

Tower of Power or Tower of Babel? Making Active Transportation Work in a Big City

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ABSTRACT

The so-called "Mirvish Project", comprised of two 90-storey twin towers located on King Street West in downtown Toronto, represents a unique opportunity to showcase how Active Transportation (AT) can change travel behaviour and public perceptions about "big development" in an urban core. This paper focuses on all of the non-single occupant vehicle (SOV) modes that will be key to the success of this redevelopment project, with a particular emphasis on the tiny amount of motor vehicle parking, but the huge amount of bike parking to compensate.

Detailed below is a compelling story of how a 2,000 unit condominium with retail, an art gallery and a College campus can function successfully in a congested environment with virtually no available roadway capacity for motor vehicles. To make it all work, however, over 2,000 dedicated, indoor bike parking spaces are provided, together with an aggressive Travel Demand Management (TDM) Plan plus high capacity transit, carshare, bikeshare and pedestrian facilities. This infill project balances the preservation of designated heritage buildings with stunning architecture by the world-renowned Canadian architect, Frank Gehry.

The project has numerous unique design and operational features that are highlighted in this paper and corresponding presentation, to elaborate on how City policies and creative infrastructure can attract residents to cycle for both commuting and recreational purposes. Recent City initiatives to construct cycle tracks along major arterials, as well as to retrofit bike lanes on a multitude of City streets in the vicinity of this mega-project, provide strong incentives for "ordinary folk" to bike to work. A major emphasis is also placed on the pedestrian, who can connect to the City's PATH system for both exercise and utilitarian trips.

In conclusion, this paper has broad appeal for both large and small municipalities since it offers valuable insights into how to make a big project on a small footprint really "work". The density is enormous, the cost is staggering, the challenges are daunting but the transportation impacts will be negligible. All of this will be accomplished by placing a significant emphasis on the cycling mode, with help from transit, pedestrian and TDM measures all working in harmony to make a development that is a shining example of high quality, sustainable city building.

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INTRODUCTION

WSP | MMM undertook comprehensive Transportation Impact, Site Circulation, Transportation Demand Management (TDM) and Parking Studies in support of the Mirvish mixed-use development to be located on the northeast corner of John Street and King Street West, including the existing Royal Alexandra Theatre and extending to just east of Ed Mirvish Way along King Street West in the City of Toronto. Several reports were prepared over the course of this assignment.

For reference, the location of the proposed development, the site plan and schematic designs are illustrated in **Figures 1 to 4**.

The development at 260 to 322 King Street West will consist of two residential towers and a mixed-use podium complex that will include the following land uses:

- 1,953 residential condominium units;
- A general retail area totalling 7,452 m²;
- Office space totalling 10,676 m²; and
- A 2,207 m² OCAD University campus.

In addition, an 870 m² art gallery is proposed to be constructed in the existing Eclipse Whitewear Building at the west end of the site. The existing 1,957 m² retail and 1,670 m² commercial land uses in the Eclipse Whitewear Building will be retained. The Princess of Wales and Royal Alexandra Theatres will also continue to feature 5,706 m² and 4,200 m² of commercial land use, respectively.

CYCLING INFRASTRUCTURE

Initially implemented as a pilot project, the City has permanently incorporated separated cycling facilities, or cycle tracks, on Richmond and Adelaide Streets between Bathurst Street and University Avenue, as well as bicycle lanes on Simcoe Street between Queen Street and Front Street. Furthermore, it is understood that the City is currently studying the potential to provide a connection between the waterfront and the existing Beverly Street bicycle lanes, which currently terminate at Beverly and Queen Streets. This infrastructure is illustrated in **Figure 5**.

In addition to the potential on-street cycling infrastructure, six bikeshare stations are available in the study area, with the nearest bikeshare station to the proposed site located at Metro Hall on Wellington Street.

PEDESTRIAN INFRASTRUCTURE

As background to our analysis of pedestrian infrastructure and conditions, the *Kings Travel Survey* prepared by the City of Toronto was thoroughly reviewed. Although completed in 2008, the results of the survey revealed a significant shift in two major travel modes: single-occupant vehicles and walking. From 2001 to 2008, SOV trips decreased from 35% to 23% while in that same timeframe, walking trips increased from 29% to 40% of all trips made by Kings Area



FIGURE 1
Site Location

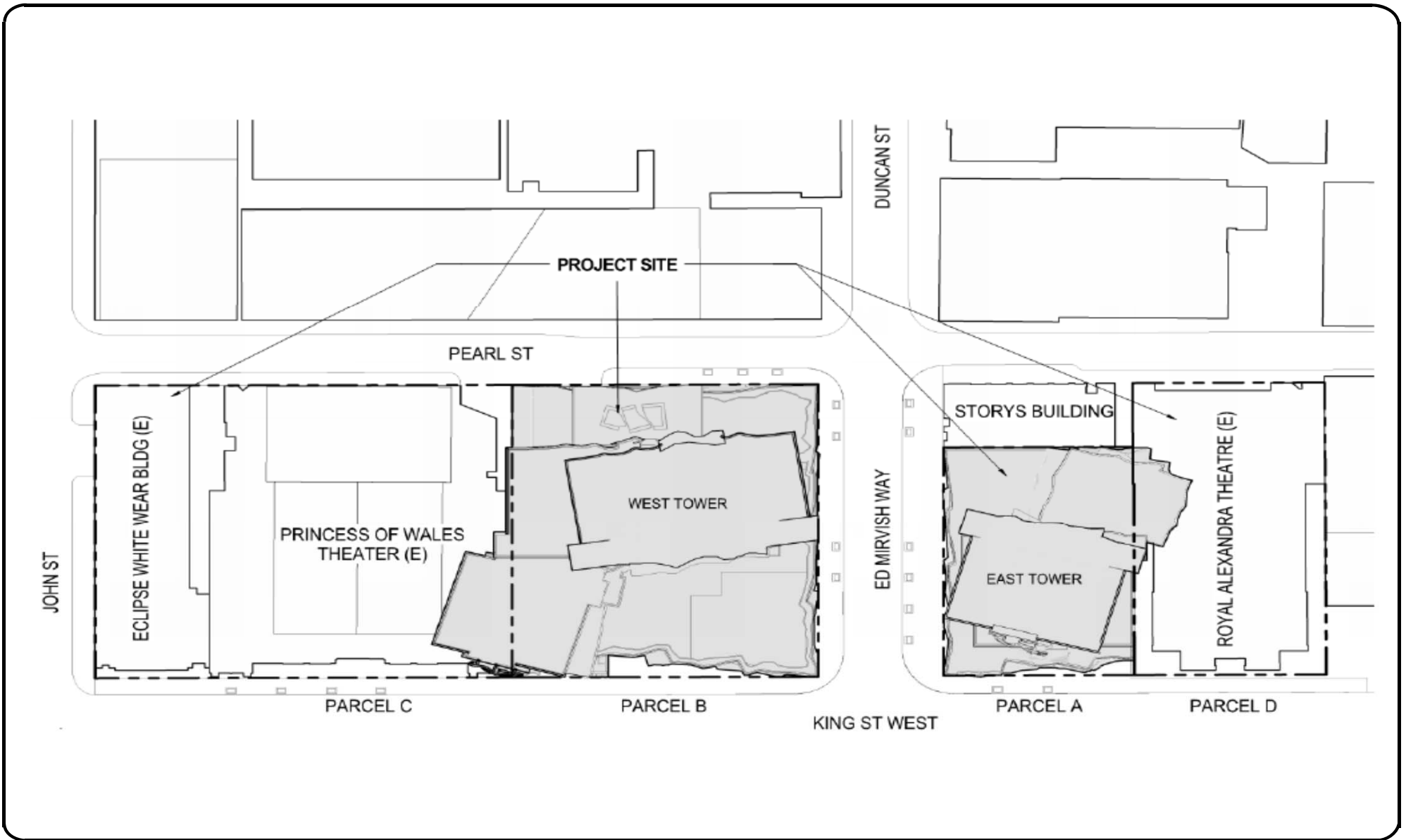


FIGURE 2
Site Plan



FIGURE 3
Schematic Design - Southeast Elevation



FIGURE 4
Schematic Design - View from Southeast



FIGURE 5
Cycling Infrastructure



residents. This trend was further confirmed over the course of our study, and impacted significantly on the prevalence of non-auto modes to support the Mirvish project.

Sidewalks are provided on both sides of all of the roadways within the study area, all of which experience significant pedestrian volumes especially on King Street. Anecdotal information from discussions with area residents indicates that the perceived sidewalk width does not always fully accommodate the pedestrian volumes, especially during events at the theatres or at the nearby Toronto International Film Festival (TIFF) building.

PUBLIC TRANSIT SERVICE

The study area is well served by existing Toronto Transit Commission (TTC) routes. A summary of the streetcar and subway operations on King Street serving the St. Andrew TTC Station are provided below in **Table 1**, and an illustration of local transit service is shown in **Figure 6**.

Table 1 – Summary of Transit Routes and Headways

Route	Direction	A.M. Peak Hour Service (7 to 9 a.m.) Frequency (minutes)	P.M. Peak Hour Service (4 to 6 p.m.) Frequency (minutes)	Saturday Peak Hour Service (noon to 2 p.m.) Frequency (minutes)
Yonge-University-Spadina Subway	N/S	2-3	2-3	4-5
504 King*	E/W	1-4	2-4	4-6
508 Lake Shore	E/W	12-13	20	No service

**Includes 504B King replacement bus to/from Broadview and Queen*

The transit service that is provided in the area will be directly available to residents, visitors, patrons and tenants of the proposed development. The underground PATH system is accessible via 225 King Street West which is located immediately across from the subject development and connects to the St. Andrew Station, as well as many Toronto landmarks and attractions. Based on available load factor data from the TTC, the 504 King Streetcar operates at capacity in the peak direction (inbound in the a.m., outbound in the p.m.) while trains arriving at St. Andrew Station have reserve capacity available during both peak hours.

PARKING

The Mirvish Project will include a total of 439 new parking spaces, comprised of 390 residential and 49 non-residential spaces for the two towers. When added to the existing 227 spaces to be retained at the Princess of Wales theatre, a total of 666 spaces will be available. This equates to a parking ratio of approximately 0.2 resident spaces/unit. Taking into account the existing 227 spaces, the overall non-residential parking ratio is 0.01 spaces/100 m².

The Ontario Municipal Board (OMB)-approved site-specific Zoning By-law for this site required a minimum of 670 vehicle parking spaces between the two buildings. The proposed parking supply of 666 spaces is within 1% of that threshold.

The Zoning By-law also required 1.0 bicycle parking spaces per dwelling unit, including visitor parking. The proposed overall supply of 2,124 bicycle parking spaces is well in excess of the By-law requirement of 1,953. In addition to regular ground-mounted racks, residents with vehicle parking spaces will be able to mount their bike on the adjacent wall. Bikes can also be mounted

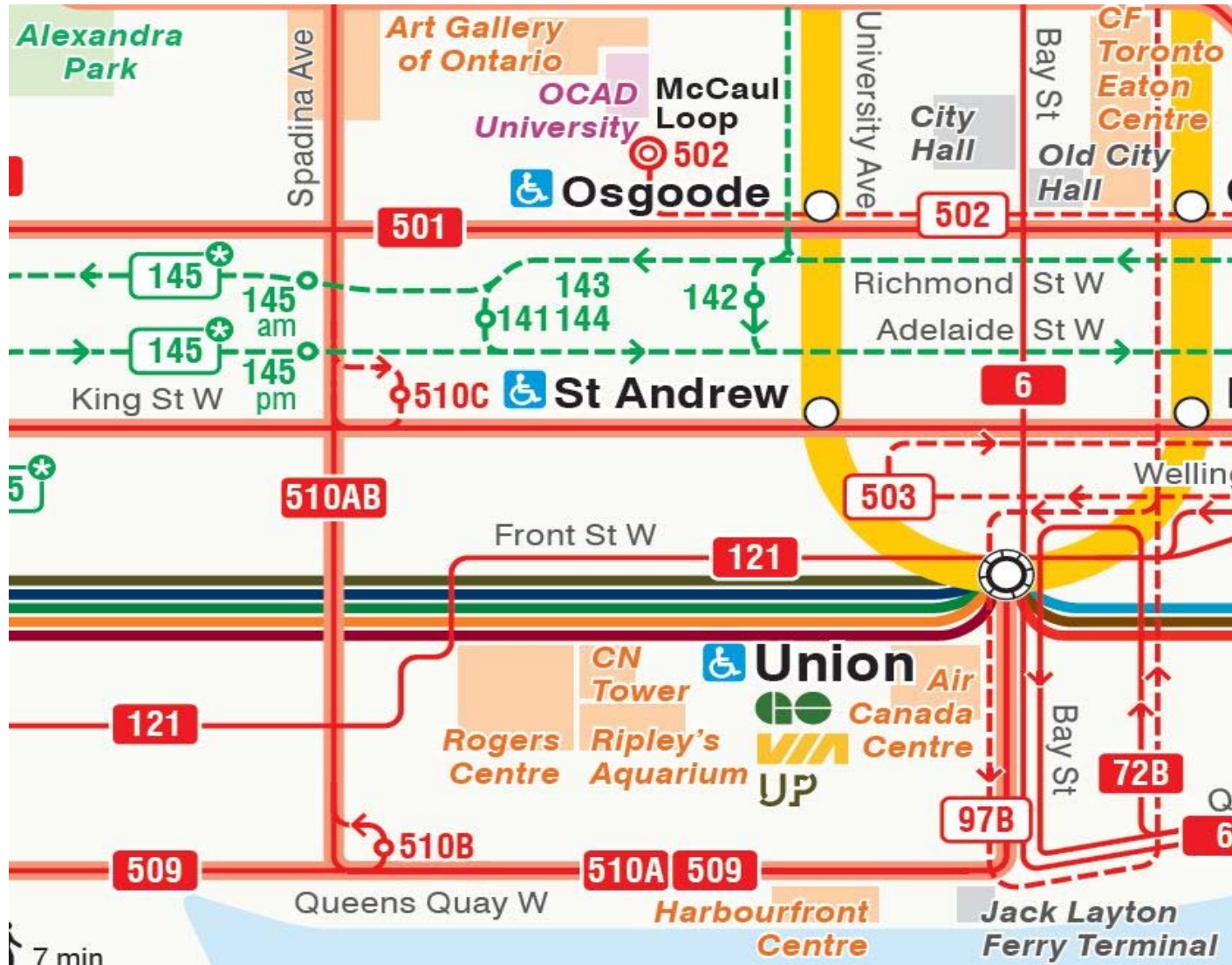


FIGURE 6
Local Transit Service

vertically within lockers and at other locations. Furthermore, stacking technology will be employed in specific places to allow bikes to be stored on two levels. Examples of the potential bicycle storage solutions for the Mirvish project are shown in **Figure 7**.

Given the development's unique location at King and John, plus the available carshare services and its proximity to the streetcar and subway network, the proposed number of parking spaces was deemed to be adequate for the following reasons:

1. **Access to the existing St. Andrew TTC Subway Station and Transit Services** – The St. Andrew Subway Station, located approximately 250 metres away, is well within reasonable walking distance from the proposed development. Additionally, there are two streetcar routes on King Street that serve the proposed site, with the Route 504 streetcar providing headways of three minutes or less during the peak hours. Furthermore, the Yonge-University-Spadina subway runs at headways of two to three minutes during the peak hours. By being proximate to and having access to the station via the PATH underground pedestrian system, residents, tenants and visitors will be able to use high frequency, high capacity transit service with relative ease, without having to travel outside for extended periods of time during inclement weather. In addition, the site is a relatively short walking distance and one stop on the subway from Union Station, Toronto's major transit hub with access to TTC, GO Transit and VIA Rail services.
2. **Critical mass of services within the King-John area** – the King-John area is already well served by shops, restaurants, professional offices, supermarkets plus other utilitarian and entertainment options. This will mitigate the necessity, especially for residents, to drive to other locations to meet their day-to-day needs.
3. **Continuing congestion in downtown Toronto, and the high cost of parking and vehicle ownership** – Downtown Toronto is perceived today as an extremely busy area to travel, especially in a motor vehicle. This condition has the potential to shift more people away from owning or travelling by car, since travel times may actually be better via transit or by walking or cycling. For example, a resident that works downtown and lives in the proposed development may only need a car on rare occasions given the multitude of transit options available, and may decide that the cost of car ownership is too high to justify infrequent usage.
4. **Provision of carshare services** – The provision of carshare services also allows for lower vehicle ownership, since infrequent drivers would no longer need to own a vehicle to meet their needs. Furthermore, carshare services such as Autoshare and Zipcar are located in the immediate vicinity, providing additional locations for residents and patrons to access this service. Two carshare spaces are proposed within the development.
5. **Provision of bicycle parking** – As previously stated, the proposed development includes the provision for 2,124 resident and visitor bicycle parking spaces. The expected bicycle trip generation from the site peaks at 143 bike trips during the p.m. peak hour. As a result, the proposed bicycle parking is able to provide for a significant increase in the number of bicycle users for the proposed development, which are likely to materialize upon improvements to the area cycling network. The substantial amount of bicycle parking also represents a major incentive for users and residents of the proposed development to cycle. As a result, we expect that the number of bicycle parking spaces will be more than appropriate for the development, while still providing a large incentive for more users and residents of the proposed development to cycle rather than own or drive a private vehicle. In addition, the Mirvish development will be supplying a substantial amount of bikeshare parking across the street at Metro Hall in order to further promote cycling as a viable travel mode.



FIGURE 7
Examples of Bicycle Storage

TRAVEL DEMAND MANAGEMENT

Travel Demand Management is a general term for various strategies that increase transportation system efficiency by managing the demand for travel. TDM treats mobility as a means to an end, rather than an end in itself, and emphasizes the movement of people and goods rather than motor vehicles. Generally speaking, TDM initiatives discourage single-occupant vehicle travel and encourage more efficient modes such as walking, cycling, ridesharing, public transit and teleworking, particularly under congested conditions. In the context of an already congested road network, TDM elements are an essential part of any progressive transportation and traffic plan for a proposed development.

The various TDM elements associated with the proposed development that would facilitate the reduction of trips to and from the site by SOV are described below. This approach was consistent with Section 3.3.3 of the *City of Toronto Guidelines for the Preparation of Transportation Impact Studies regarding Travel Demand Management Plans*, which states that TDM plans should include:

- A description of TDM initiatives;
- Steps taken to support non-auto modes such as walking, cycling, transit and the use of high occupancy vehicles (HOV); and
- Infrastructure improvements.

Description of TDM Initiatives

As noted previously, the proposed development includes several employment uses, including various retail and commercial uses, an art gallery and an OCADU campus. The following initiatives were encouraged for implementation in partnership with the City and Smart Commute through negotiations with the relevant employers and condominium corporations at a later date.

- Employer-sponsored transit passes for residents and employees. These discounted monthly transit passes make this alternative mode of transportation more financially viable for commuters, while also encouraging regular use throughout the month;
- Promoting lower auto ownership through the potential provision of a car-share program within the condominium corporation. For those residents who only need to use motor vehicles on an occasional basis, a car-share program would provide an additional option to car ownership, and as a result reduce the need for parking spaces in the development;
- Membership in the “Guaranteed Ride Home” program administered through Smart Commute Toronto-Central, which supports transport mode choices other than single occupant vehicle – such as transit, carpooling, cycling or walking – by providing a guaranteed alternative transportation arrangement in the occasional event that person needs to get home (or to a local school, hospital, family member’s home, etc.) outside their regular commute schedule. Programs generally reimburse the person for taxi fare or car rental, or involve the provision of a company vehicle or co-worker driver arrangement. For example, a car pooler who must stay at work later than usual, and thus misses their ride, is reimbursed for taxi fare home. For those individuals who are registered on the “Carpool Zone” website, the Smart Commute program reimburses commuters for taxi fares through Metrolinx; and

- Teleworking policies, where feasible, to encourage employees to work from home or satellite offices so they can minimize their need to commute.

Steps Taken to Support Non-auto Modes

Pedestrian and Cycling Connectivity

Although not directly connected to Toronto's cycling network, the development is in proximity to existing bikeway facilities. These include the suggested links to the cycling network on Peter Street and Bay Street, as well as the on-street bike lanes on Beverly Street to the north and Simcoe Street to the east, plus the aforementioned Richmond-Adelaide cycle tracks. Furthermore, pedestrian connections surround the entire development with sidewalks on King, John, Duncan and Pearl Streets, and as noted previously, there is an underground pedestrian connection to the PATH System via 225 King Street West. The prevalence of services within walking distance, as well as the local road congestion, encourages using alternative forms of transportation.

Transit Services

As noted earlier, the excellent transit services in the area will serve to reduce the number of auto trips that need to be made. This was considered in our study through the use of reduced trip rates. As transit services improve over time, dependence on motor vehicles is expected to decrease even further in the area, and for this development.

Smart Commute Toronto-Central

Assistance is available to employers in planning and implementing the employer-based TDM initiatives outlined above. The *Smart Commute Toronto-Central* organization represents a local Transportation Management Association (TMA) that will be a great asset to this development in planning and implementing TDM initiatives. This TMA will provide a valuable TDM resource to business owners operating in the proposed development by:

- Providing reference materials and expert advice;
- Making staff available for presentations to management and employees;
- Supporting the development of employer-based TDM programs, including conducting employee commuting surveys, performing site audits, networking with local transit authorities and more;
- Co-ordinating TDM initiatives among multiple employers and organizations to find synergies and economies of scale; and
- Supporting staff and residents regarding the provision of information on the above-noted "Carpool Zone", and assistance in registering on the Smart Commute website.

The condominium corporation of the Mirvish Project will be encouraged to apply for membership with *Smart Commute Toronto-Central*, in order to be able to have access to these TDM services.

Infrastructure improvements

Bicycle and Carshare Parking Facilities

Infrastructure to support and encourage sustainable travel has been incorporated into the Mirvish Project, including the provision of 2,124 bicycle parking spaces. In addition, five auto parking spaces will be designated for the exclusive use of vehicles associated with carshare programs. The parking facilities will be well lit and provide convenient access to building entrances. A combination of bicycle lockers and bicycle racks will be provided to serve long- and short-term users, respectively.

This paper has described the existing and proposed cycling, pedestrian and transit infrastructure, together with comprehensive TDM measures that will all be working in harmony to create a development that is a shining example of high quality, sustainable city building. Given the sheer size and complexity of this development, combined with the fact that little or no “reserve” capacity is available on the boundary road network, these non-SOV modes are critical to enable this project to function effectively in an already dense urban environment. All parties involved in this project, on both sides of the table, firmly believe that the proposed measures will work. Time will tell...

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