

4. RAPID TRANSIT

One of the primary objectives of the Transit Network initiative is to encourage more people to use transit. At the present time, the transit modal split (usage of transit as a mode of travel) within Markham is 10%. In order to achieve a balanced transportation network, the transit modal split has been targeted to increase to 19% as an overall average for Markham by the year 2021.

Since transit services will vary among the different traffic zones, the percentages for areas that have higher densities will have to be greater. For example, along Highway 7 within Markham Centre and the established business parks, a transit modal split of 30% will be required.

Markham's current car-dominated culture has been largely influenced by modest transit service, employment availability and segregated land use. To reduce reliance on the automobile, these practices must change. The Town is taking the lead in this regard by building communities based upon the principles of new urbanism, some of which include:

- A grid network of streets to create blocks of appropriate building sites and facilitate shorter pedestrian routes;
- Five-minute walking distance to areas within neighbourhoods (i.e. convenience stores, daycare centres, schools, transit stops and other amenities).

The transit network can take advantage of these principles to promote efficient, cost-effective modes of travel. The traditional approach of adding more buses on roads that are already congested is not going to affect significant change. In order to be perceived as a reasonable alternative to the automobile, public transit must be fast, convenient, comfortable and reliable.

A high-tech, reliable rapid transit system supported by an interconnected bus network is required. Not only must people be encouraged to leave their cars at home, the transit system must be able to deliver passengers as close as possible to their destinations.

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4.1 RAPID TRANSIT TECHNOLOGY

For the purposes of this study, rapid transit is defined as transit that operates in a dedicated right-of-way to minimize conflict with mixed traffic. In the past, rapid transit was primarily described as a subway or an expensive alternative that required fully grade-separated facilities.

The development of rapid transit technologies around the world during recent years has shown that there are other rapid transit alternatives that can be constructed at a much lower cost. These alternatives include Light Rail Transit (LRT), Bus Rapid Transit (BRT) and Guided Rubber-Tire Transit (GRT).

Light Rail Transit

LRT has become one of the most popular forms of rapid transit in North America and Europe. LRT consists of vehicles similar to street cars that operate on or above ground level on rail lines. There are typically 2 or 3 cars in each train. LRT is significantly smaller in size and weight than a subway and offers a number of flexible capital and operating options including:

- Reduced turning radius;
- Ability to negotiate steeper grades;
- Shorter crossing time required at arterial road intersections, eliminating the need for expensive grade separations;
- Simple station construction;
- Comfortable, fast ride similar to that of other rail based vehicles;
- Pedestrian compatibility, since physical separation by fence, berms or other means is not required.

Bus Rapid Transit

BRT includes a variety of vehicles and guideways (the right-of-way within which buses operate), ranging from standard buses operating in dedicated lanes to special ultra-modern buses that travel along fully grade-separated guideways. Due to the ability to instantly utilize conventional buses, BRT offers quick implementation, reduced vehicle costs, and flexibility to expand or contract the system according to demand and budget. Long-term operating expenses, particularly with regard to vehicle life, must be taken into account when cost comparisons are made with LRT.



New Rapid Transit technologies are less expensive than the traditional subway system.



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Guided Rubber-Tire Transit

A recent rapid transit option, GRT combines the flexibility of a BRT with the comfort of an LRT. GRT vehicles operate on rubber tires along a guided system that allows them to travel accurately along a defined right-of-way. The guideway can include optical systems to ensure the vehicle stays in the center of the right-of-way, or side mounted wheels adjacent to raised curbs on either side of the right-of-way. The key benefits to a guided system are higher speeds and reduced right-of-way requirements. The guideways usually create barriers to pedestrian movement in high-density centers and may have more appropriate applications in highway locations.

4.2 DEVELOPMENT OF RAPID TRANSIT CORRIDORS

The identification and testing of transit corridors requires a complex and comprehensive review of many transportation factors and a detailed modeling analysis. Furthermore, Markham's need for effective north-south and east-west links involves other municipalities and regions. It became clear that Markham's rapid transit recommendations could be developed and implemented most effectively as part of the ongoing York Region Transportation Master Plan (YRTMP).

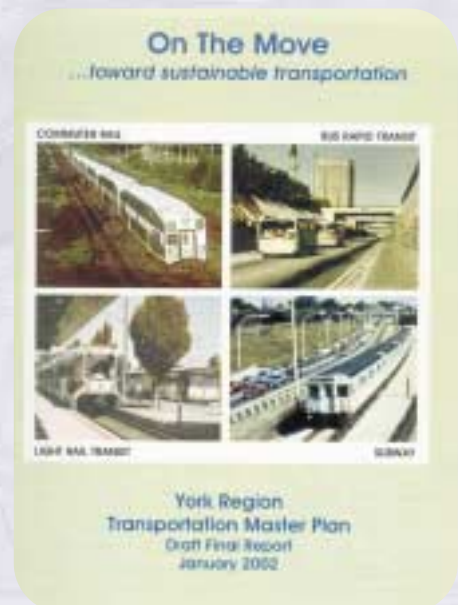
Markham staff has worked closely with the Region to provide detailed input to the transit assessment portion of the YRTMP. The Town prepared preliminary route analyses across Highway 7 and south to the Toronto Transit Commission (TTC) Sheppard Subway, and identified preferred linkages with Markham Centre.

Fed by an extensive bus network, the planned rapid transit system for Markham includes three corridors:

- **The Highway 7 Corridor** provides an east-west link along Highway 7 from Yonge Street to the eastern boundary of Markham;
- **The Warden Avenue Corridor** follows a north-south link along Warden Avenue to connect Markham Centre to the Sheppard Subway line;
- **The Yonge Street Corridor** is a north-south route along Yonge Street from Newmarket to the TTC Finch Subway Station.



Markham's need for effective north-south and east-west rapid transit links involves other regions and municipalities.



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The Town's vision for rapid transit is consistent with the approach taken by the Region of York and neighbouring municipalities. It recognizes the need for a system that connects with the TTC subway network while enabling future opportunities for connections east into Durham Region and west into Peel Region. **Figure 4-1** shows the three Markham rapid transit corridors in the GTA Interregional Transit Plan.

Although many transportation planning documents identify a need for transit initiatives to help support long-term growth, MTPS-2002 is unique in that efforts are currently underway to move forward on implementation. There has been an unprecedented focus on rapid transit as elected officials in both

Markham and the Region have made it one of the top priorities on their agendas.

Further corridor routing analyses will be required to finalize the most appropriate routes, and the final alignment of the rapid transit corridors will be determined through Environmental Assessment (EA) studies. It should be noted, however, that as part of the planning process for MTPS-2002, several options were reviewed to ensure that key routes could be identified and protected prior to the initiation of the studies. Although conceptual in nature, these options do represent the preliminary review of constraints and opportunities and will provide valuable input with regard to Markham's transportation requirements.

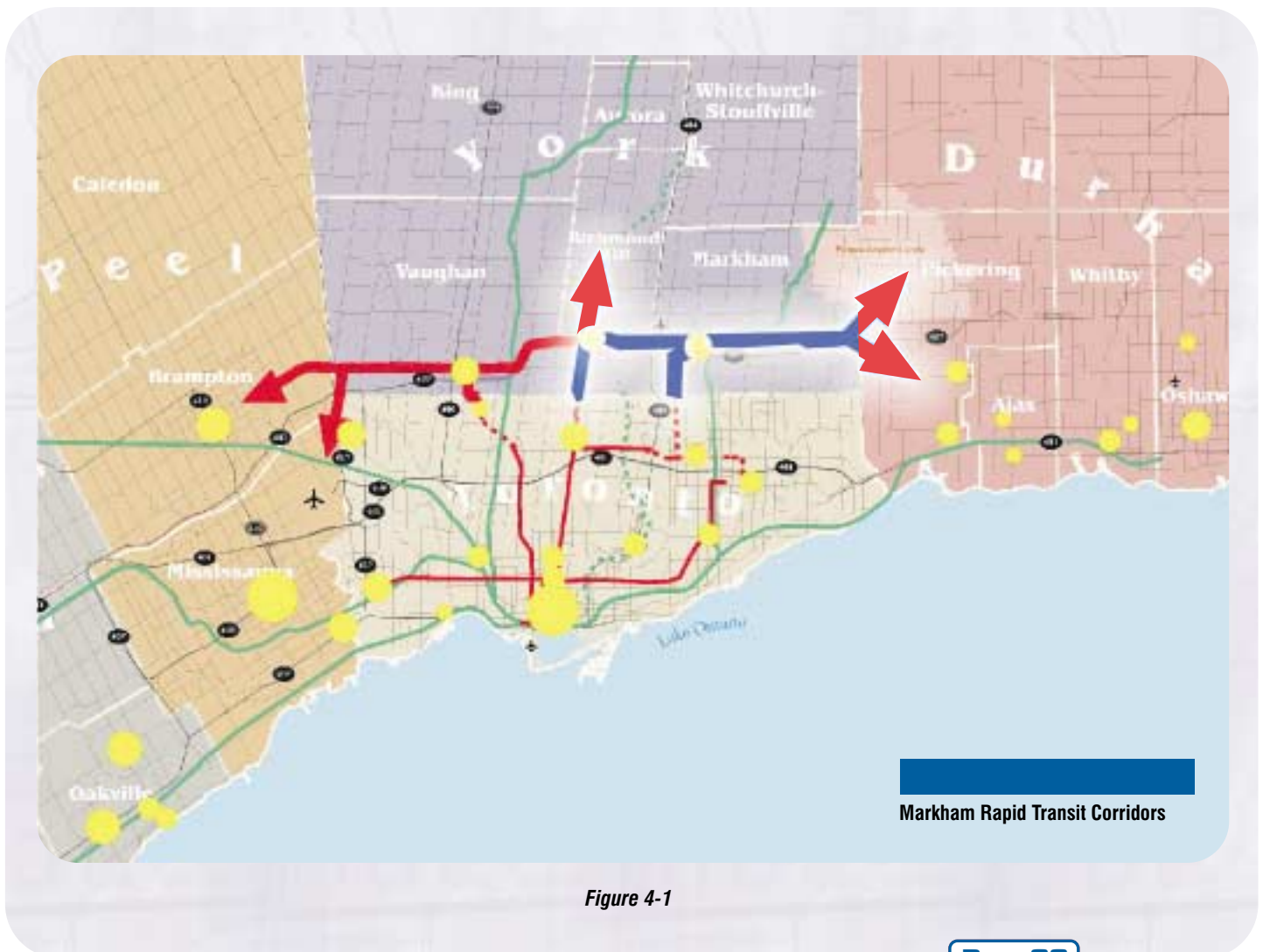


Figure 4-1

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4.3 YONGE STREET CORRIDOR

The Yonge Street Corridor proposed a rapid transit link directly to the Finch Subway Station. **Figure 4-2** shows potential alignments that will be reviewed in greater detail as part of the individual EA study. In sensitive locations where Yonge Street widenings are not desirable or feasible, the corridor could parallel Yonge Street along the GO Line, or lane reductions could be implemented to facilitate rapid transit with minimal widenings.

A dedicated rapid transit corridor along Yonge Street will provide significant benefits to users. YRT services such as the popular express bus service that uses Highway 407 and Yonge Street today will be able to take advantage of this transit corridor. A number of GO Transit buses currently operate on Yonge Street. Thornhill residents will have a direct, fast connection to the TTC Finch Station. Employees travelling between Markham and Richmond Hill, Aurora and Newmarket will also be able to use the rapid transit along Yonge Street to reduce travel time.

The Region of York has completed the first phase of the EA study for a protected bus route along Yonge Street and has submitted the detailed terms of reference to the Ministry. Once approved, the detailed EA could begin in late 2002 or early 2003. The Yonge Street Transitway is the most advanced of the rapid transit EA studies for York Region, and some preliminary screening of options has already taken place.

As identified within the EA study, the alignment south of Highway 7 is within the Yonge Street right-of-way. This is dictated by the existing established communities and the desire to serve the commercial and residential needs along Yonge Street. The key issue for this transitway is how it can be accommodated through the historic section of Thornhill. Although the EA study will examine all options, it is clear that the widening of the right-of-way in this section would have an unacceptable impact on the historic properties in the area.

It may be necessary to review the feasibility of reduced lanes for mixed traffic, or consider a mixed lane operation with traffic signal priority. All options will be carefully considered to ensure that the transitway does not negatively impact Thornhill's heritage properties.

The Yonge Street Corridor is the most advanced of the rapid transit EA studies in York Region.



Figure 4-2

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4.4 HIGHWAY 7 CORRIDOR

The Highway 7 Corridor, expected to span across the entire Region, will play a major role in shaping the form of development in Markham along this key route. There is a significant potential for growth to support rapid transit (see Appendix A). It is forecast that the Highway 7 corridor will have an employment level of approximately 250,000 and a population of about 300,000 by the year 2021.

The current level of traffic congestion along Highway 7 clearly shows that continuing to rely on the road system to accommodate growth is not a sustainable option. Sections of Highway 7 are already built out to the maximum right-of-way and do not provide pedestrian friendly environments. The implementation of rapid transit along this corridor will require a major shift from automobile dependency.

The Region of York has initiated an EA study for a dedicated transit route along Highway 7. The first phase of this study is completed and the terms of reference are expected to be submitted to the Ministry prior to the end of 2002. This corridor represents a number of challenges and opportunities. There is already a significant amount of retail and commercial development. Highway 7 will continue to be a major east-west route for vehicles. To facilitate a review of options, the Markham portion of Highway 7 has been divided into three sections.

West Section (Yonge Street to Rodick Road)

As shown in **Figure 4-3**, this section incorporates connections with the proposed Yonge Street Corridor, GO Transit and the Langstaff Gateway. Further east, the transitway must take into account the needs of the following areas:

- Commerce Valley Business Park
- East Beaver Business Park (in Richmond Hill);
- Allstate Business Area east of Highway 404;
- First Markham Place shopping centre.



Figure 4-3

The Region of York has initiated an Environmental Assessment study for a dedicated transit route along Highway 7.

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Key issues to be addressed are how a transitway can be designed within the existing seven lane right-of-way and possible opportunities for crossing Highway 404.

Central Section (Rodick Road to Kennedy Road)

The central section along Highway 7 (**Figure 4.4**) includes the integration of the transitway with the proposed development of Markham Centre.

Given the significant land use proposals for this area (the concentration of employment and residential uses in the Markham Centre land south of the Rouge Valley) and reduced right-of-way constraints east of Warden Avenue near Sciberras Road, it will likely be necessary to move the transitway off the Highway 7 alignment.

This challenge offers an opportunity for the planning and integration of a rapid transit “greenfield” environment. While OPA 21 sets out the broad land use targets for Markham Centre, there are a number of opportunities to explore how the alignment of the transitway can be integrated with the surrounding development to ensure an urban, pedestrian and transit oriented community.

Some of the key issues for the Central Section are:

- Integration and connection with the proposed Warden Avenue corridor;
- Incorporating connections with the Markham Civic Centre and major businesses located adjacent to the Highway 7/Warden Avenue intersection;
- Alignment options in the “greenway” or along Enterprise Boulevard (east of Warden Avenue);
- Re-routing of the transitway back to Highway 7 (in the vicinity of Kennedy Road).



Figure 4-4



The Central Section includes the integration of the transitway with the proposed development of Markham Centre.

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East Section (Kennedy Road to York-Durham Line)

As shown in **Figure 4-5**, this section of Highway 7 includes:

- Markville Shopping Centre, a major retail facility. Several transit routes currently transfer or pass through this site;
- Markham-Stouffville Hospital, a key employer in the Markham area, which must be easily accessed by emergency vehicles;
- Cornell development, which is based on the principles of new urbanism;
- The recent Legacy community and Box Grove Community which will require shuttle or feeder bus routes to integrate with the transitway.

Plans are currently underway for the development of Cornell South, and the Box Grove Secondary Plan is in the final stages of approval. These communities, when combined with existing developed areas, will represent a significant number of residents who will need easy access to the transitway.

Additional key issues for the east section include the restricted right-of-way through the cemetery east of Highway 48, and integration of the transit system with proposed new developments.

4.5 WARDEN AVENUE CORRIDOR

A number of recent developments have made it apparent that a north-south rapid transit corridor along Warden Avenue is a critical component to support Markham's transportation needs:

- The launch of Markham Centre, a vibrant, mixed-use urban community with 25,000 residents and 17,000 jobs;



Figure 4-5



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- The extension of the Sheppard subway line to the Don Mills Station, scheduled to open in the Fall of 2002, provides an ideal opportunity for a direct transit link with the TTC subway system;
- A trend showing strong cross border travel in both directions between Markham and Scarborough and Markham and North York.

As shown in **Figure 4-6**, the north end of the corridor will need to be integrated with the east-west rapid transit line along Highway 7 to provide a direct connection to Markham Centre. The Warden Avenue corridor will also provide Markham with a rapid transit link to the Don Mills Station.

Although GO Transit is a valuable service for the users destined for downtown Toronto, a rapid transit option will support the many travelers who cross the Steeles Avenue boundary in both directions between Markham and Scarborough or North York.

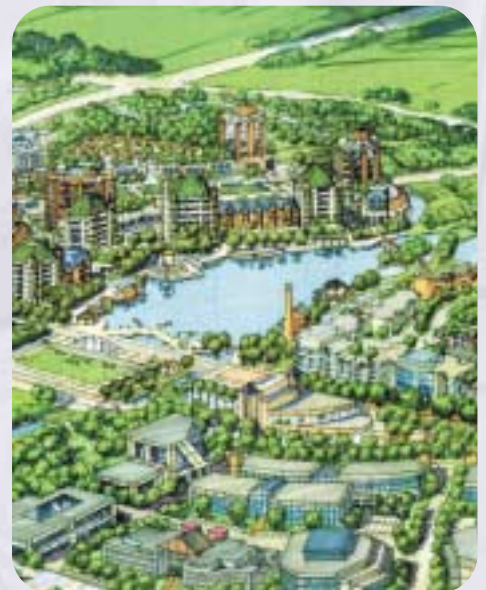
The establishment of rapid transit along Warden Avenue, with numerous stops along the way, will facilitate both northbound and southbound traffic flows.

The southerly portion of the corridor will serve the Consumers Road and Gordon Baker business parks where approximately 25,000 people are employed by a number of large, well established corporations.

While detailed EA studies will ultimately define the route along the Warden Avenue corridor, the north-south hydro corridor is considered to be a primary choice for preferred route since it reduces major impacts to traffic operations on arterial roads as well as the cost of property acquisitions.



Figure 4-6



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4.6 REGULATORY APPROVALS

The first action plan is related to the Environmental Assessment (EA) studies. Given the scope and impact of new rapid transit facilities, Individual EA studies are required.

An Individual EA study provides a more detailed review and analysis than a Class EA study which would typically be undertaken for road and sewer projects.

The Individual EA study includes a preliminary overview of the Needs and Justification, input from public consultation, and outlines a Terms of Reference for undertaking the next phase.

This information is forwarded to the Ministry for approval, and after it has been approved, the study can proceed in a similar manner to the Class EA process.

The Region of York has made significant progress with the Environmental Assessment studies, demonstrating a strong desire to set the stage for implementation.



Transit Corridor	Status of EA Study
YONGE STREET	<ul style="list-style-type: none">• EA study initiated• Needs/Justification completed• Terms of Reference submitted to Ministry
HIGHWAY 7	<ul style="list-style-type: none">• EA Study initiated• Needs/Justification and Terms of Reference currently being drafted• Submission to Ministry expected later in 2002
WARDEN AVENUE	<ul style="list-style-type: none">• EA Study expected to start in 2002• Coordination with Toronto will be required



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4.7 FUNDING

Funding is crucial to the implementation of rapid transit. It has become clear that relying strictly on public funding for transit initiatives is not a practical option given the overall cost and the time required to obtain funding approval. Markham has therefore been working closely with Richmond Hill, Vaughan and the Region of York to pursue a public-private partnership to plan and deliver the rapid transit network for York Region.

The directive to pursue a public-private partnership was driven by the need to implement a transportation solution that would capture current demands, manage and foster future growth, and promote the economic vitality of key areas within Markham, Richmond Hill, Vaughan and the Region of York.

Private-sector partners can provide the expertise and a financial strategy needed to make rapid transit a reality; municipal partners can ensure that the public's long-term interests are secured.

The public-private partnership initiative was launched in late 2001, and a partnership announcement made during the spring of 2002. The engagement of the private sector provides an opportunity to examine creative funding strategies which should, in turn, accelerate the implementation of rapid transit initiatives. It is expected that the private-sector partner will complete the remaining EA studies and provide leadership in securing alternate funding opportunities with both the Federal and Provincial governments.

Both levels of government have been promoting the opportunity for public-private partnership ventures. The Province of Ontario has launched the Greater Toronto Horseshoe Investment Plan (GTIP) which seeks partnerships to implement transit initiatives as a component of the SuperBuild Program. The Government of Canada is expected to announce a similar plan, the Strategic Infrastructure Foundation.

The transit assessment presented in this report is therefore more than strategy for future implementation. It is a comprehensive action plan currently being implemented on both the regulatory and the financial fronts.



The private-sector partner will provide the expertise and financial components needed to make rapid transit a reality.

