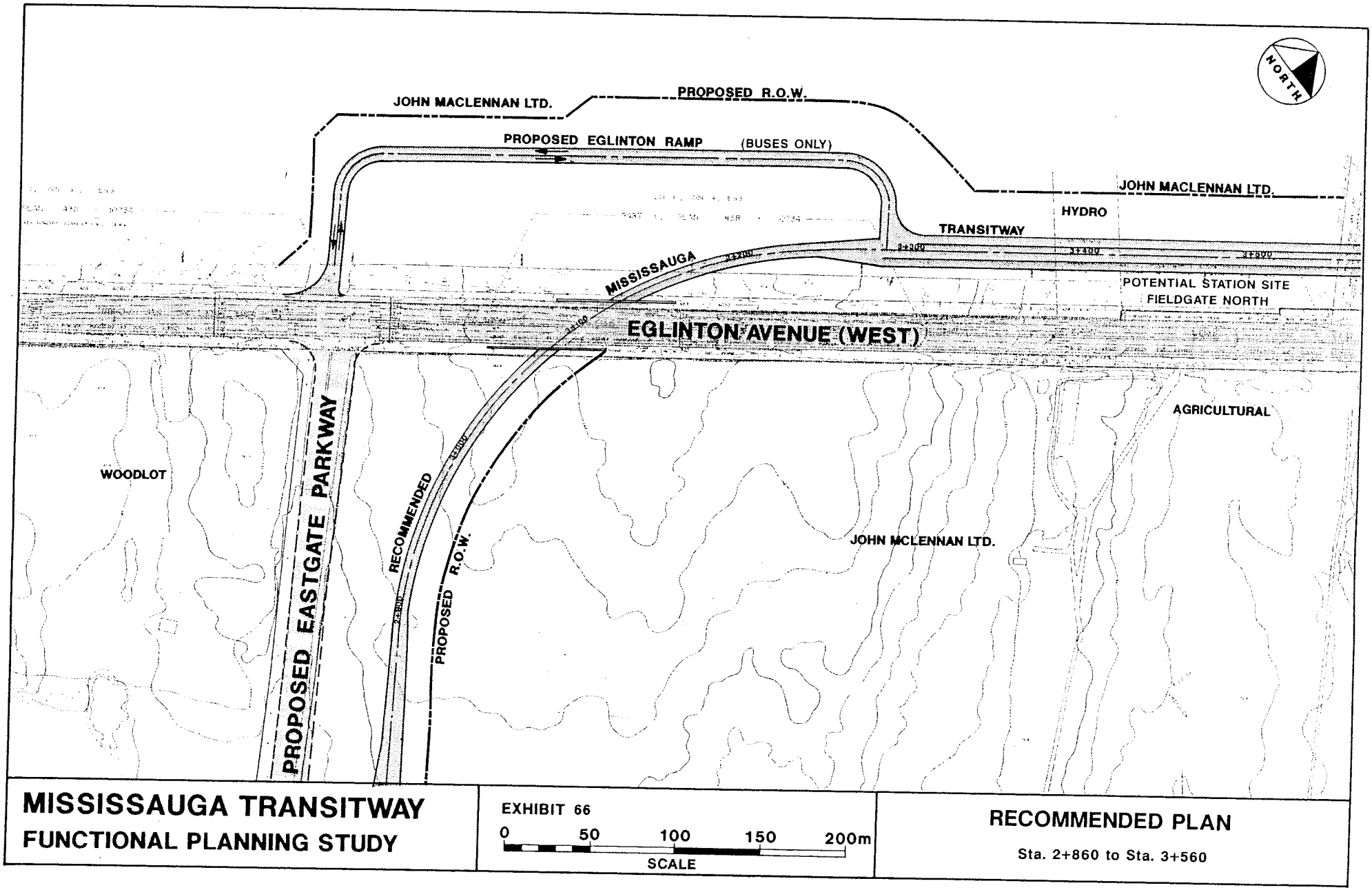
EXHIBIT 70

0 50 100 150 200m

SCALE

RECOMMENDED PLAN

Sta. 5+740 to Sta. 6+450



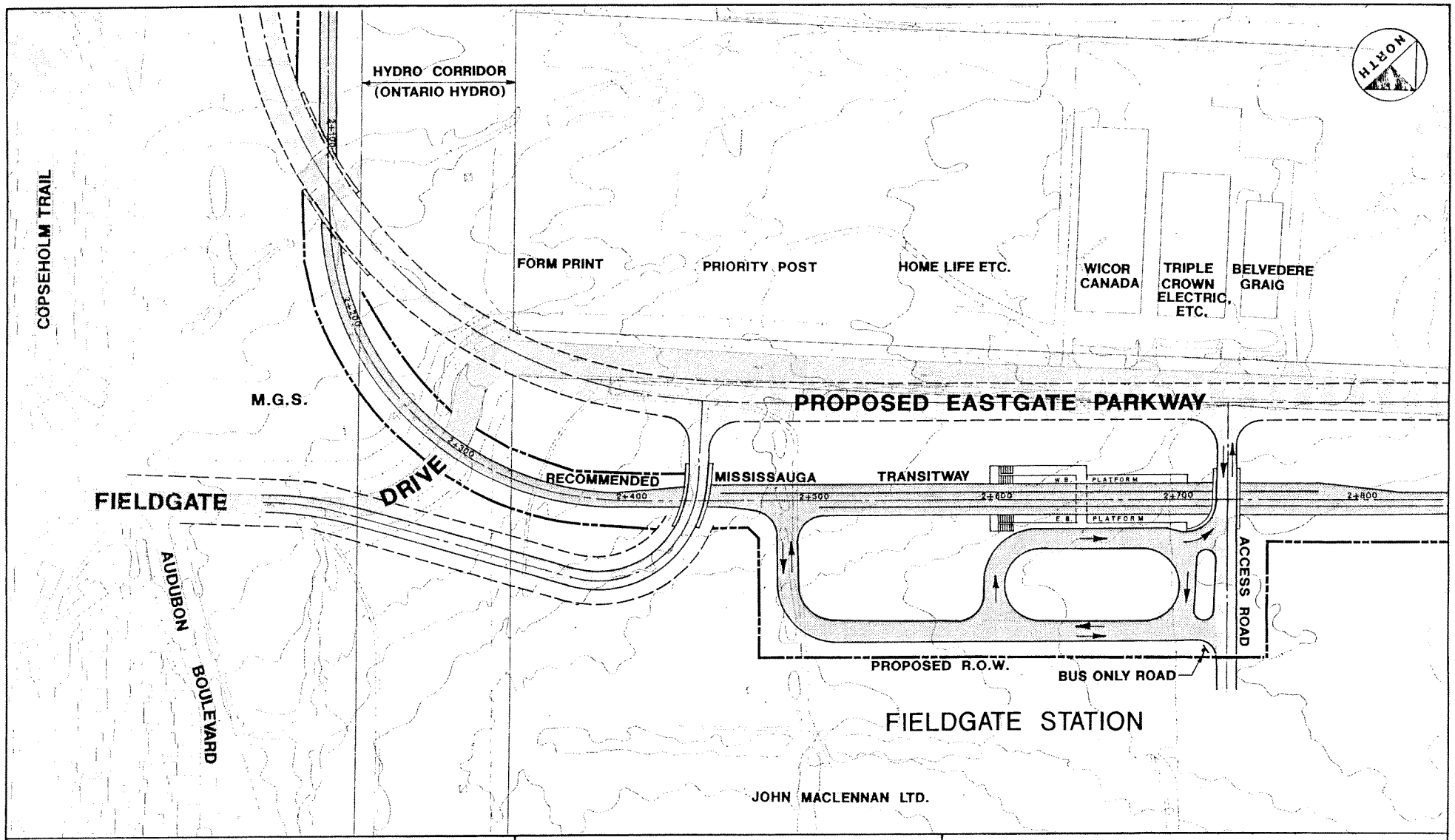
MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 66

0 50 100 150 200m
SCALE

RECOMMENDED PLAN

Sta. 2+860 to Sta. 3+560



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

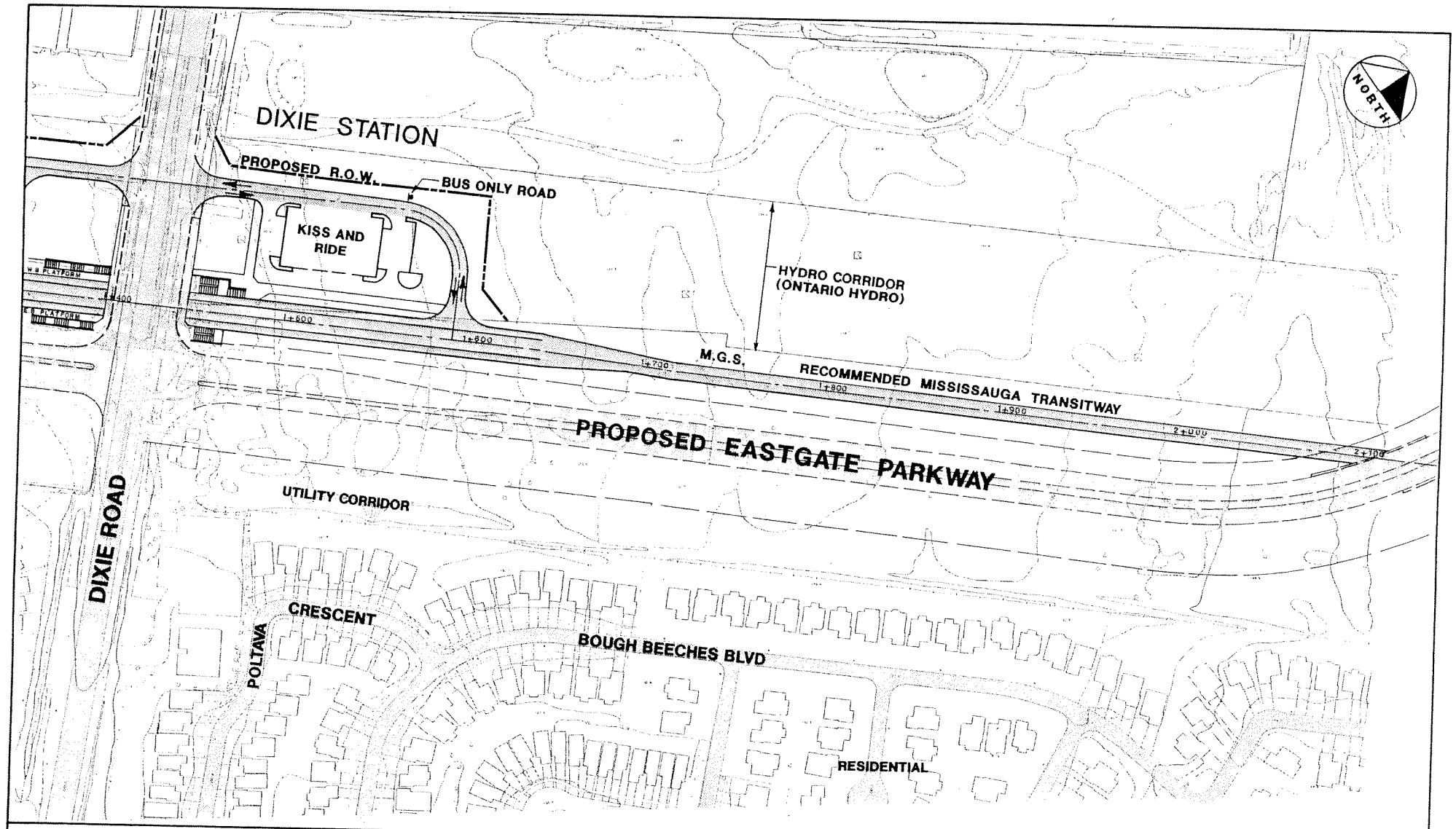
EXHIBIT 65

0 50 100 150 200m

SCALE

RECOMMENDED PLAN

Sta. 2+140 to Sta. 2+860



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

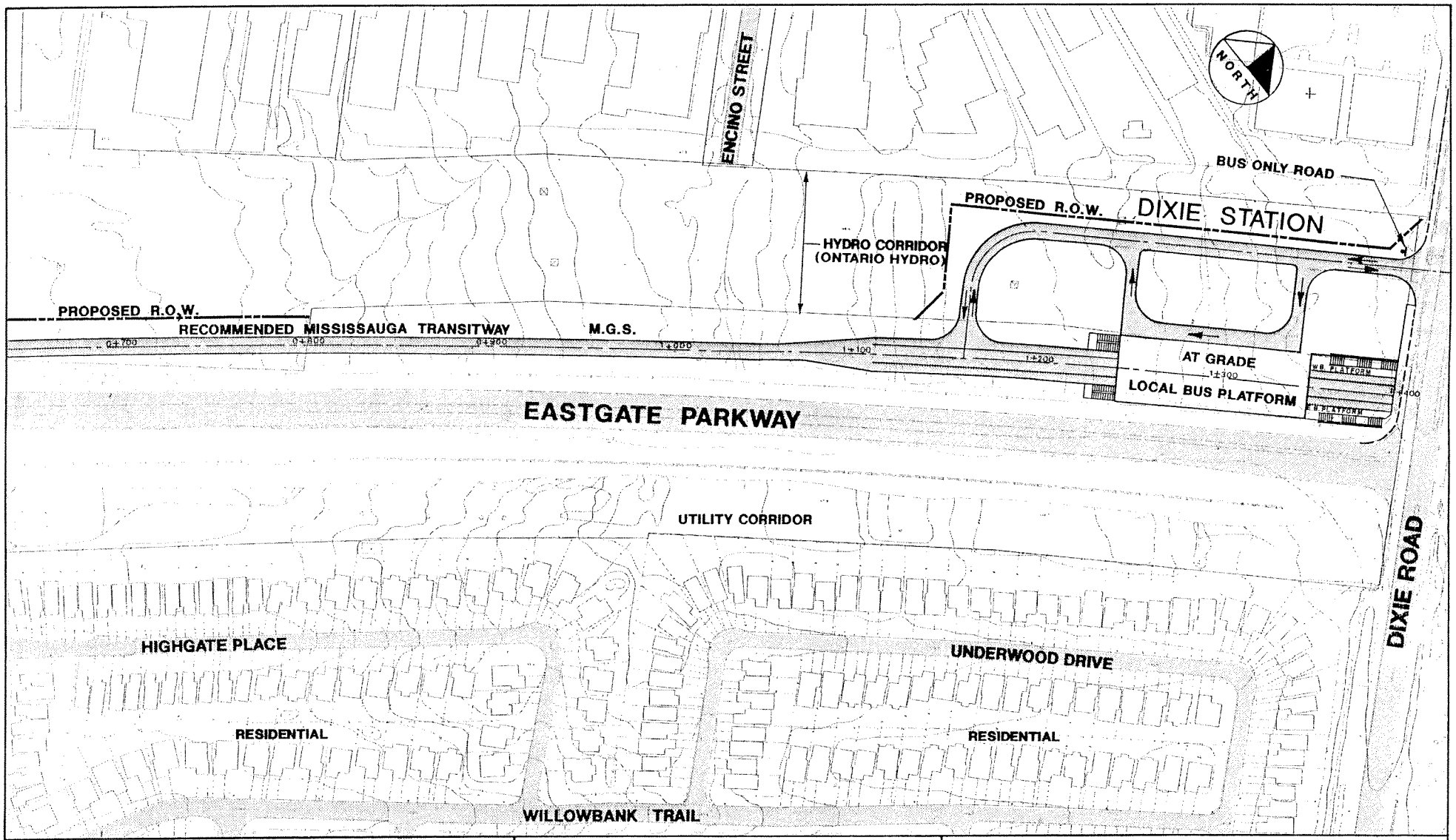
EXHIBIT 64

0 50 100 150 200m

SCALE

RECOMMENDED PLAN

Sta. 1+400 to Sta. 2+140



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

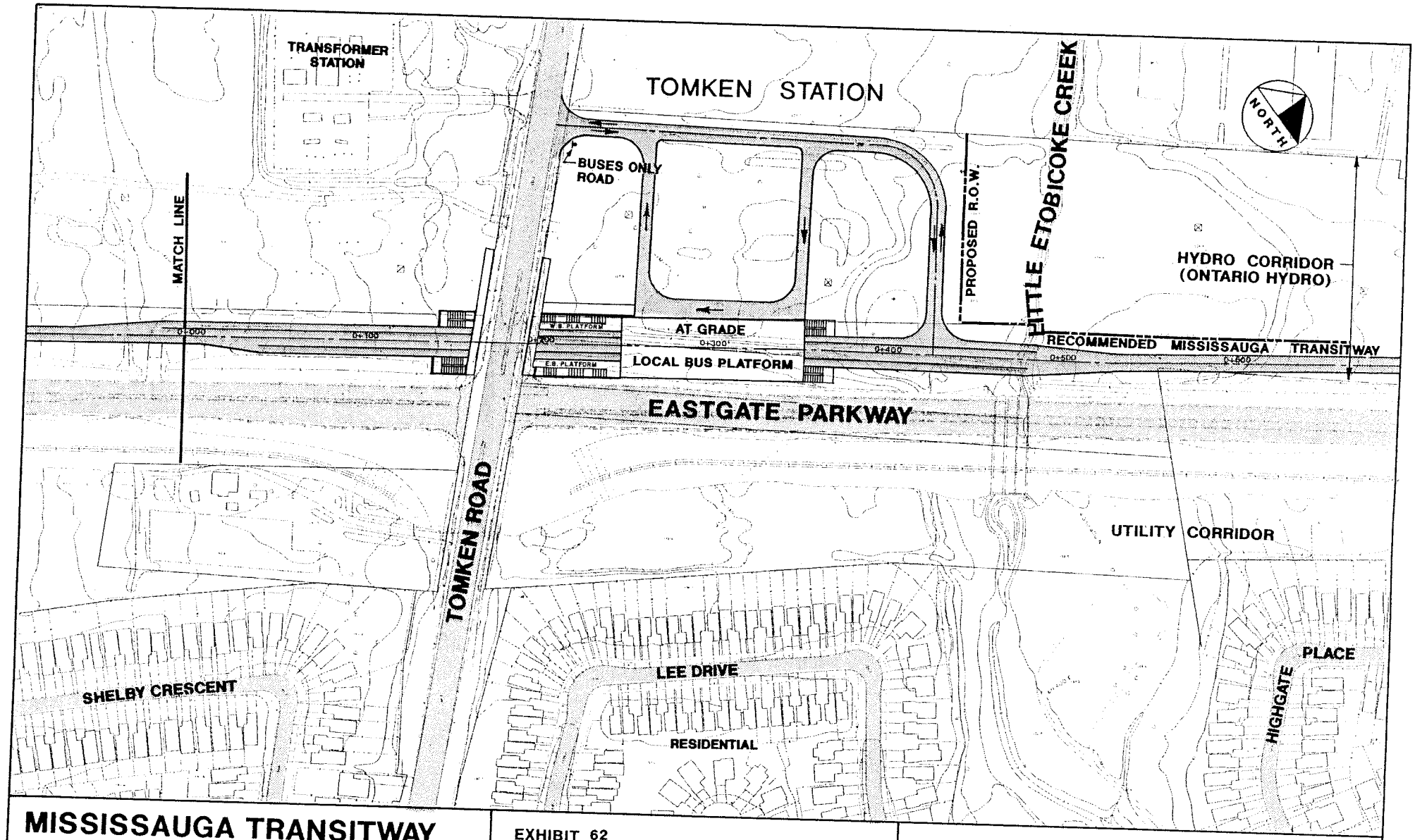
EXHIBIT 63

0 50 100 150 200m

SCALE

RECOMMENDED PLAN

Sta. 0+690 to Sta. 1+400



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

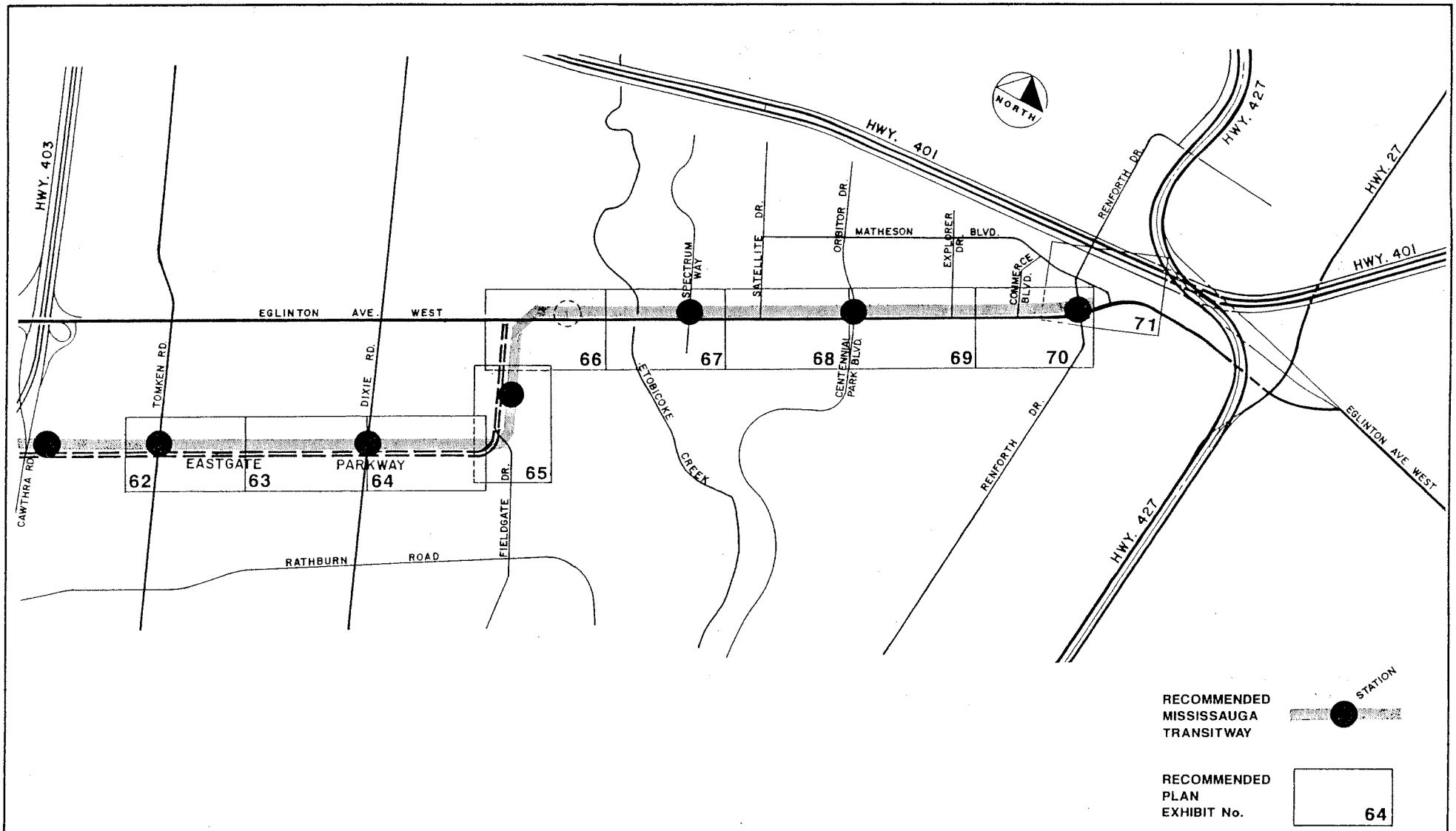
EXHIBIT 62

0 50 100 150 200m

SCALE

RECOMMENDED PLAN

Sta. 0+000 to Sta. 0+690



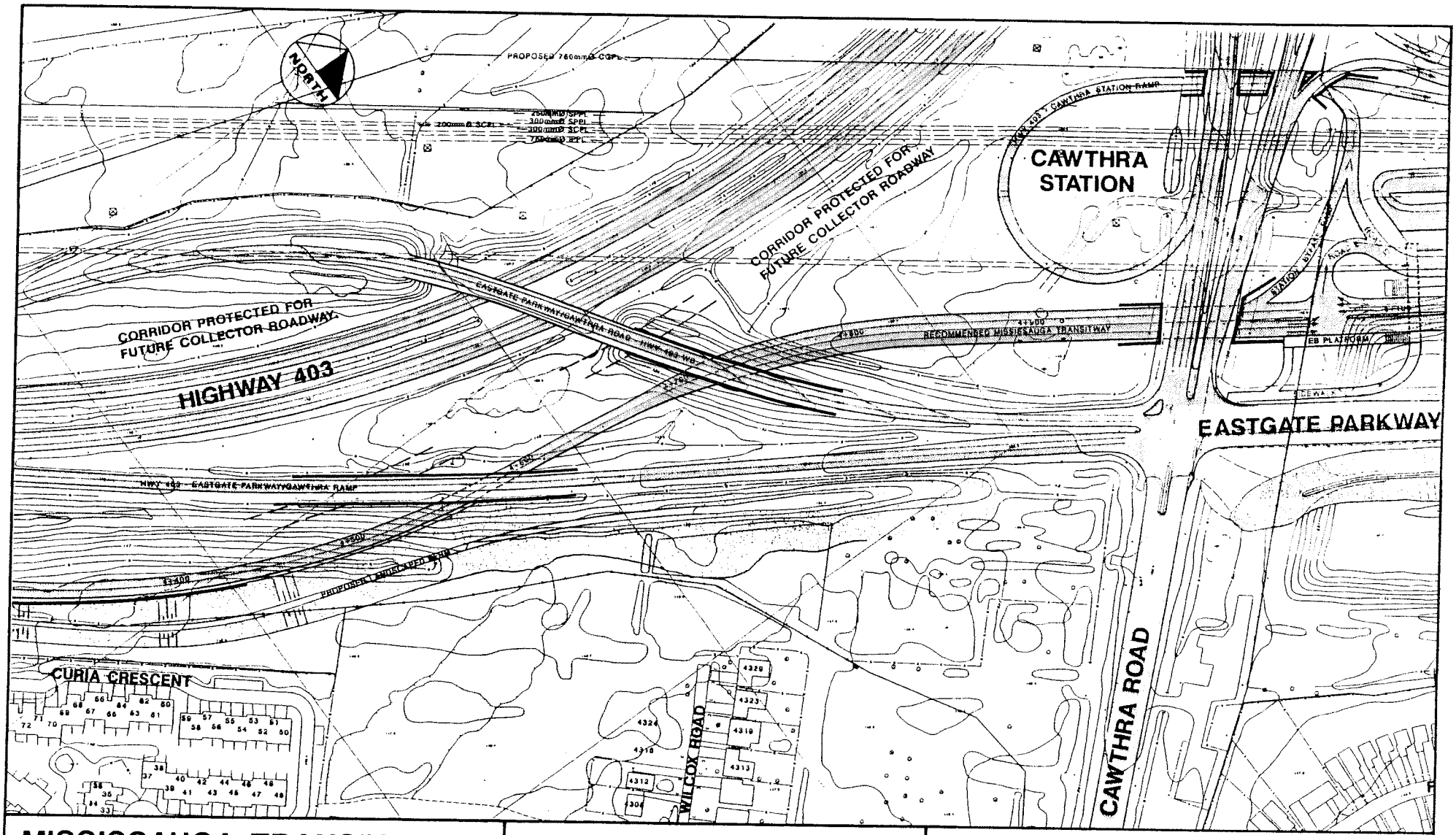
MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 61

(PLAN NOT TO SCALE)

KEY PLAN

CAWTHRA ROAD TO RENFORTH DRIVE



MISSISSAUGA TRANSITWAY

FUNCTIONAL PLANNING STUDY

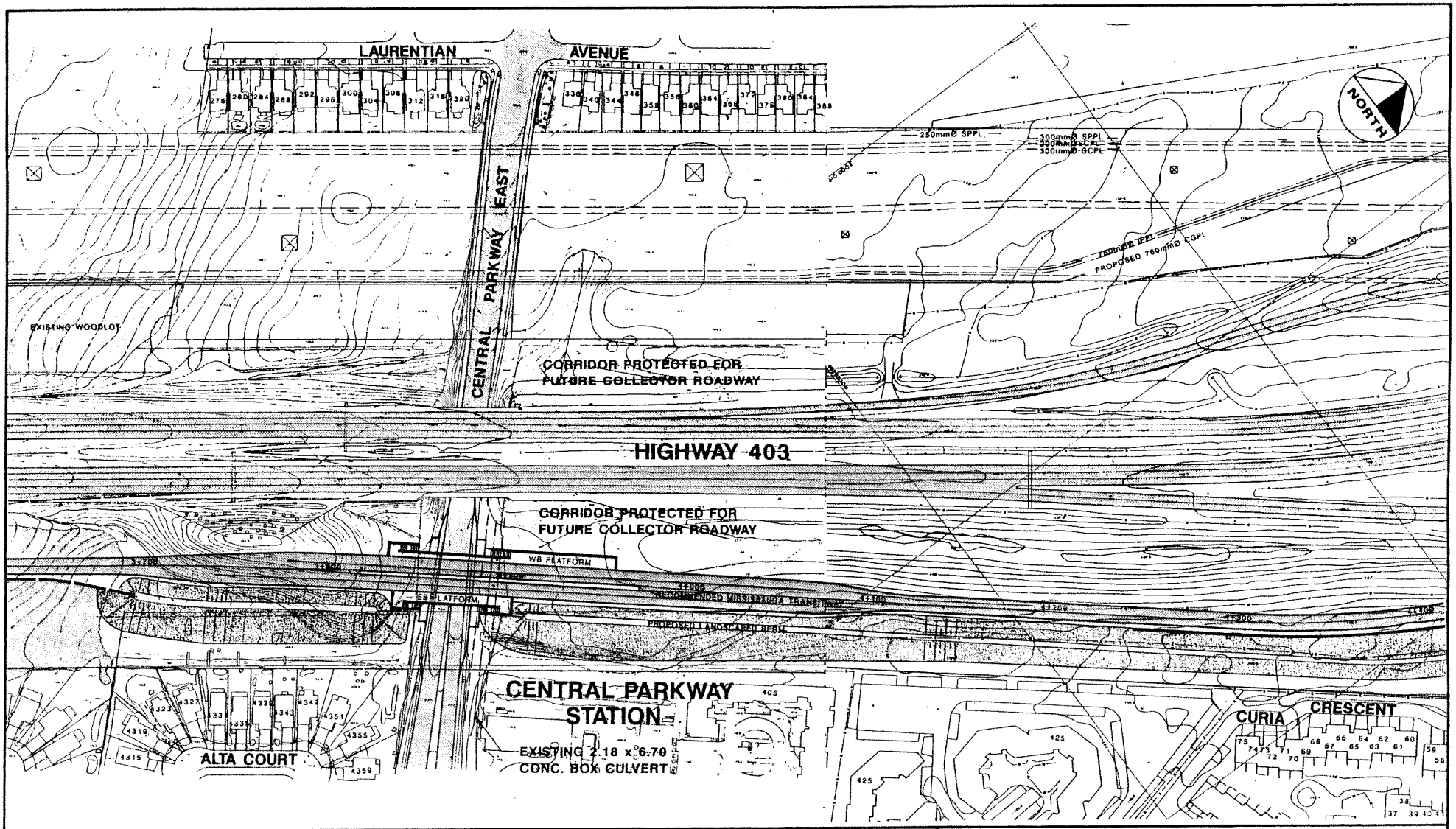
EXHIBIT 58

0 50 100 150 200m

SCALE

RECOMMENDED PLAN

Sta. 4+312 to Sta. 5+130



MISSISSAUGA TRANSITWAY

FUNCTIONAL PLANNING STUDY

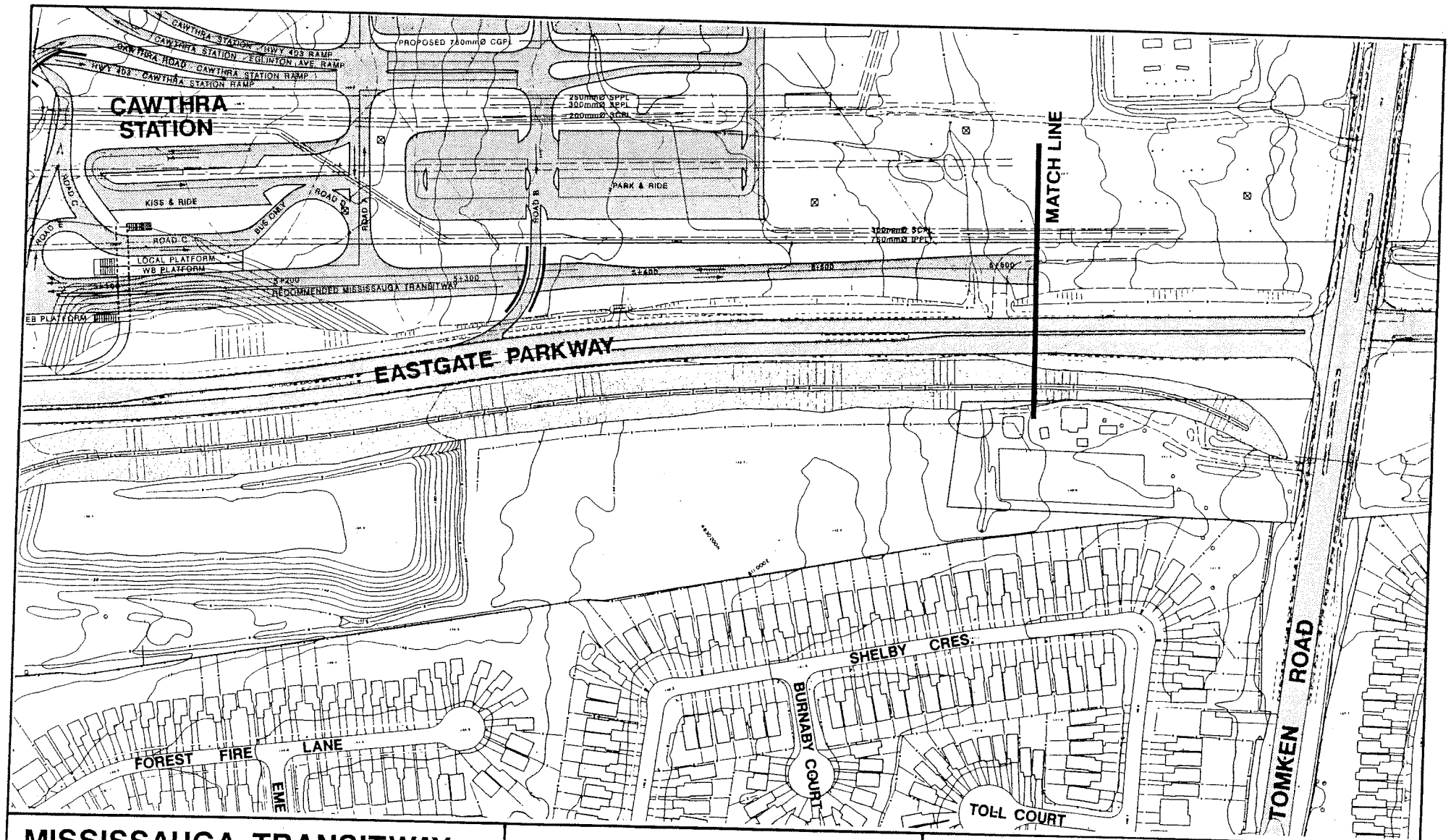
EXHIBIT 57

0 50 100 150 200m

SCALE

RECOMMENDED PLAN

Sta. 3+630 to Sta. 4+415



MISSISSAUGA TRANSITWAY

FUNCTIONAL PLANNING STUDY

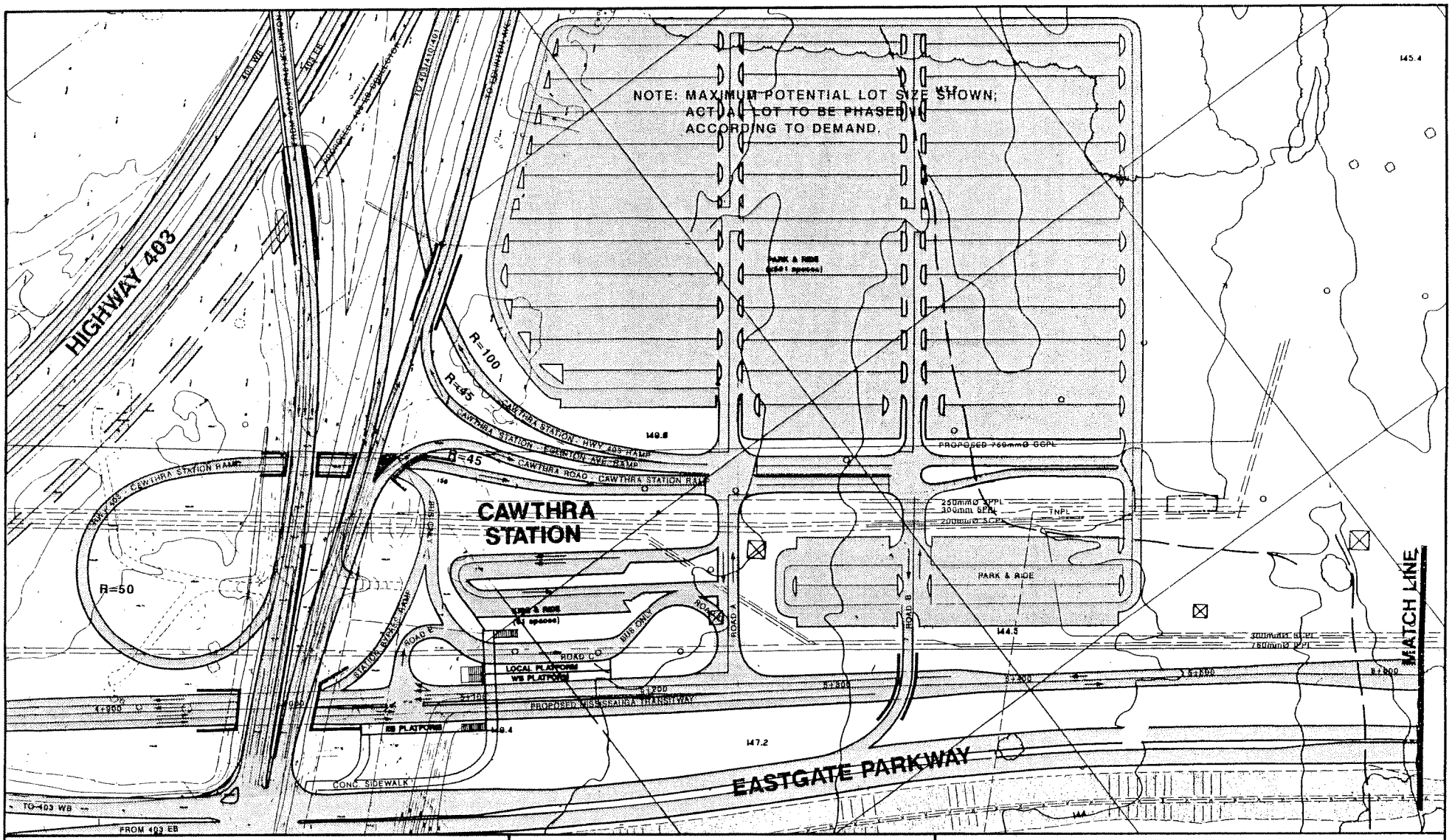
EXHIBIT 59

0 50 100 150 200m

SCALE

RECOMMENDED PLAN

Sta. 5+062 to Sta. 5+622



MISSISSAUGA TRANSITWAY

FUNCTIONAL PLANNING STUDY

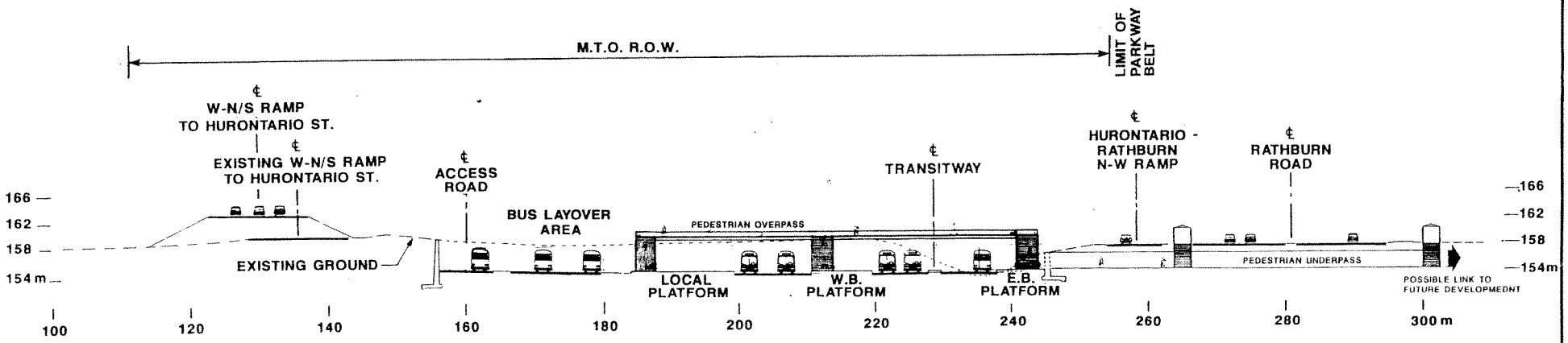
EXHIBIT 60

0 50 100 150 200m

SCALE

RECOMMENDED PLAN

Sta. 4+849 to Sta. 5+622



154m WEST OF HURONTARIO STREET
(PROPOSED HURONTARIO STATION)

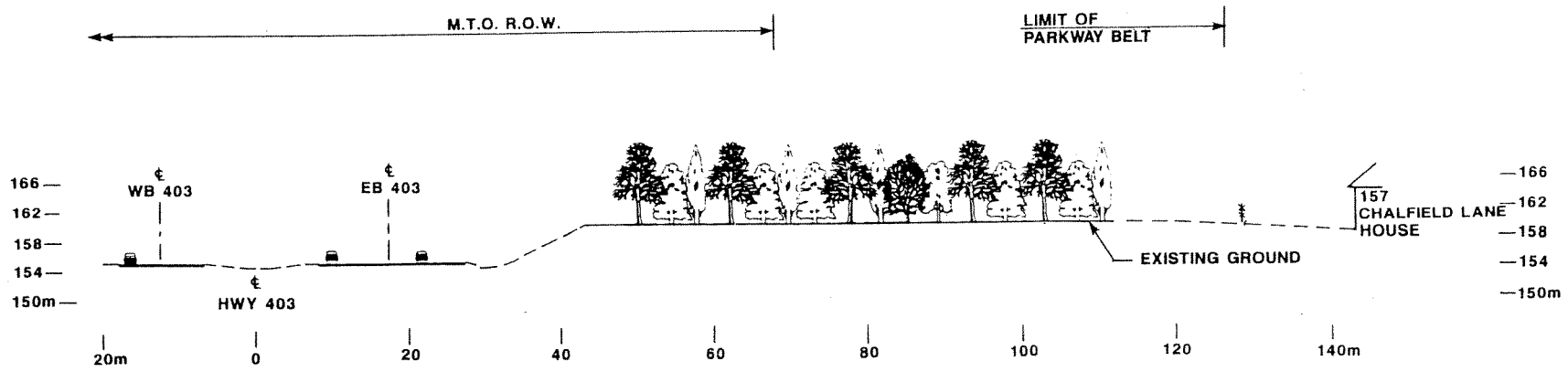
NOTE- ELEVATORS, SHELTERS, AND STATION DETAILS NOT SHOWN

MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

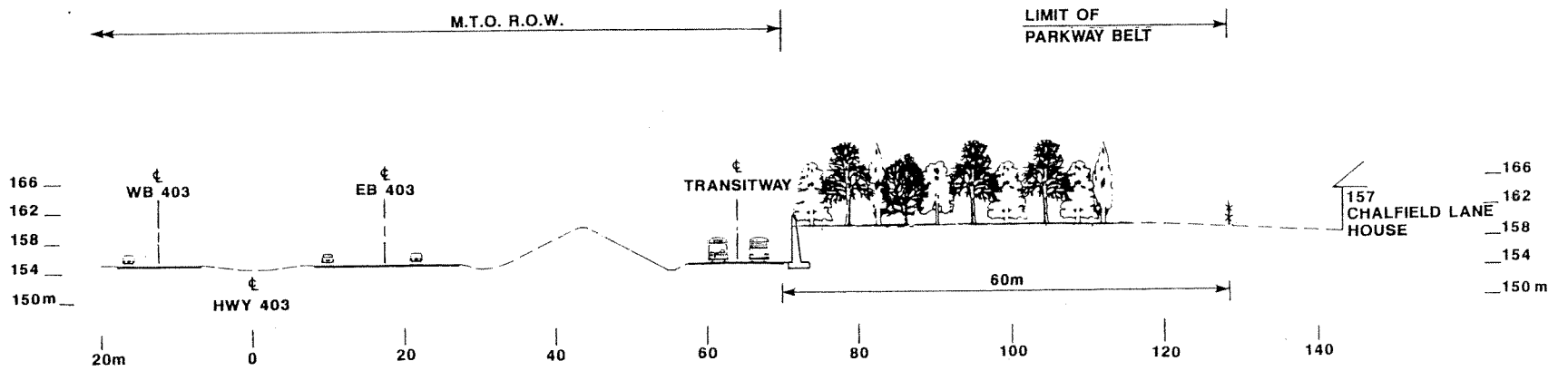
EXHIBIT 82

SCALE HORIZ. 1:600
VERT. 1:60

CROSS SECTION E-E



460m EAST OF HURONTARIO STREET
(EXISTING)

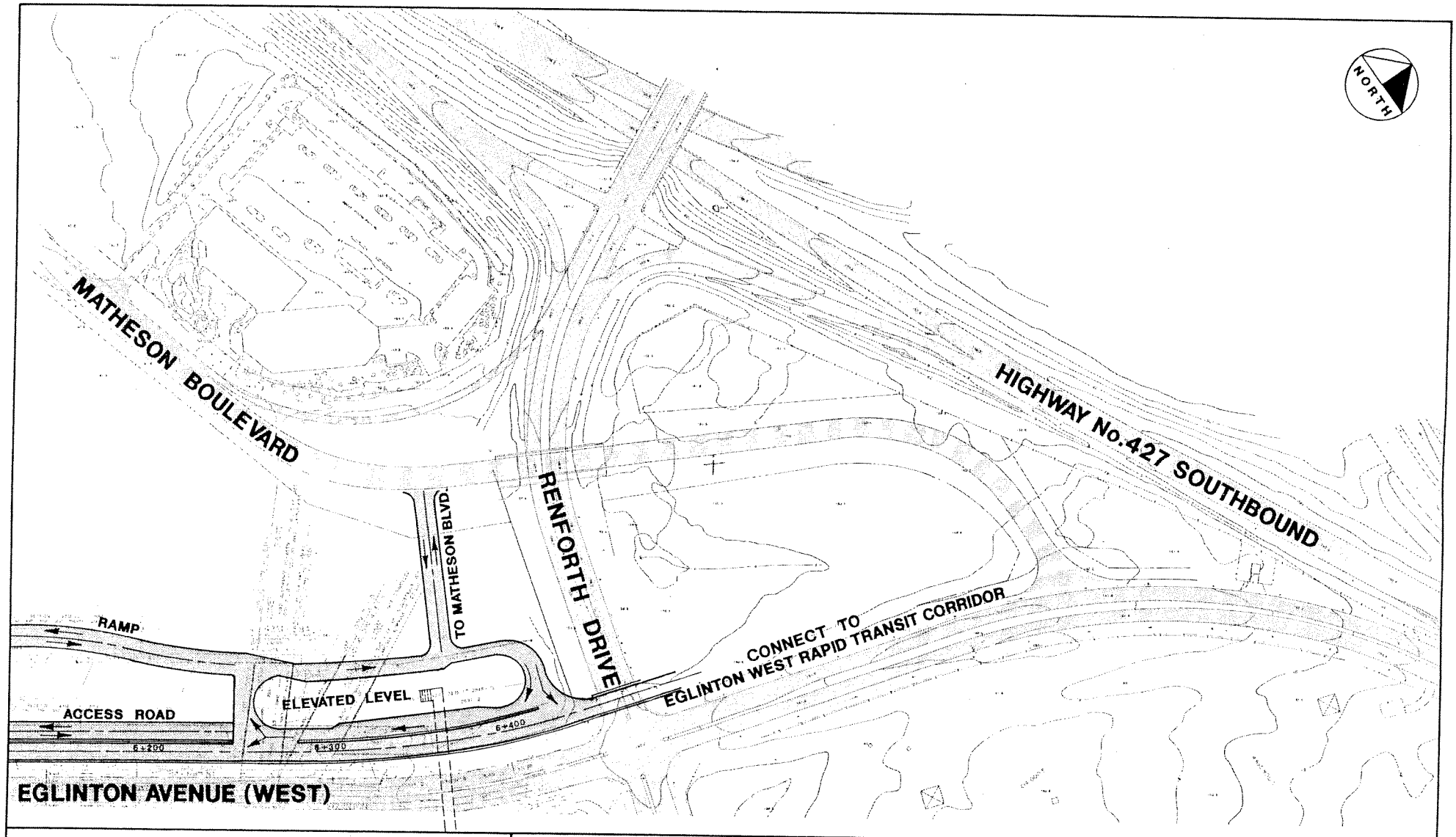


460m EAST OF HURONTARIO STREET
(PROPOSED)

MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 83
SCALE HORIZ. 1:600
VERT. 1:60

CROSS SECTION F-F



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 71

0 50 100 150 200m

SCALE

RECOMMENDED PLAN

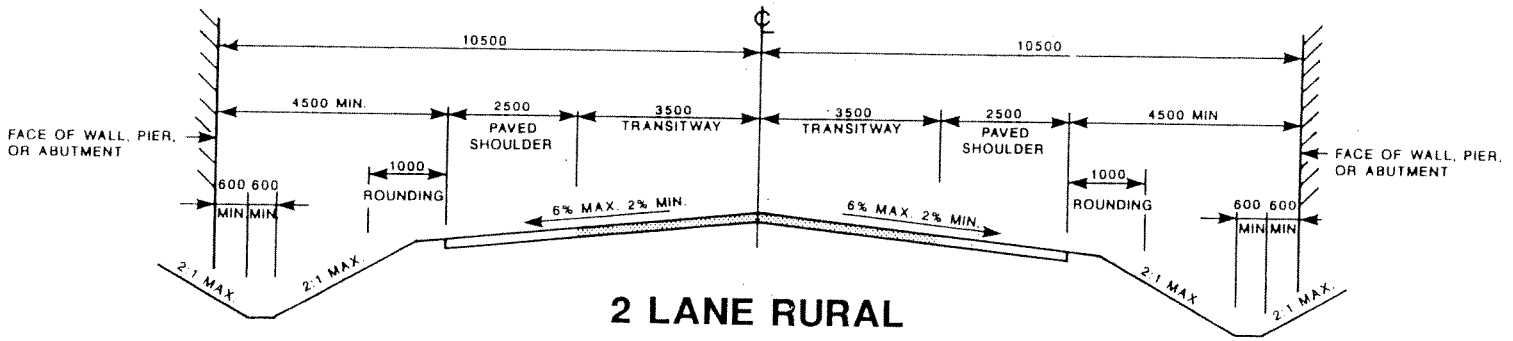
Sta. 6+150 to Sta. 6+450

5.2.2 Cross Sections

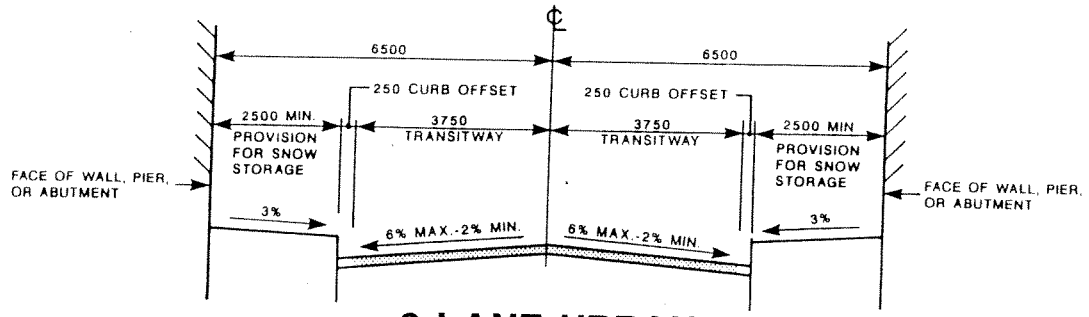
The Transitway cross section varies from location to location, reflecting changing contexts and design requirements over the length of the Transitway.

Several Exhibits (72 to 91 follow which illustrate the proposed cross sectional arrangement for the Transitway in key areas; the first Exhibit is a typical case, followed by a series of site-specific illustrations. In this manner the potential physical, visual, and aesthetic impact of the proposed undertaking on the corridor can be understood. The cross sections should be viewed in conjunction with the Transitway plans and profiles shown in Section 5.2.1 and Appendix R.

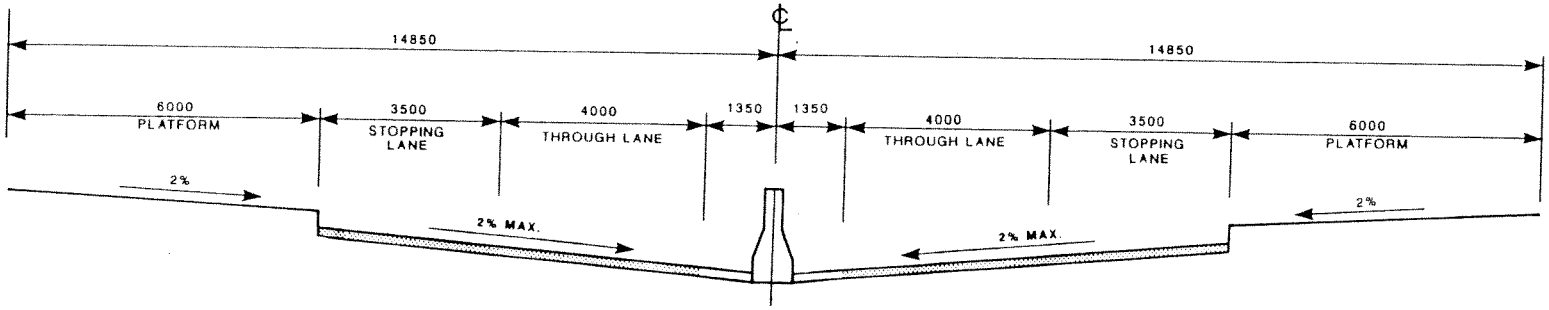
It should be noted that the cross sections shown are for illustrative purposes only, and that station layout refinement, transitway profile adjustments, drainage requirements, and other preliminary and detail design considerations may involve changes to the sections as shown. It should also be noted that property has been protected for potential future Highway 403 collector roadway and widening requirements where necessary, but that such facilities themselves, in the absence of functional plans being available, are not illustrated on the Exhibits 72 to 91.



2 LANE RURAL

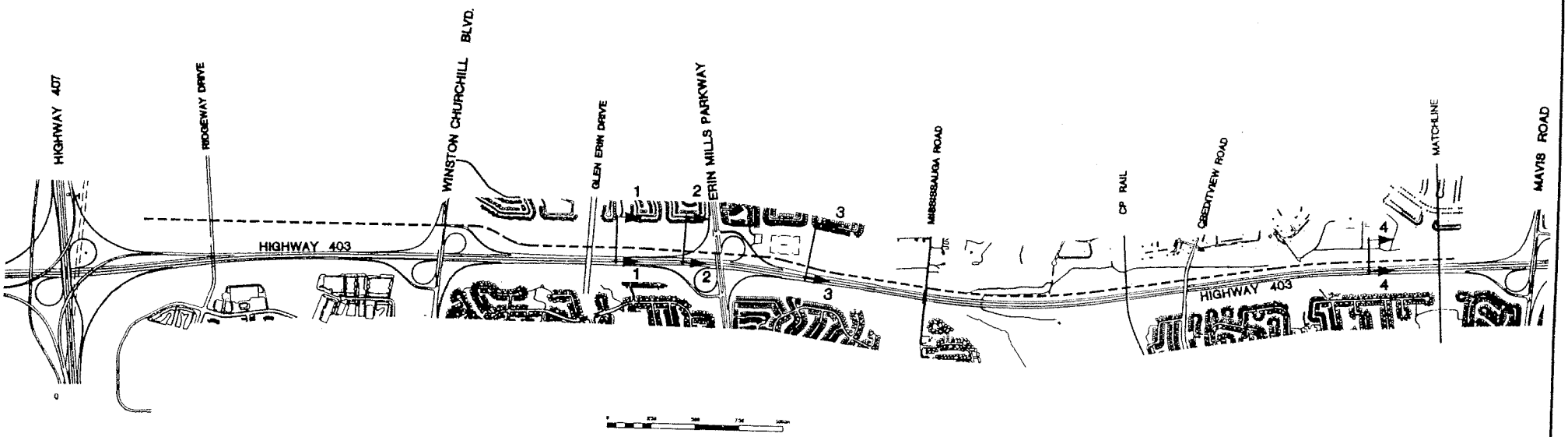


2 LANE URBAN



STATION

MISSISSAUGA TRANSITWAY **FUNCTIONAL PLANNING STUDY**	**EXHIBIT 72**	**STANDARD CROSS SECTIONS**



CROSS SECTION	SEE EXHIBIT
1	74
2	74
3	75
4	75

MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 73

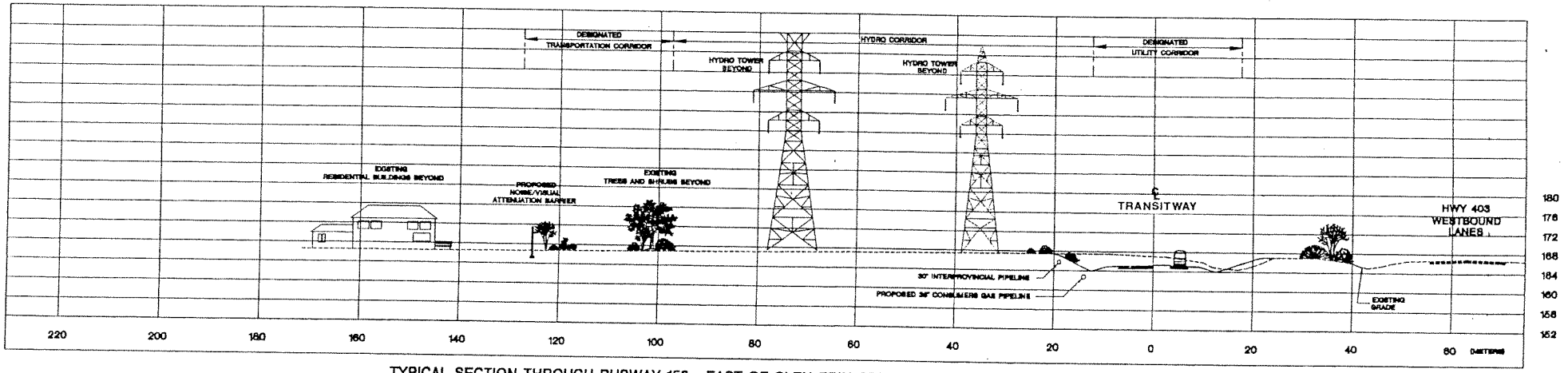
LEGEND

CROSS SECTION

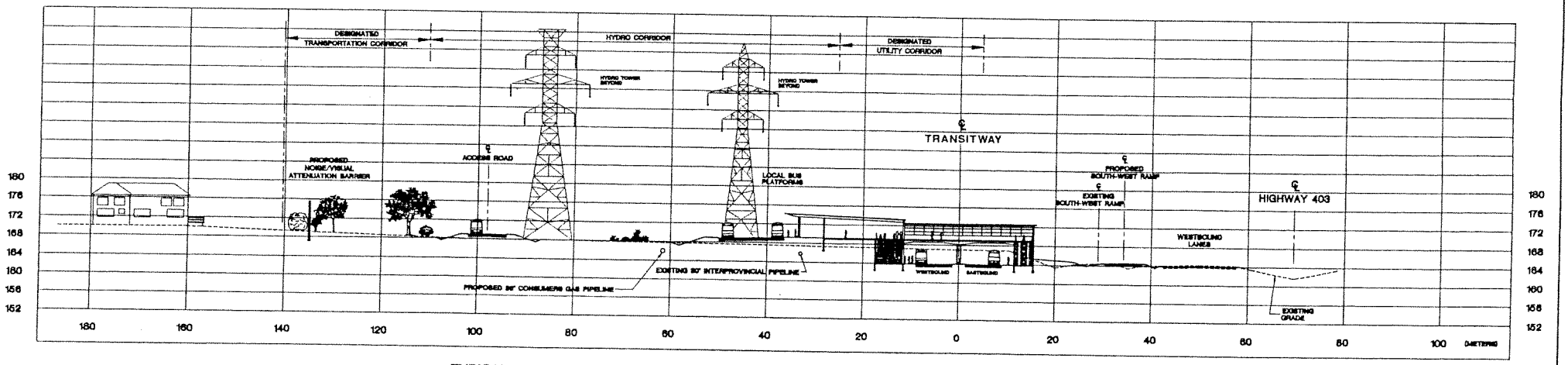
TRANSITWAY

CROSS SECTION KEY PLAN

WEST SECTION
9th LINE TO MAVIS ROAD



TYPICAL SECTION THROUGH BUSWAY 150m EAST OF GLEN ERIN DRIVE LOOKING EAST SECTION 1 - 1



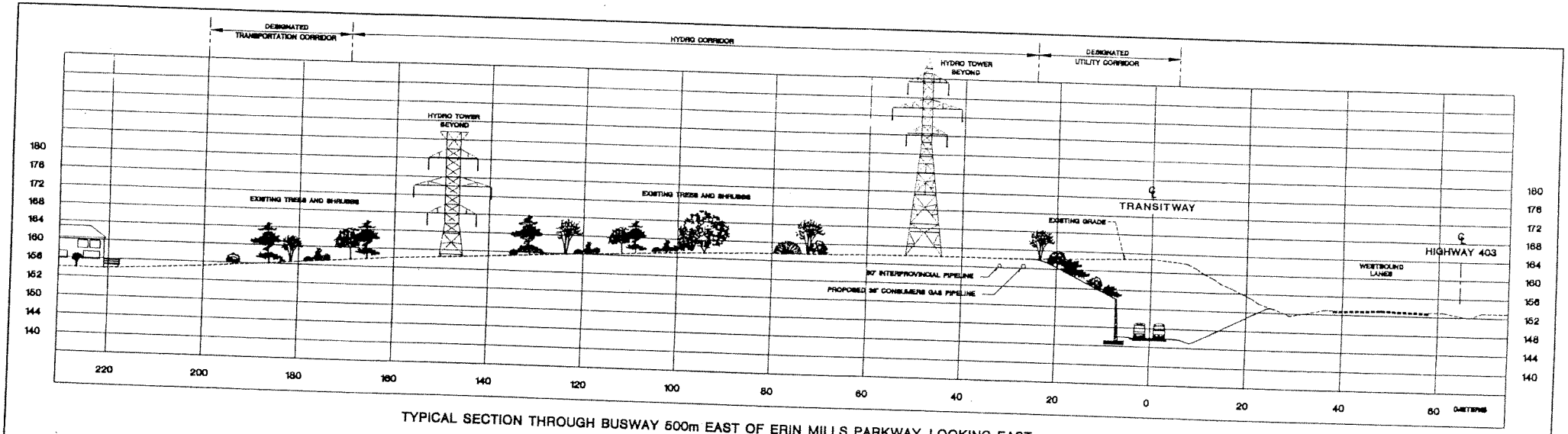
TYPICAL SECTION TROUGH ERIN MILLS PARKWAY STATION, LOOKING EAST SECTION 2 - 2

MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

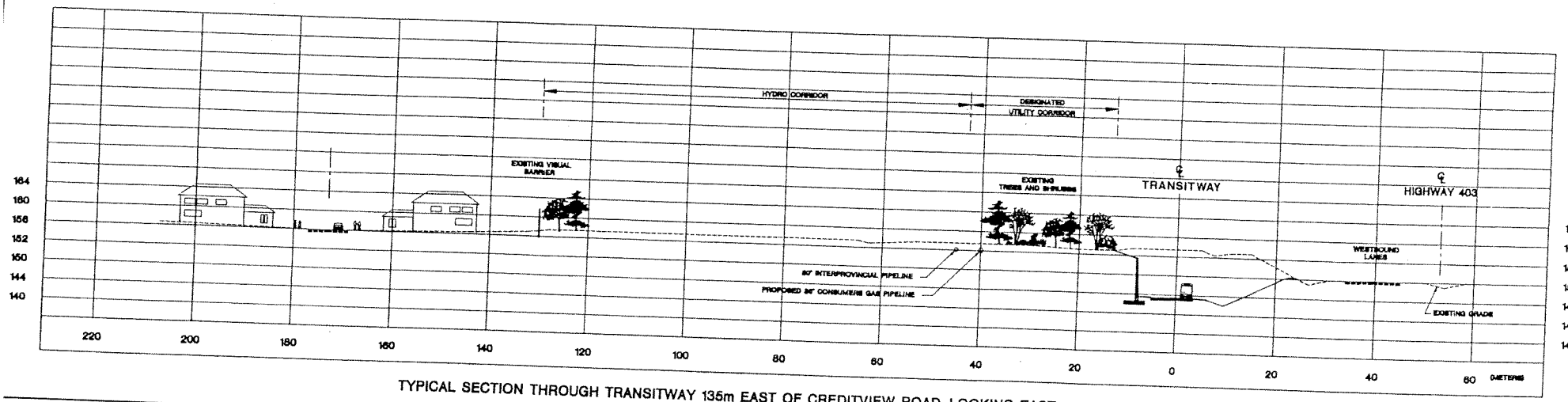
EXHIBIT 74

0 20 40 60 80

CROSS-SECTION 1-1
CROSS-SECTION 2-2



TYPICAL SECTION THROUGH BUSWAY 500m EAST OF ERIN MILLS PARKWAY, LOOKING EAST SECTION 3 - 3



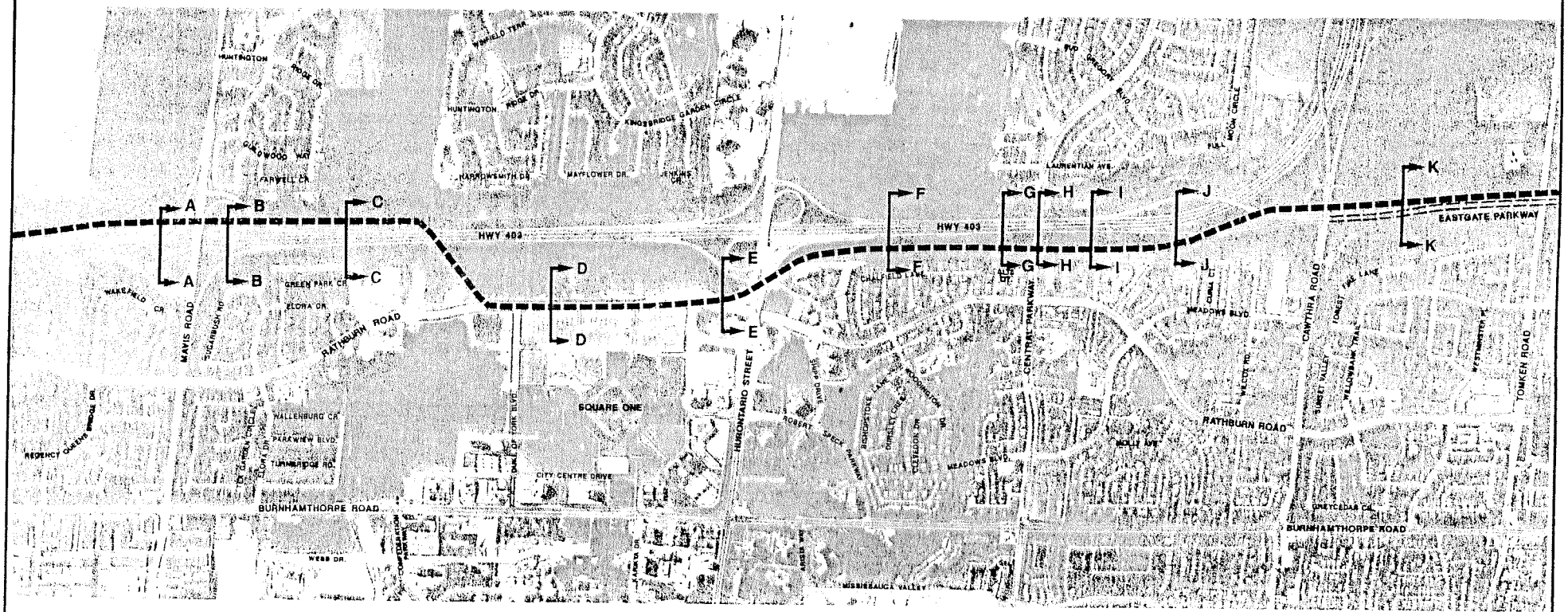
TYPICAL SECTION THROUGH TRANSITWAY 135m EAST OF CREDITVIEW ROAD, LOOKING EAST SECTION 4 - 4

MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 75

0 20 40 60 80

CROSS-SECTION 3-3
CROSS-SECTION 4-4



CROSS SECTION	SEE EXHIBIT	CROSS SECTION	SEE EXHIBIT
A	77	G	84
B	78	H	84
C	79	I	85
D	81	J	86
E	82	K	86
F	83		

1989 PHOTOGRAPHY

MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 76

0 250 500 750 1000m

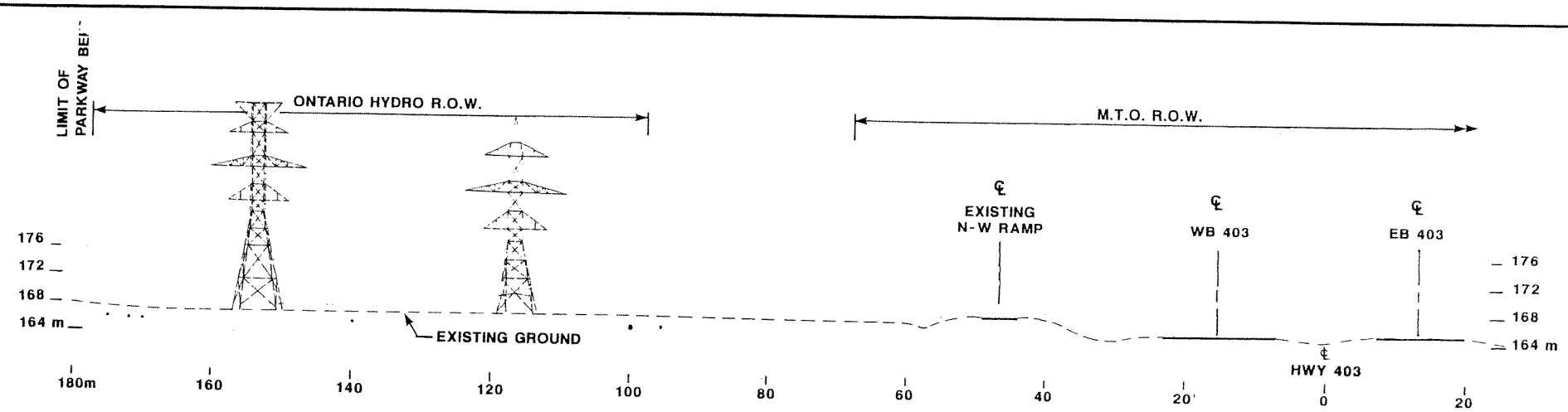
SCALE

LEGEND

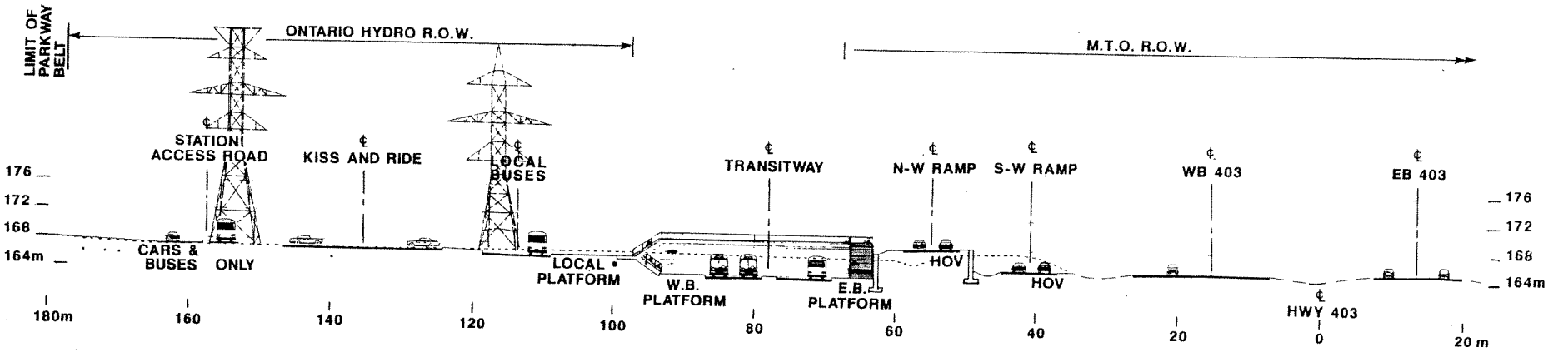
CROSS SECTION

TRANSITWAY

CROSS SECTION KEY PLAN
CENTRE SECTION
MAVIS ROAD TO CAWTHA ROAD



145m WEST OF MAVIS ROAD
(EXISTING)

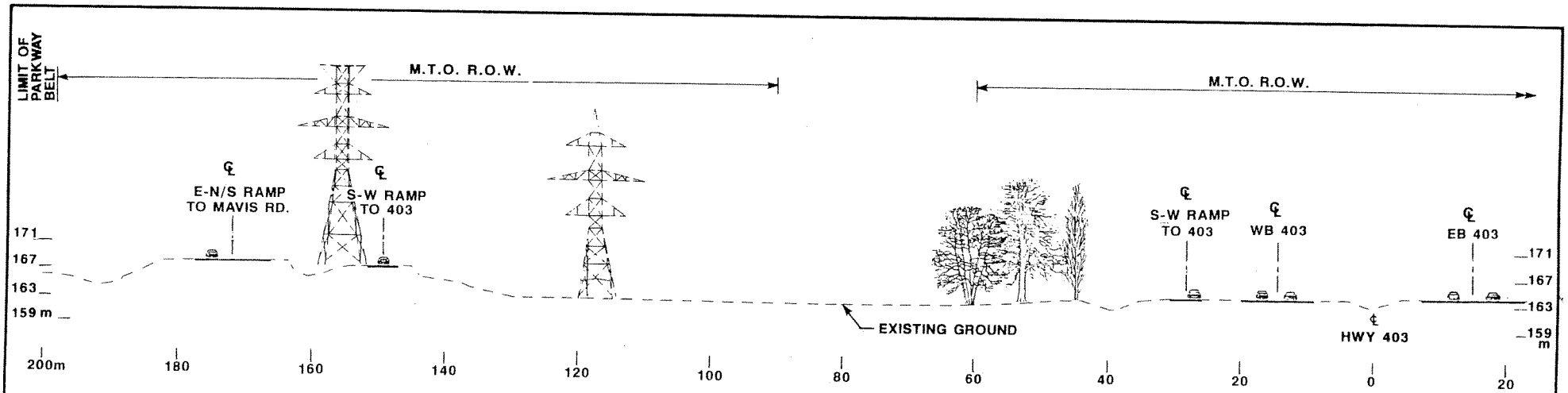


145m WEST OF MAVIS ROAD
(PROPOSED MAVIS STATION)

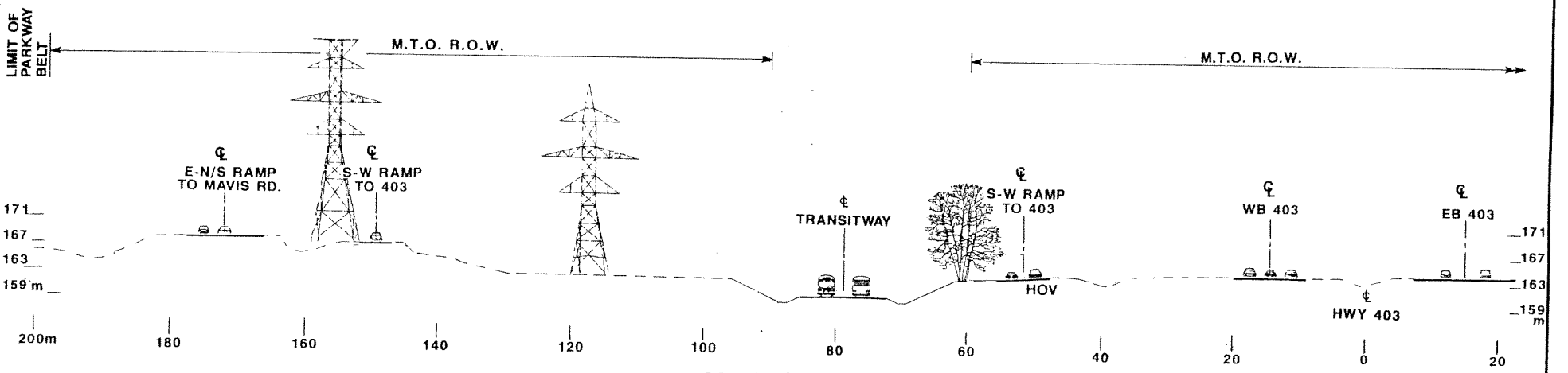
MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 77
SCALE HORIZ. 1:600
VERT. 1:60

CROSS SECTION A-A



98m EAST OF MAVIS ROAD
(EXISTING)

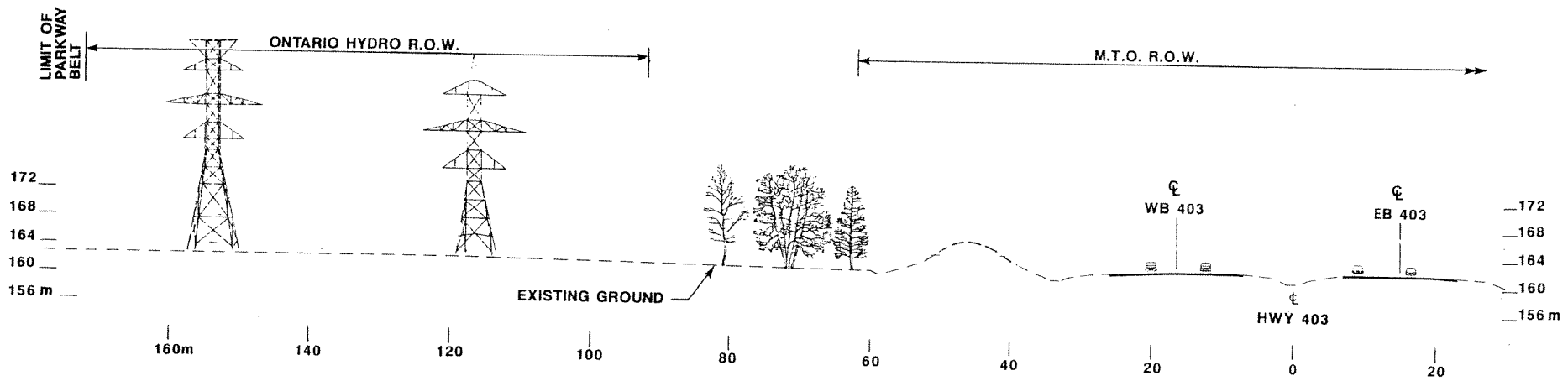


98m EAST OF MAVIS ROAD
(PROPOSED)

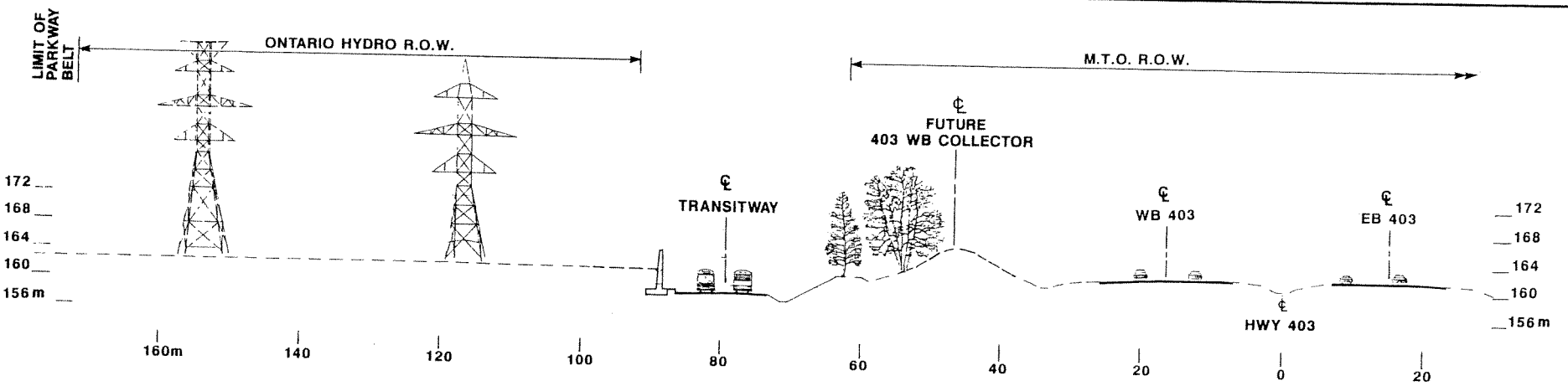
MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 78
SCALE HORIZ. 1:600
VERT· 1:60

CROSS SECTION B-B



545m EAST OF MAVIS ROAD
(EXISTING)

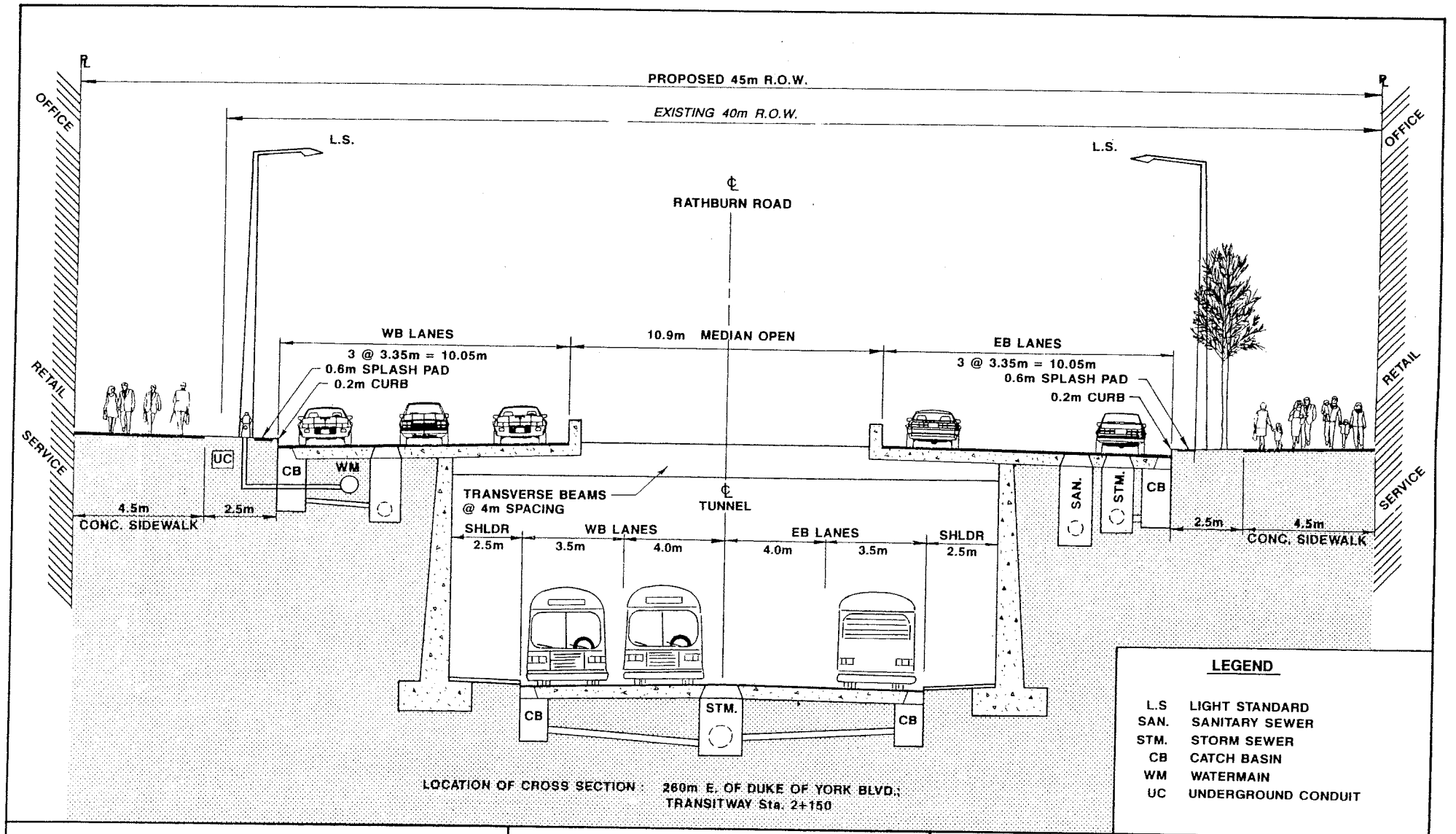


545m EAST OF MAVIS ROAD
(PROPOSED)

MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 79
SCALE HORIZ. 1:600
VERT: 1:60

CROSS SECTION C-C



LEGEND

L.S	LIGHT STANDARD
SAN.	SANITARY SEWER
STM.	STORM SEWER
CB	CATCH BASIN
WM	WATERMAIN
UC	UNDERGROUND CONDUIT

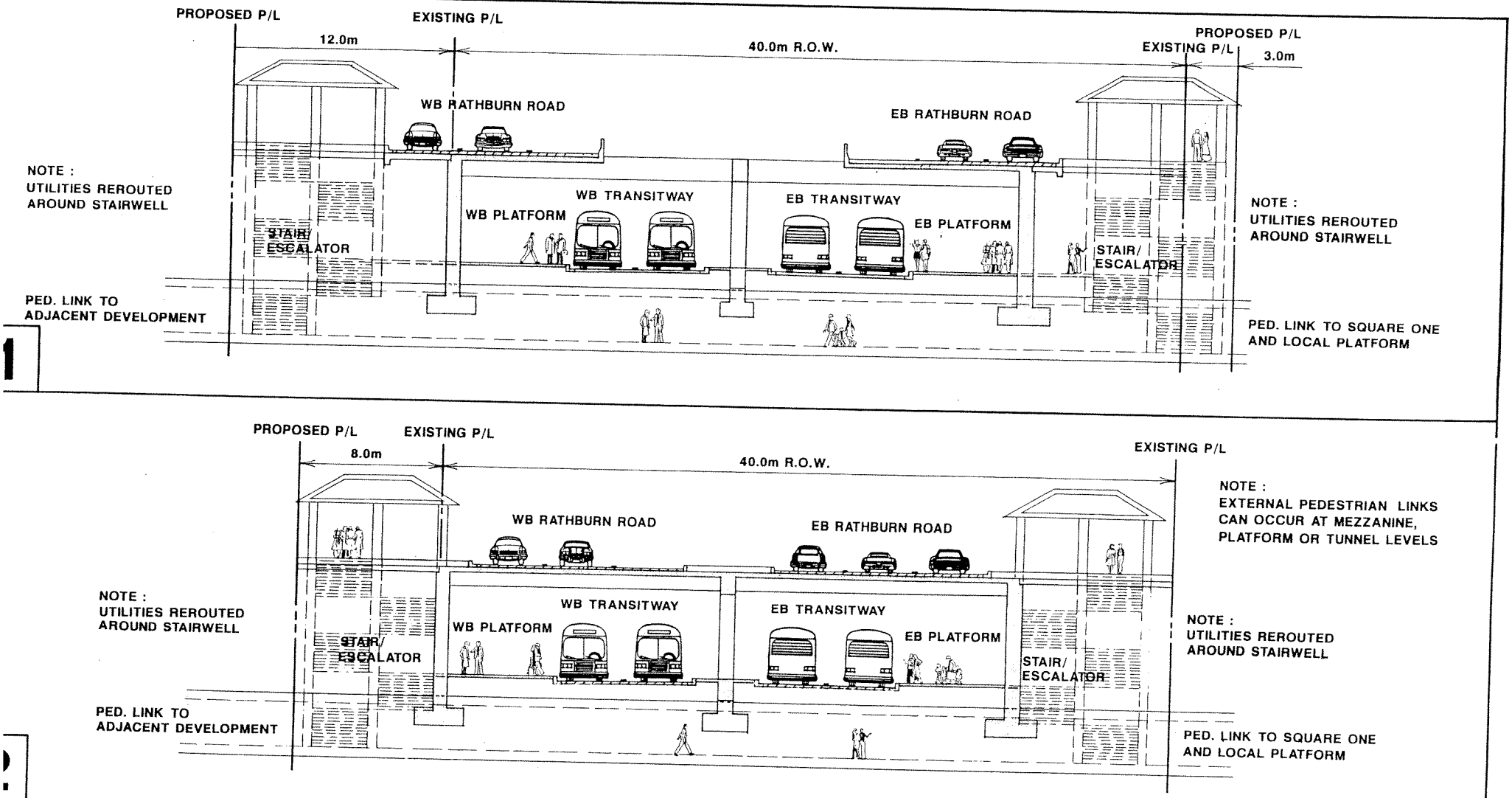
MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 80

0 1 2 3 4 5 10m

SCALE 1:125

CONCEPTUAL ARRANGEMENT OF TRANSITWAY AND SERVICES IN RATHBURN ROAD RIGHT OF WAY



ISSISSAUGA TRANSITWAY
INCTIONAL PLANNING STUDY

EXHIBIT 81

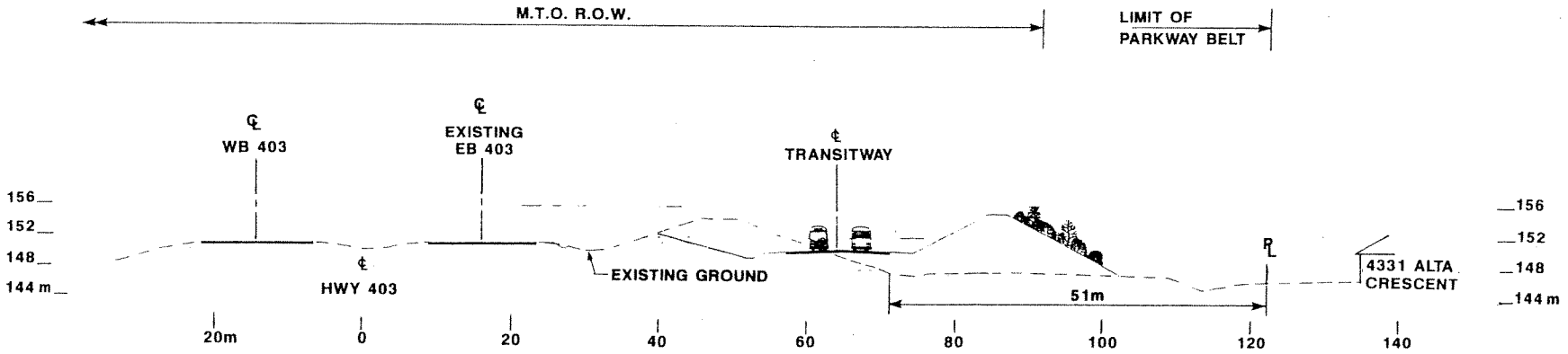
0 10 20m

SCALE 1:200

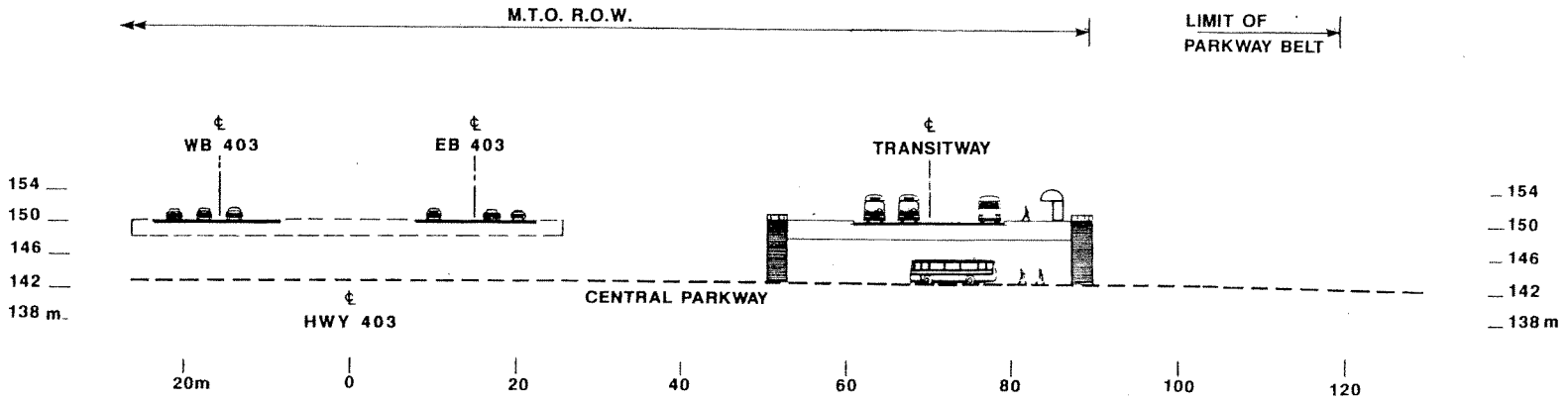
CROSS SECTION D-D

1 TRANSITWAY AT CITY CENTRE STATION: PEDESTRIAN CROSSING UNDER TRANSITWAY (OPEN CONCEPT)

2 TRANSITWAY AT CITY CENTRE STATION: PEDESTRIAN CROSSING UNDER TRANSITWAY (CLOSED TUNNEL)

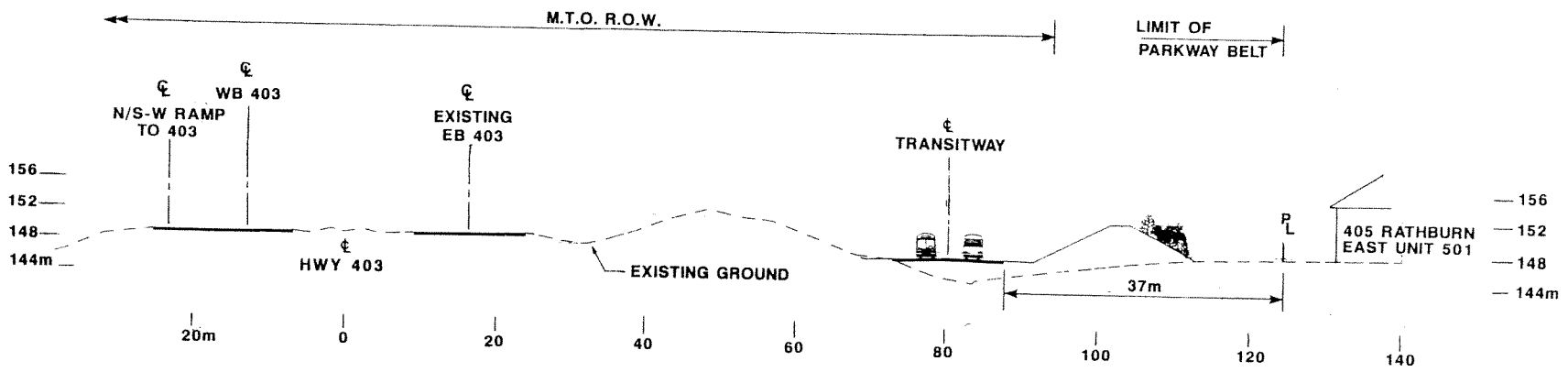


134M WEST OF CENTRAL PARKWAY
(PROPOSED)

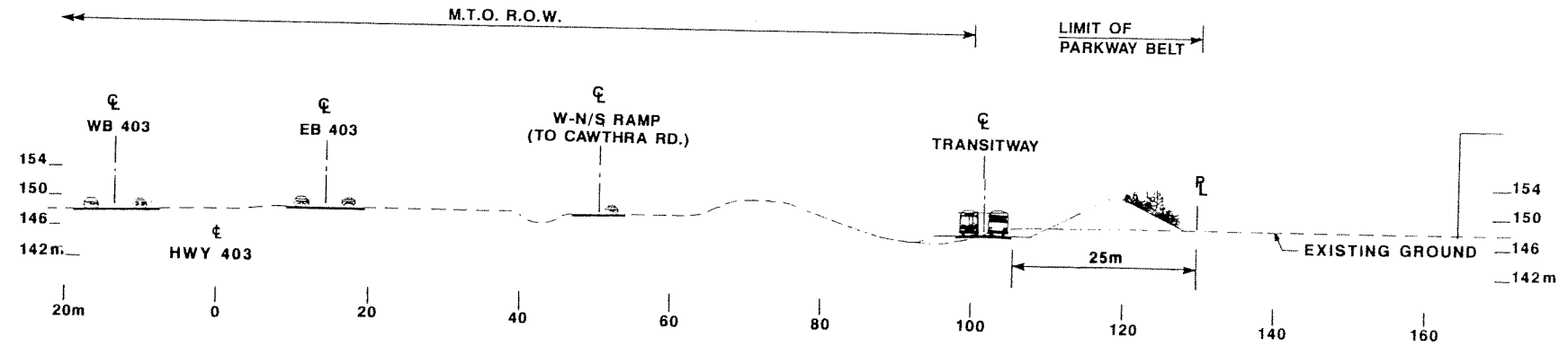


CENTRE LINE OF CENTRAL PARKWAY EAST
(PROPOSED CENTRAL PARKWAY STATION)

MISSISSAUGA TRANSITWAY **FUNCTIONAL PLANNING STUDY**	EXHIBIT 84 SCALE HORIZ. 1:600 VERT. 1:60	**CROSS SECTION G-G** **CROSS SECTION H-H**



186m EAST OF CENTRAL PARKWAY
(PROPOSED)

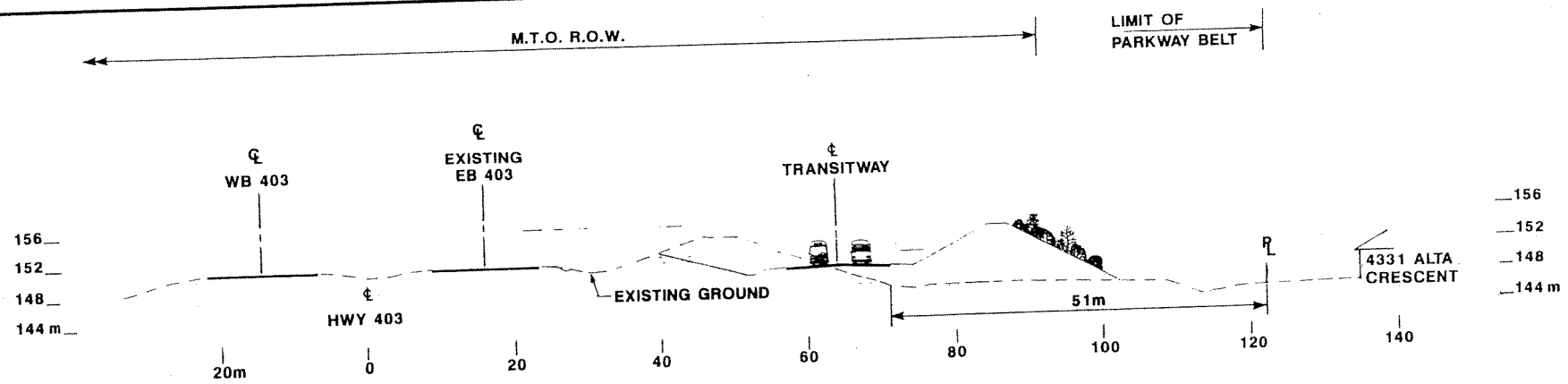


510m EAST OF CENTRAL PARKWAY
(PROPOSED)

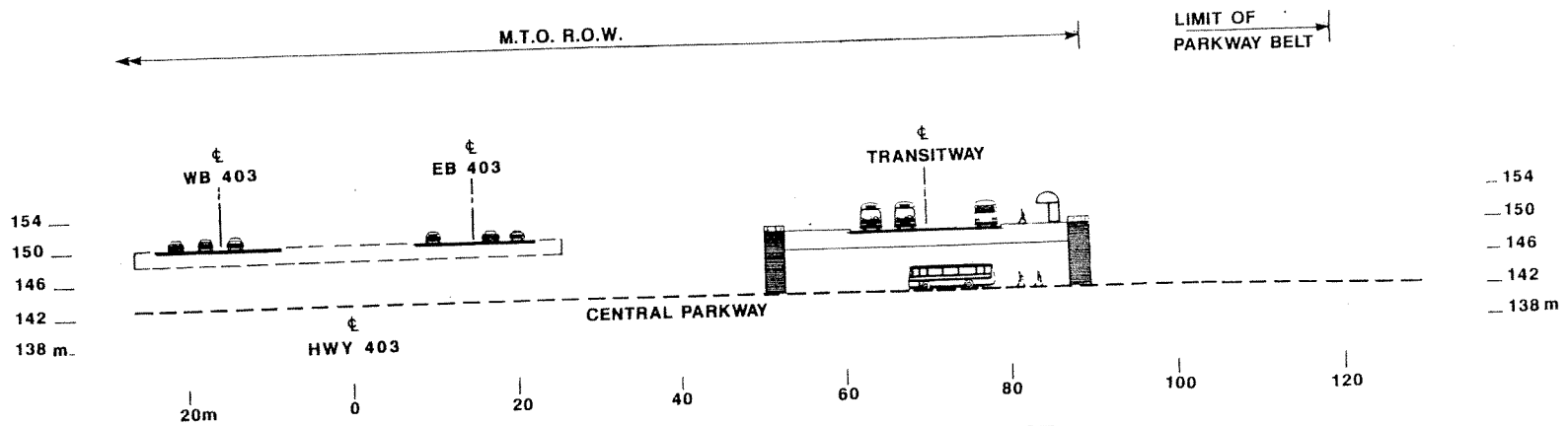
MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 85
SCALE HORIZ. 1:600
VERT. 1:60

CROSS SECTION I-I
CROSS SECTION J-J



134M WEST OF CENTRAL PARKWAY
(PROPOSED)

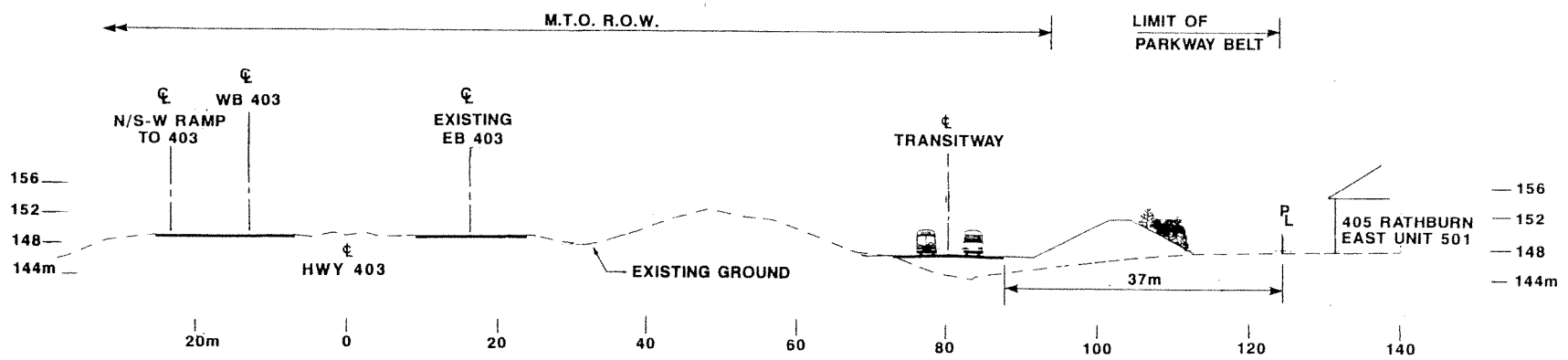


CENTRE LINE OF CENTRAL PARKWAY EAST
(PROPOSED CENTRAL PARKWAY STATION)

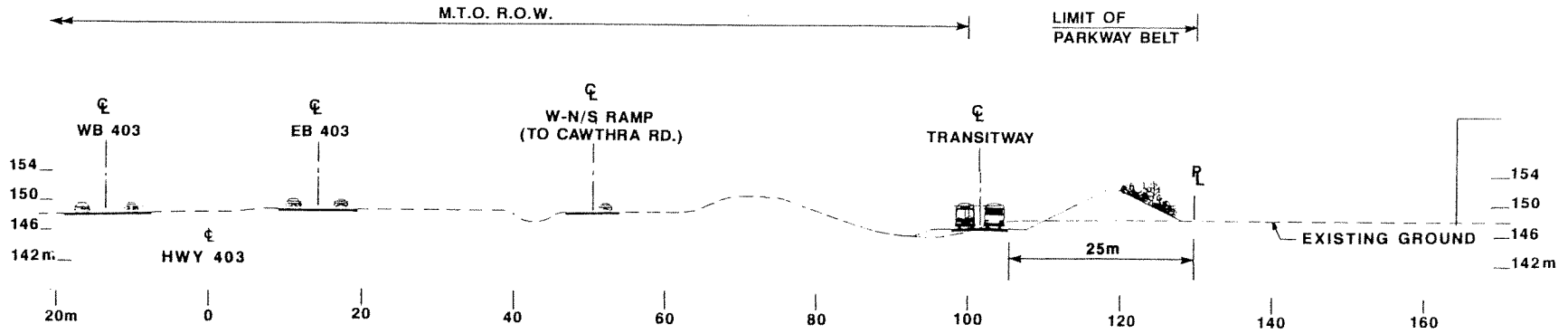
MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 84
SCALE HORIZ. 1:600
VERT. 1:60

CROSS SECTION G-G
CROSS SECTION H-H



186m EAST OF CENTRAL PARKWAY
(PROPOSED)

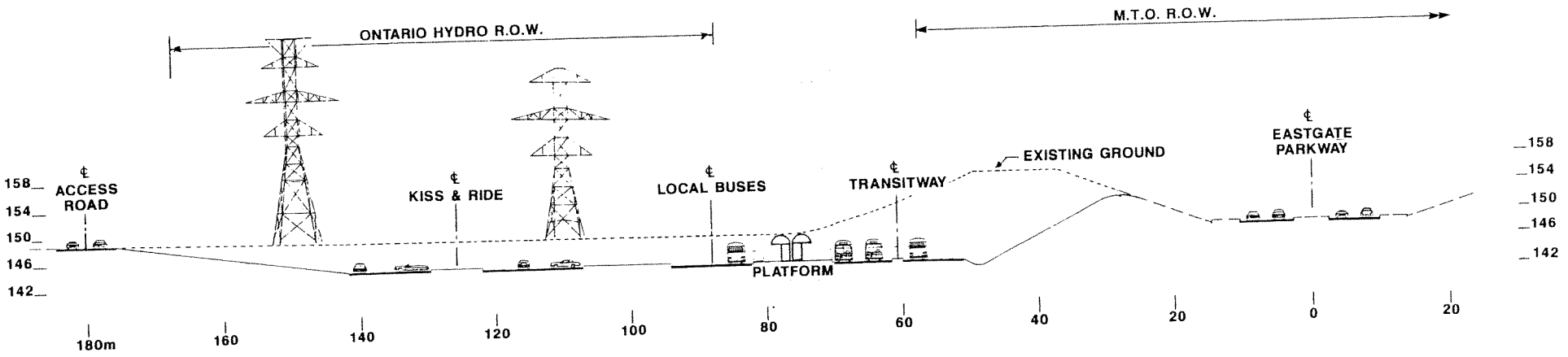


510m EAST OF CENTRAL PARKWAY
(PROPOSED)

MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 85
SCALE HORIZ. 1:600
VERT. 1:60

CROSS SECTION I-I
CROSS SECTION J-J

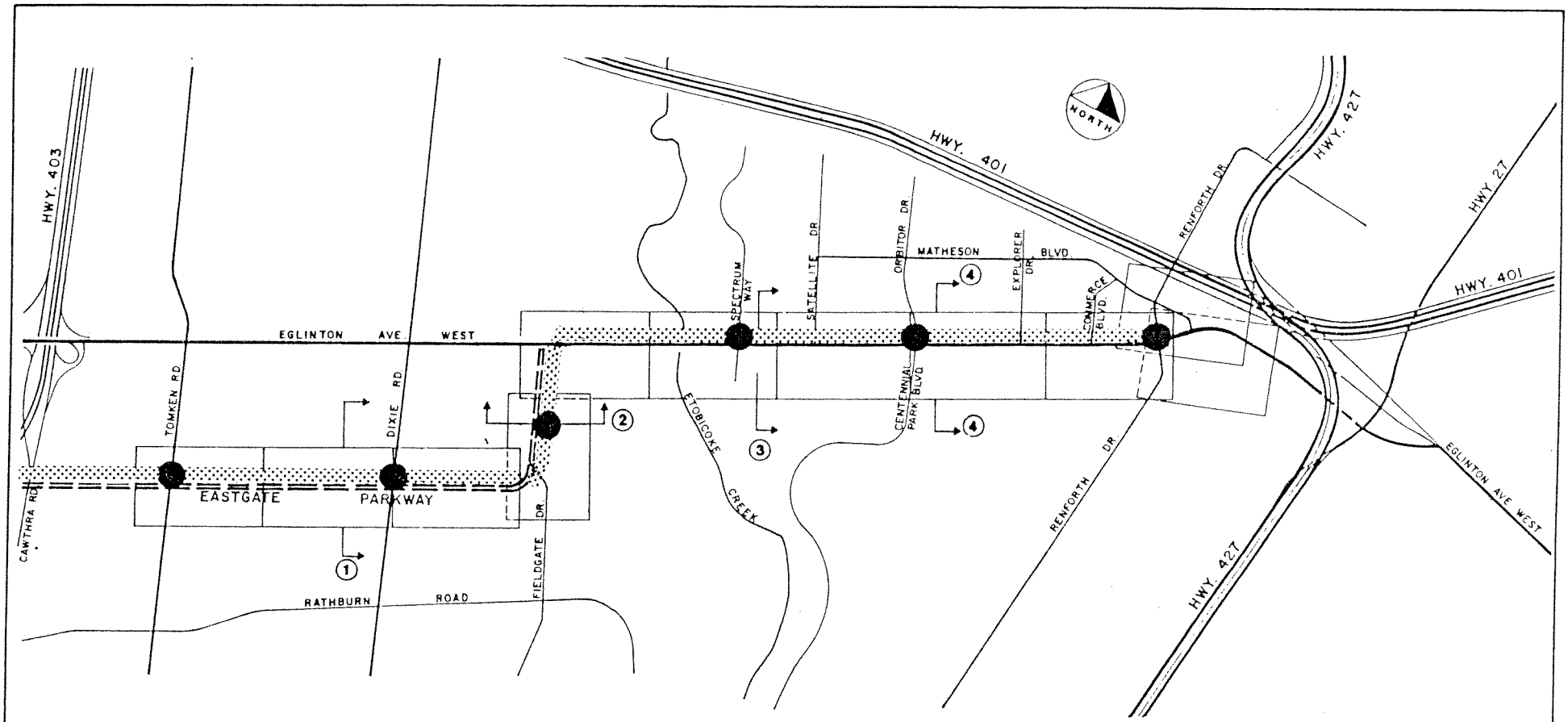


284m EAST OF CAWTHRA ROAD
(PROPOSED CAWTHRA STATION)

MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 86
SCALE HORIZ. 1:600
VERT. 1:60

CROSS SECTION K-K



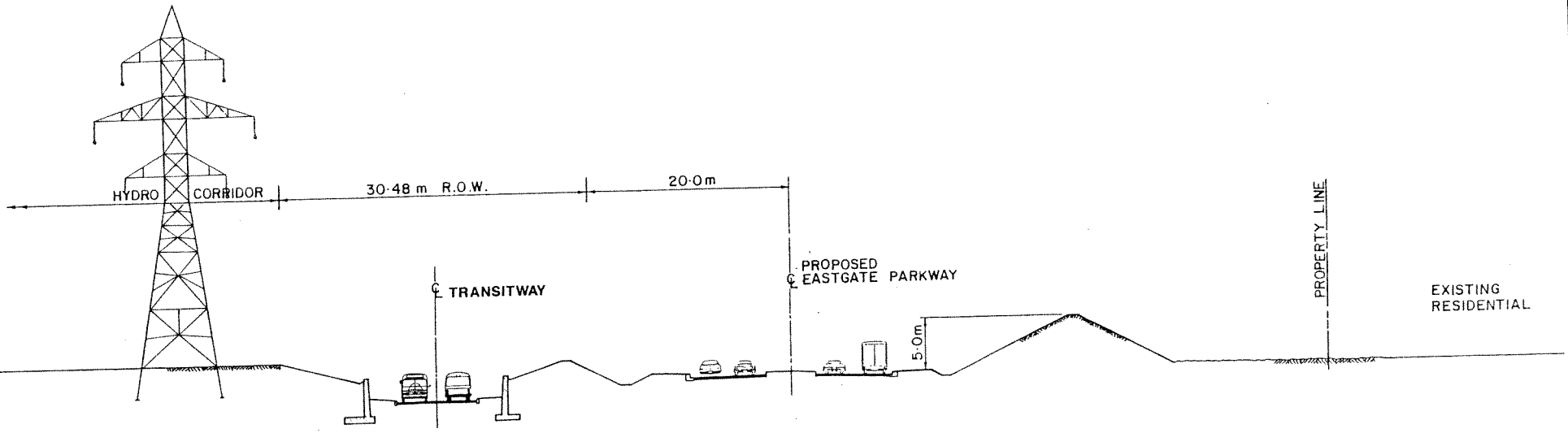
CROSS SECTION	SEE EXHIBIT
1–1	88
2–2	89
3–3	90
4–3	91

RECOMMENDED MISSISSAUGA TRANSITWAY

MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 87

CROSS SECTION KEY PLAN
EAST SECTION
CAWTHRA ROAD TO RENFORTH DRIVE



①

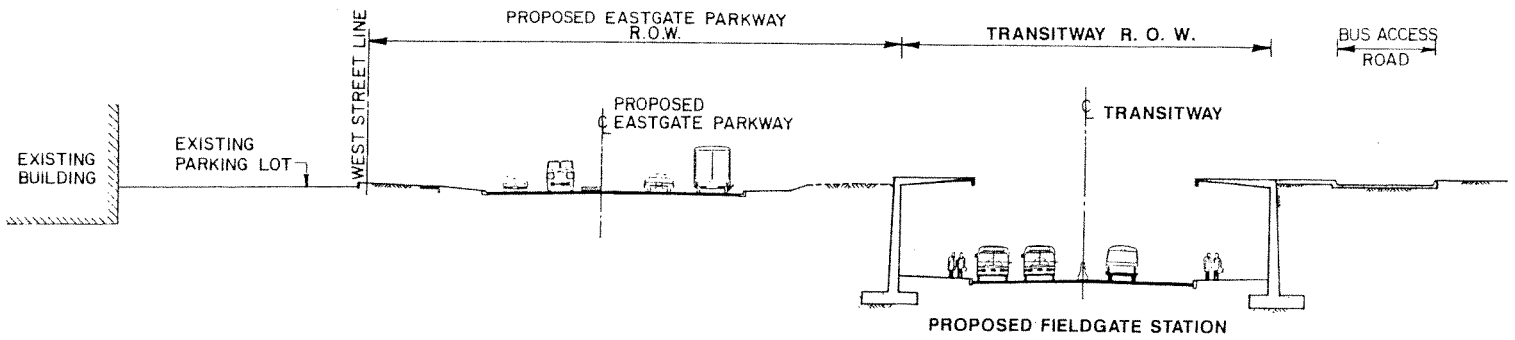
AT EASTGATE PARKWAY & DIXIE ROAD
LOOKING EAST

MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 88

0 10 20 30 40 m

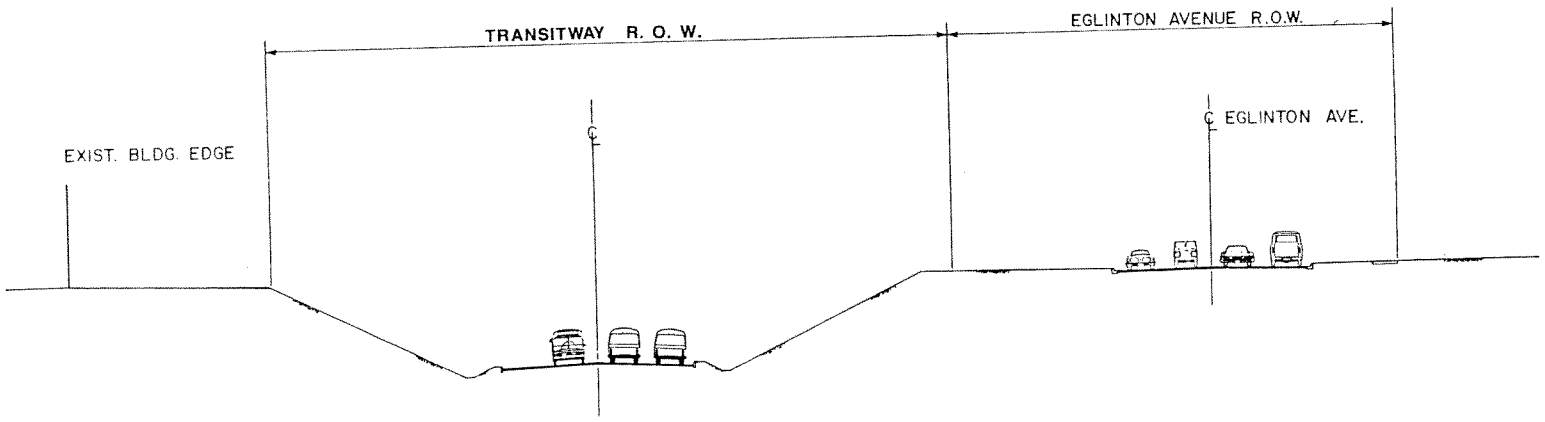
CROSS-SECTION 1



(2)

AT FIELDGATE DRIVE (PROPOSED EASTGATE PARKWAY) LOOKING NORTH

MISSISSAUGA TRANSITWAY **FUNCTIONAL PLANNING STUDY**	EXHIBIT 89 0 10 20 30 40 m	**CROSS-SECTION 2**



④

AT EGLINTON AVENUE & ORBITOR DRIVE
LOOKING EAST

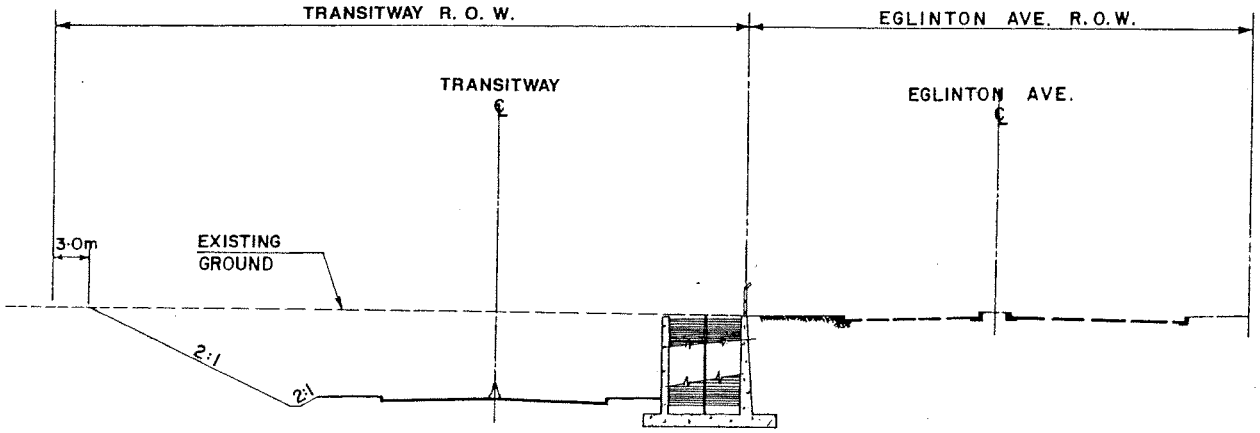
(OPEN CUT)

MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 91

0 10 20 30 40 m

CROSS-SECTION 4



③

AT EGLINTON AVENUE & SPECTRUM WAY LOOKING EAST

(OPEN CUT & RETAINING WALL)

MISSISSAUGA TRANSITWAY **FUNCTIONAL PLANNING STUDY**	EXHIBIT 90 0 10 20 30 40 m	CROSS-SECTION 3

5.2.3 Stations

Station layouts, as shown on the recommended plans, have been developed to a functional level of detail only during the current study. This was done to establish the feasibility of each station and a realistic property envelope for protection purposes. It was not the intent of the current study to generate final station plans; that will be the subject of a significant amount of further work and architectural study, and may result in refinement or alteration to the configuration of some stations shown here (albeit within the confines of the identified property block). The ability to fully or partially integrate stations with future development is present at any station location where development has not yet reached maturity.

Parking areas have been identified in the recommended plan at five key stations: Ridgeway, Winston Churchill, Cawthra, Dixie, and Renforth. This identification has been for property protection purposes only, and actual definition of parking needs and layout will be subject to future separate work.

The need for implementation of parking areas will depend on Transitway construction staging, Mississauga Transit operation strategy, demand, and timing. It is realistic to envision the combination of the Ridgeway and Winston Churchill parking facilities into a single western "gateway", and the implementation of the Halton Rapid Transit strategy may provide an opportunity to locate some of the functions of the western gateway to the west of Highway 407 in Halton. Due to the high density of development in the City Centre and the undesirability of attracting additional vehicles to the Centre, it is not recommended that long-term parking be provided for at either the City Centre or Hurontario Stations. There will nevertheless be a significant amount of privately owned parking in the City Centre area, some of which may be available, at market rates, to Transitway users.

Tables 24 and 25 in Section 4.3.3 summarize the design characteristics which were incorporated into the station layouts shown in Section 5.2.1, and which should be retained in any subsequent preliminary or detail design of the stations.

5.2.4 Roadways

The proposed Transitway, being grade-separated with crossing roads and used by transit vehicles only, will have a relatively minor impact on the layout and operation of the road network in the study area.

Where the Transitway is proposed to be located adjacent to Highway 403, careful plan, profile, and section development in consultation with the Ministry of Transportation, has resulted in a Transitway Plan which reflects a compromise acceptable to both the Ministry and the City in terms of location and layout. The plan protects the ability to construct the ultimate required Highway 403 collector road system serving the Mississauga City Centre, as well as the future requirements of the 403 / 407 interchange at Ninth Line.

Of particular concern to the Ministry of Transportation is the maintenance of acceptable geometric design standards to ensure continued safe operation of Highway 403 and its interchanges. Other issues of concern to the MTO, and taken into consideration in preparing the Transitway plans, include:

- impact on existing interchange structures;
- impact on existing Highway 403 drainage ditches;
- construction operations that may affect the operation of Highway 403;
- effect of headlight glare; and
- effect of on-line stations on the interchange ramps.

Table 43 summarizes the impact of the Transitway at interchanges, and illustrates that, although existing conditions will be affected, the proposed revised interchange ramps will meet or exceed the Ministry's geometric standards in all cases.

The impact of the Transitway on local roads focuses on two aspects: the introduction of turning lanes and traffic signal timing changes at station access points; and the ultimate need to completely reconstruct Rathburn Road between Prince of Wales Boulevard and City Centre Drive in order to accommodate the proposed Transitway tunnel. Table 44 summarizes the locations where intersection changes will be required, while the Rathburn Road plan was fully addressed in Section 4.5.3.3.

Table 51a in Section 5.3.1 identifies other specific roadway-related issues which arose during the study, and the measures committed to to ensure their satisfactory resolution.

5.2.5 Structures

The Transitway, when complete, will be grade-separated with all crossing roads and their associated freeway interchange ramps. The current layout of every road crossed by the Transitway will remain essentially intact, and it is possible to maintain roadway use throughout the Transitway construction program. Transitway construction would be faster, less costly, and less complex if roadways could be detoured around the structure construction sites, however this is impossible for the arterial crossings west of Fieldgate Drive due to the proximity of either Highway 403 or Eastgate Parkway. Some ramps may be detoured in this manner, and all roadways not yet constructed (such as the future North Collector and South Service Road near the City Centre) should be built, if possible, with Transitway structures incorporated in their construction.

Exhibits 92 - 95 highlight the locations of all transitway crossing structures, and the associated Tables 45a-45c describe a conceptual construction staging approach, including detouring plans, for each structure as well as notes of particular interest at each site.

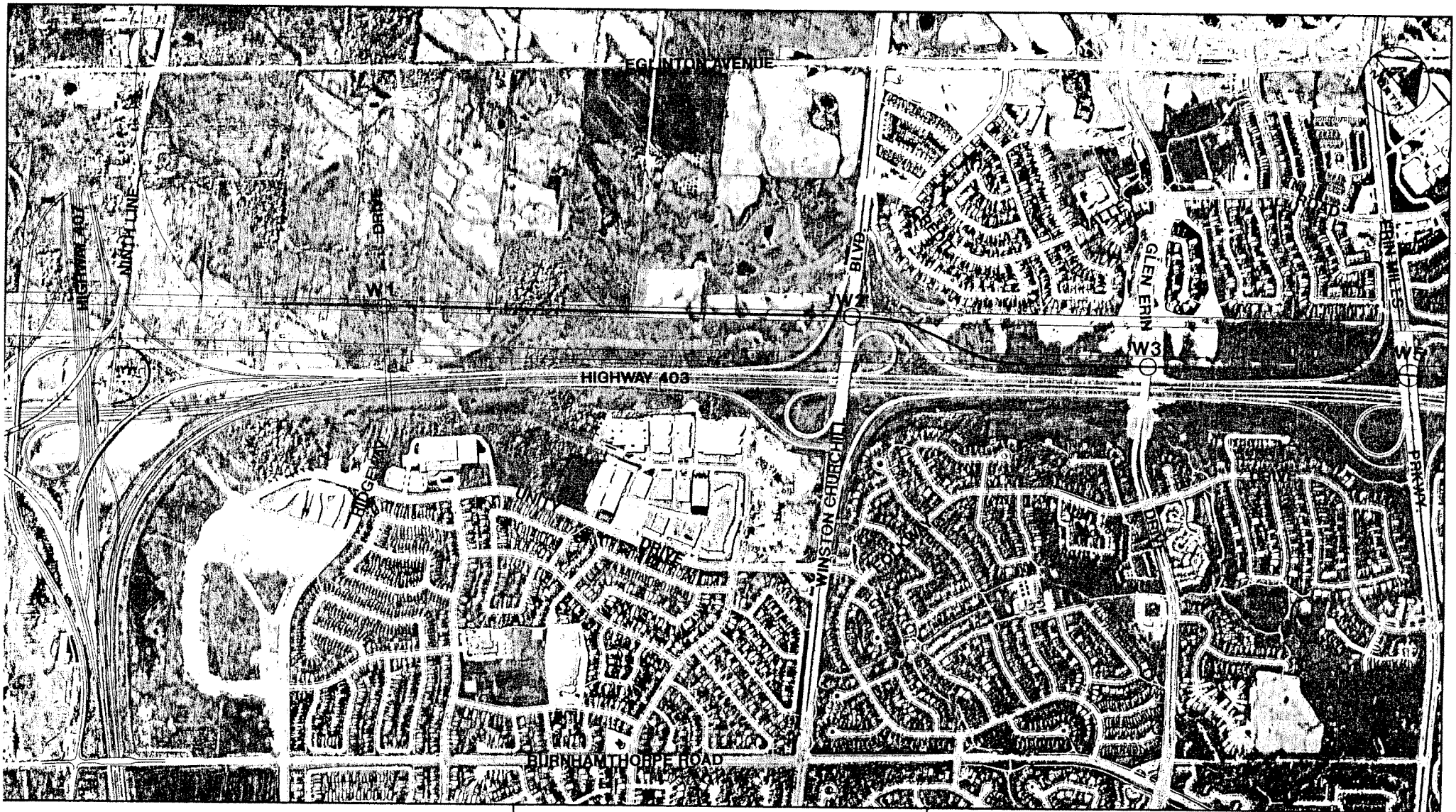
TABLE 43 - IMPACT OF MISSISSAUGA TRANSITWAY ON HIGHWAY 403 INTERCHANGE DESIGNS

HIGHWAY 403 INTERCHANGE	MINIMUM RADIUS (m)								
	OFF RAMP			LOOP RAMP			ON RAMP		
	EXISTING		PROPOSED	EXISTING		PROPOSED	EXISTING		PROPOSED
WINSTON CHURCHILL BLVD.	E-N/S	240/110	240/100 (1)	S-W	50	45 (2)	N-W	175	70 (3)
ERIN MILLS PARKWAY	E-N/S	240/110	240/110 (1)	S-W	63	58 (4)	N-W	175	95
MAVIS ROAD	E-N/S	210/100	210/100 (1)	S-W	60	45 (2)	N-W	175	100 (3)
HURONTARIO STREET	W-N/S	230/140	230/180 (1)	N-E	55	45	S-E	80	80
CAWTHRA ROAD - STATION ACCESS	N-E	N/A	50 (loop)	S-E	N/A	65	E-N	N/A	180
MTO STANDARD	200/100 (1)			50 (std) 45 (few trucks)			80		

NOTE: (1) - Right hand curve / Left hand curve radii for S - shaped freeway exit ramp at Parclo "A" type interchange
(2) - This loop provides for a metered lane.
(3) - This ramp provides for a metered lane, other ramps and loop remain unchanged.
(4) - Change due to introduction of metered lane, other ramps and loop remain unchanged.
(5) - "Existing" conditions at Hurontario Street interchange refer to the future layout with the Proposed South Service Road in place.

TABLE 44 - IMPACT OF TRANSITWAY ACCESS ON LOCAL ROADS

Access Point	Exhibit (Section 5.2.1)	Introduce Turn Lane		Revise Traffic Signal Timing	Add Bus Bays on Street	Geometric Changes to Intersection
		Left	Right			
Ridgeway	38	✓	✓	new	✓	new
Winston Churchill	40	✓	-	✓	-	✓
Glen Erin Access Ramp	41	✓	-	none	-	new
Erin Mills	42	✓	-	✓	-	✓
Creditview	46	✓	-	none	✓	new
Mavis	50	✓	-	✓	-	✓
City Centre	53	N/A	N/A	-	-	-
Hurontario	55	-	-	none	✓	new
Central Parkway	57	-	-	none	✓	-
Cawthra	60	-	✓	none	-	direct ramps
Tomken	62	✓	-	none	✓	new
Dixie	64	✓	-	new	✓	new
Fieldgate	65	-	-	-	-	new
Fieldgate / Eglinton Access Ramp	66	✓	-	✓	-	-
Fieldgate North (Potential)	66	-	-	-	-	-
Spectrum	67	-	-	-	-	-
Orbitor	69	-	-	-	-	-
Renforth - Explorer - Matheson	 70 70	 ✓ ✓	 ✓ -	 none none	 - -	 new new



MISSISSAUGA TRANSITWAY

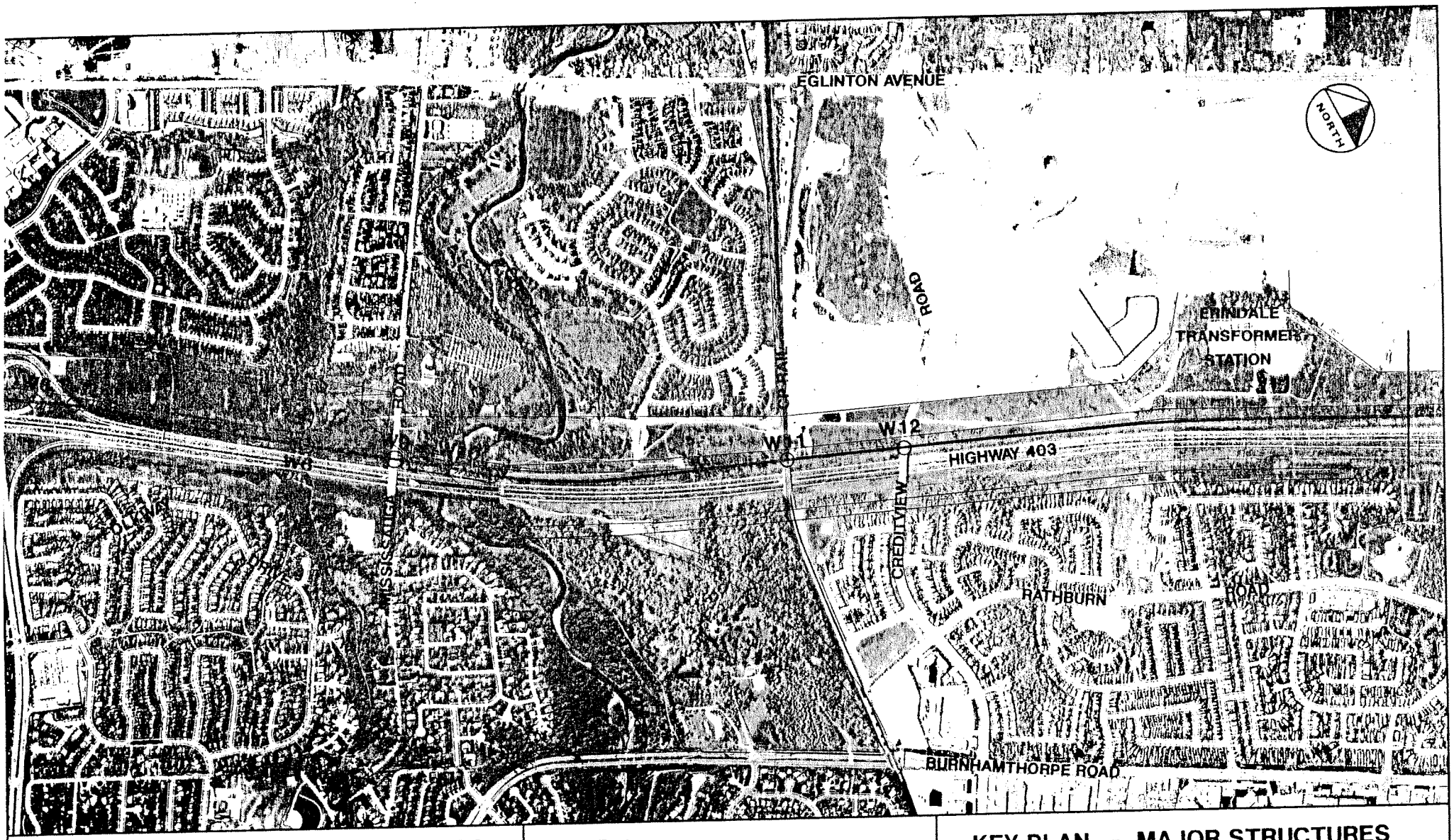
EXHIBIT 92

0 250 500 750 1000

SCALE

KEY PLAN – MAJOR STRUCTURES

NINTH LINE – ERIN MILLS PARKWAY



MISSISSAUGA TRANSITWAY

EXHIBIT 93

0 250 500 750 1000

SCALE

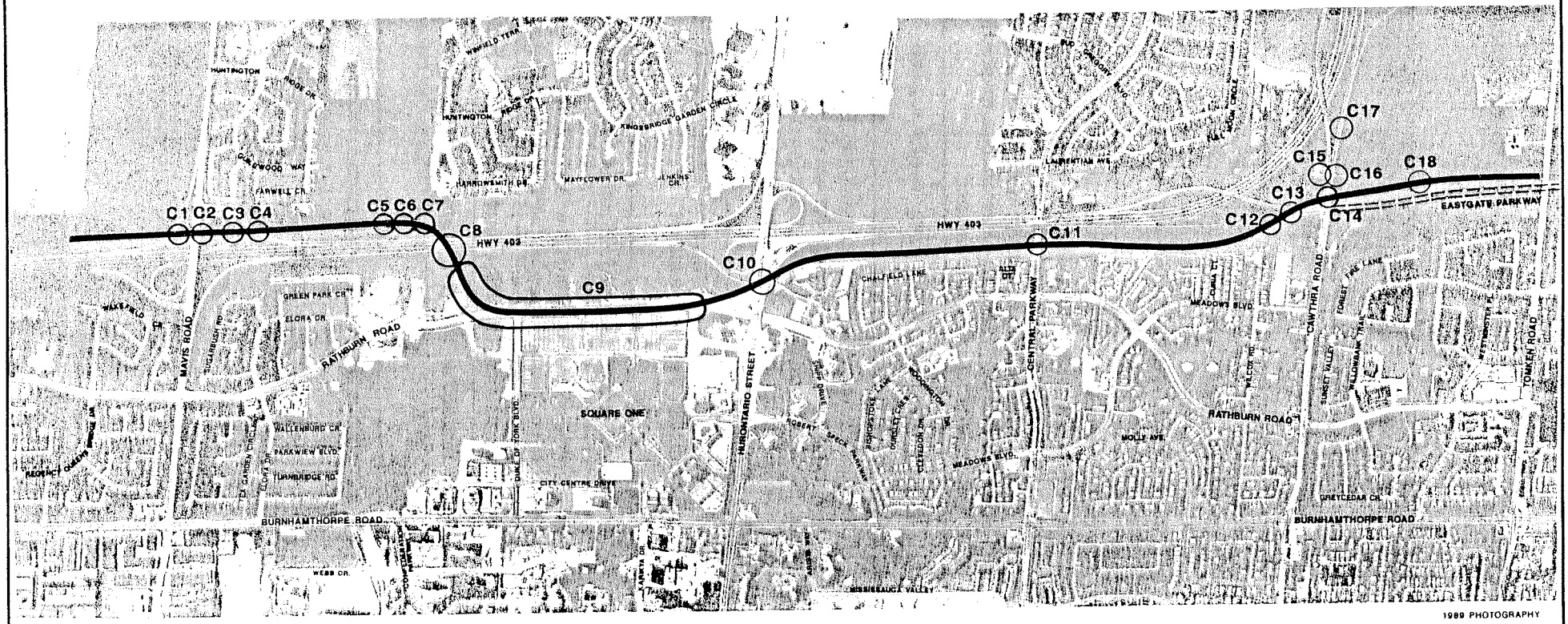
KEY PLAN – MAJOR STRUCTURES

ERIN MILLS PARKWAY – MAVIS ROAD

TABLE 45A - MAJOR STRUCTURES - WEST SECTION: NINTH LINE TO MAVIS ROAD

Structure No.*	ROADWAY	CONCEPTUAL CONSTRUCTION SEQUENCE
W1	Ridgeway Drive	Ridgeway Drive overpass can precede Transitway. No detour is required.
W2	Winston Churchill Boulevard	Relocate E-N/S ramp to temporary then permanent location to free construction area. Because Winston Churchill Boulevard will require widening on the east side, the overpass can be built in two stages while maintaining four through lanes. Build east side then west side of overpass.
W3	Glen Erin Drive	Overpass structure is built in three stages in order to maintain four through traffic lanes. Alternatively, because there is not an interchange between Glen Erin Drive and Highway 403 and there are two convenient detour routes by way of Winston Churchill and Erin Mills Parkway, Glen Erin Drive could be temporarily closed during construction and traffic detoured.
W4	Erin Mills Parkway NW ramp	Structure is on a new alignment; no detour is required.
W5	Erin Mills Parkway	A temporary relocation of the entry into the Erin Mills Parkway S-W ramp is required. Overpass can be constructed in two stages. In order to maintain four through traffic lanes temporarily reduce width of existing traffic lanes across the construction site during construction.
W6 W7	Erin Mills Parkway S-W ramp and Hwy. 403 E-N/S ramp	A temporary diversion of both ramps may be required during the construction of these two structures.
W8	Mullett Creek	A new structure on Transitway alignment. No detour is required.
W9	Mississauga Road	New structure could be built in 2 or 3 construction stages in order to maintain at least two through traffic lanes on Mississauga Road.
W10	Credit River	A new structure on Transitway alignment. No detour is required.
W11	CP Rail	A new structure on Transitway alignment. Falsework required to support heavy rail traffic during construction. No detour is required.
W12	Creditview Road	A new structure on Transitway alignment. Overpass can be constructed in 2 or 3 stages in order to maintain a minimum of two through traffic lanes on Creditview Road during construction.

*See Exhibits 86, 87



○ MAJOR STRUCTURES

MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 94

0 250 500 750 1000m

SCALE

KEY PLAN - MAJOR STRUCTURES
MAVIS ROAD TO CAWTHRA ROAD

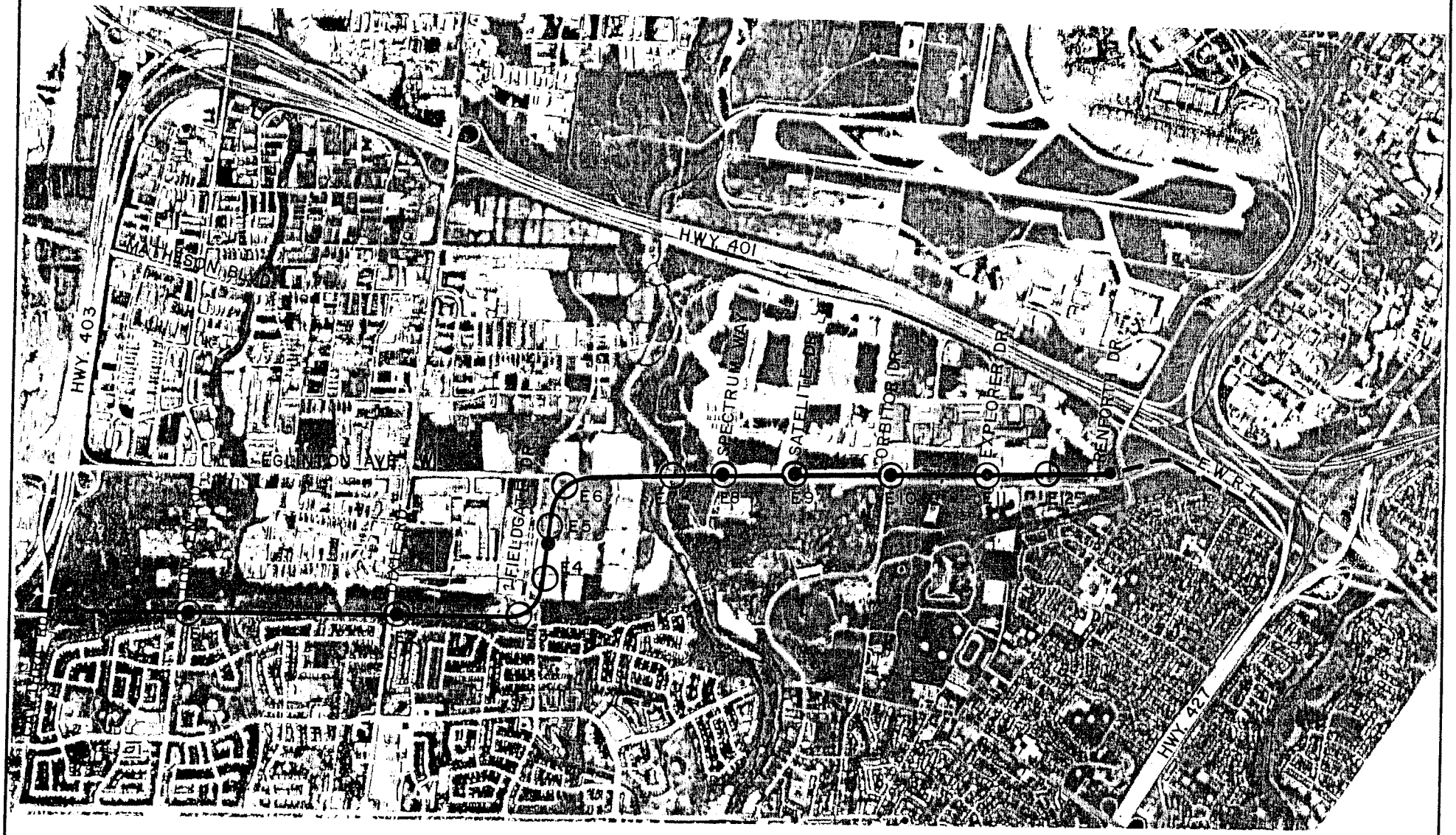
TABLE 45B - MAJOR STRUCTURES - CENTRE SECTION: MAVIS ROAD TO CAWTHRA ROAD

Structure No.*	ROADWAY	CONCEPTUAL CONSTRUCTION SEQUENCE
C1	Mavis/403 N-W Ramp	Structure on new alignment; no detour required.
C2	Mavis Road	Construction should precede that of ramp structures, to minimize traffic and geometric constraints. Structure can be built in three stages while maintaining four through lanes on Mavis Road. Existing north abutment to be converted into pier. Spans to accommodate four lane Transitway, two lane S-W ramp, and one additional mainline westbound lane (from future North Collector).
C3	Mavis/403 S-W Ramp	Structure on new alignment; major diversion of existing ramp may be required at construction site.
C4	Mavis/403 E - N/S Ramp	Realign ramp on a temporary basis to the south of construction site; Structure to span two lane transitway and future two lane North Collector.
C5 C6 C7	Confederation Parkway	Future roadway; no detour required. E - N/S and N/S - W ramps between Confederation Parkway and future North Collector may be built subsequently; no detours required for ramps. Two lane Transitway traffic to be maintained during construction should Transitway implementation precede road and ramp construction.
C8	Highway 403 (including Future North Collector and Future South Service Road)	Six lanes of Highway 403 traffic to be maintained throughout construction. Build portions of structure under North Collector and South Service Road in first phase; in second phase detour eastbound 403 to South Service Road alignment and westbound 403 to North Collector alignment, leaving existing 403 clear for construction of central section of structure. Placement of Confederation Parkway structure piers must consider potential for Highway 403 detours. If North Collector or South Service Road are in place prior to Transitway construction, either a third detour phase or a realignment of the roadways may be required.
C9	City Centre (Rathburn Road)	Using slurry walls, construct transitway in a walled trench while maintaining two lanes per direction on Rathburn Road on either side of the trench (within the right-of-way). If adjacent property undeveloped at the time of construction, temporary realignment of Rathburn Road so as to minimize the amount of walled cut may be considered. Construction of structures for crossing roads should precede remainder of trenching. Detouring of westbound Rathburn Road for two transitway crossings.

TABLE 45B (Cont.) - MAJOR STRUCTURES - CENTRE SECTION: MAVIS ROAD TO CAWTHRA ROAD

Structure No.*	ROADWAY	CONCEPTUAL CONSTRUCTION SEQUENCE
C10	Hurontario Street	Structure can be built in three phases while maintaining six through lanes on Hurontario Street. Consider temporary closure of Sherwoodtowne Boulevard access during one phase. Consider temporary closure of N-W ramp to Rathburn Road during one phase.
C11	Central Parkway East	Transitway crosses over Central Parkway; no detour required. Construction falsework to maintain clearance for two lanes (minimum) on Central Parkway.
C12	EB Ramp from Highway 403 to Eastgate Parkway	Realign ramp on a temporary basis to the north of construction site; structure to span two lane transitway and future two lane South Collector
C13	NB Ramp from Eastgate Parkway to Highway 403	Realign ramp on a temporary basis to the south of construction site; structure to span three lane transitway and future two lane South Collector
C14	Cawthra Road	Two phase construction, maintaining four through lanes on Cawthra Road; structure to span four lane transitway
C15	SB Ramp from Highway 403 to Cawthra Road	Realign ramp on a temporary basis to the east of construction site; structure to span two lane station access ramp
C16	NB Ramp to Highway 403 from Cawthra Road	Realign ramp on a temporary basis to the west of construction site (potentially using same roadbed as structure C15 detour): structure to span two-lane station access ramp.
C17	NB Cawthra Road	Ramp on new alignment for roadway; if built prior to or simultaneously with structures C15 and C16, no detour required (traffic to use existing road); structure to span one lane ramp from station to 403 northbound.
C18	Road B from Cawthra Station to Eastgate Parkway WB	Future roadway; no detour required. Construction to precede transitway opening.

*See Exhibit 88



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 95

0m 500m 1000m 1500m

SCALE

KEY PLAN – MAJOR STRUCTURES
TOMKEN ROAD TO RENFORTH DRIVE

TABLE 45C - MAJOR STRUCTURES - EAST SECTION: CAWTHRA ROAD TO RENFORTH DRIVE

Structure No.*	ROADWAY	CONCEPTUAL CONSTRUCTION SEQUENCE
E1	Tomken Road	Two-phase construction, maintaining four through-lanes on Tomken Road; structure to span four-lane Transitway.
E2	Dixie Road	Two-phase construction, maintaining four through-lanes on Dixie Road; structure to span four-lane Transitway.
E3	Eastgate Parkway	Two-phase construction, maintaining four through-lanes on Eastgate Parkway; structure to span two-lane Transitway.
E4	Fieldgate Drive	Two-phase construction, maintaining two through-lanes on Fieldgate Drive; structure to span two-lane Transitway; opportunity to pre-build ultimate structure during road construction.
E5	Local Access #1	Two-phase construction, maintaining two through-lanes on access road; structure to span four-lane Transitway; opportunity to pre-build ultimate structure during road construction.
E6	Eglinton Avenue	Two phase construction, maintaining four through-lanes on Eglinton Avenue; structure to span two-lane Transitway; opportunity to pre-build ultimate structure during road construction.
E7	Etobicoke Creek	Structure on new alignment. Possible lane closure on existing Eglinton bridge to facilitate construction.
E8 E9 E10	Spectrum Way Satellite Drive Orbitor Drive	Phased construction, stagger lane closures, maintain at least two lanes on access roads during construction; structures to span four-lane Transitway at Spectrum and Orbitor and two lanes at Satellite.
E11 E12	Explorer Drive Commerce Boulevard	Phased construction, stagger lane closures, maintain at least two lanes on access roads during construction; structures to span two-lane Transitway.

*See Exhibit 89

5.2.6 Pipelines

There are seven high pressure hydrocarbon pipelines located in the Parkway Belt, for the most part in easements on Ontario Hydro property. Another pipeline is under construction (late 1991). Discussions with each of the five affected pipeline companies have occurred over the course of the Transitway planning study, regarding constraints and potential solutions to conflicts between pipeline and Transitway locations. Appendix U includes the alternatives considered and a synopsis of the applicable design standards.

Analysis to date has been of a preliminary or conceptual nature, intended only to establish the feasibility of the various facilities coexisting. Also of concern were the relative costs and issues that could arise in the preliminary and detail design stages.

Each pipeline company has commented on the alternatives developed, and all have agreed upon the feasibility of the recommended Transitway alignment. There are however, several locations where the pipelines will be affected by Transitway construction, and pipeline relocation or lowering will be required. These points are generally in the vicinity of Transitway Stations, where station facilities occupy Ontario Hydro lands. Although relocations are preferred over lowerings by the pipeline firms, the unavailability of new or altered easements within the Ontario Hydro right-of-way has meant that, in a number of cases, lowering is the preferred alternative.

Table 46 summarizes the impact on the pipelines in the corridor by the proposed Transitway; detailed plans of each situation are included in Appendix U, along with review comments by the pipeline firms on the proposed plans. Additional discussion will occur, particularly throughout the detail design and construction phases, with each affected pipeline company.

5.2.7 Utilities

Apart from some cables in ducts in some of the structures crossing Highway 403, there are no underground utilities crossing or within the recommended corridor for the Mississauga Transitway. This is an exceptional situation, and reduced the cost and constraints of such an undertaking significantly from that which would normally be expected in a 19 km long urbanized corridor. The major exception to this condition is in the Mississauga City Centre, where the alignment utilizes part of existing Rathburn Road and would require the relocation of the various utilities in that area.

The two major utilities in the corridor are above ground - the Ontario Hydro twin high-tension power lines, and Hydro Mississauga's pole line between Mississauga Road and Dixie Road.

TABLE 46 - SUMMARY TABLE OF PIPELINE LOWERINGS / RELOCATIONS

PIPELINE / STATION	SPPL		SCPL		IPPL	TNPL		CGPL
	10"	12"	12"	8"	30"	10"	20"	36"
RIDGEWAY	relocate	relocate	-	-	-	-	-	-
WINSTON CHURCHILL	relocate	relocate	relocate	relocate	-	-	-	-
ERIN MILLS	-	-	-	-	relocate	-	-	relocate
MISSISSAUGA	relocate	relocate	relocate	relocate	-	-	-	-
CREDITVIEW	-	-	-	lower	-	-	-	lower
MAVIS	-	-	-	lower	relocate	-	-	lower
CAWTHRA	lower	lower	lower	lower	lower	-	lower	lower
TOMKEN	relocate	relocate	relocate	relocate	relocate	relocate	relocate	relocate
DIXIE	-	-	-	-	relocate	-	-	relocate
FIELDGATE	lower	lower	lower	lower	lower	lower	lower	-
RENFORTH	-	-	-	-	-	-	-	-
TOTAL								

SPPL - Sarnia Products Pipeline
SCPL - Sun Canadian Pipeline
IPPL - Interprovincial Pipeline
TNPL - Trans Northern Pipeline
CGPL - Consumers Gas Pipeline

5.2.7.1 Ontario Hydro

Ontario Hydro owns a band of property, of varying width but generally in the order of 85m wide, across Mississauga within the Parkway Belt West - Southern Link (in fact the Parkway Belt was defined in large part by the location of the pre-existing Ontario Hydro corridor). Within much of this corridor, an easement has been set aside to accommodate several oil pipelines, while the remainder is used by Ontario Hydro for two high tension power lines carrying four 230 KV circuits. There are major substations west of Mavis Road and near Tomken Road, and a smaller one planned to the east of Hurontario Street.

Ontario Hydro has been an active participant in the Mississauga Transitway Planning Study, through membership on the Technical Co-ordinating Committee and in individual agency meetings and plan reviews. This interest reflected the need to protect Ontario Hydro's interests in terms of property needs and to ensure that the portions of the recommended Transitway plan utilizing Ontario Hydro property would be feasible for both Hydro and the proponent.

The City has committed to an ongoing process of review and liaison with Ontario Hydro as the project passes through the planning, design, construction, and operational phases. This process has not been completed but Table 47 summarizes the issues currently of concern to Ontario Hydro and their proposed means of resolution. Table 47 is based on the meeting of October 5, 1990, and the subsequent Memorandum of Understanding (January 15, 1991) between the City of Mississauga, Ontario Hydro, and the Ministry of Transportation (see Appendix K).

Of note is that Ontario Hydro is not in a position to provide any cost estimates for possible Transitway-related work until a preliminary design plan for the affected section has been prepared. This lack of information is reflected in the overall cost estimate for the project in Section 5.2.11.

5.2.7.2 Hydro Mississauga

Hydro Mississauga is a power utility providing electricity to customers throughout Mississauga. It has a multiple-circuit pole line within the Parkway Belt West - Southern Link between Mississauga Road and Dixie Road. The utility has plans developed and a proposal in place for a second pole line between Winston Churchill Boulevard and Mavis Road. Hydro Mississauga has also identified a need for a third pole line in the Parkway Belt within five years (1996±).

Both the existing and proposed second pole lines run in easements immediately adjacent to the Ontario Hydro right-of-way. The location of the third line is undefined but would preferably in close proximity to the existing line(s). It should be noted that, if the third line is constructed within five years, it will likely be designed in the absence of detailed Transitway plans being available.

TABLE 47 - ONTARIO HYDRO ISSUES

ISSUES / CONCERNS	RESOLUTION
1. Any place the Transitway enters Ontario Hydro property, towers may need to be raised, either to accommodate construction equipment or to provide permanent clearance	Impact to be defined during detail design. Costs to be borne by Transitway project
2. Environmental Assessment approval required to raise Hydro towers	Note to that effect incorporated in Transitway EA. Requirement for use of Ontario Hydro lands by Transitway facilities identified in EA (in order to satisfy OH-27 Exemption Order requirement for moderate class secondary use). Public and Government Agency comment solicited as part of the EA process concerning the use of the Ontario Hydro lands; mitigation designed to resolve any reasonable concerns.
3. Tower locations may change either prior to or during raising; additional tower lines may be required by Ontario Hydro in the long term	Transitway plans are flexible regarding specific layout of facilities within Hydro right-of-way. Conceptual layouts are shown based on existing tower locations. Continued liaison during detail design is committed.
4. Close Station spacing restricts ability to locate / relocate Ontario Hydro towers (specifically referring to Winston Churchill / Glen Erin / Erin Mills	Rationale for station spacing at all major crossing arterials fully documented in EA report. Ontario Hydro future tower spacing requirements can not be determined. Glen Erin Station removed from recommended plan, thereby reducing constraints on Ontario Hydro.
5. Maintenance of access to all Ontario Hydro towers and facilities is required	Access to Hydro and pipelines to be incorporated in detail design plans as necessary. Use of Station roadways and Transitway by maintenance vehicles to be permitted.
6. Relocation of existing pipelines within Ontario Hydro corridor may be required by Transitway; federally regulated pipelines have restrictions on relocation within 30 m of towers, Transitway, etc.; Ontario Hydro cannot commit at this time to a specific relocation alignment unless construction is imminent.	Affected pipelines and Ontario Hydro consulted. Property envelopes within which relocations are feasible are documented in EA report. Specific relocation requirements addressed as much as possible now; remainder at the time of detail design. Initiate discussions with Natural Energy Board regarding possible conflict. "Impacts on utilities will be resolved subject to further discussion" noted at all conflict locations on public displays. All dealings with respect to relocation of existing pipelines within Ontario Hydro corridor to be between the pipeline companies and Ontario Hydro. Detailed construction drawings to be reviewed by Ontario Hydro prior to final approval of Transitway. Issues such as access, drainage, grading, fencing, landscaping, lighting, snowpiling, clearance, and safety to be resolved in detail design stage.
7. Property ownership of Transitway and related facilities in the long term is unresolved.	A) Transitway facilities on MGS property (i.e. utility strip): ownership of Transitway to be defined through MTO / MGS / City discussions as early as possible. B) Transitway crossing Ontario Hydro r.o.w.: desirable for Transitway owner to have title to entire Transitway r.o.w.; restrictions to be placed on property to protect Ontario Hydro's interests; details subject to discussion between City, MTO, and Ontario Hydro. Type of documentation to be defined - sale, licence, easement, etc.
8. Transitway may force some utilities to relocate within Ontario Hydro r.o.w.	All existing utilities addressed in plans; future utilities to resolve specific issues as they occur. Ontario Hydro may not be able to accommodate all of the proposed uses; alternatives to be retained pending approval.
9. Implications on Parkway Belt West Plan	Transitway alignment and property envelope defined in EA. Continuous integrated utility corridor also identified in EA. Review with Ministry of Municipal Affairs to ensure conformity with intent of Parkway Belt; request plan amendment or deeming of conformity following EA approval.
10. Access ramp to Transitway in NW quadrant of Tomken / 403. Arterial intersection conflicts with Ontario Hydro expansion plans.	Removed from plan
11. Parking on east side of Dixie Station would require raising towers (Canada Post's previous parking request rejected due to inadequate clearance).	Address in detail design.

The City of Mississauga is committed to working with Hydro Mississauga through the planning and design process to ensure that the most cost-effective configuration of both the Transitway and any future Hydro facility is achieved. In the absence of detailed design plans for both installations, specific mitigation measures related to the potential impact of the future Transitway on Hydro Mississauga's plans have not been included in this EA report. However, the series of discussions and meetings which took place with Hydro Mississauga during the functional planing stage did generate the points of note summarized in Table 48 (see Appendix K).

It should be noted that if, in the future, the designated Utility corridor within the Parkway Belt West - Southern Link were to shift to the south of Highway 403 in recognition of the Transitway location on the north side, the third Hydro Mississauga pole line could be installed in that corridor without any conflict with the Transitway. However, since all of the key transformer stations in the corridor are located on Ontario Hydro property north of Highway 403 (Erindale, Hurontario (future), and Tomken), a southerly location for Hydro Mississauga would entail higher costs at the necessary highway crossings (typically $1,200 per circuit metre for below-grade routing). the implementation of the Transitway on its recommended alignment would not necessarily preclude the sharing of the available right-of-way with a Hydro Mississauga pole line. This option will be addressed during preliminary design and would be subject to approval by the Ministry of Municipal Affairs (since the Parkway Belt designations could switch so that the Transitway would be in the designated Transit corridor rather than in what is now called the Utility corridor, the third Hydro Mississauga line would be a non-conforming use if it were built north of 403).

5.2.8 Drainage

5.2.8.1 Existing Watercourses

The Mississauga Transitway is proposed to cross five permanent watercourses and a number of urbanized drainage channels (see Exhibit 96). All of the area streams drain southward to Lake Ontario. The implications of the Transitway at the major crossings are outlined in this Section.

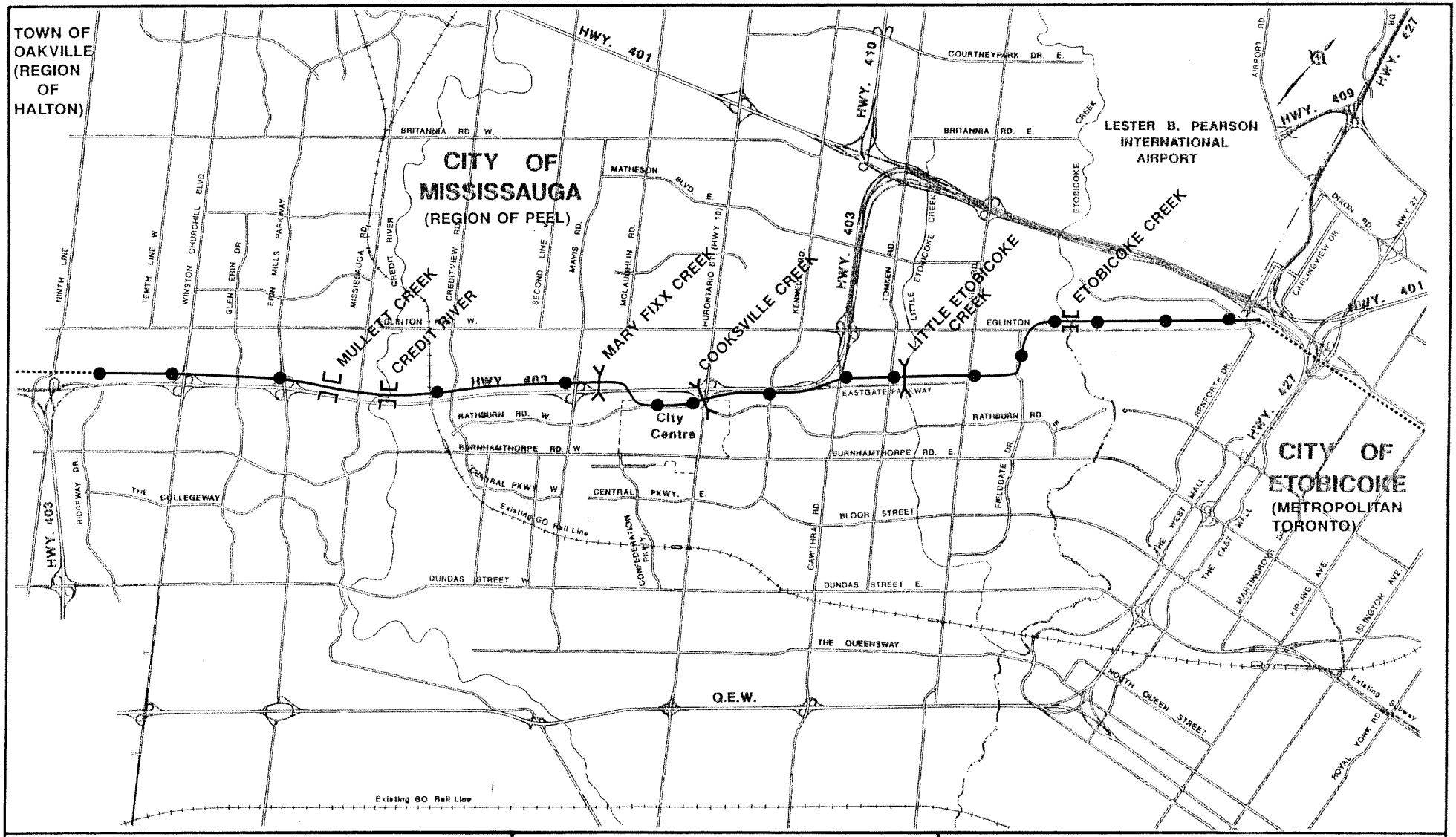
5.2.8.1.1 Mullett Creek

The Mullet Creek watershed is located entirely in Mississauga. It extends over an area of approximately 3320 hectares of which 3160 hectares is upstream (north) of the Transitway.

Although migratory salmon has been found in Mullett Creek north of Burnhamthorpe Road, it is unlikely that fish get above the waterfall that is approximately 50 metres north of this road. The Burnhamthorpe Road region of Mullett Creek is well south of the Transitway crossing.

TABLE 48 - HYDRO MISSISSAUGA IMPACTS AND MITIGATION MEASURES

Section	Hydro Mississauga Plans	Mississauga Transitway Effects and Mitigation Measures
West of Mississauga Road	No existing lines. Proposed pole line in 3 m easement along south edge of MGS "Transit" easement, adjacent to Ontario Hydro north limit.	Transitway to share easement from 250 m east of Winston Churchill westerly. Pole line to be reconstructed at that time and pole footings incorporated in Transitway design. Facility integration to be key part of detailed design. No effects easterly to Mississauga Road, assuming design co-ordination at access road to Erin Mills Station.
Mississauga Road to CP Rail	Existing pole line 1.5 m inside south edge of Ontario Hydro r.o.w. Additional 6 m easement proposed within 30 m strip immediately south of Ontario Hydro for second pole line.	Transitway to be constructed adjacent to Highway 403, with no effect on Hydro Mississauga easement. Provide duct bank in Transitway structure across Credit River if required by Hydro Mississauga, review in detailed design.
CP Rail to Erindale Transformer Station	Existing pole line on north edge of Ontario Hydro r.o.w. Additional 3 m easement for second pole line proposed adjoining south edge of Ontario Hydro.	Design co-ordination at Creditview Station site required regarding pole location for second pole line. Transitway to be located to avoid impact in remainder of corridor.
Erindale Transformer Station to Confederation Parkway	Existing pole line on south edge of Ontario Hydro r.o.w.	Design co-ordination at Mavis Station site required regarding pole location for existing and future pole lines. Transitway, 403 Collector, and Consumers Gas pipeline place constraints on location of third pole line in corridor.
Confederation Parkway to Cawthra Road	Existing pole line on south edge of Ontario Hydro r.o.w. Access to future Hurontario Transformer Station required.	No Transitway proposed north of 403.
Cawthra Road to Tomken Transformer Station	Existing pole line on south edge of Ontario Hydro r.o.w.	Design co-ordination at Cawthra Station site required regarding pole location. Pipeline / hydro easement to be maintained through parking lot area.
Tomken Transformer Station to Dixie Road	New pole line within north part of Ontario Hydro r.o.w., shifting to south edge of r.o.w. 120 m west of Dixie.	Design co-ordination at Tomken and Dixie Station sites required.
East of Dixie Road	No existing or planned facilities	No impact or mitigation measures.



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

The valley of Mullet Creek is relatively shallow and broad in the vicinity of Highway 403. At this location, it is crossed by a three span bridge carrying Highway 403. The existing bridge structure is well beyond the height of any regional storm. It is therefore proposed that the Transitway be supported over Mullet Creek by a structure similar to that supporting Highway 403. Such a structure should ensure that the flood carrying capacity of Mullet Creek is not affected by the proposed transitway structure.

5.2.8.1.2 Credit River

The Credit River watershed extends over an area of 85,900 hectares of which 80,900 hectares is upstream (north) of the Transitway.

The lower reaches of the Credit River, including the section within the study area has been designated a "warm water" fishery. A list of the resident species is appended to the Existing Natural Features, Potential Impacts and Recommended Mitigation Report (West Section) (see Appendix M). The migratory salmonids that annually enter the river are of interest from a recreational and fisheries management point of view. During their migration up the Credit River, the salmonids are prevented from moving beyond the Reid Milling dam at the south end of Streetsville, so that most in-stream fishing occurs between Queensway West and Eglinton Avenue.

The existing bridge structure which carries Highway 403 over the Credit River does not impede base flow and its height is well beyond the height of any regional storm. There are no structural supports in the river and its layout permits the unimpeded flow of both fish and other wildlife. It is therefore proposed that a similar structure be used for the Transitway crossing.

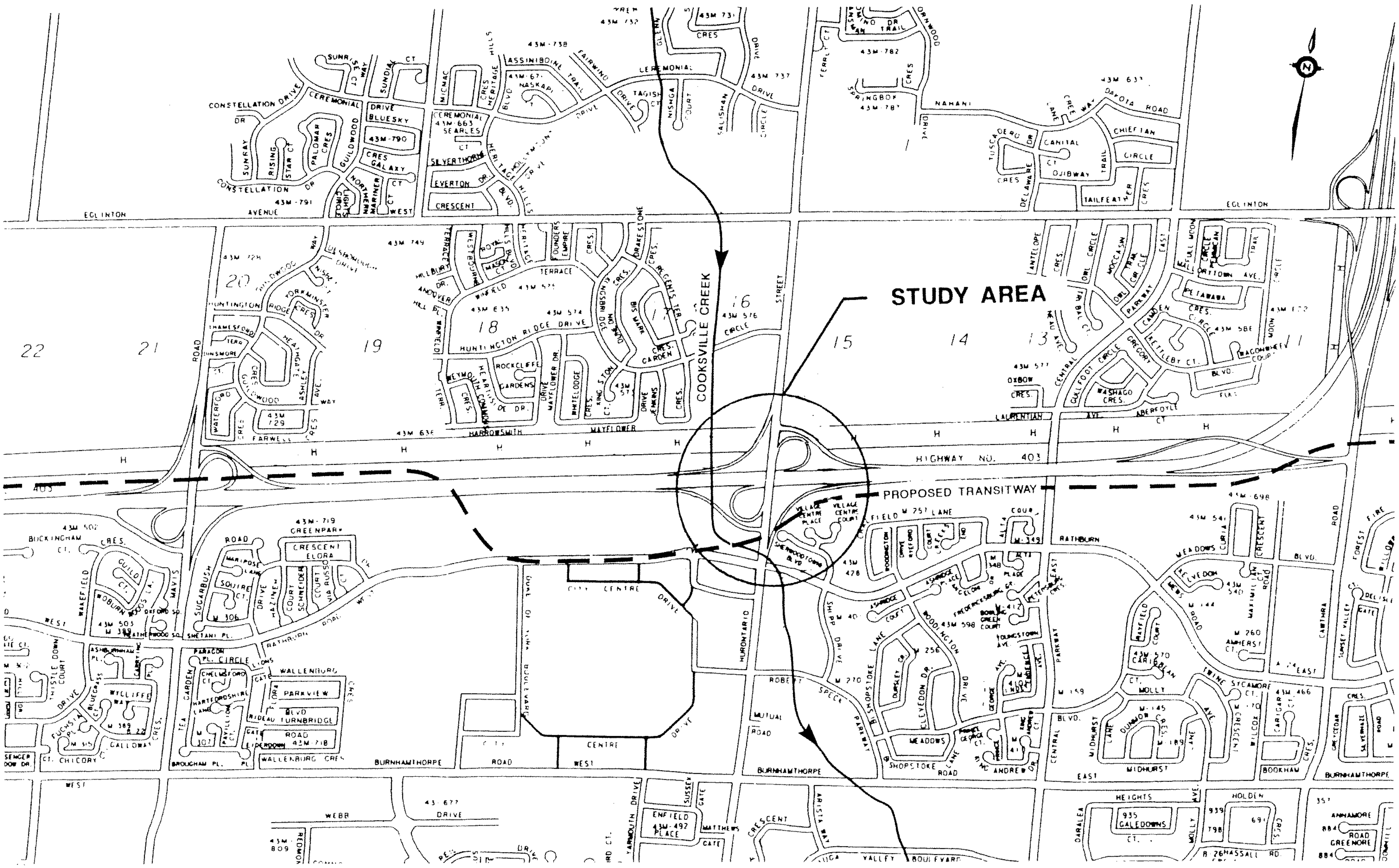
At the design stage of the Transitway a comprehensive storm water management plan will be developed. This plan will be developed in close liaison with the Credit Valley Conservation Authority, Department of Fisheries and Oceans, Ministry of Environment and other stakeholders.

5.2.8.1.3 Cooksville Creek

The Cooksville Creek watershed extends roughly between Mavis Road and Kennedy Road south of Highway 401 in Mississauga. Flow from the portion west of Hurontario Street converges in a channel at Highway 403 just west of Hurontario Street, then passes under the freeway, Hurontario Street, and Rathburn Road in a succession of culverts. The proposed Hurontario Station on the Transitway would affect this area (see Exhibit 97).

The east branch of the Creek passes under the freeway and proposed Transitway in a long closed culvert immediately east of Central Parkway, and would therefore not be physically affected by the Transitway.

Due to urbanization of the study area, there are no remaining fisheries in Cooksville Creek.



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 97

SCALE: 0 1 2 4 km

COOKSVILLE CREEK FEASIBILITY STUDY

Cooksville Creek has been the subject of a number of studies over the years, including:

- Cooksville Creek Study, Proctor and Redfern Ltd. for the City of Mississauga, 1975
- Cooksville Creek Watershed Study, M.M. Dillon Ltd. for the City of Mississauga, 1979
- Cooksville Creek - Watershed Study Update and Water Level Sensitivity Analysis, M.M. Dillon Ltd. for the City of Mississauga, 1983
- The Effect of Channelization on Cooksville Creek Flows, M.M. Dillon Ltd. for the City of Mississauga / Ministry of Natural Resources, 1985.

The principle established in the 1979 report was that all flood alleviation works should be designed and constructed based on the 100-year storm flows for ultimate development conditions within the watershed. The 1985 work indicated that increased channelization of upstream flows due to the rapid urbanization of the watershed could produce a higher peak flow (up to 20 percent more) than the 100-year flow. However, if the recommendations to maintain the overall channel gradient at less than 0.2 percent (and preferably at 0.1 percent) were followed, this excess could be reduced.

In assessing the potential impact of the Transitway crossing of the main branch of Cooksville Creek, it was determined that adequate flood plain mapping does not exist for the creek due to the rapid changes which have occurred in the watershed. This factor necessarily limits the ability, at this point, to define the impact. Up-to-date mapping will be required prior to undertaking the preliminary design of the Transitway crossing.

Efforts therefore concentrated on the "physical fit" aspect of the site. It can be seen that the proposed Hurontario Station is located in the quadrant bounded by Highway 403, Hurontario Street, Rathburn Road, and future City Centre Drive (see Exhibit 97). This is directly on top of the existing Cooksville Creek channel which was constructed in the early 1980s along with the freeway interchange. The culvert was extended under Rathburn Road during construction of the roadway in 1988. The proposed Transitway thus conflicts with the channel in plan, and since the Transitway must also pass under Rathburn Road, it would be lower in profile than the bottom of the channel at the point they cross.

In order to ensure that a functional design solution exists for the Hurontario Station site which preserves the function of both the Creek and the Transitway, several alternatives were developed. Table 49 summarizes the alternative concepts considered and the four options proposed to carry forward. The plans, profiles, and assessment of the alternatives were provided to the Credit Valley Conservation Authority for their review. The Authority wrote to indicate their support for Alternatives 3, 4, or 7, subject to the following points being addressed to their satisfaction:

TABLE 49 - COOKSVILLE CREEK CROSSING

Alternative	Assessment	Recommendation
1. Maintain Creek in present location	Creek would have to be pumped from sump at Transitway crossing; high cost, disruption to any potential fisheries, high maintenance.	Set aside following review with CVCA*
2. Divert Creek to the west and south perimeter of the Station area	Similar impact to Alternative 1; pumping required	Set aside following review with CVCA
3. Divert Creek to the north and east perimeter of the Station area	Gravity flow potentially achievable with reconfiguration of west end of existing Rathburn culvert. Creek aligned within r.o.w. reserved for possible future connection to Hurontario RT line, but need and timing of such a convention is not determined. Creek would have to subsequently be relocated if Hurontario RT built.	Carry forward for detailed analysis
4. Divert Creek to flow east approx. 40 m south of Highway 403, crossing under Hurontario then running southward approx. 30 m east of Hurontario; connect with existing culvert at Rathburn Road on east side of Hurontario Street	Rerouting avoids Station area and gravity flow achievable. Six new road crossings required, including new culvert under existing Hurontario Street and Sherwoodtowne Blvd. Most crossings could be built in conjunction with Transitway / South Service Road work to minimize disruption. Majority of diversion would be in enclosed channel due to grading constraints	Carry Forward for detailed analysis
5. Lower Transitway; carry Creek over Transitway in aqueduct	Lowering Transitway by 6 m $\pm$ would render Hurontario Station bus access infeasible and introduce significant cost premiums in the areas of Transitway drainage, structure cost, excavation quantities, and construction constraints. Creates major constraint on any interface with possible future Hurontario RT.	Set aside following review with CVCA.
6. Raise Hurontario Street at Transitway crossing	By raising Hurontario Street at the Transitway structure (between the Rathburn and 403 bridges), the Transitway elevation may be raised approximately 1 m, thereby improving the ability of Alternatives 1, 2, and 3 to achieve gravity flow. Potentially significant impact on grades of adjacent interchange ramps with Highway 403 and Rathburn Road.	Carry forward for detailed analysis
7. Divert Creek along north side of Highway 403 and in a new culvert along the east side of Hurontario Street, to rejoin existing culvert at Rathburn Road on east side of Hurontario Street	Rerouting minimizes conflict with Transitway and Station. High cost due to new Hurontario, Highway 403 and Sherwoodtowne crossings. Gravity flow attainable; creek would be enclosed over most of route.	Carry forward for detailed analysis

*CVCA - Credit Valley Conservation Authority

- detailed design to be based on up-to-date hydrologic and hydraulic data (i.e. new floodplain analysis)
- potential impacts related to existing floodplain storage to be fully assessed
- potential downstream impacts related to increased erosion to be assessed and mitigated
- detailed rehabilitation plan to be prepared for all disturbed areas

Since there is no existing fish habitat in the heavily urbanized portion of Cooksville Creek within the study area, and future development plans would suggest that the potential for re-establishing such habitat is negligible, the issue of the application of the Federal Fisheries Act by the Department of Fisheries and Oceans and the concept of compensation for loss of fish habitat would not apply in this case. The D.F.O. will be contacted to ensure the correctness of this position. The mitigation measures (both permanent and temporary during the construction period) at the crossing of Cooksville Creek will be those outlined in Chapter F (Erosion and Sediment Control) of the Ministry of Transportation of Ontario's Drainage Manual.

The City of Mississauga, in implementing the Mississauga Transitway, will ensure that all of the above conditions are met during the detailed design stage, and that the Conservation Authority and Ministry of Natural Resources are involved in the review and approval of any Transitway-related changes to Cooksville Creek.

5.2.8.1.4 Little Etobicoke Creek

Little Etobicoke Creek is a minor watercourse with limited aquatic life. Siltation controls will be required and designs should be reviewed by the Ministry of Natural Resources and the Metropolitan Toronto and Region Conservation Authority. It is recommended that the Transitway crossing of the creek be added onto the existing Eastgate Parkway structure, in order to minimize the potential hydraulic or water quality impact of the crossing.

5.2.8.1.5 Etobicoke Creek

Etobicoke Creek contains a variety of adaptable warm-water fish species, but it is not of major fisheries importance. Its valley is a locally critical natural habitat. Elmcrest and Renforth Creeks are minor tributaries. Siltation controls will be required and designs should be reviewed by the Ministry of Natural Resources and the Metropolitan Toronto and Region Conservation Authority.

5.2.8.2 Transitway Drainage Plan

The Mississauga Transitway will pass under all crossing arterials and be located in earth cut for much of its course. Accordingly, the development of an effective drainage plan for the facility will be a major element in the preliminary design phase. Due to the

length and varying nature of the Transitway, the development of a drainage plan cannot be done independently of the staging approach to the facility, which will await approval of the Environmental Assessment Report.

Therefore a specific drainage plan is not included in the current document; however, there are a number of basic principles which will be followed in the development of a drainage plan for the facility:

- drainage will be by gravity flow wherever possible
- roadway runoff will be directed to open ditches adjacent to the Transitway, or to catchbasins leading to storm sewers in constrained areas
- discharge will be to streams and rivers crossed by the Transitway, or to nearby trunk storm sewers
- settlement basins, detention ponds, and other means will be used where required to reduce the rate of discharge to that which existed prior to Transitway construction
- the existing and future drainage requirements of the Ministry of Transportation for Highway 403 will not be compromised by the introduction of the Transitway; the 403 and Transitway systems will be reviewed in depth to assess the degree to which they can coexist
- use of Ontario Hydro right-of-way for detention (temporary) ponds will be considered, if necessary. The use of the Ontario Hydro property for retention (permanent) ponds as part of the Transitway drainage system will be avoided as much as possible; any plan involving retention ponds would be subject to Ontario Hydro approval and would require enclosure by chain link fencing to limit risk of accidental entry from adjacent residential areas
- all design work should be based on the 100-year storm, to ensure consistency with floodplain standards
- the drainage system will be capable of segmental operation based on the recommended Transitway construction staging plan and possible alternatives to it.

The final drainage plan will be subject to approval by the provincial Ministries of Transportation, Natural Resources, and Environment, the affected Conservation Authorities, the Region of Peel, and the Cities of Etobicoke and Mississauga.

5.2.9 Landscaping

The City of Mississauga recognizes the high degree of importance placed on the existing visual features of the Parkway Belt, as well as the need for the Transitway to be a strong, attractive, distinct presence to transit users (and potential users). The City is therefore committed to the provision of a landscaping plan for the project, to include:

- aesthetic treatment of the roadway boulevards and station areas
- extensive shrub and tree planting on the affected parts of the noise / visual berm adjacent to the Transitway
- protection / retention of existing woodlots to the greatest feasible extent
- sodding and / or other ground cover over the entire disturbed area.

A detailed landscaping plan will be prepared as part of the detailed design process, and will be made available for public review and comment prior to Transitway construction.

Two key areas of aesthetic interest are the urban design of the joint Transitway / Rathburn Road corridor within the City Centre, and the major structure across the Credit River valley. In the latter case, the new bridge will be designed (in terms of pier spacing, location, and style) to be directly compatible with the adjacent Highway 403 bridges. The City Centre area is discussed in Section 4.5.3.3, and design concepts are illustrated in Exhibits 53, 55, 80 and 81.

5.2.10 Property Requirements

The intent of the current study is to establish the property requirements for the Transitway and its related facilities so that an envelope may be defined and protected within which the ultimate development may occur when required. It is intended therefore that any subsequent applications for development which may affect the defined property area be subject to City of Mississauga review and approval. This would not preclude other development within the Transitway property but would ensure that such development (for example, a new pipeline, interchange reconfiguration, office construction within the City Centre / Airport Corporate Centre, etc.) would be compatible with the ultimate transitway requirements.

Based on the functional plan shown in this report, there will be no need for property acquisition or use beyond the identified area; if such were required due to future changes to the surrounding context, it would not be "protected" and would be subject to a separate purchase / use agreement between the City and the property owner, and any expansion of the Transitway facilities beyond the identified property limits would fall under the appropriate Environmental Assessment process. It is also recognized that the construction of the Transitway would, in some areas, require temporary working easements which have not been shown on the accompanying plans; the location and extent of any requirements in this vein will be part of the detailed design contract.

The plans and summary tables in Appendix T illustrate the property requirements for the Mississauga Transitway. Areas are summarized by parcel and by property owner in the following Table 50. A distinction has been made between those areas where the Transitway would be the first and primary use made of the property and other sections where existing uses have prior claim. In the first case it is assumed that ownership of the property would be transferred to the City of Mississauga; in secondary use areas (e.g. Ontario Hydro corridor, Ministry of Transportation freeway interchanges) it is assumed that the City would enter into a long-term lease or easement arrangement with the property owner which would protect both parties' interests.

TABLE 50 - SUMMARY OF PROPERTY REQUIREMENTS

SECTION	PROPERTY OWNER	PROPERTY REQ'D (m^2)		OWNER TOTAL (m^2)	SECTION TOTAL (m^2)
		PRIMARY	SECONDARY		
NINTH LINE TO MAVIS ROAD	M.T.O.	103,520	4,300	107,820	
	M.G.S.	198,020		198,020	
	ONTARIO HYDRO	7,590	104,150	111,740	
	CITY OF MISSISSAUGA		1,980	1,980	
	REGION OF PEEL		750	750	
	CP RAIL		260	260	
					420,570
MAVIS TO CAWTHRA	M.T.O.	74,870	33,150	115,620	
	M.G.S.	155,700		155,700	
	ONTARIO HYDRO	32,800	10,500	43,300	
	CITY OF MISSISSAUGA		32,600	32,600	
	HAMMERSON	27,300		27,300	
					366,920
CAWTHRA TO RENFORTH	M.G.S.	60,295		60,295	
	ONTARIO HYDRO	13,950	65,205	79,155	
	CITY OF MISSISSAUGA	30,155		30,155	
	JOHN McLENNAN	56,060	45,375	101,435	
	HEWLETT PACKARD	10,400		10,400	
	AIRPORT CORP. CENTRE	46,405		46,405	
	741299 ONT. LTD.	10,550		10,550	
	750274 ONT. LTD.	10,870		10,870	
	DODGE SUITES HOTEL	780		780	
	EGLINTON W. CORP. CENTRE	1,040		1,040	
	AIRPORT SQ. DEVELOPMENT	120		120	
	BAIF DEVELOPMENT LTD.	34,420		34,420	
	MULBERRY'S RESTAURANT		260	260	
	M.T.O.		2,775	2,775	
					388,660
TOTAL					1,176,150

There have been no dollar values assigned at this point to the various properties required; this will be subject to discussion between the parties following approval of the plan.

5.2.11 Cost Estimate

The estimated cost of constructing all the physical infrastructure shown in Exhibits 37 to 71 is in the order of $500 million in 1991 dollars. The high degree of uncertainty associated with the definition at this stage of a "Transitway cost" will only be resolved with the completion of a detailed staging plan, the carrying out and tendering of the detail design, decisions regarding transit operation strategy, agreements concerning integration of Transitway facilities into development, and further liaison with affected utilities and property owners. Until such time as these issues have been resolved it is impossible to define an absolute cost for the facility.

The development of preliminary cost estimates for the recommended facility has, nevertheless, been undertaken in the knowledge of current local road construction contract costs, the actual construction costs of similar facilities (notably the analogous Ottawa Transitway system), and measured or calculated quantities for the recommended 1:1000 scale plans.

The unit costs used in generating the estimated construction cost are summarized, along with their sources, in Appendix S. The Transitway cost summary, subdivided by section and by item is also included in Appendix S.

It must be noted that the total cost estimate for Transitway construction does not include the following:

- Property acquisition
- Ontario Hydro-related requirements
- possible additional charges for long-haul offsite disposal of excavated material
- potential costs associated with development integration
- inflation beyond the current year (1991)
- possible application of Goods and Services Tax (GST) to some items
- interest or financing costs
- engineering, design, and contingency percentages associated with Ontario Hydro and development integration work

The costs of acquiring, operating, storing, and maintaining the vehicles to be used on the Transitway are also not included in the capital cost estimate for the facility. The need for these vehicles is not generated by the presence of the Transitway; rather, they

would be necessary under any future scenario in Mississauga in order to serve the ultimate travel demands (including the "No Transitway" scenario). The fact that they could operate on the Transitway in fact leads to a more efficient utilization of the City's bus fleet and a corresponding reduction in the order of 15 to 20 percent in the overall fleet size from that which would be required if there were no Transitway. Thus the Transitway would generate significant capital cost savings in this area compared to the alternative: a reduction in fleet size of 25 standard buses and 25 articulated buses would translate to a capital savings of approximately $18 million for vehicles alone. However, since this is a hypothetical situation, no specific figures are applied to the capital cost estimate of the Transitway itself.

It should be noted that a significant contingency (20 percent, or nearly $100 million) has been built into the cost estimates in order to account for the lack of detail available at this stage. Furthermore, the station and cross section elements have been based on the Ottawa Transitway standards; changes in the level of architectural detail, passenger amenities, and safety features for the Mississauga Transitway could result in significantly different costs for those items.

5.3 Identified Environmental Effects and Commitments to Mitigation

In this Section, those effects on the environment that may or will occur due to the implementation and operation of the proposed Mississauga Transitway, and have been identified during the course of this or previous studies as being of significance, are summarized. In cases where mitigation will be required in order to reduce the effects of the Transitway to an acceptable level, a commitment to such mitigation is spelled out. This commitment constitutes a binding agreement by the identified agency to include the required mitigation measures in any future work. Identified mitigation measures are limited to those requiring further actions beyond those already incorporated in the study recommendations. For example, the recommended Transitway alignment has been developed so as to minimize environmental effects to the greatest extent possible; in committing to such an alignment the City of Mississauga has already achieved mitigation of a great many proximity-related concerns expressed by adjacent residents. The Transitway alignment is therefore not specified as a "commitment to mitigation" in the section.

The "Definition of Environmentally Significant Areas / Issues" can be referred to in Section 3.3, and the identification of those areas / issues deemed significant by those involved in the study can be found in Section 4.

5.3.1 Built Environment

The effects of the Transitway on the Built Environment (Roadways, Utilities, and Adjacent Development), as outlined in Section 4.1.1, and the mitigation measures required, are summarized in Tables 51a, 51b and 51c. The significant issues in this section are mainly the potential disruption of existing and future roadways and utilities by the implementation of the Transitway on the recommended alignment.

TABLE 51A - EFFECTS ON BUILT ENVIRONMENT AND COMMITMENT TO MITIGATION

ROADWAYS

SIGNIFICANT AREA/ISSUE	CONCERNED AGENCY	EFFECT OF TRANSITWAY	COMMITTED MITIGATION MEASURES	COMMITMENT TO FUTURE WORK
Protection for ultimate Highway 403 expansion needs, including • additional median lanes • ramp metering and ramp meter bypass lanes • auxiliary lanes between sequential interchanges	Ministry of Transportation of Ontario (MTO)	• No effect on freeway median • Numerous freeway entrance ramps reconfigured and/or crossed	• Grade separation with all crossing roadways • Structures to accommodate two lane on-ramps and three lane off-ramps • Offset between Transitway and existing freeway edge of pavement to be no less than 10.25m, allowing for 3.75m auxiliary lane, 3m shoulder, 1m barrier, and 2.5m Transitway shoulder • Adequate separation to allow rural (open ditch) drainage to be provided wherever physically possible • Reconfigured ramps to meet MTO design standards • Cawthra Station access ramps designed to protect for possible ultimate grade separation and interchange between Cawthra Road and Eastgate Parkway	• Continued liaison with MTO Planning and Design staff through implementation period
Maintenance of operational integrity and adequate level of traffic service at ramp terminal intersections at Winston Churchill Boulevard, Erin Mills Parkway, and Mavis Road interchanges with Highway 403	MTO	• Additional access at termini of E-N/S ramps • Rerouting of N-W ramp traffic through ramp terminal intersections • Northbound left turn lane for cars and buses • changes in traffic signal phasing and timing • reduction in overall vehicular traffic in corridor, as compared to the "do nothing" case	• Limit size of Winston Churchill parking lot to that which can be accommodated by the intersection access. • Provide kiss and ride areas at each station to eliminate cars stopping on arterial to drop off / pick up passengers • Charge parking fee at park and ride lots • Provide adequate turn provisions at station accesses • Restrict station access to buses only at times of high traffic volume (if necessary for acceptable signal operation).	• Transit operation and marketing to encourage use of transit and discourage car access to Transitway Stations. • Encourage provision of park and ride facilities west of Highway 407 in Halton. • Monitoring of traffic flow, volume, and signal operations at station accesses.
Access to and from Cawthra Station	MTO	Direct access ramps introduced.	All moves are freeflow; no signals introduced to adjacent roads/ramps Station-oriented traffic diverted from Cawthra/Eastgate intersection to the greatest extent possible	• Continued liaison with MTO Planning and Design staff through implementation period. • Monitoring of traffic flow at Cawthra Station area.
Protection of current and future drainage requirements for MTO roadways	MTO	Alteration of existing drainage patterns. Possible extension of existing MTO culverts.	Develop and implement Master Drainage Plan. No deterioration of existing drainage conditions on MTO facilities will result from Transitway implementation.	• Continued liaison with MTO Planning and Design staff. • Comprehensive preliminary design of drainage system to be completed prior to construction of first Transitway segment.
Disruption during construction to Highway facilities and crossing roads	MTO City of Mississauga Region of Peel	Detours required during construction of most Transitway structures. Feasible detours are available in each case.	Maintenance of six lanes of traffic on Highway 403, four lanes of traffic on crossing arterials, and one lane of traffic on each ramp throughout construction. Use of adequate design standards for all detours.	• Review of detail design and detour arrangements by MTO for approval prior to construction
Protection for ultimate access requirements between Highway 403 and the Mississauga City Centre	City of Mississauga MTO	• Transitway occupies property that could otherwise be considered for City Centre collector/ramp facilities • early Transitway implementation may defer need for improved Highway 403 access in City Centre area	Transitway alignment developed under MTO review, does not preclude ability to implement the ultimate collector roadway network between Mavis Road and Eglinton Avenue	Continued liaison with MTO Planning and Design staff.
Operational Safety, particularly headlight glare between Highway 403 and Transitway traffic.	MTO City of Mississauga	Transitway grade similar to freeway grade in many areas.	• Visual screening for headlight glare where required. • Standard physical separation and safety appurtenances.	Review of detail design by MTO for approval prior to construction.

TABLE 51B - EFFECTS ON BUILT ENVIRONMENT AND COMMITMENT TO MITIGATION

UTILITIES

SIGNIFICANT AREA/ISSUE	CONCERNED AGENCY	EFFECT OF TRANSITWAY	COMMITTED MITIGATION MEASURES	COMMITMENT TO FUTURE WORK
Protection for ultimate Ontario Hydro expansion requirements	Ontario Hydro	• Transitway adjacent to Ontario Hydro right-of-way from Ninth Line to Confederation Parkway and from Cawthra Road to Fieldgate Drive • Transitway crosses Ontario Hydro right-of-way between Winston Churchill and Glen Erin. • Parking, bus layovers, station access roads and walkways lie on Ontario Hydro property at several stations	• Transitway alignment avoids Ontario Hydro right-of-way; one crossing is at least skew possible • Where open cut for Transitway extends into Ontario Hydro right-of-way, provide retaining wall instead if required by Ontario Hydro.	• Continued liaison with Ontario Hydro through implementation phase. • Ontario Hydro review of preliminary and detail design drawings for approval of elements affecting Ontario Hydro property. • Public and government agency comment to be solicited (under Ontario Hydro OH-27 Exemption Order) regarding secondary use of Hydro lands.
Raising of towers to provide clearance for construction and/or permanent installations. Need for Environmental Assessment approval to raise Hydro towers.	Ontario Hydro	Transitway and ancillary facilities at or below grade; temporary raising of transmission wires may be required during construction	Cost to be borne by Transitway project.	Define impact during detailed design.
Maintenance access to all Hydro towers and facilities and to all pipelines and utilities in the Parkway Belt	Ontario Hydro Imperial Oil Interprovincial Pipeline Sun-Canadian Pipeline Consumers Gas Hydro Mississauga TransNorthern Pipeline	• Improved access to most of Hydro corridor and pipelines. • Access to some utilities in some station areas may be constrained. • Parking areas or internal station roadways cross underground utilities in numerous locations.	• Use of station roadways and Transitway by maintenance vehicles to be permitted (authorization required). • Temporary partial or full closure or access restriction to be permitted when required for utility maintenance, emergency work or reconstruction in or around Transitway station areas. • Closure or restriction of Transitway to be permitted in cases of severe unavoidable or emergency utility requirements. • Station layout to permit utility access.	• Specific access points to Ontario Hydro property to be incorporated in detail design, following identification by Hydro of needs. • Develop a permanent notification mechanism covering all Parkway Belt users to ensure mutual awareness of maintenance needs.
Access to future Hurontario Transformer Station (E. of Hurontario, N. of 403 within Ontario Hydro r.o.w.)	Hydro Mississauga	• Transitway south of Highway 403; does not affect existing Hydro Mississauga installation in this area. • Possible redesignation of utility corridor in Parkway Belt West Plan to south side of corridor resulting from Transitway plan; if future Hydro Mississauga pole lines were restricted to this corridor a major underground crossing of Highway 403 would be required to access Hurontario T.S.	Share Transitway right-of-way with Hydro Mississauga where feasible and required	Reach a detailed understanding with Ministry of Municipal Affairs regarding need for Hydro Mississauga to locate future pole lines south of 403 in the event of utility corridor redesignation
Relocation of existing oil pipelines	Ontario Hydro Imperial Oil Interprovincial Pipeline Sun-Canadian Pipeline TransNorthern Pipeline	• Relocation, realignment, and lowering of existing pipelines required at numerous points between Ninth Line and Fieldgate Drive (particularly at station sites) • Exact definition of Transitway effects can not be made pending detail design completion	• Transitway plan developed to minimize utility impacts; plans reviewed by all utilities and revised based on comments received. • Transitway proponent to pay for utility reconstruction costs associated with Transitway implementation • Relocation of existing pipelines within Ontario Hydro right-of-way to be subject of agreement between Ontario Hydro and affected pipeline companies	• Ongoing liaison process between Transitway proponent and utilities • Address specific requirements in detail design; plans to be reviewed and approved by all affected utilities prior to construction. • Proponent to compensate utilities for major inspection requirements during construction
Location of future utilities within Parkway Belt West	Ontario Hydro Hydro Mississauga City of Mississauga Ministry of Municipal Affairs of Ontario	Transitway may trigger a shift in designation of some corridor uses within the Parkway Belt West Plan	• Address future utility needs as they occur; all existing and currently proposed utilities incorporated in the development of recommended plan. • Recommended Transitway plan has continuous utility strip protected in Parkway Belt	• Review plans with Ministry of Municipal Affairs to ensure conformity with intent of Parkway Belt West Plan. • Request deeming of necessary property following EA approval.
Provision for Hydro Mississauga requirements at Credit River crossing	Hydro Mississauga	Transitway crossing in potential conflict with desired hydro alignment	• Provide duct bank or pole supports in Transitway structure	Review needs with Hydro Mississauga at time of detail design
Secondary Use of Ontario Hydro property	Ontario Hydro	Parking, access roads, bus layovers, and walkways are recommended at most stations as secondary uses on Ontario Hydro property.	• Provide visual/noise mitigation measures as required • Structure and market transit operations so as to minimize demand for use of ancillary station facilities (parking, kiss and ride, etc.)	Implement secondary use facilities in accordance with Ontario Hydro OH-27 Exemption Order. At the time of implementation, solicit additional public comment and document comments from interested Government Agencies
Property ownership and acquisition of easements on Ontario Hydro right-of-way	Ontario Hydro	Property required for Transitway crossing of Ontario Hydro right-of-way	Restrictions to be placed on Transitway property acquired from Ontario Hydro in order to protect Ontario Hydro's interests	Definition of type of document to be agreed between City, MTO, and Ontario Hydro (sale, license, easement, etc.)

TABLE 51C - EFFECTS ON BUILT ENVIRONMENT AND COMMITMENT TO MITIGATION ADJACENT DEVELOPMENT

SECTION	SIGNIFICANT AREA/ISSUE	CONCERNED AGENCY	EFFECT OF TRANSITWAY	COMMITTED MITIGATION MEASURES	COMMITMENT TO FUTURE WORK
Ninth Line to Mavis	Protection for future development in accordance with City of Mississauga Official Plan. Only area where it is not yet built out is between Ninth Line and Winston Churchill Blvd.	City of Mississauga, local residents	Transitway and stations provide capacity for demand at ultimate development level. Limited impact on Transitway.	Implement Transitway in accordance with passenger demand.	Integrate Transitway and Winston Churchill Secondary Plan planning processes. Focus higher density development near stations
Mavis to Cawthra	Protection for future development in accordance with City of Mississauga Official Plan (specifically in the area of the City Centre Secondary Plan)	City of Mississauga City Centre developers / property owners	Transitway and stations provide capacity for demand at ultimate development level Transitway integrated into urban design and adjacent development wherever possible, in accordance with developer needs	Implement Transitway in accordance with passenger demand and development needs Control type and timing of development to match transportation capacity	Assess demand and justification for a "people-mover" higher-order transit system linking the Transitway with other parts of the City Centre. Continue liaison with developers of adjacent properties. Encourage direct linkage between Transitway stations and future development.
Cawthra to Renforth	Protection for future development in accordance with City of Mississauga Official Plan (specifically in the area of the Airport South Secondary Plan	City of Mississauga; Airport Corporate Centre developers / property owners	Transitway and stations provide capacity for demand at ultimate development level Transitway integrated into urban design and adjacent development wherever possible, in accordance with developer needs	Implement Transitway in accordance with passenger demand and development needs Control type and timing of development to match transportation capacity	Assess demand and justification for a "people-mover" higher-order transit system linking the Transitway with the Airport. Continue liaison with developers of adjacent properties. Encourage direct linkage between Transitway stations and future development.

5.3.2 Natural Environment

The potential effect of the Transitway implementation and operation on the natural environment in the study area has been minimized to the greatest extent possible; however some impact has been unavoidable. The environmentally significant impacts and mitigation measures associated with those impacts are summarized in Table 52. The City is committed to carrying out the identified mitigation measures and to the future work noted in the Table.

The impact of the Transitway is mainly on remnant vegetation stands and at stream crossings. In the context of the entire Greater Toronto Area's major natural environmental resources, the Transitway has a relatively minor impact; of the 975 greenland features / areas in the GTA (including wetlands, streams, parks, conservation areas, Environmentally Significant Areas and Areas of Natural and Scientific Interest), only five are affected by the proposed Transitway - the Credit River (3 categories) and Cooksville, Mullett and Etobicoke Creek crossings.

TABLE 52 - SUMMARY OF EFFECTS ON NATURAL ENVIRONMENT AND COMMITMENT TO MITIGATION

Element	Environmentally Significant Area / Issue	Concerned Agency*	Effect of Transitway	Mitigation Measures	Commitment to Future Work
Physiography and Soils	Protection against possible soil and physiography impacts. Erosion of exposed slopes. Disturbance of bedrock fossils.	MNR CVCA	• Limited sensitivity. • Locations near watercourses more sensitive. • Potential bedrock disturbance in construction.	Apply necessary temporary and permanent erosion control measures for exposed soils, slopes.	Develop erosion and sedimentation management plan in detailed design stage. Continued review and reporting of conditions during and after construction. Identify and assess bedrock fossil areas prior to construction.
Watercourses and Fisheries	Creek crossings and realignment; erosion and sedimentation in streams; conflict between fish migration and construction activities. Potential impact of roadway drainage. Salt runoff from roadway. Degradation of fish habitat. Changes to hydraulic characteristics of watercourse.	MNR MOE CVCA MTRCA	• Possible stream sensitivity to sedimentation and erosion. • Hydraulic design of possible realigned channel sensitive to future upstream development. • Increased runoff and salt spray expected. • Possible hydraulic changes to watercourse due to new crossing structures.	MNR/CVCA/MTRCA permits required for any floodplain activity. • Direct bridge runoff away from stream. • Use standard MTO erosion / sediment control at creek crossing areas. • Install and maintain silt fence protection until site stabilized. • Apply CVCA/MNR Sediment Control Guidelines (1990).	Proper work scheduling and continued review with concerned agencies regarding construction procedures and transitway developments. Prepare comprehensive stormwater management design during detailed design stage. Develop drainage plan using principles of no net loss of fisheries habitat, no degradation of stream hydrology, and no negative impacts on watercourses.
Vegetation	Possible vegetation and woodland clearing and disruption during construction. Reduction / alteration of wetlands.	MNR MTRCA CVCA	• New edges sensitive to salt spray, vehicle emissions. • removal of vegetation on r.o.w. • Outside of woodlots sensitivity to change limited since most vegetation is planted. • Possible elimination of small seasonal wetlands on route.	• Minimize vegetation / woodlot clearing through both design and construction measures. • Restore and rehabilitate natural vegetation where possible; supplement elsewhere with plantings and landscaping. • Minimize physical intrusion through detailed design process.	Commitment to minimizing vegetation / woodlot removals. Develop detailed restoration plans in detailed design stage, based on existing vegetative communities and ecologically sound rehabilitation principles. Compensation for wetland loss per CVCA practice.
Wildlife	Possible effect on terrestrial and aquatic wildlife movements and habitat.	MNR MTRCA CVCA	• May discourage terrestrial wildlife movement as natural cover would be affected. • Limited sensitivity due to previous condition changes particularly outside woodlots. • Aquatic wildlife movement potentially impeded during construction process. • Aquatic wildlife habitat potentially disturbed at crossings or due to sedimentation / hydraulic changes.	• Vegetation retention and replanting will encourage terrestrial wildlife movements. • Construction scheduled to consider terrestrial and aquatic wildlife impacts. • See measures to protect watercourses.	Proper staging of construction to minimize disruption to terrestrial and aquatic wildlife movement. For habitat, see commitments above re: watercourses and vegetation.
Designated Environmentally Sensitive Areas	Protection against change in character or impact on environment of designated areas.	MNR MOE Ministry of Consumer and Commercial Relations City of Mississauga City of Etobicoke MTRCA CVCA	• See above.	• See measures to protect watercourses and vegetation. • Involve affected City Planning Departments regarding Environmental Policy Areas.	Continued consultation with interested agencies.

* Abbreviations used:

MOE - Ministry of the Environment
MNR - Ministry of Natural Resources
CVCA - Credit Valley Conservation Authority
MTRCA - Metropolitan Toronto and Region Conservation Authority

5.3.3 Social-Cultural Environment

Due to the complexity and extent of some of the significant social - cultural issues, some supplementary text is included in this section to ensure that the issues and means of addressing them are clearly defined and understood. Table 55 in Section 5.3.3.8 follows the discussion, summarizing the effects of the recommended Transitway on the area's social-cultural environment as well as those mitigation measures committed to.

5.3.3.1 Noise

a) Background

As with any major transportation facility in an urban area, the potential impact of Transitway operation on outdoor noise levels in surrounding areas was identified as a significant issue by all parties involved in the project.

There are a number of measures either inherent or incorporated in the project which serve to reduce and minimize the noise impact potential. These include:

- the need to grade-separate and depress the Transitway profile below the level of crossing roads and much of the existing ground;
- the relatively minor vehicular volume projected to use the Transitway (particularly in the context of adjacent high-volume mixed-flow freeways and arterials);
- the uniformity and controlled nature of Transitway vehicles (i.e. no heavy trucks, no speeds over 80 km/h, industry-wide noise control standards);
- the location of the Transitway so that it is buffered from adjacent residences by other Parkway Belt facilities;
- the development controls in place on properties bordering the Parkway Belt (i.e. no frontage, visual barriers);
- the availability of sufficient right-of-way in some sections to provide earth berms;
- the previous establishment of earth berms through much of the Highway 403 right-of-way; and
- the partial development of the corridor, meaning that all future development can take place in the knowledge of the Transitway's location, characteristics, and noise impact.

These characteristics work to the advantage of corridor residents, however some constraints do exist which reduce the optimum benefits:

- an earth berm cannot be located on the Ontario Hydro corridor; a wall-type barrier would be required;
- the alignment of the Transitway is constrained in a number of areas and cannot be located any farther from adjacent homes;
- the existing noise levels generated by road traffic are quite high, so that any significant increase in noise is on top of an already substandard situation;
- the existing berms may need removal / relocation in some portions of the corridor in order to construct the Transitway;
- much of the corridor is bordered by low-density single family homes, which are more sensitive to noise impact than commercial, industrial, or apartment land use types.

The City of Mississauga, in Appendix G of the Official Plan, identifies "Noise Sensitive Areas" as being those which lie within:

- 300m of a railway mainline
- 820m of an 8 lane expressway
- 565m of a 6 lane expressway
- 90m of a 6 lane arterial
- 50m of a 4 lane arterial or major collector
- 15m of a 2 lane arterial or major collector

It is thus apparent that the Transitway, in acting as a 2 lane roadway in its location adjacent to Highway 403, Eastgate Parkway, and Eglinton Avenue, would not alter the existing or future extent of identified "Noise Sensitive Areas", as its 15 m sphere of influence would be entirely located within the broader impact areas of the adjacent major roadways.

b) Analysis Procedure

The method, input, results, and conclusions of a comprehensive noise study carried out for the Transitway corridor are included in Appendix N of this report.

The intent of the noise impact analysis is to establish, through measurements and prediction models, the existing ambient / background sound levels and the projected sound levels at selected receptor locations along the proposed Transitway or in the vicinity of the proposed stations, as well as to recommend noise control measures where warranted.

Sound levels were calculated at the selected receptor for three different noise sources.

1. Bus traffic along the proposed Transitway.

2. Bus activities within the proposed stations, as well as cars entering into, exiting from and idling within the kiss and ride and park and ride facilities (where applicable).

3. Vehicular traffic on the existing Highway 403, Eastgate Parkway, and local roads. These constitute the sources of ambient sound levels.

c) Provincial Sound Level Criteria

At the present time, there are no provincial regulations or policies for the control of individual or cumulative bus sound levels for buses operating on provincial or municipal roadways. For frequency of bus movements on an existing bus route or to add a new roadside bus stop, no specific approval is required by any provincial jurisdiction.

In the absence of specific provincial policies and guidelines on the noise impact of exclusive bus transit systems, a written submission was made to the MOE based on the discussions with MOE staff. In response, the M.O.E. Noise Assessment section of the Approvals Branch noted its agreement with the noise analysis process undertaken (see Appendix N).

The following summarizes the criteria used in the current study:

(i) <u>Bus Movements Between Stations</u>

The Transitway impact may be characterized by the 2 descriptors Leq 16 hour (daytime) and the Leq 8 hours (night-time), i.e. 07:00-23:00 and 23:00-07:00 Leq values. This approach is reasonable since the AM and PM peak bus activities will occur at these times due to the ambient / background vehicular traffic on other roads. Similarly low ambient noise on Sundays will correspond with low Sunday bus service, therefore no additional calculations will be needed for the weekend case.

The calculated Transitway Leq 16 and Leq 8 figures were then compared against the MOE general objective of; the higher of both: 55 dBA or the ambient / background due to vehicular traffic elsewhere; i.e. use of the same principles included in the MOE / MTO Protocol for Highway Noise Assessments. A standard maximum of 5 dBA over ambient noise levels was applied (consistent with the MOE / MTO Protocol) for the Transitway which was assumed to be equal to a new roadway.

(ii) Station Noise

All sources within a station (with the exception of a simple roadside bus stop) were treated as a Stationary Source that is subject to the MOE's Publications NPC-105 and NPC-106 (i.e. the higher of either the ambient or the NPC-106-2 Table).

However, for this specific project only, the following exceptions or variations in the station noise criteria were applied:

- The assessment was performed in terms of the Leq 16 and Leq 8 in order to be consistent with the Transitway impact between stations. The general activities in a bus station are expected to follow the ambient activities, therefore 16 hour and 8 hour averages were used.

- The excess that may be allowed by the MOE for the Transitway may also be allowed for the stations as well as for the combined effect of stations plus the transitway. Therefore, if the 5 dBA MOE / MTO Protocol excess or any other excess is allowed, the proposed stations and the combined effect of stations and Transitway may also be allowed the same excess.

d) Noise Sources

(i) Transitway

The primary source of noise associated with the proposed system is bus operation on the transit route and within the stations. Other sources of noise of less significance include automobile traffic using the designated parking areas associated with some stations and possibly mechanical equipment associated with one of the stations. The noise emitted by buses is due to bus exhaust, engines and tire / ground interaction (depending on the bus speed and the type of pavement).

The traffic noise prediction model used for the assessment of bus movements between the stations is "ORNAMENT" which was developed by the Ontario Ministry of the Environment. The technical details of the model can be found in the MOE Technical Document ORNAMENT, October 1989. The computerized version of the Model used for this project is STAMSON 3.0, with buses treated as "Medium Truck" equivalents. In order to assess a "worst case" scenario, the volume of Transitway buses was taken to be 125 per hour per direction, a figure likely only to be achieved in specific segments in the very long term, if ever.

ii) The primary sources of noise within a bus station are the acceleration, deceleration, idling, or moving at constant speeds of buses. Such activities generate different peak sound levels and the time or duration of each event may be different. Since the ORNAMENT model cannot deal with such complex evaluations, a different approach was followed whereby the sound emission levels of Mississauga Transit buses operating under different conditions were actually measured and the results were then used to compose overall noise exposure levels at the specific points of reception.

Sound levels due to bus activities within the bus stations were calculated using computer programs developed by S.S. Wilson and Associates for multiple receptors and for multiple noise sources. These programs take into account the following factors:

- Reference sound levels and reference distances for the various bus movements or activities;
- Reference sound levels for vehicular traffic activities within the parking area based on data measured by S.S. Wilson and Associates in connection with other similar projects.
- Speeds of buses within the various segments of the stations or alternatively, the time spent by each bus in each identified time segment.
- Volume of buses.
- Distance attenuation.
- Sound barrier attenuation where applicable.
- Ground and Atmospheric attenuation (as modified by source / receiver elevations and the intervening sound barrier).
- Source and receptor elevations.

Since no detailed plans are available at this time to show the design of the specific station where a station building will be constructed, the noise from any potential mechanical equipment such as ventilation fans and air conditioning equipment was not considered at this point. It is worth noting that the noise from mechanical equipment is expected to be lower than the noise generated by the bus movements, due to the high ambient / background sound levels. Shielding effects provided by station buildings were also not considered.

iii) Road Traffic

Traffic noise due to vehicular traffic movements on the major roadways in the study area were calculated using the ORNAMENT model based on the available roadway and traffic data.

It should be noted that there are other major sources of transportation noise affecting the area of concern which were not included in the estimation of the ambient noise. These include aircraft and railway noise which were specifically excluded from the analysis in order to comply with the MOE recommendation for the exclusion of sources of noise that are fairly intermittent in nature.

For the purposes of this study, several receptor locations were selected to represent the closest points of reception to both the Transitway and the stations. Moreover, many of the selected receptors are located further away from the arterial roads in order to provide a more conservative approach in calculating the ambient sound levels, but still keeping the distance as close as possible to the proposed Transitway. As an added measure of safety, the receptor elevation was considered as a typical second storey level in a dwelling unit when calculating the station sound levels since less ground attenuation would be included in the calculation of the sound propagation factors.

e) Results

Table 53 summarizes the results of the noise impact calculations for each segment of the Transitway, and Table 54 follows to summarize the noise levels predicted near the Transitway stations. It should be noted that potential stations at Glen Erin Drive and Mississauga Road were included for the purposes of analysis, and both "north of Ontario Hydro" and "south of Ontario Hydro" alignment options were considered between Winston Churchill Boulevard and Erin Mills Parkway, as part of the analysis of alternatives in that area. Noise levels were not calculated within the Mississauga City Centre area, due to the extent of future development, the absence of dwellings, and the nearly covered nature of the Transitway.

TABLE 53 - PREDICTED SOUND LEVELS DUE TO TRANSITWAY TRAFFIC [1]

WORST CASE RECEPTORS

Link From To	Receptor	Predicted Sound Levels (dBA)			Excess Over future Ambient Sound Levels (dB)	Mitigation
		Future Ambient[2] (Do-Nothing)	Transitway Traffic	Total Combined Sound Levels[3]		
Ridgeway Winston Churchill	A2	60	62	64	+4	Not Required
Winston Churchill Glen Erin	A5	62	54	63	+1	Not Required
Glen Erin Erin Mills	A11	57	54	59	+2	Not Required
Erin Mills Mississauga Road	A15	57	61	62	+5	Not Required
Erin Mills Mississauga Road (South Alignment)	A17	61	56	62	+1	Not Required
Mississauga Road Erindale/Creditview	A24	63	52	63	0	Not Required
Erindale/Creditview Mavis	A30	67	64	69	+2	Not Required
Mavis Confederation	B3	62	55	63	+1	Not Required
Hurontario Central Parkway	B6	67	62	68	+1	Not Required
Central Parkway Cawthra	B11	62	56	63	+1	Not Required
Cawthra Tomken	B14	58	45	58	0	Not Required
Tomken Dixie	C3	48	52	53	+5	Not Required
Dixie Fieldgate	C7	49	49	52	+3	Not Required
Fieldgate Spectrum/Satellite++	Typical Receptor	61	53	62	+1	Not Required
Spectrum/Satellite Orbitor/Renforth++	Typical Receptor	61	53	62	+1	Not Required

(1) Sound levels predicted at receivers Locations in the vicinity of the proposed Transitway with no impact from stations activities.
(2) Future ambient sound levels are due to vehicular traffic on Highway no. 403 or its arterials.
(3) Total Combined Sound Levels refers to future ambient sound levels combined with and Transitway traffic sound levels.

++ Along Eglinton Avenue.

TABLE 54 - PREDICTED SOUND LEVELS AT THE TRANSITWAY STATIONS [1]

WORST CASE RECEPTORS

Location/Station	Predicted Sound Levels (dBA)				Excess Over future Ambient Sound Levels (dB)	Mitigation[5]
	Future Ambient[2] (Do-Nothing)	Station Activities[3]	Transitway Traffic	Total Combined Sound Levels[4]		
Ridgeway	59	51	43	60	+1	Not Required
Winston Churchill	60	54	53	62	+2	Not Required
Glen Erin (North Alignemnt)	62	57	52	64	+2	Not Required
Glen Erin (South Alignment)	62	57	47	63	+1	Not Required
Erin Mills (North Alignment)	61	58	58	64	+3	Not Required
Erin Mills (South Alignment)	61	52	55	62	+1	Not Required
Mississauga Road	57	47	48	58	+1	Not Required
Erindale/Creditview	65	60	51	66	+1	Not Required
Mavis	62	53	53	63	+1	Not Required
City Centre	N/A	N/A	N/A	N/A	N/A	N/A
Central Parkway	63	56	60	65	+2	Not Required
Cawthra	53	45	45	54	+1	Not Required
Tomken	56	51	51	58	+2	Not Required
Dixie	56	52	49	58	+2	Not Required
Fieldgate*	45	46	46	50	+5*	Not Required
Spectrum/Satellite	64	61	53	66	+2	Not Required
Orbitor/Explorer	64	61	53	66	+2	Not Required
Renforth	63	54	N/A	64	+1	Not Required

(1) Sound levels predicted at Receptor Locations in the vicinity of the stations.
(2) Future ambient sound levels are due to vehicular traffic on Highway no. 403 and local roads.
(3) Station activities include buses entering into, exiting from, manoeuvering and idling within the station boundaries as well as Cars entering into, exiting from and idling within the Kiss & Ride and Park & Ride Facilities (where applicable).
(4) Total Combined Sound Levels refers to future ambient sound levels combined with both station activities sound levels and Transitway traffic sound levels.
(5) Pending MOE Approval of 5 dBA excess.
*Worst case location (E1, E2, E3 & E4 Transitway option)

In the vicinity of Fieldgate Drive, the "worst case" Transitway alignment alternative in terms of potential noise impact was used (alternatives E1, E2, E3, E4); the subsequent recommendation of alternative E6 in that area results in a significant reduction in potential noise impact of the receptor sites.

The results of the analysis show that in no instance is the operation of the Mississauga Transitway anticipated to result in noise levels exceeding the ambient by an amount requiring mitigation. It is of note that this is achieved without considering specific mitigation measures other than the general conditions outlined in Section 5.3.3.1 (a). In the subsequent course of preliminary design and detail design, the provision of visual barriers or screens will be considered in a number of areas where the Transitway may be visible from existing homes; this additional screening will serve to reduce the Transitway noise impact (and existing roadway noise levels) even further.

f) Single Passby

In reviewing the noise analysis with the public, the question of the noise level expected due to the passby of a single bus was raised (compared to the one-hour or other equivalent noise levels (Leq) cited in the analysis). It is of note that the Ministry of the Environment, in specifying Leq as the standard descriptor of human perception of transportation-based noise, carefully considered surveys in Ontario and elsewhere on the topic before deciding on an equivalent energy-based descriptor. The measurement of audibility of a single bus would require knowledge of the distance between the source and receiver, bus speed, road segment length under consideration, sound barriers (if any), reflections, noise level of traffic and other background activity, and the bus type. In most circumstances, the noise level of a single bus passby can vary so much as to be of little use as an indicator of actual noise impact due to a facility. For example, at a receiver near a Transitway station with a 16 hour Leq of 62 dBA, the following possible passby noise levels were calculated: a bus going 80 km/h on the Transitway would produce 58 dBA; a bus at 50 km/h at the same spot would generate only 50 dBA; a bus on the access ramp between the crossing road and the Transitway, moving at 20 km/h, would produce 65 dBA at the same receiver; while a bus stopping to pick up passengers at the station would provide 61 dBA. These figures would vary for every receiver at all times, and could not account for situations such as a truck on the adjacent freeway passing by at the same time and generating 75 dBA to completely mask the bus noise.

Thus the only practical way of comparing "before" and "after" noise levels to assess the impact of the introduction of a transportation facility on an area is to use equivalent noise levels calculated on the basis of traffic characteristics for all noise sources, combined together and averaged over a defined period of time (such as 16 hours, or 7 a.m. to 11 p.m. to

represent daytime noise). This has been the approach taken in the current study.

5.3.3.2 Visual Impact

The view of the Transitway from residential areas (and vice versa) is a key issue among residents, and through a combination of a lowered Transitway profile, earth berms, existing woodlots, strategic landscaping, and visual screens (where necessary), the view will be similar (or enhanced) to that of today. In fact, most existing residential subdivisions do not have a view of Highway 403, as a result of the berm and profile measures taken in the Parkway Belt corridor. Since the Transitway will, in most areas, run at the same grade as, and adjacent to, the freeway, little disruption of current views is anticipated. East of Cawthra Road, the Transitway will lie in a trench alongside existing roads, with no residential view at all.

In areas where the existing berm will be required to be removed for Transitway construction, a berm / wall combination of equivalent height will be reinstated.

Particular attention will be paid to the detail design and layout of Transitway stations, so that they do not disturb adjacent residents.

On the other hand, it is important that the Transitway present an attractive, modern, well-lit face to the public, passengers, workers, and passing motorists. To that end, a distinct architectural theme will mark Transitway stations that, in combination with extensive landscaping and aesthetically sensitive structural elements, will result in a facility with a strong positive visual impact on its corridor. The presence of stations, the motion of buses and passengers, and the gently rolling topography in which the Transitway is set will serve to bring attention and interest to the facility.

Several areas have specific visual concerns:

i) Credit River crossing - the structural piers and bridge profile will match as much as possible the configuration of the adjacent Highway 403 structures

ii) Adjacent to Highway 403 - Transitway and station lighting will be restricted so as to not spill over to either Highway 403 or adjacent residential areas to the extent that drivers or residents are unduly distracted or otherwise affected

iii) Rathburn Road Tunnel (Mississauga City Centre) - the urban design of the section of the Transitway within the Mississauga City Centre will be subject to extensive architectural, planning, landscaping, and structural review to ensure that both the integration of the facility into the City Centre development and the distinction of its key elements (in particular, the City Centre Station) are achieved

iv) Eglinton Avenue Corridor - as in the City Centre, the aesthetic impact of this Transitway section is a key issue, to be dealt with in conjunction with adjacent development at the detail design stage.

The typical cross sections in Section 5.2.2 of this report may be referred to in considering the visual impact of the Transitway.

5.3.3.3 Air Quality

The impact of the Mississauga Transitway on background air quality in Mississauga will generally be positive, in that the Transitway will play a key role in reducing the vehicular emissions per person - kilometre of travel in the City. If the forty people riding a typical bus were occupying thirty cars instead, the emissions from those vehicles would exceed the bus' by several hundred percent. In the context of the Highway 403 / Eastgate Parkway / Eglinton Avenue corridors through which the Transitway passes, the negative impacts of transportation on air quality are almost entirely due to car and truck traffic. Even at the ultimate level of Transitway usage, Transitway buses will comprise only between two and five percent of the vehicles using the Highway 403 / Eglinton Avenue corridor (in the order of 250 buses/h vs. 10,000 veh./h on Highway 403; 200 buses/h vs. 4,000 veh./h on Eglinton Avenue east of Fieldgate Avenue).

It should be noted that vehicular emissions increase exponentially with increasing roadway traffic congestion, while congestion will never occur on the Transitway. Furthermore, with environmental standards becoming more stringent, Mississauga Transit is committed to having the majority of its fleet of buses (currently 325±) on natural gas power by 2000. With this change, the diesel exhaust of older buses will be an unfamiliar sight and smell by the time of Transitway completion. All segments of the Transitway are buffered from residential areas, and in the City Centre tunnel, a key design factor will be to ensure that current air quality standards are met under all circumstances. A ventilation study for the proposed City Centre Transitway Tunnel was prepared as part of the current study, and outlines various means of providing appropriate ventilation under both operating and emergency conditions.

Although a detailed air quality assessment was not carried out for the entire Transitway corridor, it is instructive to refer to the report prepared by Rowan Williams Davies and Irwin Inc. in 1988 entitled "Pollution Dispersion Assessment for the Highway 403 Arterial Extension - Mississauga Ontario", as incorporated in the Environmental Study Report for the Highway 403 Arterial Road Extension.

In assessing the impact on air quality of the introduction of the Mississauga Transitway and the four lane divided Highway 403 Arterial Extension (a.k.a. Eastgate Parkway) to the Parkway Belt between Cawthra Road and Fieldgate Drive, a comprehensive analytical air pollution modelling and measurement procedure indicated the following:

- maximum predicted concentrations for carbon monoxide are likely to be below the current air quality criterion for all receptors studied

- the maximum predicted nitrogen dioxide concentrations for a 1-hour average in the residential sector were just under the current air quality criterion, while all other residential receptor locations were well within the criterion

- total suspended particulate predictions showed maximum future levels not much different from the current situation, and in a number of instances reductions are anticipated.

Given the relatively low proportion of transit vehicles' contribution to the overall modelled figures, and the presence of even greater amounts of non-transit traffic on Highway 403 in the remainder of the Mississauga Transitway study area, it may be conclusively stated that the impact of the Transitway operation on air quality is not a significant environmental issue.

Nevertheless, the City of Mississauga will commit to the continued evolution of the Mississauga Transitway bus fleet to low-emission vehicles, and to ensure that design measures are taken in station and tunnel areas that result in an adequate level of air quality for passengers, bus drivers, and adjacent residents.

5.3.3.4 Property Value

The potential impact of the Transitway on the value of residential properties abutting the Parkway Belt is considered a significant issue by some residents. However, it may be considered that the analysis of the Highway 403 Arterial Extension (including the Transitway) showed that "there is no evidence to support the view that the existing roadways in Study Areas "B" and "C" or the proposed roadway (Eastgate Parkway) in Study Area "A" have impacted property values in a negative manner". ("Analysis of Residential Property Sales, Mississauga Ontario", Larry Bedford and Associates, September 1988, as included in the Environmental Study Report for the Highway 403 Arterial Extension). The Study Areas referred to were (A) homes abutting the south side of the proposed Eastgate Parkway / Transitway corridor, (B) homes abutting the south side of the Highway 403 corridor west of Erin Mills Parkway, and (C) homes south of the Queensway east of Cawthra Road.

If there were negative impact on property values due to the Transitway, these would stem from visual, noise, and traffic conditions which were not compatible with the affected area; in all cases these conditions have been shown to be either of negligible impact or would have effective mitigation measures associated with them. Potential positive impact would stem from improved transit service, reduced auto congestion, and an attractive well-designed facility, each of which is a goal of the Transitway.

The net impact of the Transitway on property values within the affected corridor is considered to be negligible, and therefore not requiring specific mitigation over and above all those measures already committed to, which serve to minimize impact. The fact that a 19 kilometre grade-separated new roadway can be implemented across a city of 460,000 without requiring the purchase of any existing residential property indicates the unusually low level of impact associated with the Mississauga Transitway, and the effectiveness of previous corridor / property protection programs.

It may also be noted that the presence of the Transitway would be anticipated to have a significant positive impact on commercial and residential property values throughout the City Centre, Airport Corporate Centre, and all other currently undeveloped areas along the route. Given that the Transitway is an essential component in the transportation system which will support such future development, its net impact on current and future property values in Mississauga is positive. Consequently, no mitigation measures are required.

In the analogous Ottawa Transitway situation, no significant effect on residential property values (either positive or negative) has been attributed to the Transitway, while some stations have become focal points for several hundred million dollars worth of commercial development.

If, upon Transitway implementation, residents feel that property values have been significantly affected, one possible avenue of mitigation is through an appeal to the provincial Assessment Review Board for a reduction in municipal taxes. The Board determines equity in property valuations and hears objections to property assessments.

5.3.3.5 Construction Disruption

Construction activities associated with the Transitway within the corridor will have the potential to result in temporary noise level increases, vibration or dust, particularly in areas identified as noise sensitive (see Section 5.3.3.1 (a)).

The Contractor is required to comply with any by-laws regarding noise emission standards for construction equipment that the affected municipalities have in place at the time of construction. Dust control measures are also standard components of roadwork contracts.

Blasting operations, if any are required, will be monitored for noise and vibration, and a pre-blast survey will be carried out. A copy of the pre-blast survey report will be submitted to the M.O.E. The Contractor will be advised of the recommended limits for blast-induced sound (concussion) and vibration levels contained in the Ministry of the Environment's Model Municipal Noise Control By-law. A copy of all reports on the monitoring of these levels will be forwarded to the M.O.E.

In addition, consideration will be given to the incorporation of the following features into the contract specifications:

- specific low sound emission standards for various types of construction equipment, especially when operating near noise sensitive areas
- proper maintenance of equipment, especially those parts that could create high sound levels
- restriction of construction activities during certain time periods and scheduling some of the noisy construction operations to suitable times of the day and year when less use is made of outdoor recreation areas

- early construction of noise / visual berms and barriers in those areas where a need has already been identified.

There are specific constraints and safety issues associated with construction activities in proximity to existing pipelines, utilities, and Ontario Hydro lines. The needs of each affected operator will be incorporated in the detail design and contract documents, and site inspection services will be provided as necessary by each pipeline firm and utility. Ongoing dialogue will provide the forum for review and design input by the affected agencies.

5.3.3.6 Vibration

There are no provincial vibration criteria for roadways, and it is not considered a significant problem for low-volume facilities not immediately adjacent to an inhabited structure. Two types of vibration are possible: ground-borne vibration, which is not a concern with vehicular traffic (it is a heavy rail issue); and air-propagated vibration, which could occur with low-frequency powerful sounds or on an instantaneous basis, for example, due to a truck hitting a pothole. For a low-volume new facility such as the Transitway this is not considered a significant issue.

In general, since air-propagated vibration is essentially identical to noise in its characteristics, it may be assumed that, in meeting the criteria for noise levels at adjacent homes, the Transitway also would not result in residents experiencing air-borne vibration.

5.3.3.7 Safety

The safety of operation and use of any transportation system is an issue to the general public as well as to those responsible for the system. Although bus transit, and particularly bus use of a dedicated transitway is amongst the safest means of travel in an urban area (considerably safer than moving the equivalent number of people by private automobile, for example), specific issues have been raised over the course of the current study regarding safety. These fall under the general categories of: Operational Safety; Passenger Safety; and Community Safety.

Operational Safety

The operational record of the similar Ottawa Transitway has been referred to, and in discussion with representatives of the Ottawa system, the following points were made:

- the Transitway's operational safety record is significantly better than that of the entire bus system (3.8 accidents per million bus kilometres travelled on the Transitway vs. 13.3 on the entire system in 1989).

- more than one half of OC Transpo daily riders use the Transitway, but only ten percent of the injuries on the entire system occurred on the Transitway

- in 1989, no accidents were recorded involving an unauthorized vehicle on the 16.8 kilometre two-way Transitway

- warnings or tickets were issued to over 1,150 unauthorized vehicles on the Transitway in 1989

- in operating the Transitway since the early 1980's, only one fatal accident is known to have occurred; in 1985 a pedestrian was hit by a bus while crossing the Transitway in an area where signage is in place forbidding such crossing.

The accident rate for 1988 on Highway 403 in Mississauga ranged between 0.3 and 0.7 per million vehicle kilometres (provincial freeways averaged 0.6 overall); at a typical occupancy rate of 1.2 persons per vehicle, the accident rate per million person kilometres would be between 0.25 and 0.58. Given the uncontrolled nature of urban streets, the rate for arterials may be assumed to be significantly higher. On the Ottawa Transitway, using a conservative estimate of 40 passengers per bus, the accident rate per million person kilometres would be less than 0.1.

In summary, it may be conclusively stated that the operational safety record for a high standard exclusive bus-only transitway such as that in use in Ottawa and proposed for Mississauga is amongst the highest achieved for any surface personal transportation mode.

It is also implied that safety-related design elements, such as pedestrian overpasses, limited, controlled access points, and roadway grade separations such as those recommended for the Mississauga Transitway are important elements in achieving such a low accident rate. Controlled speeds, professional drivers, relatively low volumes, and prohibition of unauthorized vehicles and pedestrian crossings also contribute to the inherent operational safety of a Transitway system.

In high speed express bus operation, it is recommended that articulated (60 seat) buses be used as much as possible in order to minimize the number of people standing on the bus.

Passenger Safety

In the concentration of a great number of people at stations and on moving vehicles, there is some inherent safety risk. The risk is mainly in the areas of accidents (such as slipping or falling) or of personal safety due to harassment or assault. These issues are not specific to the Mississauga Transitway, but tend to arise in any circumstances where people congregate. However, a Transitway system is in a unique position to reduce the risk associated with such locations, and the following measures will be incorporated in the system to ensure personal safety of all passengers:

- public awareness campaign

- all passenger areas to be well-lit and visible

- emergency telephones to be provided at each platform
- passenger shelters to be transparent to the degree required to provide visibility both in and out
- pedestrian bridges to be preferred over pedestrian tunnels
- where pedestrian tunnels are provided, retail or other commercial activity is recommended for incorporation in tunnel
- provide frequent off-peak service to all stations, to ensure minimum passenger waiting time
- bus routes, schedules, and safety information will be posted in all stations.

One inherent advantage of bus use of a Transitway (as opposed to LRT or Subway use) is the elimination of the need for many passengers to transfer between or wait for vehicles at the station.

Where a significant amount of walk-in access occurs, pedestrian walkways will be clearly delineated, signed, and protected to the greatest extent possible; in high-volume traffic or pedestrian areas, protection is made in the Transitway plan for the provision of pedestrian overpasses or underpasses leading to the station.

Of all the safety measures possible, perhaps the most important is the generation of awareness among users and the general public; public perception of a safe, secure transit system is fundamental to the system being so.

Community Safety

Unauthorized access, particularly by children, to the Transitway right-of-way may pose a safety and liability risk to themselves, bus passengers, and bus operators. In order to control access to the Transitway and limit pedestrian access points to Station sites, a 1.8m high chain link fence is recommended for installation and maintenance between the Transitway and any adjacent development. The fence should be closed at each crossing roadway, and it should be co-ordinated with any existing parallel fences. Where an existing right-of-way fence provides adequate protection, no additional Transitway fence would be required. Use of stormwater retention ponds as part of the Transitway drainage system will be minimized to the extent possible, and if used, pond perimeters will be enclosed by a chain link fence.

At stations, loitering or unauthorized entry will be subject to enforcement by police and/or transit operators.

5.3.3.8 Summary of Significant Social-Cultural Environmental Effects and Commitments to Mitigation

Table 55 provides a brief summary of the significant issues and mitigation measures in the area of Social-Cultural Environment.

In order to ensure that the public, and specifically interested local residents, continue to be involved in the Transitway planning process through to construction and operation, the City has formed a Community Advisory Committee . This is a group of residents, limited in number, modelled on that which was successful in resolving social-cultural environmental issues during the planning and design of the Highway 403 Arterial Extension. The Committee will meet on a regular basis to review progress and provide input to the design and implementation of the Transitway.

Furthermore, each stage of the Transitway planning process will be open to public review and input, and no portion of the Transitway will be constructed without further public involvement in the affected area(s).

TABLE 55 - SUMMARY OF EFFECTS ON SOCIAL CULTURAL ENVIRONMENT AND COMMITMENT TO MITIGATION

Element	Environmentally Significant Area / Issue	Concerned Agency / Group	Effect of Transitway	Mitigation Measures	Commitment to Future Work
Noise	Impact of Transitway operation on outdoor noise levels in surrounding area	Ministry of Environment (MOE) Residents	Minimal effect. Noise analysis shows no locations where noise levels exceed the future ambient by an amount requiring mitigation	Noise barriers / berms to be provided where appropriate	Liaison with the MOE will be continued through design. Detailed design of each section to be reviewed by local residents prior to construction.
Visual Impact	Possible visual intrusion of Transitway	MOE Residents	Minor impact. Certain areas may require specific attention	Credit River crossing - structure / piers and bridge profiles will attempt to match configuration of Highway 403 structure. Adjacent to Highway 403 - restricted Transitway and Station lighting so as to not spill over to Highway 403 or adjacent residential areas. Rathburn Road Tunnel - Within Mississauga City Centre extensive architectural, planning, landscaping and structural review	Reduction of visual impacts will be reviewed in preliminary design.
Air Quality	Possible increase in air pollutants due to Transitway	MOE Residents	Minimal effect. Low emission vehicles will prevent higher pollutant levels	Ensure design measures are developed to result in adequate levels of air quality in tunnels and stations	Commitment to low emission vehicles for transit service.
Property Value	Impact of Transitway on value of adjacent properties	Landowners / residents MGS	No significant impacts. Potential positive impact on some commercial / residential properties due to improved accessibility	High architectural standards; Integrated development where feasible; Minimize physical / environmental impact where integration not feasible	Commitment to well developed plans and continued discussion with adjacent property owners.
Construction Disruption	Possible disruption to existing traffic. Temporary noise level increase	MOE Ministry of Transportation (MTO)	Detours required during construction of Transitway	Construction will comply with any by-laws regarding noise emission of equipment. Restriction of construction activities during certain time periods	Proper work schedules and review of detour arrangements by MTO for approval prior to construction.
Vibration	Increased vibration due to Transitway	MOE Residents	Minimal possible air-propagated vibration; no ground-borne vibration	Since air-propagated vibration is essentially identical to noise in its characteristics it may be assumed that, in meeting criteria for noise levels at adjacent homes, the Transitway also would not result in residents experiencing air borne vibration	Low volume facility not considered a significant issue with vibration.
Safety	Possible safety hazards associated with the Transitway and passenger safety	MTO City of Mississauga	Minimal risk to passenger safety and community	• passenger areas well lit and visible • passenger shelters transparent to the degree required to provide visibility both in and out • pedestrian bridges to be preferred over pedestrian tunnels • bus routes, schedules and safety information will be posted in all stations • 1.8 m high chain link fence between Transitway and adjacent development	Consultation with agencies involved in safety review.
Station Access	Protection for ultimate access into Transitway stations	MTO City of Mississauga	Various station layout and design may require protection for pedestrian tunnels	Ensure stations are fully accessible to all persons including handicapped	Review and continued development of station layout in detailed design stages. Pursue access from Forest Fire Lane to Cawthra Station via pathway through transformer station property with Ontario Hydro.
Heritage Resources	Protection of possible heritage resources in the Parkway Belt West corridor	MOE Ministry of Culture and Communications City of Mississauga	Potential unearthing of heritage / archaeological material during construction	Transitway alignment avoids known heritage sites	Standard reporting of unearthed finds. Transitway r.o.w. to be assessed by licenced heritage resource consultant prior to construction.

5.3.4 Planning / Administrative Requirements

5.3.4.1 City of Mississauga Official Plan

The recommended Transitway alignment is not shown in the current City of Mississauga Official Plan, except as incorporated in the City Centre Secondary Plan. The City has therefore prepared an Official Plan Amendment on the subject, provided for public review and input, and will submit the Amendment as approved by Council on November 1, 1991 to the Minister of Municipal Affairs for approval.

5.3.4.2 Parkway Belt West Plan

a) Compatibility

Given the status and definition of objectives for the Parkway Belt West Plan in Mississauga, it is appropriate to determine whether or not the proposed Mississauga Transitway is compatible with the Plan, and whether any future action is required in relation to the Plan. The analysis is summarized in Table 56, referring to the actual objectives set out in the Parkway Belt West Plan (1978).

In reviewing the Table it is apparent that the proposed Transitway plan is either supportive of, compatible with, or has no effect on each of the 34 objectives set out for the Parkway Belt West Plan in Mississauga. In that respect, therefore, there are no additional measures required.

However, an administrative issue remains, in that the recommended alignment for the Transitway does not entirely follow the 30 m wide "Interurban Transit" corridor which was identified in the 1978 Parkway Belt Plan (see Exhibit 98).

In minimizing impact on existing Parkway Belt users, the Transitway plan must follow either the Utility or Transit corridors, or the fringes of the Road corridor that are not occupied by current or future Highway 403.

In carrying out an extensive public involvement program, proximity of the Transitway to existing residential properties emerged as the single most important public concern. Strong opposition was expressed to any alternative Transitway alignment that utilized the Parkway Belt's designated Transit corridor where it passed adjacent to residential areas. To avoid residential impact, then, the Transitway must be located adjacent to Highway 403, either in part of the Road corridor or in what is currently the Utility designation. This would require redesignation of the Utility corridor to Transit corridor, and vice versa.

Since neither the Utility nor the Transit corridor have, at present, any longitudinal facilities in them, the location of the Transitway in the Utility corridor would not affect existing users, while this redesignation of uses would ensure that the strip next to residential areas remains a low-intensity use corridor.

TABLE 56 - ROLE OF TRANSITWAY IN PARKWAY BELT

Parkway Belt West Plan - Section 3 Objectives		Impact of Mississauga Transitway
3.1	Define urban areas by means of clear limits to urban physical development.	No effect
3.2	Separate urban areas by providing a break in the pattern of continuous urban land use and by minimizing the number of traffic routes connecting urban areas across the Parkway Belt.	No change to existing pattern
3.3	Include in the Parkway Belt natural features as ravines and river valleys, which provide physical, identifiable boundaries	N/A
3.4	Include in the Parkway Belt such linear facilities as major transportation, communication, and utility facilities, which provide physical, identifiable boundaries.	Compatible
3.5	Locate the major transportation, communication, and utility rights-of-way so that they do not cut through urban areas.	Achieves objectives to a far greater extent than a non-Parkway Belt alternative route would.
3.6	Place in one corridor as many as possible of the major transportation, communication, and utility facilities that link the system of urban areas to each other and connect them to areas beyond.	Supports objective
3.7	Provide land reserves to accommodate future linear facilities whose nature, demand, or land needs cannot be set out specifically at the date of approval of the Plan.	Utilizes corridor while protecting for future uses.
3.8	Provide a land reserve for unspecified linear facilities which may also accommodate conventional facilities that may be needed but are not presently set out in action programs.	Plan protects utility corridor within Mississauga
3.9	Provide extensive blocks of land as a reserve for unforeseen, compatible public and private activities that require substantial land area and locations readily accessible to the system of urban areas.	N/A
3.10	Provide extensive areas of public and private open space and complementary uses in the Parkway Belt that, together with non-urban areas outside the Parkway Belt, will maintain a continuity of open space through the system of urban areas.	Compatible
3.11	Set out major public and private open space that will provide opportunities for recreational activities that are accessible to the system of urban areas.	Increases potential accessibility of Parkway Belt via stations
3.12	Link existing and proposed public open-space and recreation areas into a network extending through the Parkway Belt and connecting to areas beyond.	Does not preclude links
3.13	Preserve prominent natural features, such as river valleys and the Niagara Escarpment, and protect other features, such as wooded areas, watercourses, and other points of interest.	River crossings adjacent to existing crossings; minimal impact on prominent natural features.

TABLE 56 (Cont.) - ROLE OF TRANSITWAY IN PARKWAY BELT

Parkway Belt West Plan - Section 6.3.2 Specific Objectives for Southern Link		Impact of Mississauga Transitway
a)	Define the northern limits of the Oakville Urban Area.	N/A
b)	Define the northern limits of the Mississauga Urban Area.	compatible
c)	Define the southern limits of the Milton West Future Urban Area.	N/A
d)	Define the southern limits of the Milton East Future Urban Area.	N/A
e)	Define the southern limits of the Mississauga Northwest Urban Area.	compatible
f)	Separate by open space the Oakville Urban Area and the Milton West Future Urban Area.	N/A
g)	Separate by open space the Oakville Urban Area and the Milton East Future Urban Area.	N/A
h)	Separate by open space the Mississauga and Mississauga Northwest Urban Areas.	compatible
i)	Include the existing Ontario Hydro facilities.	compatible
j)	Minimize the number of transportation routes crossing the Link and connecting the Oakville Urban Area to the Milton West and Milton East Future Urban Areas and connecting the Mississauga Urban Area to the Mississauga Northwest Urban Area.	No change to existing routes.
k)	Identify transportation, communication, and utility corridors to Metropolitan Toronto.	compatible
l)	Provide for Highway 403.	Accommodates ultimate Highway 403 needs
m)	Provide for a controlled-access arterial road (Eastgate Parkway).	Accommodates Eastgate Parkway
n)	Provide for the possible Dorval Way.	N/A
o)	Provide for inter-urban transit to the activity centres of the Milton West Future Urban Area, Milton East Future Urban Area, Mississauga Northeast Urban Area, and Mississauga Urban Area, as well as to Toronto International Airport.	Achieves goal for Mississauga activity centres; compatible with ultimate Milton plans
p)	Provide for future utilities.	Maintains 30 m utility corridor
q)	Provide for public open space at Oakville Creek-East Oakville Creek, Credit River-Mullett Creek, and Centennial Park-Etobicoke Creek.	compatible
r)	Provide open space between urban areas so as to maintain the continuity of open space from the Escarpment Link to the rural area east of the Credit River.	compatible
s)	Provide for recreational trails and associated facilities between the Escarpment Link and Centennial Park.	Does not preclude future development of such trails / facilities
t)	Preserve the following prominent natural features:	
	i) Oakville Creek-East Oakville Creek Valleys.	N/A
	ii) Credit River-Mullett Creek Valleys;	One crossing proposed; compatible with objective
	iii) Etobicoke Creek Valley	One crossing proposed; compatible with objective
u)	Protect tree stands that are either significant in their own right or serve as buffers.	Existing tree stands preserved to the greatest extent possible.

Exhibit 99 illustrates a possible redesignation of corridors within the Parkway Belt, and may be compared with the existing designation in Exhibit 98.

The plans show that the recommended Transitway routing would still allow all the functions of the Parkway Belt West Plan to be fulfilled with no more significant constraints than already exist. A viable continuous Utility strip equivalent to the currently designated utility corridor can be protected throughout the Mississauga portion of the Parkway Belt West, even if the Transitway occupies much of the current Utility corridor. In fact, the construction of the Transitway will fulfil one of the major objectives of the Parkway Belt Plan, which is to provide for an interurban transit facility.

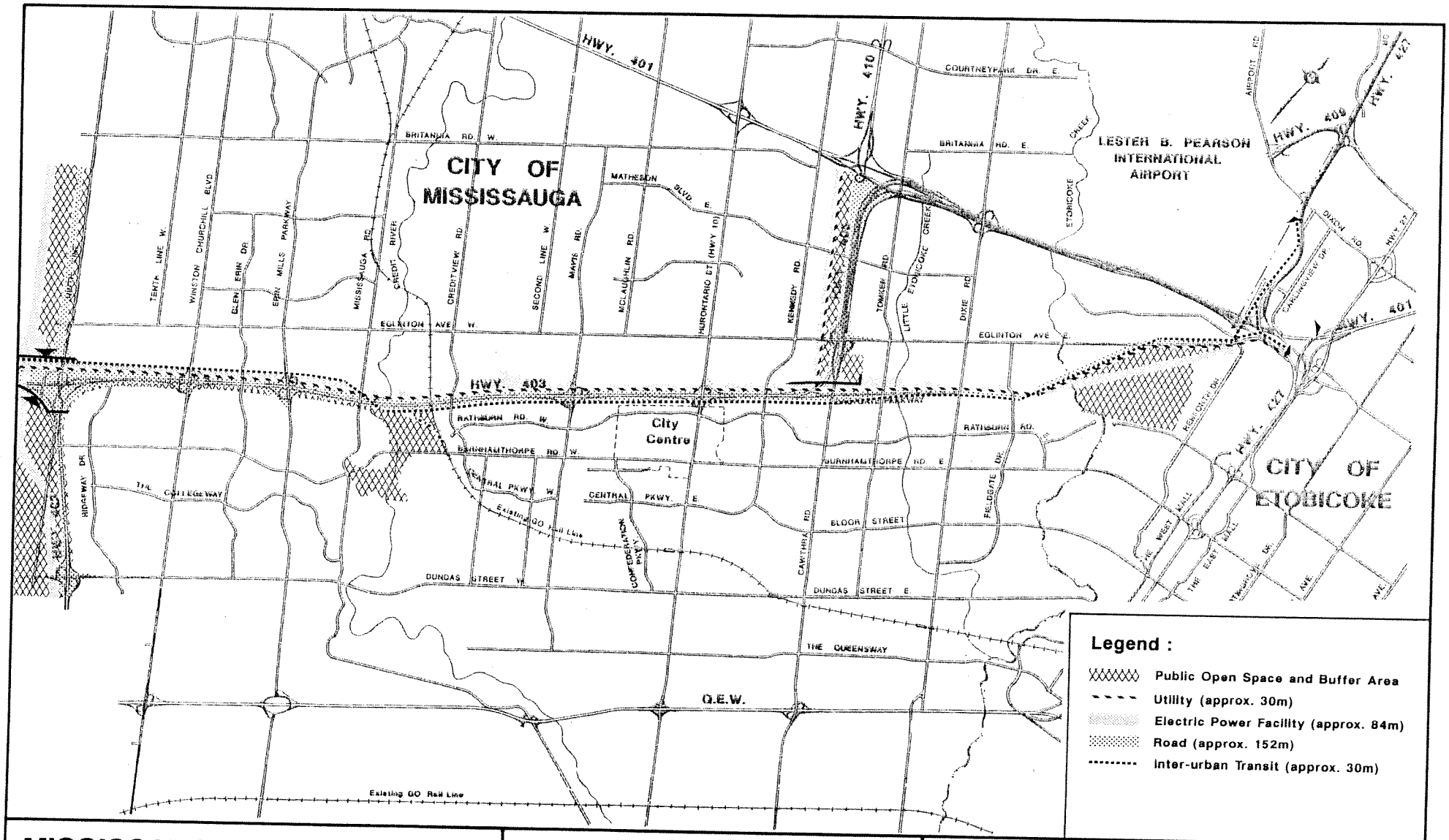
The proposed changes from existing corridor designations to reflect the proposed arrangement of linear facilities within the Parkway Belt are also noted on Exhibit 100. In most areas, a simple switch in designations between Transit and Utility corridors is all that is required. Given that both corridors are now unused and that the location of the Transitway in what is now the Utility corridor benefits adjacent residents while not significantly affecting Parkway Belt users, no serious objection from adjacent residents or users is seen to this proposal. It should be noted that the Transitway itself is, for significant sections, within the MTO Highway 403 right-of-way, and that the corridor redesignation would only be for continuity purposes.

Although various options exist between Winston Churchill Boulevard and the City Centre, the most straightforward approach would be to switch the current designations of the Transit and Utility strips.

Within the Mississauga City Centre (between Confederation Parkway and Hurontario Street) two unique situations present themselves: the currently designated Transit strip is privately owned (by Hammerson Canada, Inc.) in conjunction with the ownership of a significant proportion of the adjacent City Centre; and the recommended Transitway alignment is outside the Parkway Belt along Rathburn Road. In reviewing the plans for the area (see Appendix T), it is apparent that the optimum outcome would require several property / usage shifts, as outlined in Table 57. The rationale for each shift is included in the Table, and the resultant plan would preserve all the necessary functions of the Parkway Belt.

In the section of the Parkway Belt between Hurontario Street and Cawthra Road, the Transitway's recommended route is immediately adjacent to Highway 403 within the Road corridor leaving room for the Utility strip along the south edge of the Parkway Belt in what was originally the Transit corridor. This arrangement leaves the current Utility strip unoccupied north of the freeway, and it is suggested that what is now Utility be designated for Road use to protect for future Highway 403 expansion needs.

Between Cawthra Road and Fieldgate Drive, a switch of Transit and Utility designations was requested by the City during the planning of Eastgate Parkway, and the current plans continue to support that request.



Legend :

- Public Open Space and Buffer Area
- Utility (approx. 30m)
- Electric Power Facility (approx. 84m)
- Road (approx. 152m)
- Inter-urban Transit (approx. 30m)

MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

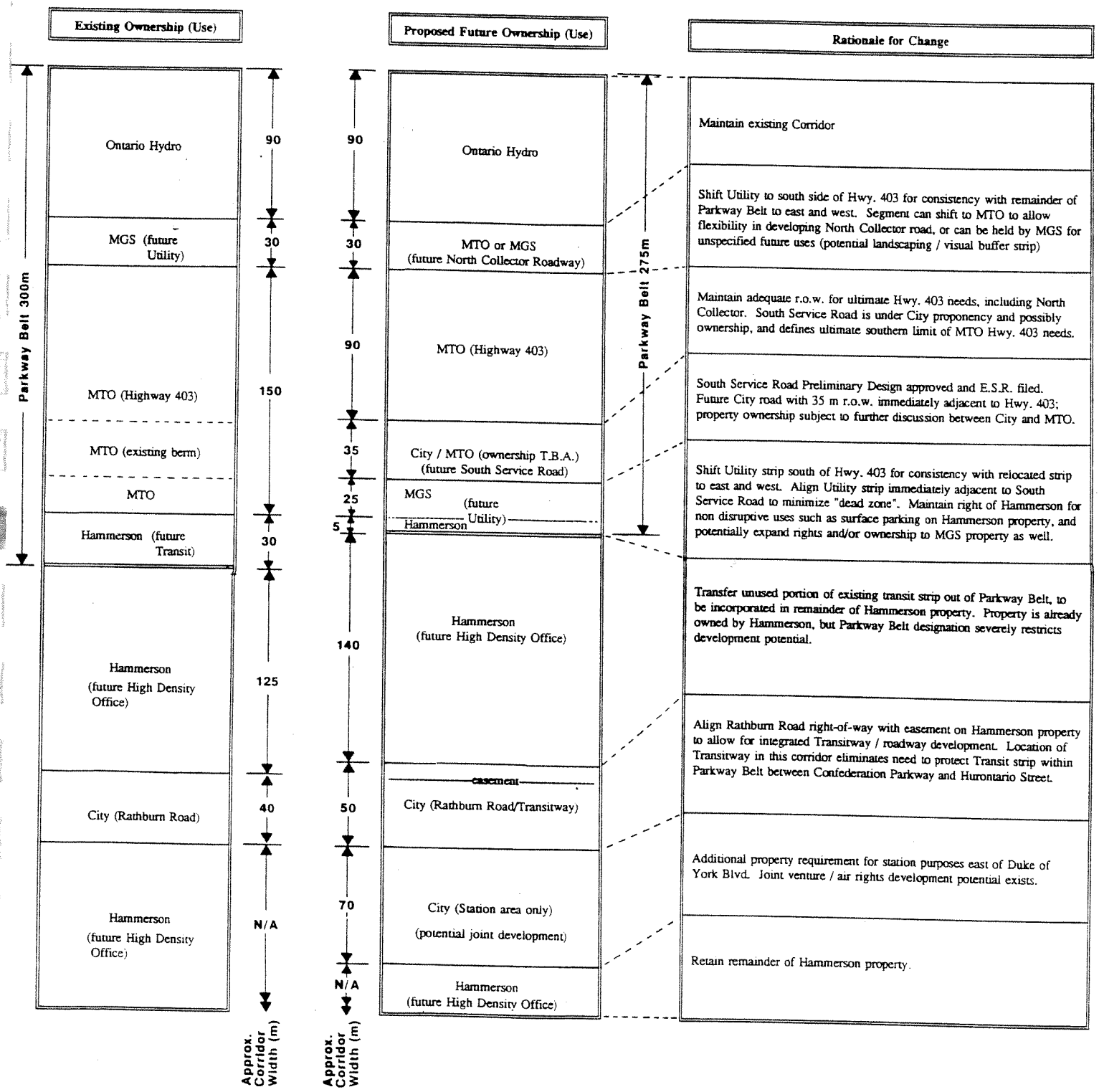
EXHIBIT 98

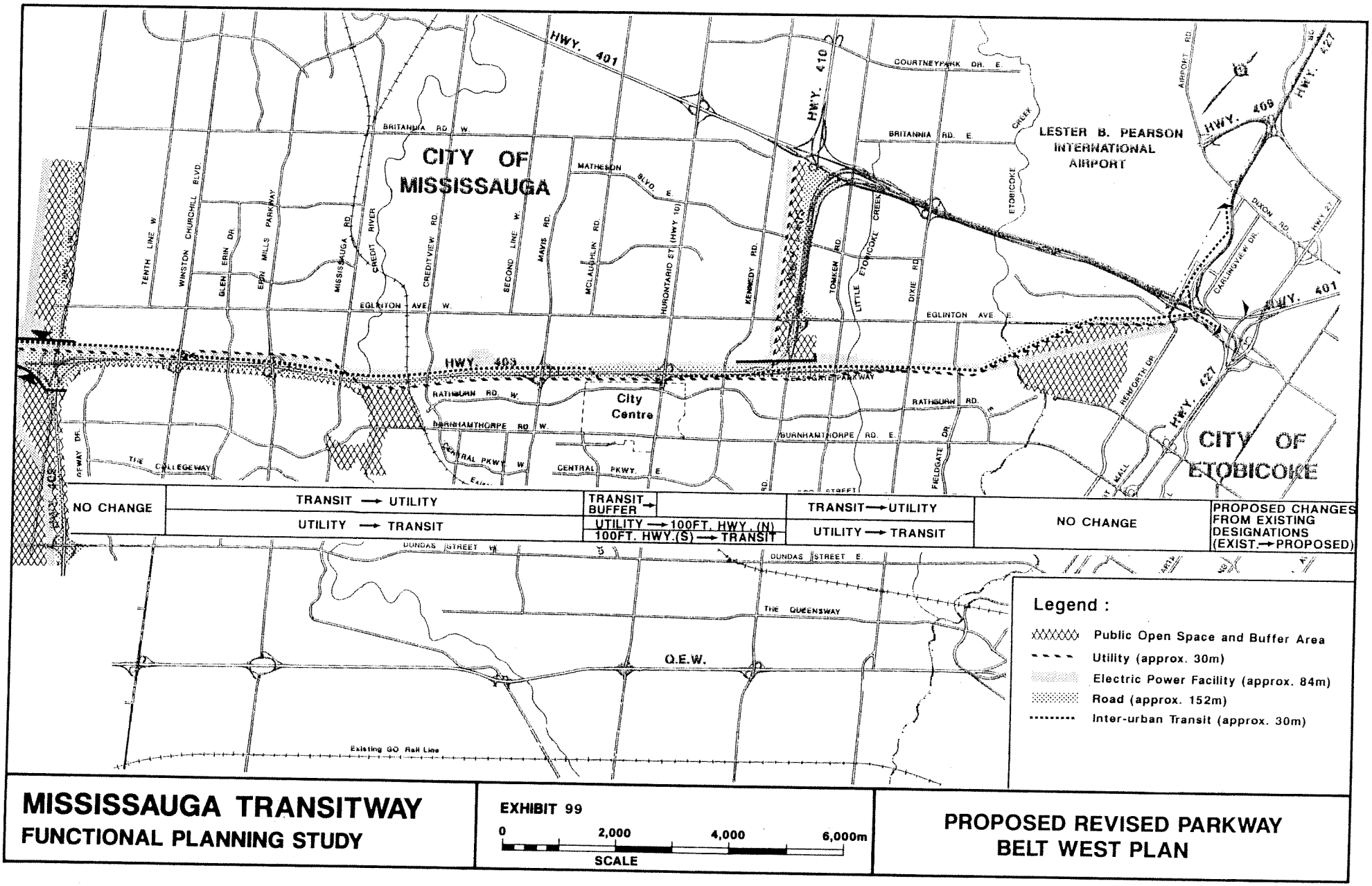
0 2,000 4,000 6,000m

SCALE

PARKWAY BELT WEST PLAN (1978)
EXISTING DESIGNATIONS

TABLE 57 - PARKWAY BELT REVISIONS IN CITY CENTRE AREA
(CONFEDERATION PARKWAY TO CITY CENTRE DRIVE)





MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 99

0 2,000 4,000 6,000m

SCALE

PROPOSED REVISED PARKWAY BELT WEST PLAN

6. IMPLEMENTATION AND MONITORING

6.1 Implementation Timing and Staging

The Mississauga Transitway constitutes the largest single construction project ever undertaken by the City. Its implementation will depend on many factors, chief among them being funding availability, demand growth, and strategic requirements. It is not realistic, nor is it intended, to construct the entire Transitway in a short timeframe immediately upon its EA approval. However, the City is capable of implementing express bus service in the Transitway corridor, using existing / widened roads in advance of the actual provision of the Transitway itself.

In that the timing, staging, flexibility, and complexity of implementing the Transitway are sufficient subjects themselves to warrant a separate study, and that such a study would be inappropriate in the absence of an approved Transitway facility, the development of a detailed implementation plan by the City will await the completion of the current study.

Nevertheless, the groundwork for a rapid transit implementation strategy for the entire City of Mississauga, including the Transitway, has been in place since the Mississauga Transportation Study in the mid-1980s. Additional influence on the timing of rapid transit in Mississauga will come from the ten-year "Let's Move" provincial initiative, which brings together all of the major transit infrastructure initiatives throughout the Greater Toronto Area. It is emphasized that implementation of the Transitway will be done in a staged manner, as one (albeit key) element in a city-wide transportation and transit improvement strategy.

Consideration of possible staging strategies from a technical viewpoint yields the following as an appropriate approach:

1) Introduce express and improved / rationalized local bus services in the Burnhamthorpe / 403 / Eglinton corridor, in order to build and focus transit ridership

2) Preliminary development of key station sites, with basic facilities and features (potential candidates include Erin Mills, City Centre, Dixie, and Airport Corporate Centre stations)

3) Implement transit priority measures on existing roads - reserved bus lanes, High Occupancy Vehicle lanes, bus use of freeway shoulders, traffic signal priority, etc.

4) Construct initial segments of the Transitway in areas where operation of buses on surface roads is most severely constrained (potential areas include the crossing of the Credit River, the Hurontario-Dixie corridor, and Eglinton Avenue)

5) Operate transitway service on a mix of priority lanes, Transitway segments, and new roadways such as the collector roads serving the Mississauga City Centre

West of Winston Churchill Boulevard and east of Fieldgate Drive, the Transitway plans do not require changes to the Parkway Belt, thereby ensuring continuity with the adjoining Parkway Belt sections in Halton and Metro Toronto.

To summarize, it is apparent that either a shifting of corridor designations within the Parkway Belt West Plan through an amendment to the Plan, or a Ministerial deeming that the Transitway conforms with the intent of the Plan is required for the Transitway to be in agreement with the revised Parkway Belt West Plan.

b) Approvals Process

As outlined in Section 2.1 and 2.2, the implementation of the Mississauga Transitway requires approval under three pieces of provincial legislation:

- Environmental Assessment Act (administered by the Ministry of Environment)
- Planning Act (Ministry of Municipal Affairs)
- Parkway Belt West Plan (Ministry of Municipal Affairs)

In order to proceed in an efficient and co-ordinated manner through the review and approvals processes entailed under all three Acts, the City will act in close co-operation with the Ministries of Environment, Municipal Affairs and Transportation. If it is determined that, through either the EA or Planning processes, a Consolidated Hearing is required, the City would request that the Ministry of Municipal Affairs consider an amendment for the Parkway Belt West Plan for the Transitway as part of the Hearing. If there is no Hearing during the approvals process, the City would, immediately upon EA approval, pursue a "deeming" by the Minister that the plan conforms with the intent of the Parkway Belt West Plan. To do so would require the endorsement of the existing Parkway Belt property owners - Ontario Hydro, Ministry of Transportation, Ministry of Government Services, etc. - who would have already had the opportunity (through the EA review process) to express and have had addressed any outstanding concerns with the Transitway proposal. Since the Ministry of Municipal Affairs is one of the agencies reviewing the EA submission in any case, there is good reason to consolidate the review and approvals process with those of the other Acts to the extent possible.

In the area of the Mississauga City Centre, the potential to reduce the width of the Parkway Belt while preserving its function has been identified (see Table 57); since this change is not essential to the approval of the Transitway as planned, it could be pursued through an Amendment to the Plan rather than the deeming process, if necessary.

TABLE 58 - SUMMARY OF CITY-WIDE CONCEPTUAL TRANSIT STAGING STRATEGY

	ROUTE	PHASE					
		EXISTING 1991	I 1 - 2 years	II 2 - 5 years	III 5 - 10 years	IV 10 - 20 years	V 20+ years
ARTERIAL East - West	DERRY ROAD	EXPRESS (Airport Road to Hwy. 427)				EXPRESS (Mississauga Rd. to Airport Road)	RBL (9th Line to Georgetown GO Line)
	BRITANNIA ROAD				EXPRESS (Erin Mills Pkwy. to Hurontario Street)	EXPRESS (Winston Churchill Blvd. to Hurontario Street)	RBL (9th Line to Hurontario St.)
	EGLINTON AVENUE	EXPRESS (Dixie Rd.to Renforth Dr.)	EXPRESS (Erin Mills to Dixie Rd.)	RBL (Dixie Rd. to Hwy. 427)	EXPRESS (Erin Mills to Dixie Rd.) RBL (Dixie Rd. to Kipling Ave.)	EXPRESS (Winston Churchill Blvd. to Fieldgate Drive) RT (Fieldgate to Renforth)	RBL (Erin Mills to Dixie Rd.) RT (Fieldgate to Renforth)
	BURHAMTHORPE ROAD	EXPRESS (Erin Mills Pkwy. to Kipling Avenue)		EXPRESS (Erin Mills Pkwy. to Dixie Road)			RBL (Creditview Rd. to Dixie Rd.)
	DUNDAS STREET	EXPRESS (Erin Mills Pkwy. to Kipling Avenue)	EXPRESS (Erin Mills to Dixie Rd.) RBL (Dixie Rd. to Kipling Ave.)	EXPRESS (Erin Mills to Cawthra Rd.) RBL (Cawthra Rd. to Kipling Ave.)	EXPRESS (Erin Mills Pkwy. to Hurontario St.) RBL (Hurontario St. to Kipling Ave.)		RBL (Hwy. 403 to Hwy. 427)
	LAKESHORE BOULEVARD				EXPRESS (City Limits to Dixie Road)		RBL (Dixie Rd. to Hwy. 427)
	COURTNEY PARK DRIVE					EXPRESS (Hurontario St. to Dixie Rd)	RBL
ARTERIAL North - South	WINSTON CHURCHILL BOULEVARD	EXPRESS (Erin Centre Blvd. to Battleford)		EXPRESS (removed)		EXPRESS (Highway 403 to Milton GO Line)	
	ERIN MILLS PARKWAY	EXPRESS (Eglinton to Hwy. 403)	EXPRESS (Lakeshore GO Line to Eglinton Avenue)	EXPRESS (Burnhamthorpe Rd. to Lakeshore Blvd.) RBL (Meadowvale to Burnhamthorpe Rd.)	RBL (Meadowvale to Lakeshore GO Line)	RBL (Highway 401 to Lakeshore GO Line)	RT (Hwy. 407 to Lakeshore GO Line)
	HURONTARIO STREET	EXPRESS (Hwy. 401 to Matheson Blvd.)	EXPRESS (Lakeshore Blvd. to City Boundary)	RBL (Matheson to Dundas St.)	EXPRESS (City Boundary to Derry Rd.) RBL (Derry Rd. to Lakeshore Blvd)	RBL (City Boundary to Lakeshore Blvd.)	RT (Hwy. 407 to Lakeshore Blvd.)
	DIXIE ROAD	EXPRESS (Eastgate to Eglinton Ave.)	EXPRESS (Derry to Lakeshore Blvd.)	RBL (Courtney Pk. to Dundas St.)	EXPRESS (Dundas St. to Lakeshore Blvd) RBL (Derry Road to Dundas St.)	EXPRESS (Q.E.W. to Lakeshore Blvd.) RBL (Hwy. 407 to Q.E.W.)	RBL (Hwy 407 to Lakeshore Blvd.)
FREEWAYS	HIGHWAY 407					RBL (Hurontario St. to Airport Rd.)	RT (Entire Corridor)
	HIGHWAY 401	EXPRESS (Hurontario St. to Highway 427)		EXPRESS (Mississauga Rd. to Highway 427)		EXPRESS (removed)	
	HIGHWAY 403 / EASTGATE PARKWAY	EXPRESS (Erin Mills Pkwy. to Dixie Rd.)		EXPRESS (Cawthra Rd. to Eglinton) RBL (Winston Churchill to Cawthra)	RBL (Mavis Rd. to Hurontario St.)		
TRANSITWAY	HIGHWAY 403 / EASTGATE PKWY / EGLINTON CORRIDORS				TRANSITWAY (Erin Mills to Mavis Rd.) (Hurontario St. to Dixie Rd.) Key Stations	TRANSITWAY (Ridgeway to Fieldgate) all major Stations	TRANSITWAY (all Transitway Stations)

* NOTE: 1. RBL - Reserved Bus Lane
2. RT - Rapid Transit
3. It has been assumed GO Transit will continue to operate with existing services
4. Local transit service assumed

FILE NAME SCHED2

6) Continue to expand the Transitway in the areas of greatest benefit, ultimately to reach its entire planned length

7) Phase in stations on the Transitway, both sequentially and in terms of size and scope. Some stations may be long-term projects, while others may start as simple platforms and gradually improve in quality and size as demand grows.

This general sequence of events is illustrated in Table 58 and on Exhibits 100 to 105, which place the Transitway staging plan in the context of a broad city-wide rapid transit implementation strategy.

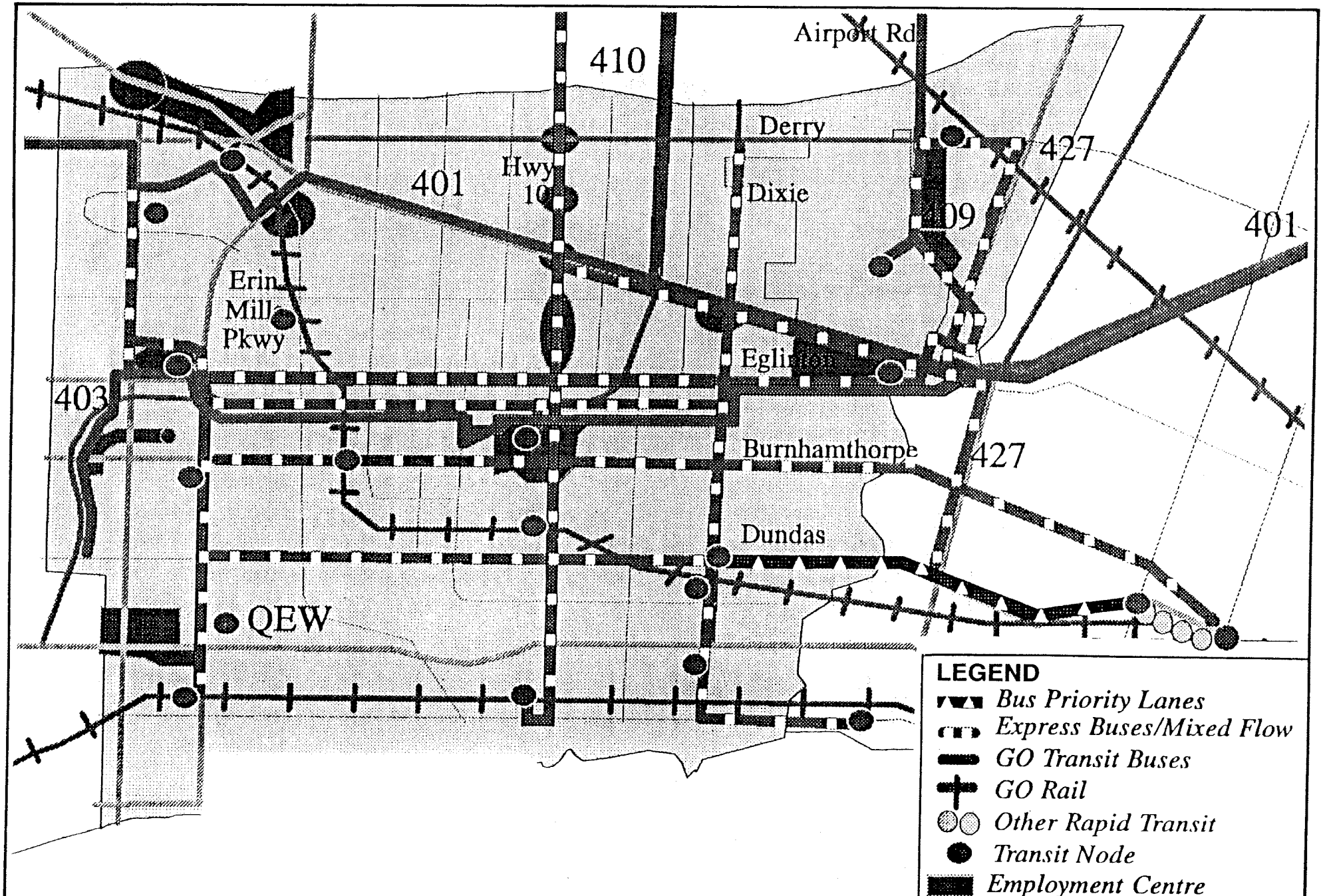
The entire staging process may take up to twenty years, and as conditions vary over the coming decades the implementation strategy may also vary, potentially differing significantly from that described above. For these reasons, the discussion contained in this section should be treated as background information only, and not be construed as a recommended implementation strategy for which Environmental Assessment approval is being sought. The continued involvement throughout the entire implementation process of the Transitway Community Advisory Committee will provide a forum for further public input at each physical and fiscal stage.

6.2 Operating Strategy

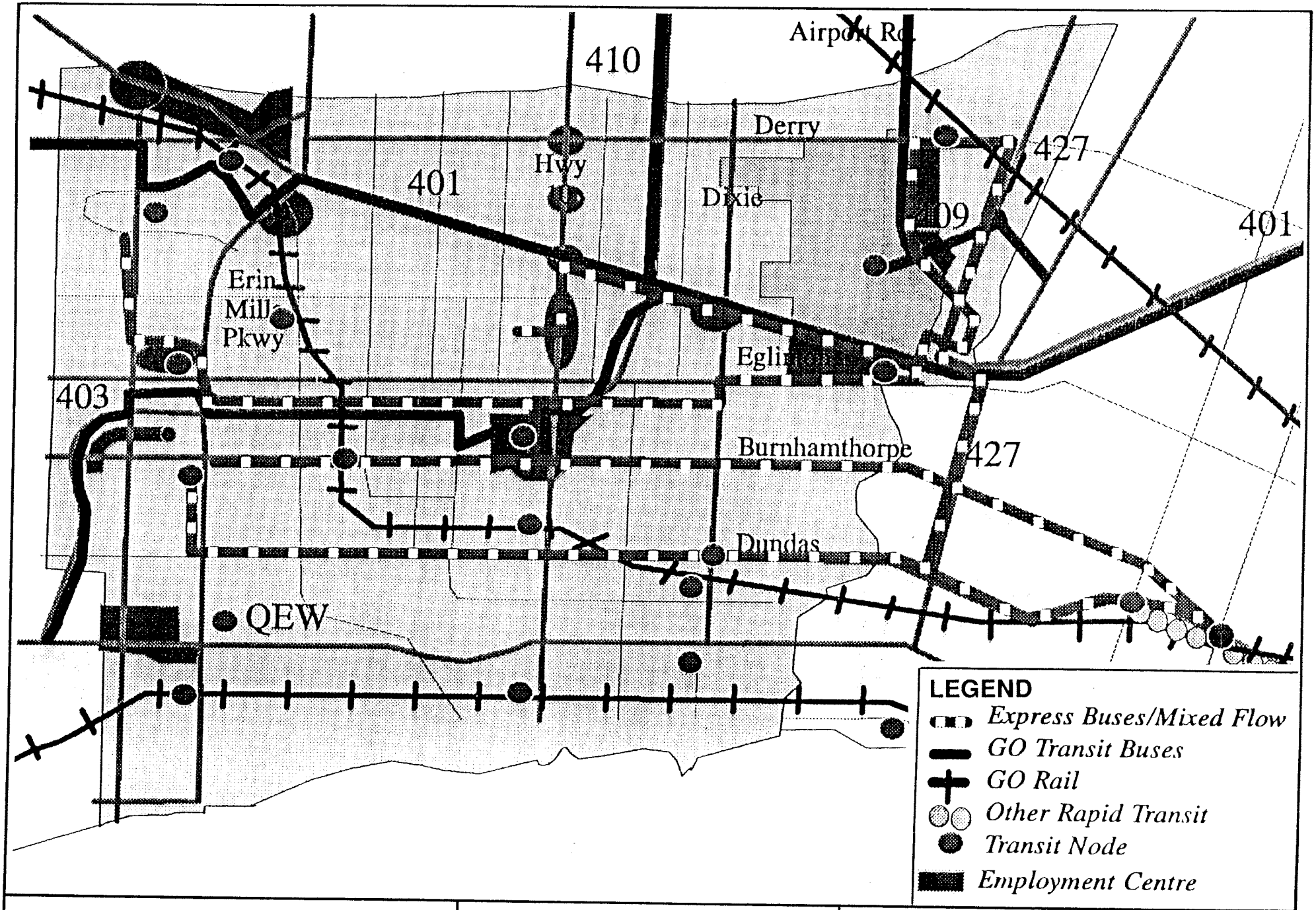
The actual transit routing and operating strategy to be applied to the Mississauga Transitway as it evolves will be flexible, yet geared towards establishing the most efficient, convenient, cost-effective service to passengers within and around Mississauga. The presence of the Transitway opens up an entirely new opportunity in this respect, and Exhibit 106 illustrates some of the ways by which the facility's characteristics may be taken advantage of in the future. In Appendix P, a more detailed review of potential operating approaches is presented, but it should be noted that the operating strategy for the Transitway is not subject to the Environmental Assessment Act, unlike the facility itself. This operational information is presented only with the intent of providing a more complete understanding of how the Transitway may operate, and its potential role in the broader Mississauga and GTA context.

A key issue, of interest to Mississauga residents and workers, is the potential linkage of the Transitway bus service to the systems of adjacent regions. To the east, Mississauga Transit currently operates successful express bus services between the TTC Islington subway station and several points in central Mississauga. It is planned to relocate the Mississauga Transit terminal from the Islington site to the Kipling station, and to operate express buses in the Transitway corridor to the Kipling station via the Renforth Gateway and Highway 427. This would supplement existing express services, with routes being rationalized in accordance with travel demand, travel time, and operating efficiency needs.

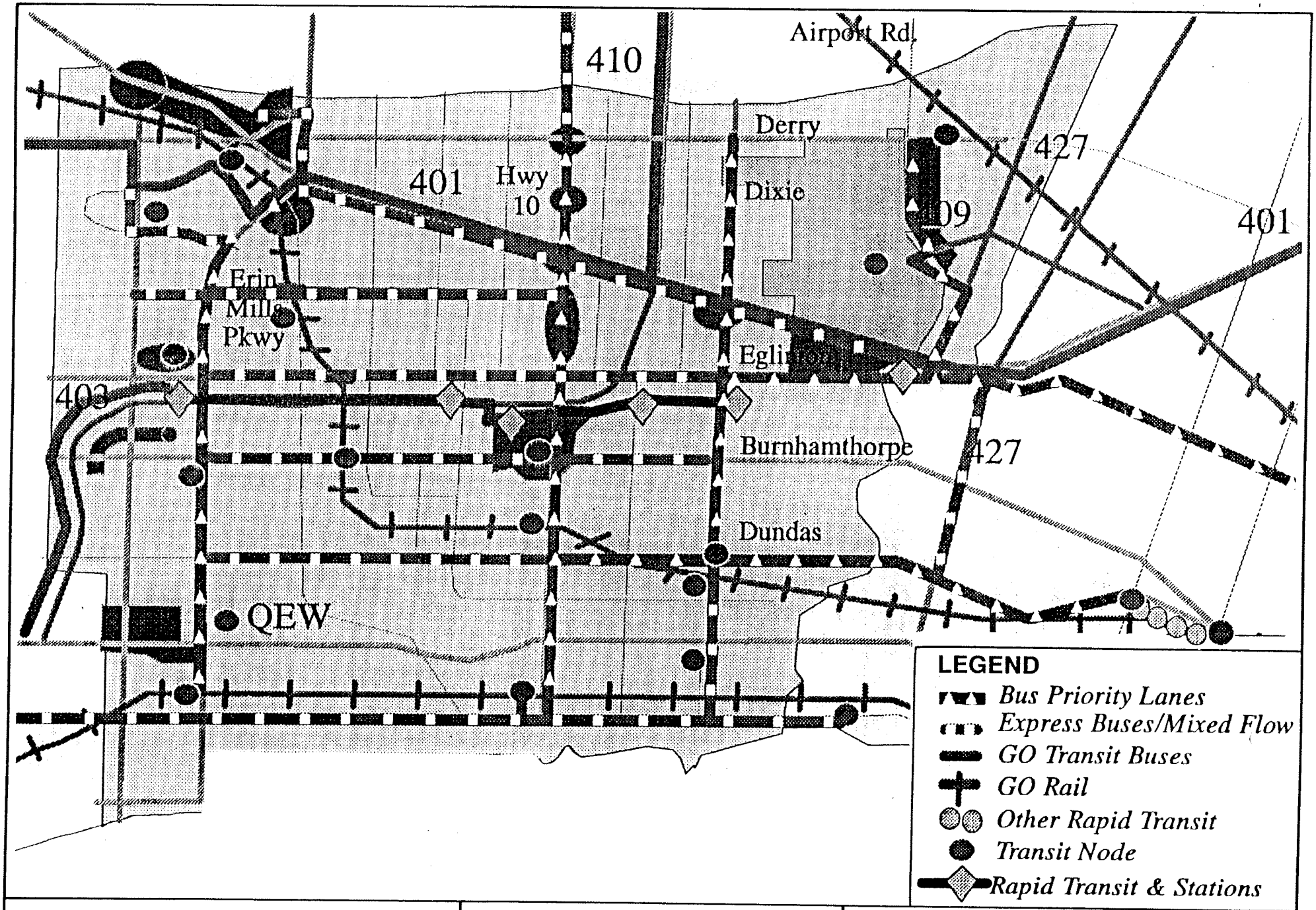
Simultaneously, the development of the Eglinton West Rapid Transit line, and its potential HOV lane precursor, would encourage transit use and divert some trips from the subway corridor. From the Renforth Gateway, Mississauga passengers could travel along Eglinton to destinations such as the future York City Centre, various intersecting



MISSISSAUGA TRANSITWAY **FUNCTIONAL PLANNING STUDY**	**EXHIBIT 101**	**CONCEPTUAL TRANSIT STAGING STRATEGY** **PHASE 1:** **EXPANDED EXPRESS TRANSIT SERVICE**



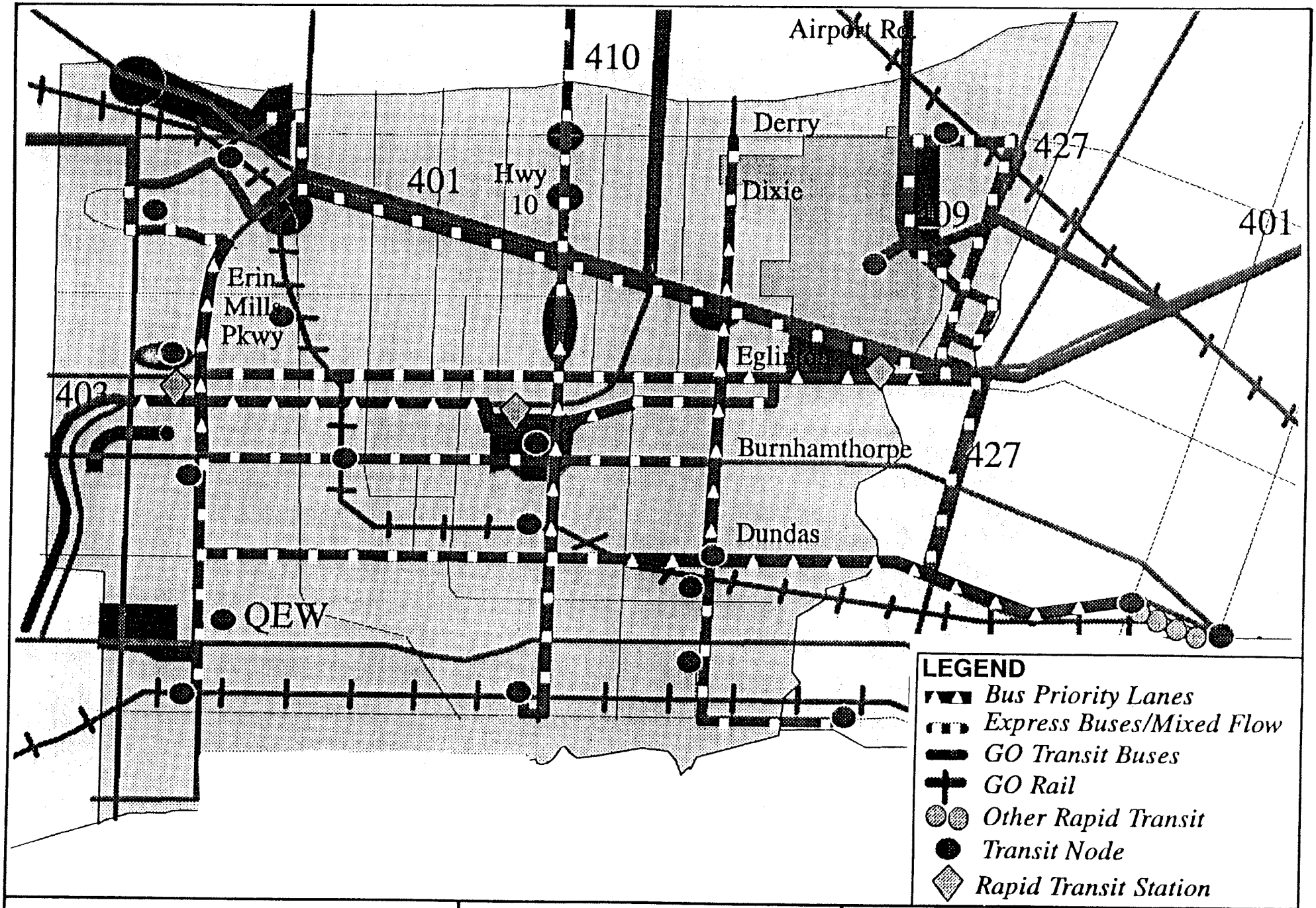
MISSISSAUGA TRANSITWAY FUNCTIONAL PLANNING STUDY	EXHIBIT 100	EXPRESS TRANSIT SERVICE - 1991 (EXISTING)



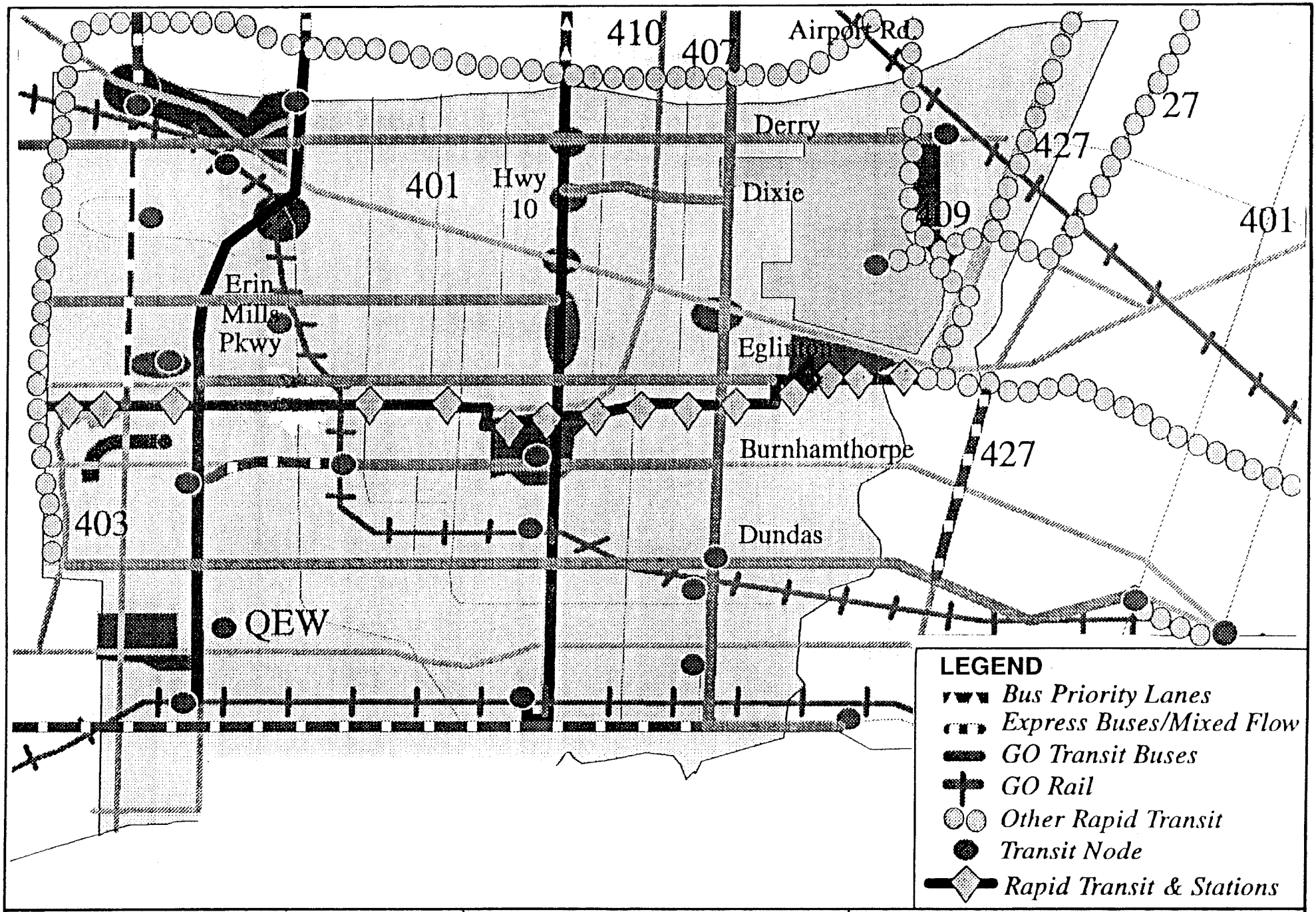
MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 103

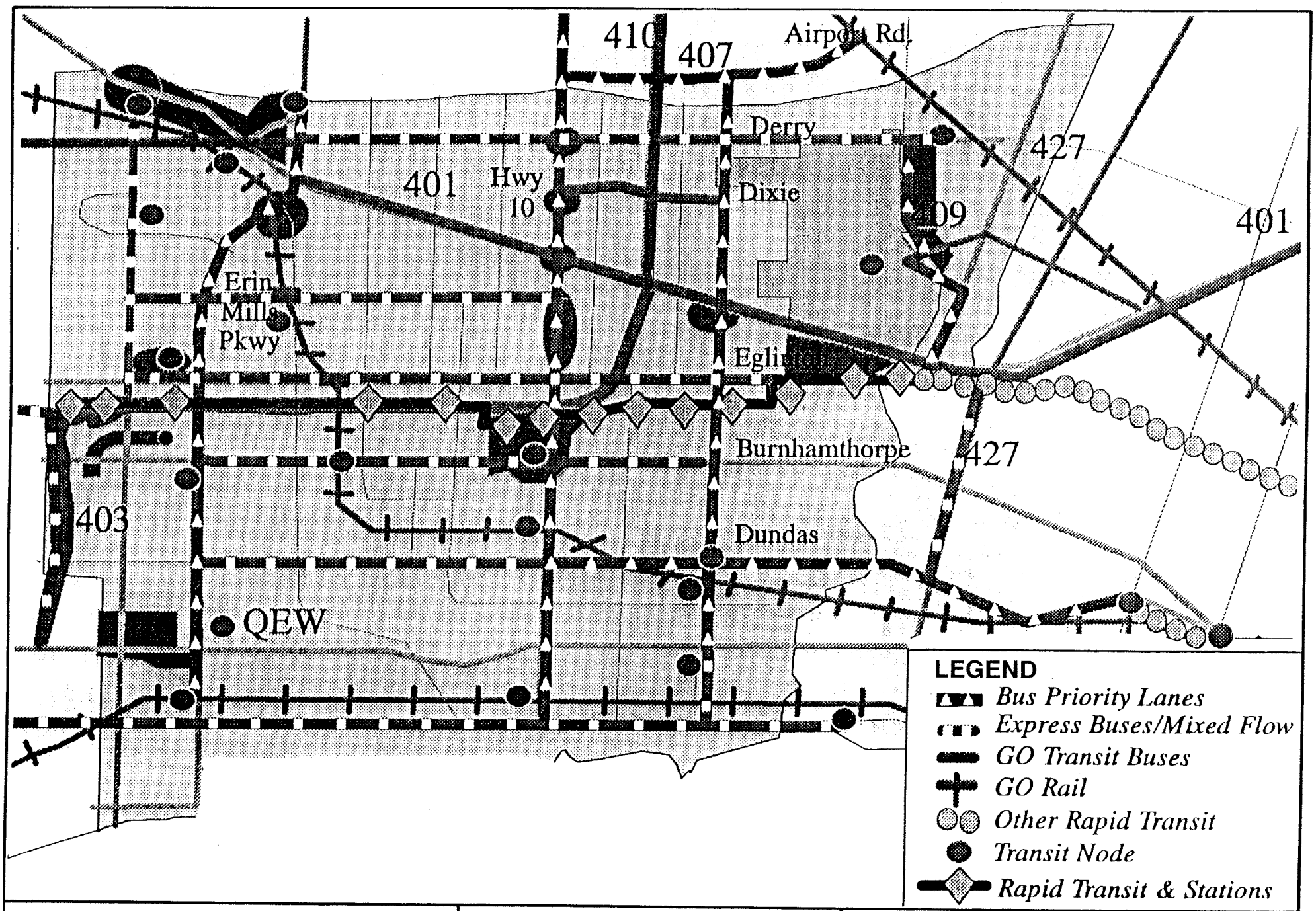
CONCEPTUAL TRANSIT STAGING STRATEGY
PHASE 3: TRANSITWAY INITIATION



MISSISSAUGA TRANSITWAY **FUNCTIONAL PLANNING STUDY**	**EXHIBIT 102**	**CONCEPTUAL TRANSIT STAGING STRATEGY** **PHASE 2: PRIORITY BUS LANES**



MISSISSAUGA TRANSITWAY FUNCTIONAL PLANNING STUDY	EXHIBIT 105	CONCEPTUAL TRANSIT STAGING STRATEGY PHASE 5: LONG TERM VISION



MISSISSAUGA TRANSITWAY
FUNCTIONAL PLANNING STUDY

EXHIBIT 104

CONCEPTUAL TRANSIT STAGING STRATEGY
PHASE 4: TRANSITWAY COMPLETION

bus routes, the Eglinton West subway station on the Spadina line, or the Yonge - Eglinton centre. This may or may not require a co-ordinated modal or vehicular transfer at Renforth, depending on the mode and timing of the Eglinton West line. It is of note that central Toronto could be reached from most of Mississauga more rapidly by the bus / subway combination using the Eglinton / Spadina route than by using the Bloor subway.

Also from the Renforth Gateway, express bus service via the Renforth corridor to the Airport and its surrounding service area would be possible in the interim, prior to the development of a fixed-route facility to serve the area.

To and from the north, high-speed express bus service via the Highway 403 / 410 corridor based on the Cawthra Transitway station could link the Brampton and Mississauga City Centres, while bus service on HOV lanes in the Hurontario and Dixie corridors could provide good transit accessibility from Brampton to those employment centres in the short term as well (note - the link between Highway 403 and 410 allowing through north-south travel in that corridor is scheduled for completion in 1992).

In the west, buses from Halton region will be able to use HOV lanes on Highway 403 to provide express service to key points in the Transitway corridor, and later gain access to the Transitway via freeway interchanges as it is completed to Erin Mills and Winston Churchill.

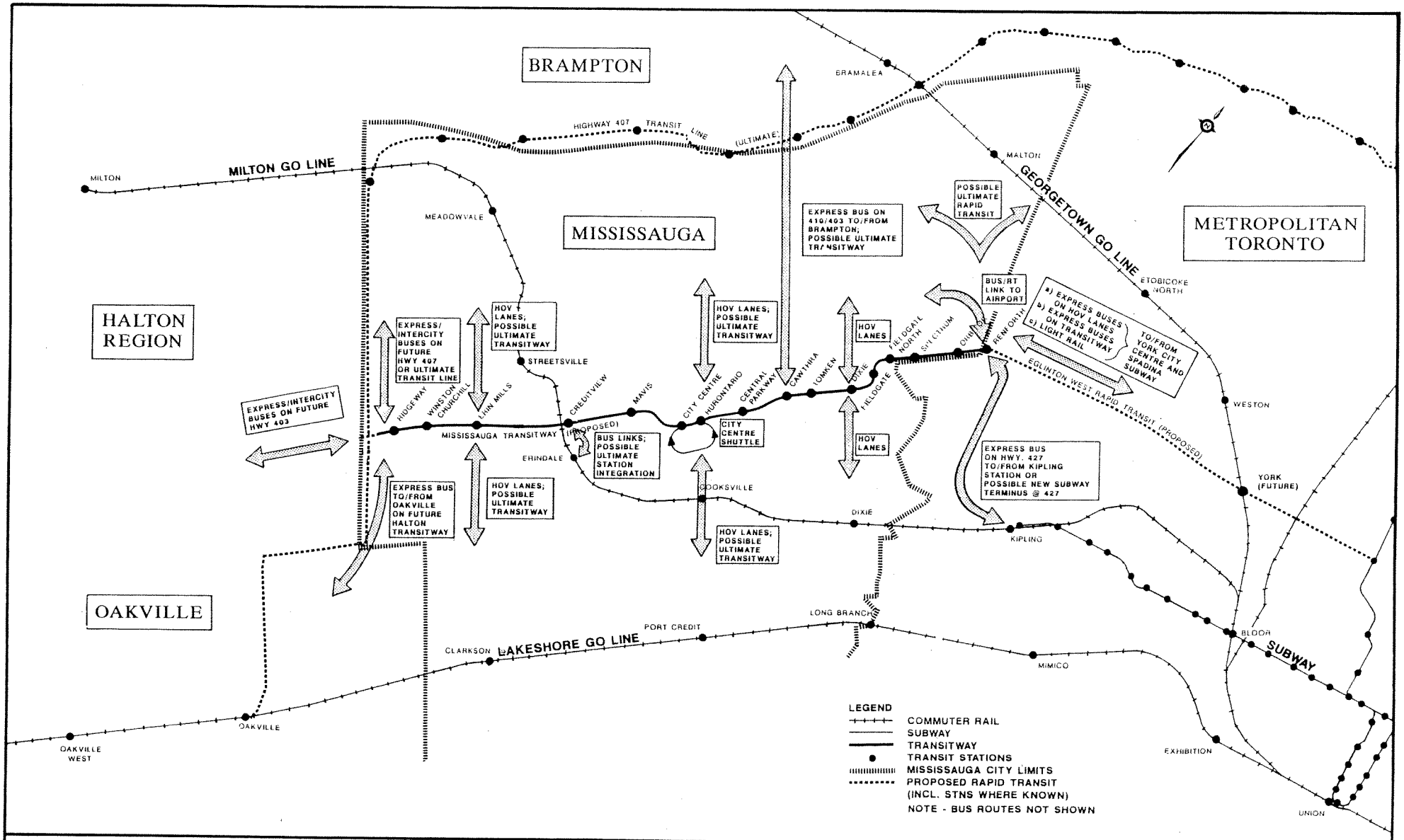
In this manner, efficient and effective transit links will be maintained and enhanced throughout the entire Transitway implementation process.

Use of the Transitway by buses of all types - Municipal, GO, private Intercity, Paratransit, and School vehicles - will be considered, as well as its potential role in serving emergency vehicles. Private cars will not be permitted on the facility, except in designated areas of some stations.

6.3 Monitoring Requirements

There are two categories of monitoring requirements associated with the Mississauga Transitway: the post-construction impacts of the facility on the physical environment, and the impacts on surrounding areas and the City as a whole due to the operation of the Transitway. An example of the first case would be the monitoring of downstream water quality from a new river crossing, while in the second case the impact would stem from the operation of vehicles on the facility (i.e. noise) rather than the presence of the facility itself.

In the case of noise, disruption, traffic pattern changes, truck movement, and other potential impacts due to the actual construction activities associated with the implementation of the Transitway and its related facilities, these will be mitigated with standard measures which apply relevant provincial and municipal standards in the context of the particular affected areas. Appendix V, excerpted from the Municipal Engineers Association's standard practices for Municipal Road projects in Ontario, indicates the specific types and extent of mitigation measures which would be expected



MISSISSAUGA TRANSITWAY
FUCTIONAL PLANNING STUDY

EXHIBIT 106

0 2 4 6 8 10 Km

SCALE

POTENTIAL TRANSIT LINKAGES WITH MISSISSAUGA TRANSITWAY

7. MECHANISM FOR CHANGES TO APPROVED PLAN

The Transitway is not a static plan, nor is the context in which it is being reviewed, approved, constructed, and used. Given the combination of a lengthy approvals, funding and construction process and a rapidly-changing and in some cases unforeseeable environment, it is prudent to include in the Environmental Assessment Report some comment on the responsibilities of the proponent should changes be required in the proposed or approved plan.

7.1 Environmental Assessment Act Requirements

The ability of the proponent to amend an E.A. submission following receipt of the EA by the Minister of the Environment is outlined in Section 7(3) of the Environmental Assessment Act R.S.O. 1980, Chapter 140. The only specified requirements are that an amendment be "subject to such terms and conditions as the Minister may by order impose".

7.2 Change in Station Location and Layout

The current report clearly identifies property envelopes within which stations can feasibly be constructed; their actual layout is subject to detail design and any variation from that shown in this report, unless it results in a more severe environmental impact, which cannot be accommodated within the committed mitigation measures, does not require a change to the approved plan. Significant changes in station location (for example, from one quadrant of an interchange to another) could potentially result in impacts which differed from those identified in this report; since such a change would have no bearing on the overall rationale for the Transitway, but would only occur in response to a localized design or property issue, it would be inappropriate to prepare and submit for approval an entire new EA report.

Rather, the proponent would prepare an addendum to the EA report, undertake a public review process involving affected local interests, and file the addendum with the M.O.E. as an appendix to the existing report. MOE may approve the addendum or undertake a limited government review process to ensure that all concerns have been dealt with.

7.3 Change in Transitway Alignment

A major change in the alignment of the Transitway (e.g. from one side to the other of Highway 403) would require the preparation and submission of a new EA report, although the content would be limited to the revised analysis of alternatives and new description of the recommended plan. Reference would be made to the original EA report (this document) for those sections of the new report which do not change.

If a minor change is involved (e.g. affecting one station) the same process as that outlined for a change in Station Location in Section 7.2 would be followed. Design shifts within the identified property envelope of the Transitway do not require changes to the EA approval.

7.4 Change in Mode

The Mississauga Transitway will be designed to geometric standards which will permit the eventual conversion to Light Rail Transit (LRT) or Heavy Rail Transit (HRT) technology if required at some time in the future.

If the Transitway is to be used by Light Rail or Subway rather than by Bus technology as proposed (or, in the case of Light Rail, potentially in addition to Bus use) the implications on the social and economic environment, transportation service, and property requirements would be significant. Although not necessarily any more severe than the Bus condition, the environmental impact of a different mode would be quantifiably different in many respects from that presented in the current report. It would be necessary, as a result, to prepare and submit a new Individual Environmental Assessment for M.O.E. approval.

for the Transitway. However, the actual measures to be applied would be detailed as an essential construction contract component.

The following Table 59 summarizes the commitments made to monitoring the impact of the undertaking.

TABLE 59 - MONITORING REQUIREMENTS

Identified Issue / Concern	Concerned Agency	Monitoring Procedure
Traffic Conditions at freeway interchange access points	MTO	Annual traffic count program; ongoing signal timing review
Water quality and siltation of new crossings on Credit River, Mullet Creek, Cooksville Creek, and Etobicoke Creek	MNR, CVCA, MTRCA	Sample monitoring for a period of one year following completion of construction
Noise levels in adjacent areas	City, residents	Field noise level measurement prior to and following Transitway operation at potentially affected residential sites
Air pollution levels in adjacent areas	City, residents	Field air quality level measurement prior to and following Transitway operation at potentially affected residential sites
Community disruption due to noise, truck movement, dust, etc. during construction	City, residents	On-site supervision during the period of construction