3.0 Study Context: Existing Conditions

3.1 The Study Area and Surroundings

The Yonge Street Corridor Study Area includes 165.4 hectares of land located in the northeastern corner of the City of Vaughan, bordered by the Town of Markham to the east and the City of Toronto to the south. The Study Area is divided into a north and south area, separated by the Thornhill neighbourhood which is the subject of a recently completed Secondary Plan (OPA 669) within the Thornhill Heritage Conservation District.

The South Study Area is bisected by the CN Rail line and consists of the properties fronting along Yonge, from Steeles Avenue to Arnold Avenue and along Steeles, from Yonge Street to Palm Gate Boulevard. In addition, the established low rise residential neighbourhood adjacent to the west is included in the South Study Area (figure 7).

The North Study Area extends along Yonge Street from the northern edge of the Thornhill Golf and Country Club to Highway 407. It includes properties with direct frontage onto Yonge Street and the adjacent residential neighbourhood to the west (figure 8).

Yonge Street facing North

Auto oriented environment

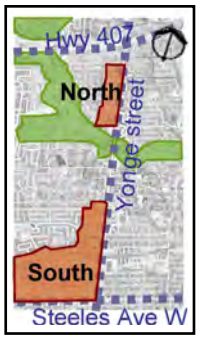


Fig. 8 North Study Area

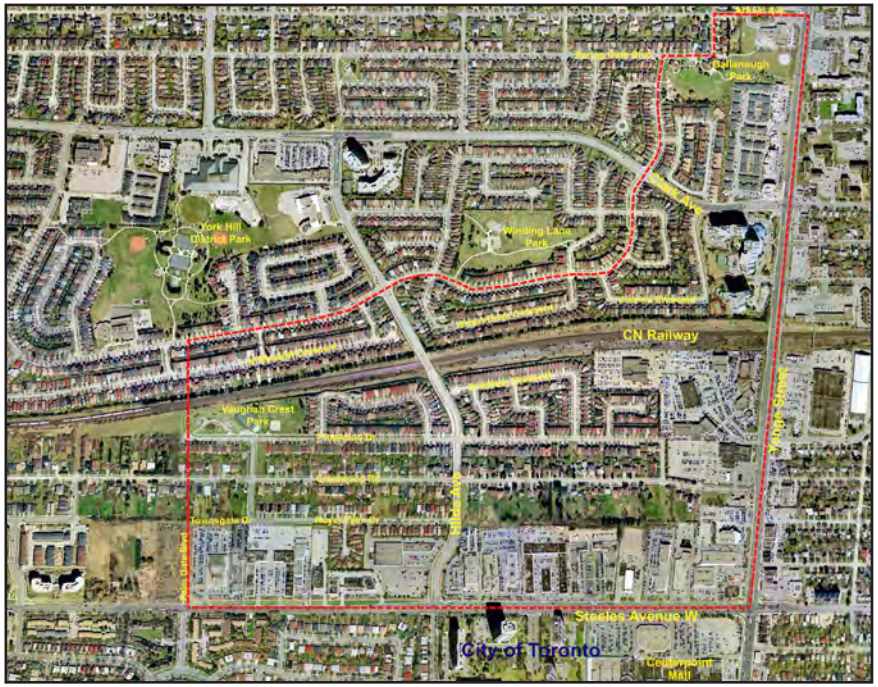


Fig. 7 South Study Area

South Study Area - Existing Conditions, 3D Aerial View from South East

Fig. 9

North Study Area - Existing Conditions, 3D Aerial View from South East

Fig. 10

3.2 Existing Land Use

The physical character, lot configurations and land uses vary greatly throughout the Study Area and reflect the auto-oriented priority of the roads. In general, built form is characterized by one to three storey buildings, with higher buildings located north of the rail line to Arnold Avenue (See figures 11 and 12).

Street frontages along Yonge Street in the North Study Area consist mainly of low rise commercial buildings south of Bunker Road. There is a shift to residential uses north of Bunker Road in the form of a low density residential subdivision with reverse lot frontage adjacent Yonge Street. A school site exists on the north west corner of Uplands Avenue and Yonge Street, with road access via Uplands.

In the South Study Area is characterized by a greater range of land uses including:

- low-rise, large format retail and auto-oriented uses
- commercial buildings are situated on large lots with surface parking along the Yonge Street and Steeles Avenue frontages or adjacent to buildings
- predominantly residential and office buildings north of the CN Rail line
- high-rise node of three apartment buildings adjacent to the rail line
- low-rise mixed use development with ground floor commercial and residential units above
- recently completed townhouse development situated adjacent the mixed use site
- The Thornhill Public School is located at Arnold Avenue, fronting on to Yonge Street
- Gallanough Park, a high rise node, is located at Arnold Avenue, fronting on to Yonge Street

In both the North and South Study Areas, low density residential uses are found to the west of the properties fronting on Yonge Street and to the north of the properties fronting onto Steeles Avenue. In the South Study Area, the lots fronting on Yonge Street and Steeles Avenue are quite deep creating ample opportunities to provide a transition from higher density development along these arterials to the low density neighbourhoods to the west and north of the lot frontages along the arterials.

In the surrounding area, the south side of Steeles Avenue which lies within the City of Toronto boundary, includes a range of land uses including the Centrepoint Mall which is situated on the southwest corner of Yonge Street and Steeles Avenue. Further west, Hilda Avenue acts as a dividing line with high rise apartment buildings on the east side, and low rise dwellings on the west side to Bathurst Street.

Much of the east side of Yonge Street north of Steeles Avenue in the Town of Markham, is characterized by older, commercial, auto-oriented strip development and large-scale retail uses with surface parking at the front. The current planning and design of these commercial establishments does not create a pedestrian oriented mixed use urban setting. North of Clark Avenue, built form transitions to residential uses in mid-rise buildings. A large site (formerly the location of a Hy and Zel's store) is the subject of a major redevelopment proposal including major office, high density residential and commercial uses. In the North Study Area, the east side of Yonge Street is comprised mainly of a mix of high-rise apartment buildings and strip commercial uses, with the Holy Cross Cemetery located just south of Highway 407.

Existing Land Use

South Area

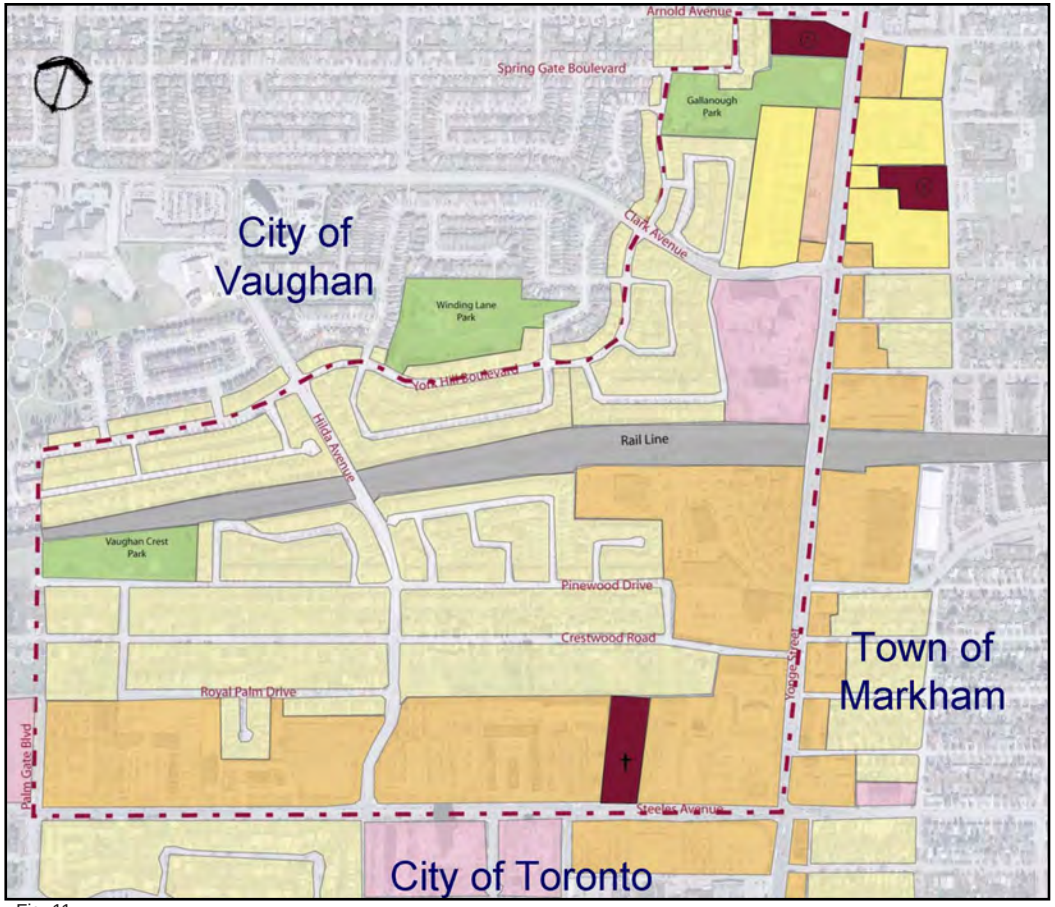


Fig. 11

North Area

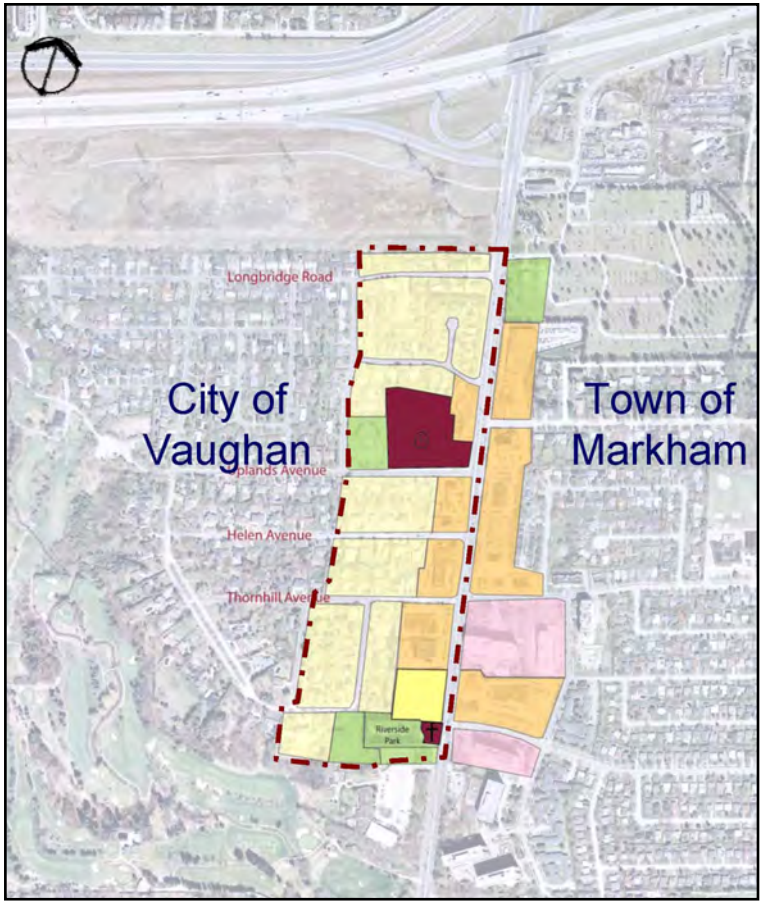


Fig. 12

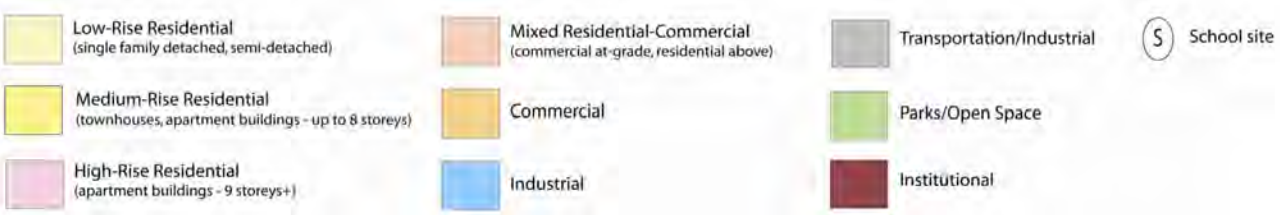


Table 2: Study Area Land Use Designations

North Study Area

LAND USE DESIGNATION	LAND AREA (HA)	LAND AREA (SQ.M.)	PERCENTAGE OF STUDY AREA
Low-Medium Density Residential	12.21	122,074	45.5%
Commercial	4.13	41,320	15.4%
Institutional	2.08	20,785	7.8%
Parks/Open Space	2.52	25,243	9.4%
North Study Area	26.82	268,223	100%

South Study Area

LAND USE DESIGNATION	LAND AREA (HA)	LAND AREA (SQ.M.)	PERCENTAGE OF STUDY AREA
Low-Medium Density Residential –	55.51	555,115	40.1%
Medium-High Density Residential	4.89	48,930	3.5%
Mixed Residential - Commercial	1.29	12,858	0.9%
Commercial	33.23	332,333	24.0%
Industrial	1.97	19,705	1.4%
Institutional	1.33	13,322	1.0%
Transportation/Industrial	8.62	86,173	6.2%
Parks/Open Space	5.73	57,317	4.1%
South Study Area	138.55	1,385,530	100%

Note: The totals depicted in the above tables represent the gross study area in hectares, including roads and infrastructure not itemized in the table.

3.3 Existing Built Form

A review of existing built form addresses building height, lot depth and architectural character.

3.3.1 Building Height

The majority of properties in the Study Area are one to three storeys in height. There are also several buildings between four and eight storeys, and the highest development, an 18 storey condominium, is located at Clarke Avenue and Yonge Street (see figures 13 and 14).

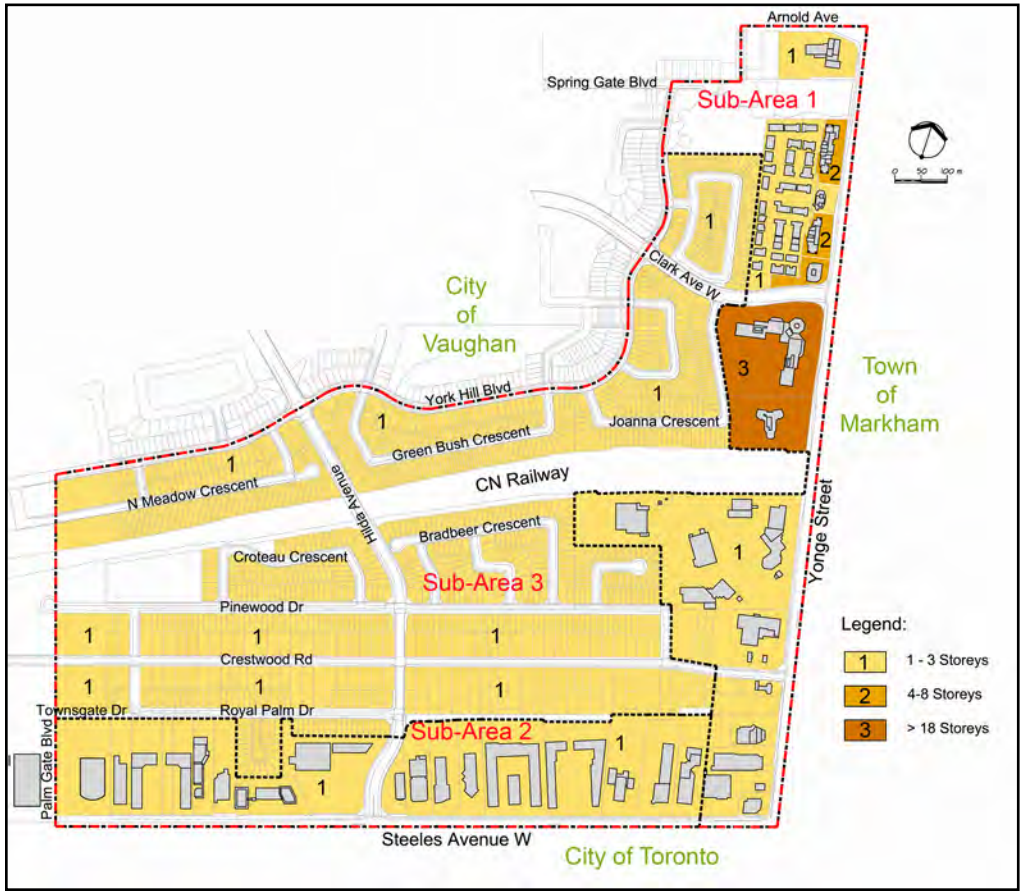


Fig. 13 South Study Area - Existing Building Height

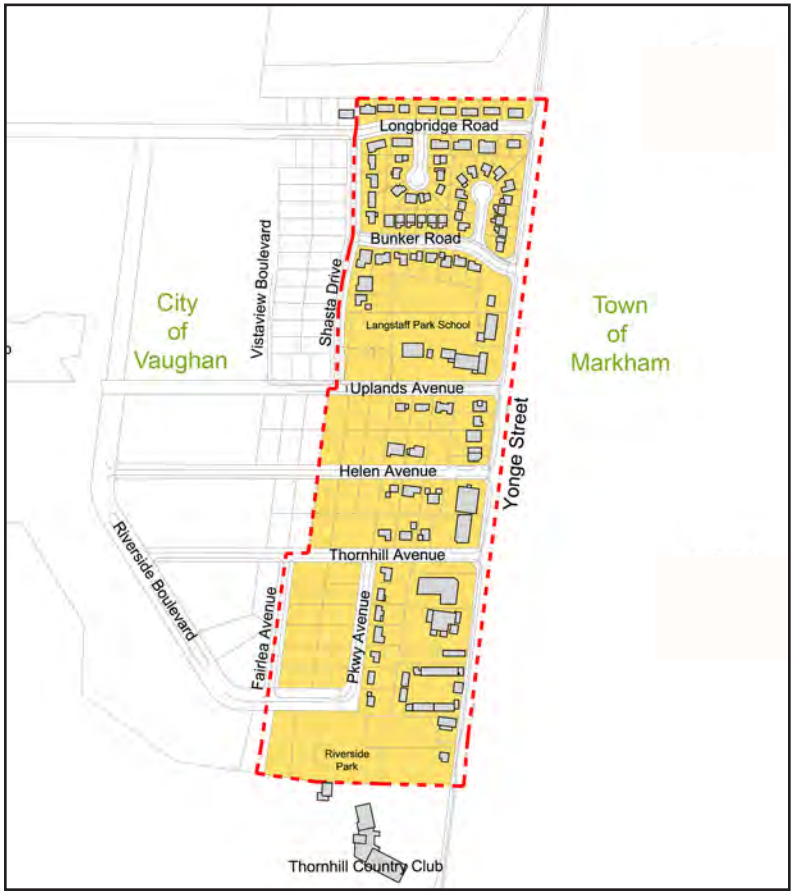


Fig. 14 North Study Area - Existing Building Height

3.3.2 Lot Depth

For the majority of properties lining Yonge Street and Steeles Avenue in the South Study Area the lot depth is 150 meters to 200 meters. By contrast, the existing residential lot depth north of Steeles Avenue are considerably smaller, with the majority measuring less than 50 metres.

There is a slight gradation of lot depths within the block between the commercial properties on Steeles Avenue and the residential to the north with lot depths ranging from 50 metres to 100 metres (see figures 15 and 16).

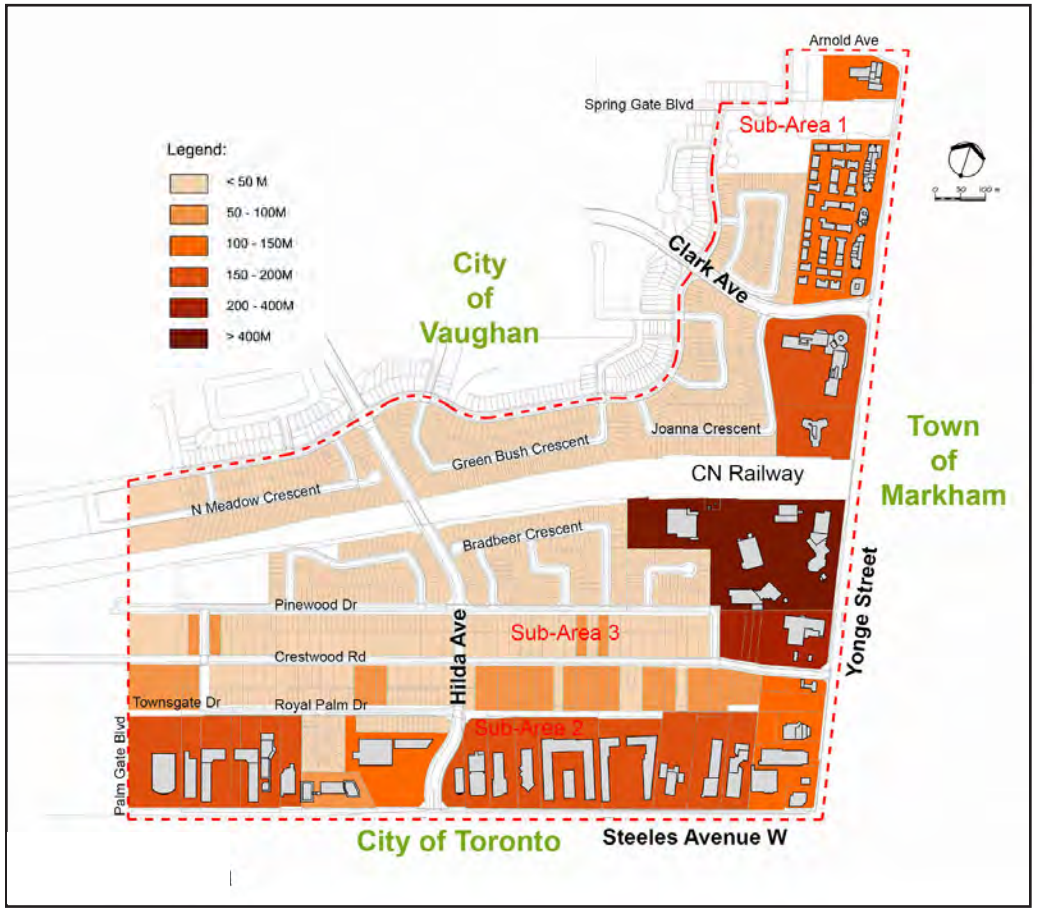


Fig. 15 South Study Area - Existing Lot Depth

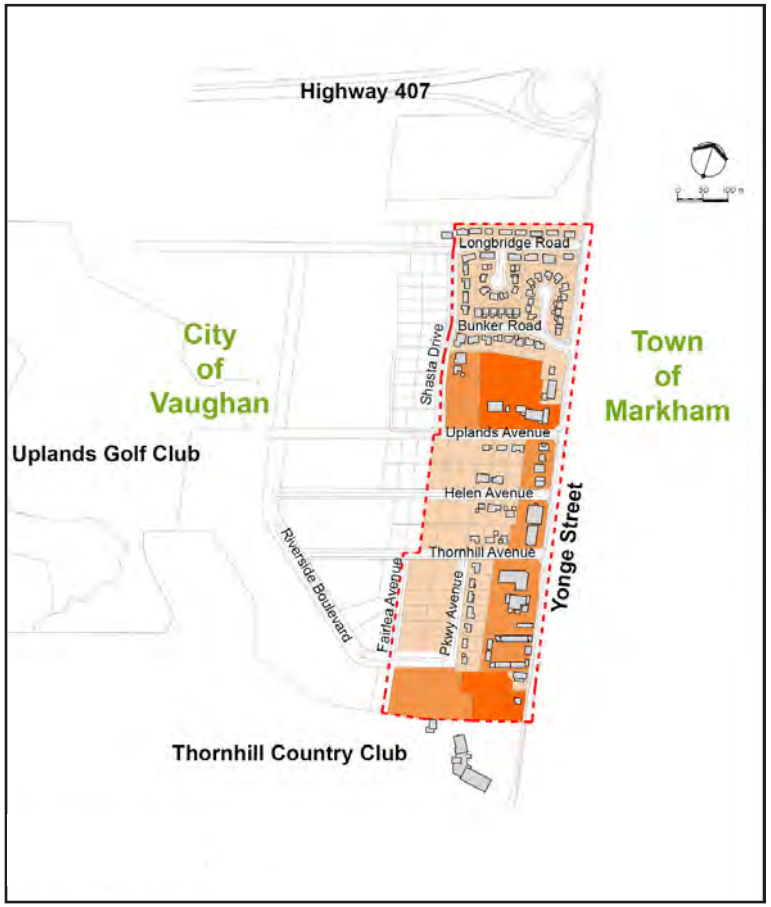


Fig. 16 North Study Area - Existing Lot Depth

3.3.3 Existing Architectural Character

The existing built environment of both the North and South Study Areas offers little architectural variation. The dominant vernacular of 1-3 storey auto-oriented retail plazas, car dealerships with expansive surface lots and retail with residential above results in a disjointed architectural character. Most buildings are set back from the street with parking lots along the frontages resulting in an ill-defined unattractive streetscape. Some building parcels are irregular in size and shape presenting opportunities and challenges to redevelopment. Where building parcels are of sufficient size, urban intensification is easier; in areas where there are small sites with different owners, redevelopment may depend on the consolidation of building parcels.

Despite the loss of many heritage buildings in the Study Area, the north section has retained several structures which date back to the 19th century, and early 20th century. These heritage buildings are identified and described in *Vaughan Thornhill Heritage Conservation District, 2007 Inventory.*

Built in 1854, 8000 Yonge Street has preserved much of its original character despite a renovation in 1980. The central entry, with wide moulded window casings, is typical of the era and contributes to the unique historical character of Thornhill. The site is host to several mature trees. Integrated within new residential development, 8038 Yonge Street offers a similar hipped roof and double hung windows. These two buildings are both listed in the Canadian Inventory of Historic Buildings. Other heritage buildings include a vernacular church built in 1829 with a classical revival entrance at 8010 Yonge Street, and 8054 Yonge Street with a steep gable with a window above the entrance, which often characterizes this region's historical style. Another important heritage structure in the Study Area is 7554 Yonge Street which boasts a symmetrical composition of three blocks of three bays each. There are more recent additions to the left and to the rear, all in sympathetic design and material.


8000 Yonge Street


8038 Yonge Street

8010 Yonge Street

8054 Yonge Street


7554 Yonge Street

3.4 Existing Street Character & Hierarchy

Yonge Street is a primary transportation corridor serving south-central York Region and the Thornhill area. It is a major arterial roadway connecting to regional urban centres, Highway 407, and the Finch subway station. North of Steeles Avenue, it is under the jurisdiction of York Region; south of Steeles Avenue, it is under the jurisdiction of the City of Toronto. It has a six-lane cross-section from south of Steeles Avenue to a point north of Clark Avenue, where it narrows to a four-lane cross-section through Thornhill. At Langstaff Road, the road widens back to a six-lane cross-section that extends through the Highway 407 interchange and Highway 7 connector road. Steeles Avenue is a major east-west arterial roadway that forms the boundary between the City of Toronto and York Region. It is under the jurisdiction of the City of Toronto, including all traffic signal operations. It has a four-lane basic cross-section, except for the section between Hilda Avenue and Yonge Street, which has a six-lane basic cross-section. The six-lane section south of Clark Avenue includes two general-purpose lanes and one high-occupancy vehicle (HOV) lane in each direction.

In the South Study Area, the local street network is characterized by:

- large blocks fronting along Yonge Street and Steeles Avenue
- numerous private driveways on Yonge Street and Steeles Avenue, accessed via continuous two-way left turn lanes.
- hierarchical street network consisting of collector roadways providing a connection between Yonge Street and curvilinear local neighbourhood streets (in contrast with the local street network on the east side of Yonge Street, much of which generally consists of a typical post-war grid network with sections of short intersection spacing along Yonge Street, approximately 100 metres).
- traffic calming treatments in place along Hilda Avenue, York Hill Boulevard, Pinewood Drive, and Crestwood Road — predominantly vertical measures such as speed humps and raised crosswalks.

In the North Study Area, the local street network is characterized by:

- a modified grid, with irregular intersection spacing ranging from 75 meters to 250 meters
- numerous private driveways on Yonge Street and Steeles Avenue, accessed via continuous two-way left turn lanes
- greater degree of access control on sections of Yonge Street between the two Study Areas (outside of the Thornhill Heritage District)

Additional amenities are needed to improve the pedestrian environment of Yonge Street and Steeles Avenue. The near absence of lighting, street furniture, and shaded sidewalks currently detracts from pedestrian experience. Existing lighting serves vehicular traffic, there is a distinct absence of benches and litter receptacles, and few trees are found lining these arterial roads. A sparse supply of street furniture tends to be located only at major transit stops.

Although a sodded buffer of varying widths provides pedestrians with separation from the multi-lane, fast-moving traffic, the public sidewalk is frequently interrupted by multiple driveways accessing commercial strip plazas. Buildings are setback from the street an average of 20 meters creating an absence of street definition and detracting from the pedestrian experience. Pockets of landscape treatment are found in the private realm, particularly the larger residential developments and higher scale commercial developments.

The following pages represent a photographic inventory of the existing conditions.

South Study Area -- Existing Conditions, 3D Aerial View (Palm Gate Boulevard to Hilda Avenue)

Fig. 17

Existing Conditions Images (Palm Gate Boulevard to Hilda Avenue)

South Study Area -- Existing Conditions, 3D Aerial View (Hilda Avenue to Yonge Street)

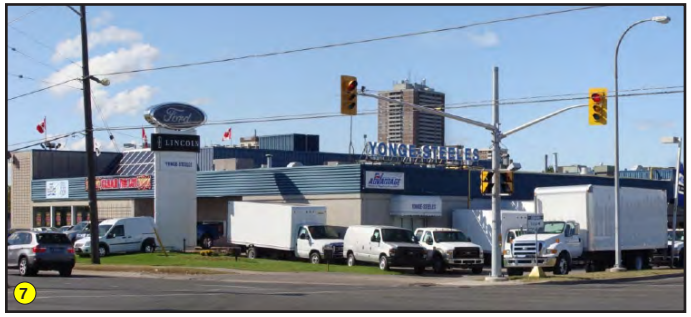
Fig. 18

Existing Conditions Images (Hilda Avenue to Yonge Street)

South Study Area -- Existing Conditions, 3D Aerial View (Steeles Avenue to CN Railway)

Fig. 19

Existing Conditions Images (Steeles Avenue to CN Railway)



South Study Area -- Existing Conditions, 3D Aerial View (CN Railway to Arnold Avenue)

Fig. 20

Existing Conditions Images (CN Railway to Arnold Avenue)

South Study Area -- Existing Conditions, 3D Aerial View (Residential Area)

Fig. 21

Existing Conditions Images (Residential Area)

North Study Area -- Existing Conditions, 3D Aerial View (South of Thornhill Avenue)

Fig. 22

Existing Conditions Images (South of Thornhill Avenue)

North Study Area -- Existing Conditions, 3D Aerial View (Thornhill Avenue to Uplands Avenue)

Fig. 23

Existing Conditions Images (Thornhill Avenue to Uplands Avenue)

1


2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5

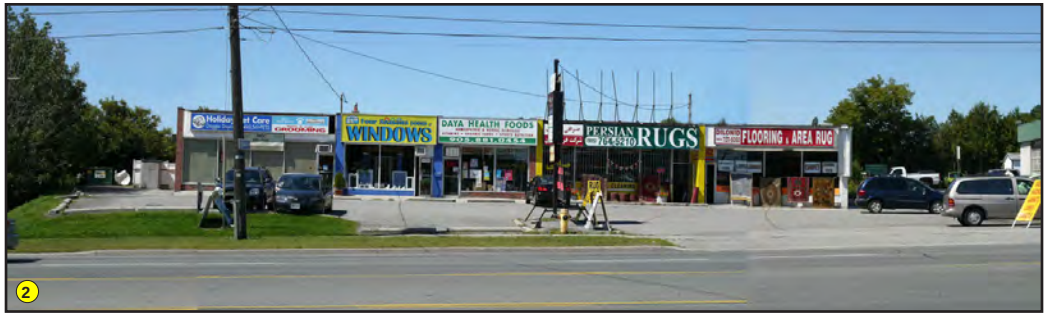

6

North Study Area -- Existing Conditions, 3D Aerial View (Uplands Avenue to hydro easement)

Fig. 24

Existing Conditions (Uplands Avenue to hydro easement)

1



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3.5 Existing Parks and Open Space

The City of Vaughan's Active Together Park, Recreation, Culture and Libraries Master Plan is a long-range planning study initiated in order to identify current needs and future strategies for recreation facilities in the City and will guide future parks and open space development in the Study Area. Discussions with the City Parks department revealed an inadequacy of parks supply within the study area. There are three parks located in the South Study Area (See figure 25):

- Gallanough Park located at 21 Springfield Way is 2.52 Hectares and has a heritage building, Arnold House, located on site.
- Winding Lane Park located at 580 York Hill Boulevard is 4.2 Hectares in size and includes a basketball court.
- Vaughan Crest Park located at 300 Pinewood Drive is 2.40 Hectares and includes tennis courts and a bocce court.

Presently, Gallanough Park has frontage on Yonge Street. It should be noted however that the Thornhill-Vaughan Community Plan (OPA #210) shows this frontage (approximately 1.10 Hectares) as medium density residential.

There are two parks located in the North Study Area (See figure 26):

- Riverside Park located at 2 Riverside Boulevard is 0.85 Hectares and includes playground facilities.
- Langstaff School Park located at 106 Garden Avenue is 0.67 Hectares and lies to the West of the Langstaff School.

Additional open space resources include the Uplands and Thornhill golf courses, located immeadiately south of the North Study Area.

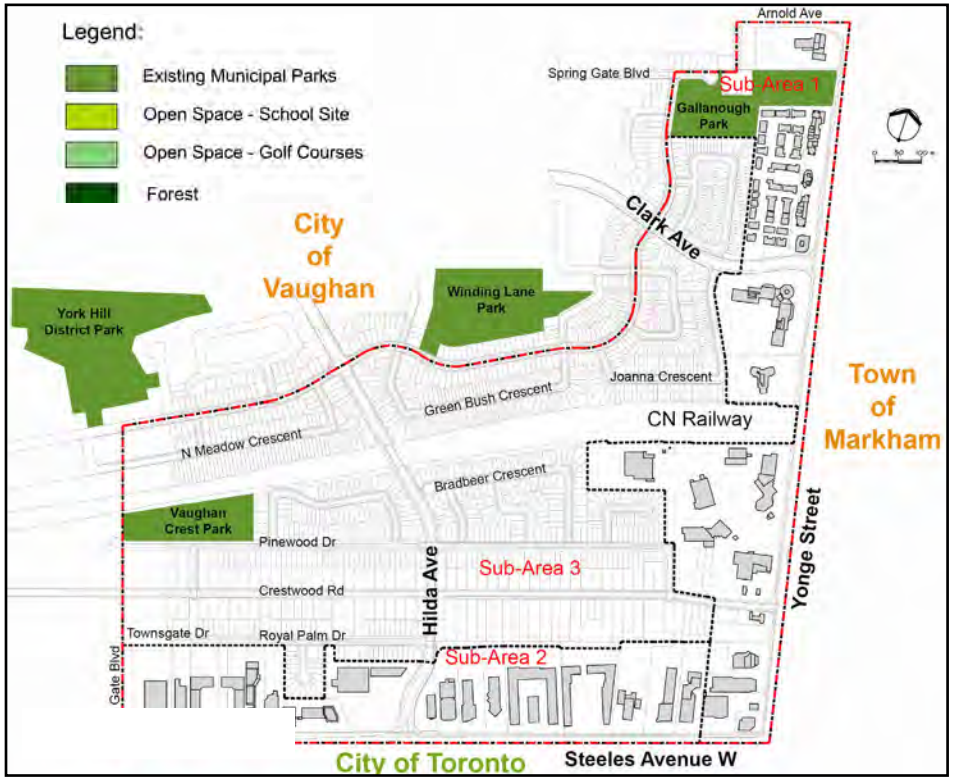


Fig. 25 South Study Area Existing Parks & Open Space

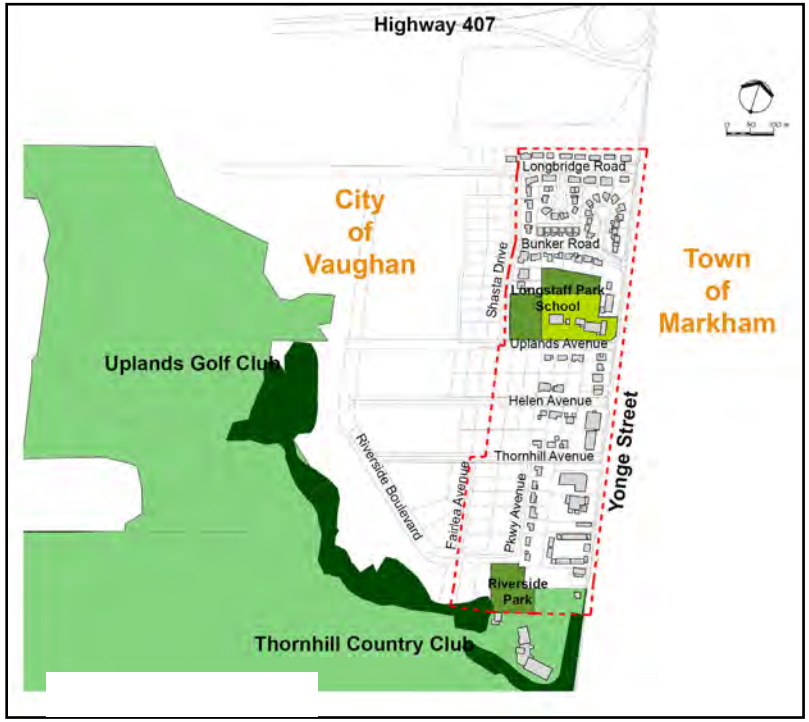


Fig. 26 North Study Area Existing Parks & Open Space

3.6 Existing Community Services & Facilities

Several community-oriented amenities including schools, libraries, childcare facilities, recreation and community facilities, and emergency services are located within, and adjacent to, the Study Area.

Schools: York Region District School Board has six elementary/middle schools and two high schools serving the Study Area and the York Region Catholic District School Board has two elementary schools and two secondary schools serving the Study Area. Some schools are currently nearing or exceeding 100% utilization rates.

Libraries: The Study Area is served by the Bathurst Clark Resource Library and the Thornhill Centre Community Library located in Markham. One of two resource libraries in the City, the Bathurst facility was constructed in 1994 and is intended to serve residents over a broad geographic area. The Thornhill facility forms part of a community complex that is also comprised of an arena and community facilities. Also available is the Gallanough Resource Centre, formerly a part of the Vaughan library, now operating as an independent resource centre.

Childcare Facilities: There are 14 childcare centres in the Study Area including city operated facilities and private daycares. In total, these centres provide over 780 licensed childcare spaces. Nine centres have subsidy available. Home care agencies and private home care providers were not included in this inventory.

Recreation & Community Facilities: There are eight parks located in the Study Area and the area surrounding it, along with the nearest District Park located at Dufferin Street, north of Steeles Avenue. The York Hill District Park includes basketball courts, tennis, and an outdoor skating rink along with the Garnet A. Williams community centre. In addition, the Thornhill outdoor swimming pool is located on Center Street, in the Thornhill Park.

The Uplands Golf and Ski Centre is located in the northern segment of the Study Area and is a nine-hole golf course and ski hill. The Thornhill Golf and Country Club is also located in this area and is a private membership golf course. Moreover, public parks in the Town of Markham include a range of park options including Woodland Park, Grandview Park, Don Valley Park and Pomona Mills Park.

Emergency Services: The Study Area is served by the York Region Police 2nd District Headquarters, located on Major Mackenzie Drive in the Town of Richmond Hill. A police community resource centre is also located in Hillcrest mall, also within Richmond Hill. Two fire stations serve the area - #7-1 and #7-8 and the closest hospital to the area is the York Central hospital, located in Richmond Hill.

Summary This facilities assessment captures the existing services and facilities currently serving the Study Area. While there are limited community resources located in the immediate Study Area in both the south and north, the majority of services and facilities are located in the neighbourhoods adjacent the Study Area. These resources include a range of park spaces, schools, child care facilities and libraries. Some facilities are within walking distance while others may require alternative forms of transport. Presently, there may be some capacity limitations to accommodate future elementary and secondary school students in the York Region District School Board and elementary students in the York Catholic District School Board based on current enrollments, However, it is important to remember that administrative boundaries may change along with capital improvements which could expand capacity of existing facilities. Finally, additional child care spaces will likely be required to support the future residential population in the Yonge Street Study Area. Residential and mixed use redevelopment along Yonge Street and Steeles Avenue present an opportunity to integrate new services and facilities into the area to meet future demand.

Existing Community Services and Facilities

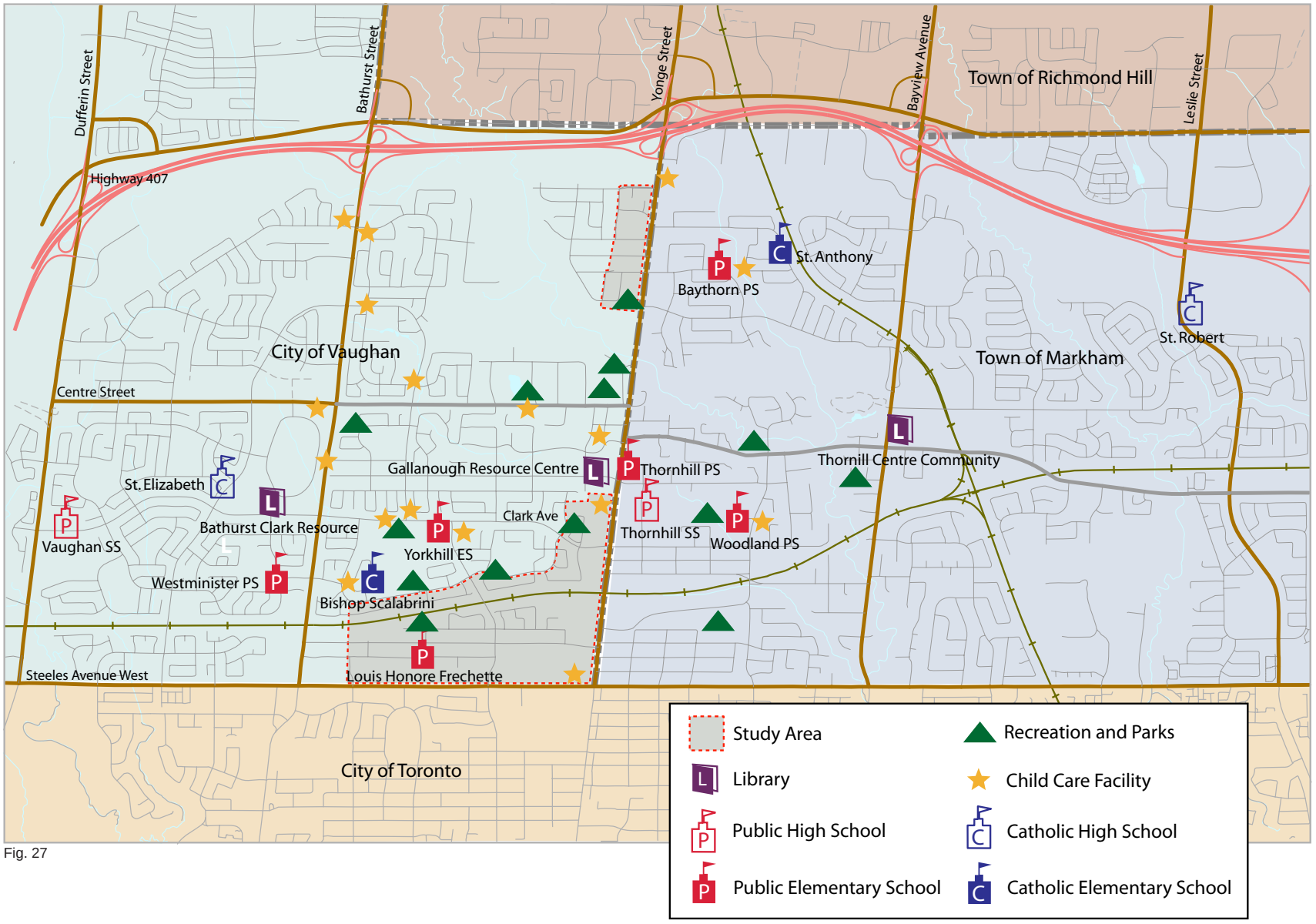


Fig. 27

3.7 Existing Transportation & Transit

3.7.1 Road Network

Yonge Street (York Road 1; former Highway 11) is a primary transportation corridor serving south-central York Region and the Thornhill area and functions as a major arterial roadway connecting to regional urban centres, Highway 407, and the Finch subway station. North of Steeles Avenue, it is under the jurisdiction of York Region; south of Steeles Avenue, it is under the jurisdiction of the City of Toronto. It has a six-lane cross-section from south of Steeles Avenue to a point north of Clark Avenue, where it narrows to a four-lane cross-section through Thornhill; at Langstaff Road, it widens back to a six-lane cross-section that extends through the Highway 407 interchange and Highway 7 connector road. The six-lane section south of Clark Avenue includes two general-purpose lanes and one high-occupancy vehicle (HOV) lane in each direction. There is a speed limit of 50km/h on Yonge Street from Steeles Avenue north to the Highway 407 interchange, where the speed limit increases to 60km/h.

Steeles Avenue is a major east-west arterial roadway that forms the boundary between the City of Toronto and York Region. It is under the jurisdiction of the City of Toronto, including all traffic signal operations. It has a four-lane basic cross-section, except for the section between Hilda Avenue and Yonge Street, which has a six-lane basic cross-section. The speed limit is posted at 60km/h.

In the South Study Area, the local street network is characterized by large blocks fronting along Yonge Street and Steeles Avenue, and a hierarchical street network consisting of collector roadways providing a connection between Yonge Street and curvilinear local neighbourhood streets. This contrasts with the local street network on the east side of Yonge Street, much of which generally consists of a typical post-war grid network with sections of short intersection spacing along Yonge Street (approximately 100 metres). There are traffic calming measures in place along Hilda Avenue, York Hill Boulevard, Pinewood Drive, and Crestwood Road — predominantly vertical measures such as speed humps and raised crosswalks.

In the North Study Area, the local street network generally consists of a modified grid, with irregular intersection spacing ranging from 75 to 250 metres.

Most of both the north and South Study Areas include private driveways on Yonge Street and Steeles Avenue, accessed via continuous two-way left turn lanes. There is a greater degree of access control on sections of Yonge Street between the two Study Areas (outside of the Thornhill heritage district).

Table 3 lists the intersections on Yonge Street and Steeles Avenue that operate under traffic signal control, including intersections between the North and South Study Areas.

Table 4 lists the arterial and collector roadways in the North and South Study Areas, and in the zone between the two Study Areas, including roadways intersecting with Yonge Street on the east side (in Markham). Other streets not listed are classified as local streets.

3.7.2 Traffic Volumes & Capacity

Traffic volumes for the Yonge Street and Steeles Avenue corridors were obtained from the Region of York and from the City of Toronto. These included peak hour turning movement counts at signalized and unsignalized intersections, and 24-hour directional counts at various locations on Yonge Street and on Steeles Avenue.

Existing AM and PM peak hour intersection turning movements for signalized intersections in the North and South Study Areas are shown on table 5 along with the existing lane configurations and other key traffic control measures. Adjustments were made to balance traffic at some intersections where the surveyed traffic volumes appeared to be inconsistent with upstream and downstream volumes.

Table 3 - Existing Signalized Intersections

	Intersecting Roadway	**Within Study Area**	**Bordering Study Area**	**Outside Study Area**
Yonge Street at:	Highway 407 eastbound ramp terminal/ Langstaff Road		✓	
	Uplands Avenue	✓		
	Royal Orchard Boulevard	✓		
	Centre Street/Thornhill Summit Way			✓
	John Street			✓
	Arnold Avenue/Elgin Street		✓	
	Clark Avenue	✓		
	Glen Cameron Road	✓		
	Auto Complex Street/Meadowview Avenue	✓		
	Steeles Avenue	✓		
Steeles Avenue at:	Centerpoint Mall	✓		
	Hilda Avenue	✓		
	Cactus Avenue		✓	

Table 4 - Existing Road Classification

	West of Yonge Street	**East of Yonge Street**
North Study Area	N/A (All streets are local streets)	Royal Orchard Boulevard (Collector)
Between Study Areas	Centre Street (Minor Arterial)	John Street (Arterial)
South Study Area	Clark Avenue (Minor Arterial) Hilda Avenue (Minor Arterial) York Hill Boulevard (Collector)	Clark Avenue (Collector) Glen Cameron Road (Collector) Doncaster Avenue (Major Collector)

Existing Street Network and Hierarchy

South Study Area

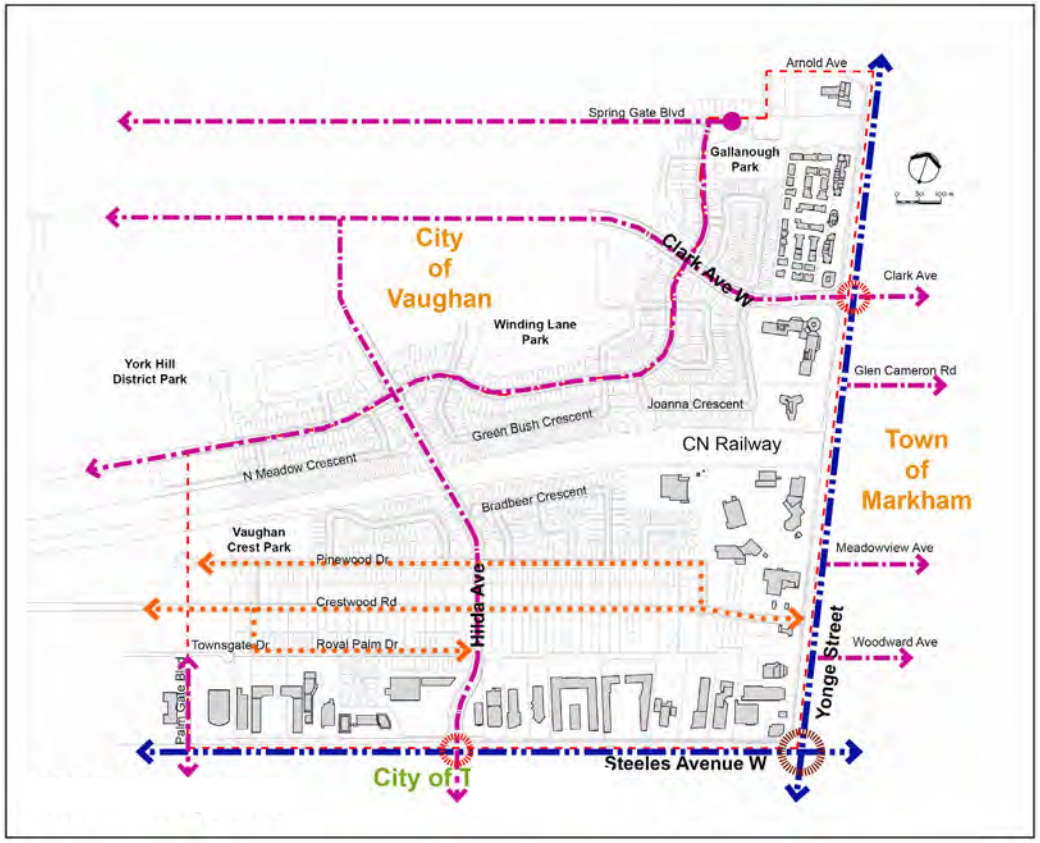


Fig. 28

North Study Area

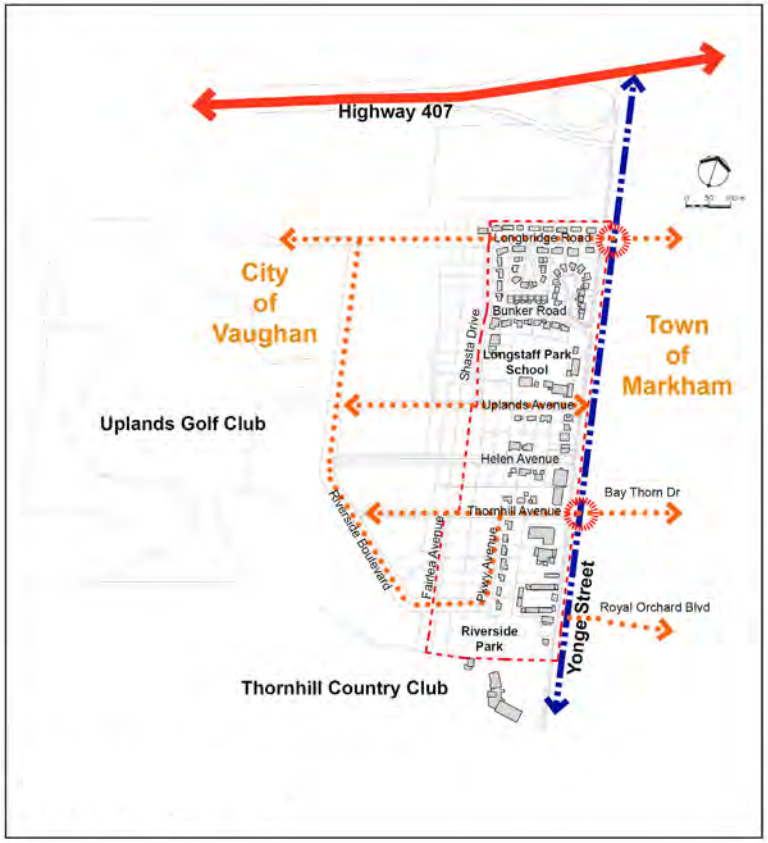


Fig. 29

Existing Intersection Traffic Volumes and Control Measures

South Study Area

North Study Area

Fig. 30

General corridor capacity was reviewed at a planning level using the 24-hour directional count data. Figure 32 below illustrates the hourly traffic volumes in each direction on Yonge Street at two locations (north of Steeles Avenue, and south of Royal Orchard Boulevard).

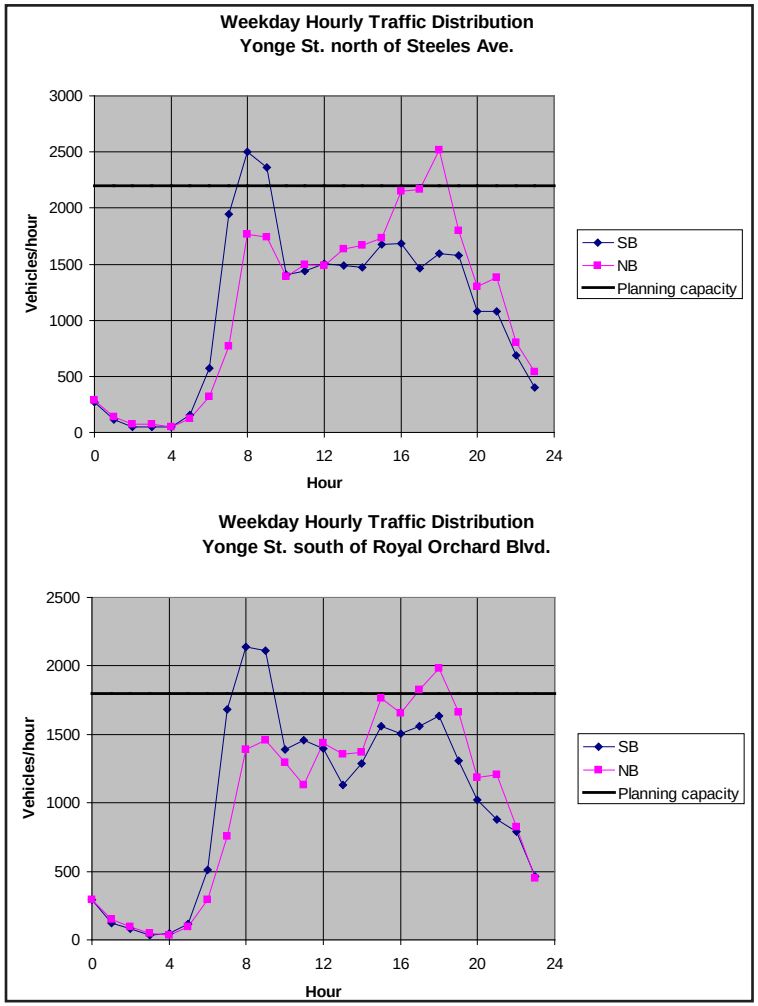


Fig. 32 Yonge Street Hourly Traffic Distribution

Planning-level capacity has been estimated at approximately 900 vehicles per hour per lane (or 400 vehicles per hour per direction for the high-occupancy vehicle lanes south of Clark Avenue), corresponding to a traffic capacity of 2,200 vehicles per hour in each direction at Steeles Avenue, and 1,800 vehicles per hour in each direction at Royal Orchard Boulevard. As illustrated in Figure 32, peak direction traffic is at or above capacity for a three-hour period in the morning and afternoon peaks; at Royal Orchard Boulevard, northbound traffic is essentially operating at capacity from 3:00 until 7:00 PM or later.

Other streets not listed are classified as local streets. Signalized intersection operations were assessed based on AM and PM peak hour turning movement volumes, using the methodology outlined in the 2000 Highway Capacity Manual (HCM) and the Synchro (version 6) software package. For each signalized intersection within the North and South Study Areas, the overall intersection level of service (LOS) and volume-to-capacity (v/c) ratios were noted. In addition, any critical movements were identified.

Table 5 — Existing Intersection Levels of Service

Intersection	AM Peak Hour			PM Peak Hour		
	LOS	v/c	Critical Movements*	LOS	v/c	Critical Movements*
Yonge St./Uplands Ave.	B	0.71	—	C	0.83	SBL
Yonge St./Royal Orchard Blvd.	C	0.83	—	B	0.76	—
Yonge St./Clark Ave.	C	0.90	—	D	>1.20	NBL
Yonge St./Glen Cameron Rd.	A	0.58	—	B	>1.20	SBL
Yonge St./Meadowview Ave.	A	0.59	—	D	0.97	WBL
Yonge St./Steeles Ave.	E	>1.20	EBL, WBL, NBL, SBL, SBT	E	>1.20	All movements
Steeles Ave./Centerpoint Mall	A	0.39	—	C	0.79	NBL
Steeles Ave./Hilda Ave.	D	0.87	NB, SBL	E	1.04	NB, SBL

*Refers to through lane v/c > 0.85, or turning lane v/c > 1.00

1. Level of Service (LOS), applied to an intersection, is a measure qualifying the amount of delay experienced by motorists, expressed either for specific turning movements or for the intersection as a whole. Level of service
2. Critical movements are defined as:
   - Any through movement, or shared through/turning lane, with a v/c greater than 0.85; and
   - Any exclusive turning lane with a v/c greater than 1.00.

During both the AM and PM peak hours, the primary corridor constraint is the Yonge Street/Steeles Avenue intersection, which is nearing operating capacity overall and for most through and turning movements. It is operating at a poor level of service (LOS E) during both peak periods. Traffic infiltration analyses are beyond the scope of the current study.

In the North Study Area, the two Study Area intersections (at Uplands/Yonge and at Royal Orchard/Yonge) are operating at reasonable levels of service (LOS B to LOS C) during the AM and PM peak hours. Most movements have some capacity overall, although the intersections are operating with moderately high v/c ratios (roughly 0.70 to 0.85).

In the South Study Area along Yonge Street north of Steeles Avenue, the primary capacity constraint is at Clark Avenue, which is operating at LOS C and near capacity during the AM peak hour, and at LOS D and over capacity during the PM peak hour. This is a reflection of significant turning traffic volumes, particularly on movements oriented to the west, since the number of access points from Yonge Street into this neighbourhood is limited. The other intersections between Steeles Avenue and Clark Avenue are generally operating at reasonable levels, although there are two left turn movements that are operating over capacity during the PM peak hour and impacting overall intersection results. Specifically, the westbound left turn from Meadowview Avenue, and the southbound left turn movement to Glen Cameron Road (which is a low-volume movement that has limited capacity due to high opposing volumes).

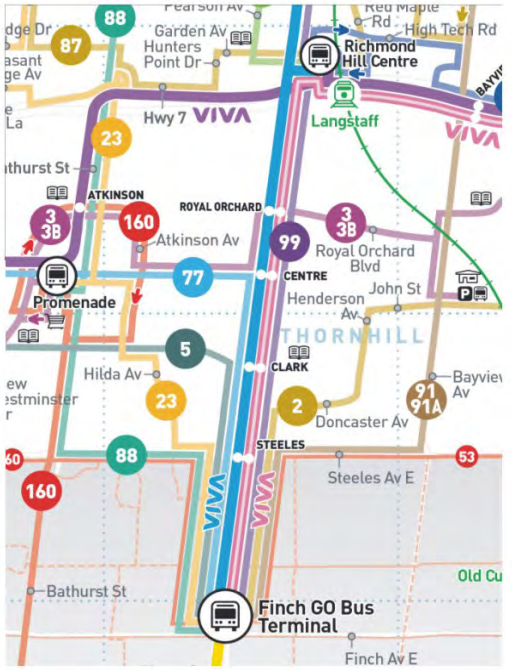
On Steeles Avenue, the Hilda Avenue intersection is operating at a poor level of service due to high demand and limited capacity on the single-lane northbound approach and the southbound left turn movement. The Centerpoint Mall signalized driveway is operating at a very good level of service during the AM peak hour when commercial traffic is light, and at a poorer level of service (LOS C) during the PM peak hour when traffic leaving the mall is heavier and operating at capacity.

Yonge Street is currently operating at capacity in the peak direction during the peak hours (southbound from 7:00 to 10:00 AM; northbound from 4:00 to 7:00 PM). Peak direction traffic volumes on Yonge Street typically reach more than 2,200 vehicles per hour in the South Study Area, and more than 1,800 vehicles per hour in the North Study Area. The primary constraint in the corridor is the Yonge Street/Steeles Avenue intersection, which is operating at capacity. Other constrained intersections in the Study Area include Yonge Street at Clark Avenue, and Steeles Avenue at Hilda Avenue, both of which are operating near or at capacity.

3.7.3 Existing Transit Service

Existing Service

The transit environment in the Study Area is dominated by the presence of the Toronto Transit Commission's (TTC) Yonge subway line, which currently ends at Finch station, 2km south of Steeles Avenue. Numerous TTC and York Region Transit (YRT)/Viva bus routes feed into the Finch bus terminals, leading to very high bus volumes on Yonge Street, particularly south of Steeles Avenue. In addition, there are 3,214 commuter parking spaces at Finch station, which are usually fully occupied by the end of the AM peak period. Up to 85% of these parking spaces are typically used by York Region residents; this contributes to high north-south traffic volumes on Yonge Street and other parallel roadways accessing the parking lots. Figure 33 illustrates the existing transit routes in the Study Area.



Source: YRT/VIVA Route Map, April 2008

Fig. 33 Existing Transit Service

Bus Rapid Transit

The primary transit service on Yonge Street is the Viva Blue line, which is a bus rapid transit service operating from Newmarket south along Yonge Street to the TTC's Finch subway station. Viva operates at high frequencies (every 5 minutes in peak periods; no longer than 15 minutes at other times) using articulated buses. In addition, the Viva Pink line operates on Yonge Street north to Highway 7, and then east through Markham, at 10-minute intervals in peak periods. Viva is a limited-stop service, with the following stops within the Study Area:

- Richmond Hill Centre (Highway 7)
- Royal Orchard Boulevard
- Centre Street
- Clark Avenue
- Steeles Avenue

YRT Surface Transit Routes

Local service on Yonge Street is provided by YRT Route 99 (Yonge), which makes intermediate stops between the Viva stations and operates less frequently (every 9 minutes in peak periods, and every half-hour at other times).

In addition to the core Yonge Street service, there are 7 other local YRT routes that converge onto Yonge Street to provide a direct connection to the Finch subway station.

YRT Express Routes

There are 5 premium-fare express routes operated by YRT that use Yonge Street to reach Finch subway station. These routes do not stop within the Study Area and therefore are not available to serve potential riders in the Study Area, but do contribute to bus volumes along Yonge Street. These routes operate in the AM and PM peak periods in the peak direction only (southbound in the AM peak; northbound in the PM peak), at headways generally ranging from 15 to 30 minutes each.

GO Transit

In addition to the Viva and YRT routes noted above, GO Transit's Newmarket "B" bus route operates from York Mills subway station north to the Newmarket terminal, southbound at 10-minute headways in the AM peak period and northbound at 12- to 15-minute headways in the PM peak period.

TTC Surface Transit Routes

Transit service to the south end of the Study Area is also provided by the TTC. The 60 Steeles West and 53 Steeles East buses currently travel north from Finch Station, and then turn west and east onto Steeles Avenue. There is also supplementary half-hourly service on Yonge Street provided by the 97 Yonge route, which ends at Steeles Avenue.

Summary of Transit Frequencies

Table 6 outlines the scheduled headways (interval between buses) for each route within the Study Area as of November 2008, and the times at which service is offered on each route.

Table 6 - Scheduled Transit Headways

Route	Existing Scheduled Headway (minutes)														
	Weekday					Saturday					Sunday				
	AM	Mid	PM	Eve.	Late	Early	Morn.	Aft.	Eve.	Late	Early	Morn.	Aft.	Eve.	Late
Viva routes:															
Viva Blue	5	12	5	10-15	15	15	15	10	10	15	15	15	15	15	15
Viva Pink	10	—	10	—	—	—	—	—	—	—	—	—	—	—	—
Local YRT routes:															
99 Yonge South	12	30	12	30	30	30	30	30	30	30	30	30	30	30	30
2 Milliken	15	30	15	60	60	—	30	30	30	30	—	60	60	60	60
5 Clark	15	30	15	10-15	30	30	30	30	30	30	—	—	—	—	—
77 Highway 7–Centre St.	15	30	15	10-20	30	30	30	30	30	45	—	45	45	45	45
3 Thornhill–York U. (Centre to Royal Orchard)	20	40	20	45	45	40	40	40	40	—	—	40	40	40	—
Local YRT routes (south of Steeles only)															
23 Thornhill Woods	30	40	30	40	40	—	—	—	—	—	—	—	—	—	—
88 Bathurst	20	30	10-25	45	60	30	30	30	30	30	45	45	45	45	—
91 Bayview South	5-10	30	7.5-10	30	30	30	30	30	30	30	60	40	40	40	60
Express YRT routes (peak direction only; no stops in study area)															
300 Business Express	20	—	30	—	—	—	—	—	—	—	—	—	—	—	—
301 Markham Express	15	—	15	—	—	—	—	—	—	—	—	—	—	—	—
302 Unionville Express	30	—	30	—	—	—	—	—	—	—	—	—	—	—	—
303 Bur Oak Express	15	—	25	—	—	—	—	—	—	—	—	—	—	—	—
340 Bayview Express	30	—	—	—	—	—	—	—	—	—	—	—	—	—	—
GO Transit:															
Newmarket “B”	10	—	12-15	—	—	—	—	—	—	—	—	—	—	—	—
TTC routes:															
53 Steeles East	2	6	2.4	5	10	15	10	6	18	20	11	11	7	18	20
60 Steeles West	3	4	3	12	10	15	5.5	5.5	16	20	—	7.5	7.5	20	20
97 Yonge	30	30	30	30	30	30	30	30	30	30	—	30	30	30	30

In the AM and PM peak periods, there are 50 to 56 buses per hour scheduled to operate on Yonge Street in the peak direction north of Steeles Avenue, and roughly 110 to 120 per hour in the peak direction south of Steeles Avenue (including TTC buses).

Transit service in the Study Area currently consists predominantly of TTC and YRT surface bus routes and the Viva Yonge Street bus rapid transit line. The transit route structure in the Study Area is dominated by the TTC's Yonge subway line, which currently ends at Finch station, 2km south of Steeles Avenue. The majority of surface transit routes in the Study Area converge onto Yonge Street and travel south to meet the subway, resulting in significant bus traffic on Yonge Street and at the Yonge Street/Steeles Avenue intersection (up to 120 vehicles per hour, per direction south of Steeles Avenue). In addition, the subway impacts traffic volumes in general, particularly on north-south roads, since the majority of the 3,200 park-and-ride spaces at Finch station are typically used by York residents driving across the municipal boundary.

3.7.4 Existing Plans for Future Transit Service

The existing Viva service, consisting of frequent limited-stop service operating in mixed traffic, is the first phase of planned rapid transit on Yonge Street. The second phase has been planned to consist of dedicated transit lanes along the centre of Yonge Street, which would allow buses to bypass general traffic congestion and thus improve transit travel speeds and reliability. There would be stations corresponding roughly to the existing Viva stops. This project has been approved from Finch station to Richmond Hill Centre, and funding has been identified. However, this project is currently on hold pending confirmation of timing and funding of a potential extension of the Yonge subway line.

As part of the Metrolinx Regional Transportation Plan released in September 2008, an extension of the Yonge subway to Richmond Hill Centre (Highway 7) has been recommended as a priority project. Preliminary planning is already underway for a subway extension, including station requirements. Table 7 outlines the likely station locations and facilities that have been identified as of November 2008.

In addition to the above, there would be a major restructuring of surface transit routes to redirect service to new stations, rather than to the existing Finch terminal.

The Yonge line is currently planned to operate with two terminal stations, with half of all trains operating the full distance to Richmond Hill Centre, and the other half turning back at Finch. Based on existing peak period headways, this would result in service every 4 to 5 minutes through the

Table 7 — Yonge Subway Extension Proposed Stations

Station	Description
Richmond Hill Centre (Highway 7)	Major transit node with bus terminal and passenger pick-up and drop-off
Bunker/Longbridge	Commuter parking (2,000-2,500 spaces); passenger pick-up and drop-off
Royal Orchard	Intermediate station serving primarily walk-in traffic
Clark	Intermediate station serving primarily walk-in traffic
Steeles	Major transit node with bus terminal and passenger pick-up and drop-off
Cummer/Drewry	Intermediate station with bus loop

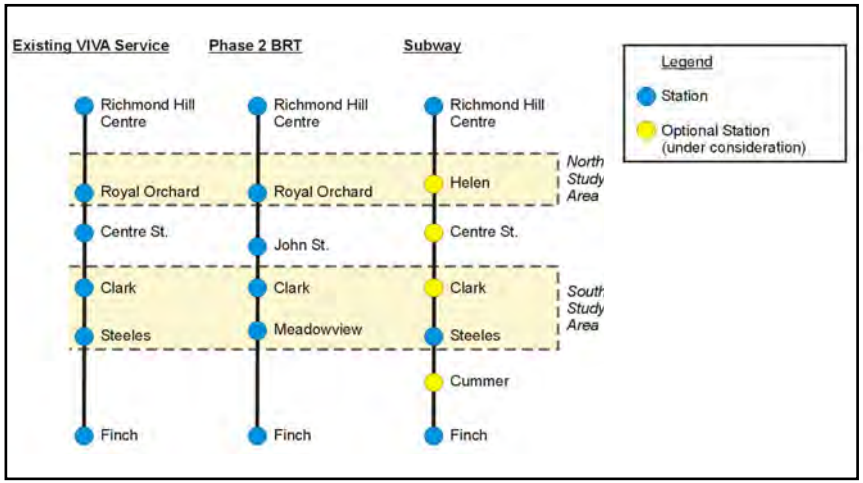


Fig. 34 Existing & Proposed Transit Service

Study Area. These headways are expected to be reduced slightly once signal replacement is complete along the Yonge line (considered a pre-requisite to the extension opening, in order to provide additional capacity in the south part of the line).

It is currently estimated that the earliest that the subway extension would be open and operational would be the end of 2016.

Metrolinx has identified the extension of the Yonge subway north to Highway 7 as a priority project in its Regional Transportation Plan. Based on plans completed to date by TTC and York Region, major bus terminals are planned at the Highway 7 and Steeles Avenue stations, and a major commuter parking lot is planned at a Bunker/Longbridge station. Other potential local stations include Royal Orchard Road and Clark Avenue.

The Yonge subway extension has the potential to significantly influence travel patterns and transportation choices in the Study Area. During the AM peak hour, roughly 15-20% of the Study Area residents and 10% of employees travel via transit. In the North York Centre corridor between Finch and Sheppard stations, these percentages increase to approximately 40% of residents and 33% of employees (higher for sites within walking distance of the subway stations).

3.7.5 Existing Travel Patterns

Data from the 2006 Transportation Tomorrow Survey (TTS) database were reviewed to assess the current origin-destination patterns and transportation mode choices made by residents and employees within the Study Area and within nearby comparable areas. Data outlined below refers to AM peak period conditions for outbound residential trips and for inbound employment trips.

Origins & Destinations

Table 8 summarizes the AM peak period trip destinations for Study Area residents and the trip origins for Study Area employees. (For the purposes of this assessment, the Study Area has been expanded to include the zones on both sides of Yonge Street, from Highway 407 south to Steeles Avenue).

Table 8 - AM Peak Period Origin/Destination Data

	Percentage of AM Peak Period Trips					
	Destinations of Study Area Residents			Origins of Study Area Employees		
	All Trips	Auto Trips	Transit Trips	All Trips	Auto Trips	Transit Trips
Toronto (416 area)	**54%**	**46%**	**85%**	**37%**	**33%**	**76%**
Downtown Toronto (PD 1)	14%	4%	59%	2%	1%	4%
North York Centre (PD 11)	13%	14%	7%	10%	10%	14%
Midtown Toronto (PD 4)	5%	4%	7%	4%	4%	8%
Toronto West	12%	13%	9%	8%	7%	21%
Toronto East	10%	11%	3%	13%	11%	29%
Outside Toronto (905 area):	**47%**	**53%**	**15%**	**63%**	**68%**	**23%**
Vaughan	19%	22%	3%	21%	24%	0%
Markham	15%	17%	9%	11%	13%	0%
Richmond Hill	6%	7%	1%	10%	10%	11%
Other York Region (North)	1%	1%	1%	10%	10%	8%
Peel/Halton	5%	5%	1%	4%	4%	4%
Durham	1%	1%	0%	7%	7%	0%

More than half (54%) of all trips made by Study Area residents in the AM peak period are bound for the City of Toronto (and roughly one-third of all trips are bound for the planning districts along the Yonge Street corridor). In contrast, slightly less than two-thirds (63%) of trips to work made by Study Area employees in the AM peak period have an origin outside the City of Toronto. These trips are more widely spread out, with roughly 20% originating in Vaughan, and roughly 10% originating in each of Markham, Richmond Hill, northern York Region, and outside York Region. Only 16% of Study Area employee trips originate in the planning districts along the

Yonge Street corridor.

Most transit trips have an external trip end in the City of Toronto. In particular, 59% of AM peak period transit trips made by Study Area residents are bound for the downtown area.

The distribution of auto trips is generally similar to the overall trip distribution, except that trips bound to downtown Toronto are under-represented (since most of those trips are made via transit, as noted above).

Transportation Modal Split

Table 9 below outlines the modal split (i.e., the percentage of trips made by different modes of transportation) for residents of the Study Area during the AM peak period, in the peak direction (outbound).

Table 9 — AM Peak Period Residential Modal Split

	AM Peak Hour Outbound Trips by Mode				
	Driver	**Passen-ger**	**Transit**	**Walking**	**Cy-cling**
Study Area:					
Highway 407 to CN corridor	64%	16%	13%	7%	0%
CN corridor to Steeles Avenue	48%	12%	31%	7%	1%
Overall average	62%	16%	15%	7%	0%
East of Yonge, 407 to Steeles	61%	12%	19%	8%	0%
Yonge corridor, Steeles to Finch	48%	11%	32%	9%	0%
North York Centre (Finch to Sheppard)	38%	11%	41%	9%	1%

For comparative purposes, modal split percentages were also determined for other nearby areas with varying degrees of transit access: the area on the east side of Yonge Street between Highway 407 and Steeles Avenue; the Yonge Street corridor between Steeles Avenue and Finch Avenue (i.e., north of the Yonge subway but within the City of Toronto); and the North York Centre area along Yonge Street between Finch Avenue and Highway 401. Table 10 outlines the modal split for employees in those same areas during the AM peak period, in the peak direction (inbound).

Table 10 - AM Peak Period Employment Modal Split

	AM Peak Hour Inbound Trips by Mode				
	Driver	**Passen-ger**	**Transit**	**Walking**	**Cy-cling**
Study Area:					
Highway 407 to CN corridor	79%	5%	15%	2%	0%
CN corridor to Steeles Avenue	79%	9%	7%	4%	1%
Overall average	79%	7%	10%	3%	1%
East of Yonge, 407 to Steeles	82%	8%	8%	2%	0%
Yonge corridor, Steeles to Finch	74%	6%	17%	2%	0%
North York Centre (Finch to Sheppard)	56%	7%	33%	4%	0%

Trips made by residents in the Study Area, and in the other zones used for comparative purposes, can be divided roughly into three categories.

- Residents in the vicinity of the subway (North York Centre area) make approximately 40% of AM peak hour trips both by subway and by driving.
- For residents within walking distance of TTC bus service, but north of Finch station, the transit modal split decreases to roughly 30%, and the auto driver split increases to roughly 50%.
- For residents outside walking distance of TTC service, the transit modal split decreases to roughly 15%, and the auto driver split increase to roughly 60% to 65%.

In all zones, auto passengers comprise 10% to 15% of all trips; pedestrians comprise 7% to 10% of all trips; and bicycle trips comprise 1% or less of all trips.

Part of the Study Area (the section north of Steeles Avenue and south of the CN corridor) is within walking distance of the Steeles West TTC bus, and has a modal split similar to areas south of Steeles Avenue. A similar trend is observed in zones farther to the west and east, in that transit ridership levels drop off slightly north of Steeles Avenue, rather than immediately at the Toronto/York Region boundary. This is likely a result of two factors: primarily the fare zone boundary at Steeles Avenue and the

need to pay a second fare upon entering Toronto, and potentially also the higher level of service along most routes in Toronto than in York Region (in terms of bus frequency and hours of service).

As noted above, more than 40% of AM peak period trips made by North York Centre area residents are made via the TTC. This is largely due to the presence of the Yonge subway, but also reflects more aggressive TDM measures to limit automobile use (e.g., parking policies that discourage ownership of more than one vehicle per household; provision of auto-sharing; etc.).

It should be noted that the modal splits outlined above are likely conservative in that the analysis zones include some residents and employees beyond walking distance of Yonge Street, for whom transit travel would be more inconvenient. For residents within walking distance of higher-frequency transit service, the proportion of trips made via transit would likely be higher than the overall average.

Similar to the residential modal splits, transit usage is lowest amongst employees working beyond walking distance of TTC routes, is higher south of Steeles Avenue, and is greatest in the North York Centre area.

A comparison with the residential modal splits reveals that Study Area employees are much more likely to drive alone than Study Area residents, and are less likely to carpool or use transit. This is a reflection of the origin-destination data shown above. Trips made by Study Area residents are more likely to be bound for the downtown core, or other sub-centres along the Yonge Street corridor. For these trips, the Yonge subway is a convenient and direct alternative to the car, and there are more constraints on automobile travel downtown and in denser urban areas (e.g., limited or paid parking; congestion). Trips made by Study Area employees are more widely scattered across the GTA along routes less conducive to transit travel; additionally, there are less likely to be parking constraints at workplaces in the Study Area.

3.8 Existing Civil Infrastructure

The analysis of the sanitary sewer system servicing the properties fronting Yonge Street has been prepared based on GIS data and as built drawings provided by City of Vaughan and York Region.

With regards to the Region of York's York-Durham trunk sewer servicing this Study Area, the Region has confirmed they expect their system has, or will have, enough capacity to handle intensification of this area until the year 2051 and has reported that there are no known problems or concerns with the Steeles Avenue East Collector at this time.

3.8.1 Sanitary Sewers

Sanitary Sewers – South Study Area
The current sanitary sewer system providing service to the potential redevelopment properties is as follows (refer to figure 35):

1. Sanitary sewage from the properties fronting Yonge Street, between Crestwood Road and the Canadian National Railway Railway Corridor, outlet via City of Vaughan sanitary sewers located within the Crestwood Road right-of-way. These flows then proceed to the Hilda Avenue sanitary sewers and eventually to a manhole located on the intersection of Hilda Avenue and Steeles Avenue West. This manhole is connected to the York Region sanitary trunk sewer by a 1.0m long, 450mm diameter stub. The sewage enters the vortex chamber and is conveyed down a 300mm drop pipe to the 1676mm diameter concrete York Region sanitary trunk and then west to the Steeles East Collector.
2. Sanitary sewage from the properties fronting Yonge Street, south of Crestwood Road, and from those fronting Steeles Avenue outlet to the City of Vaughan system located within both the Yonge Street and Steeles Avenue right-of-ways, and is conveyed to the Region of York trunk sanitary sewer at the Hilda Avenue intersection as described above in item #1.

Our analysis is provided in the spreadsheet entitled "Sanitary Capacity Analysis" (table 11).

These calculations identified no existing problems related to pipe ca-

Existing Sanitary Sewer System - South

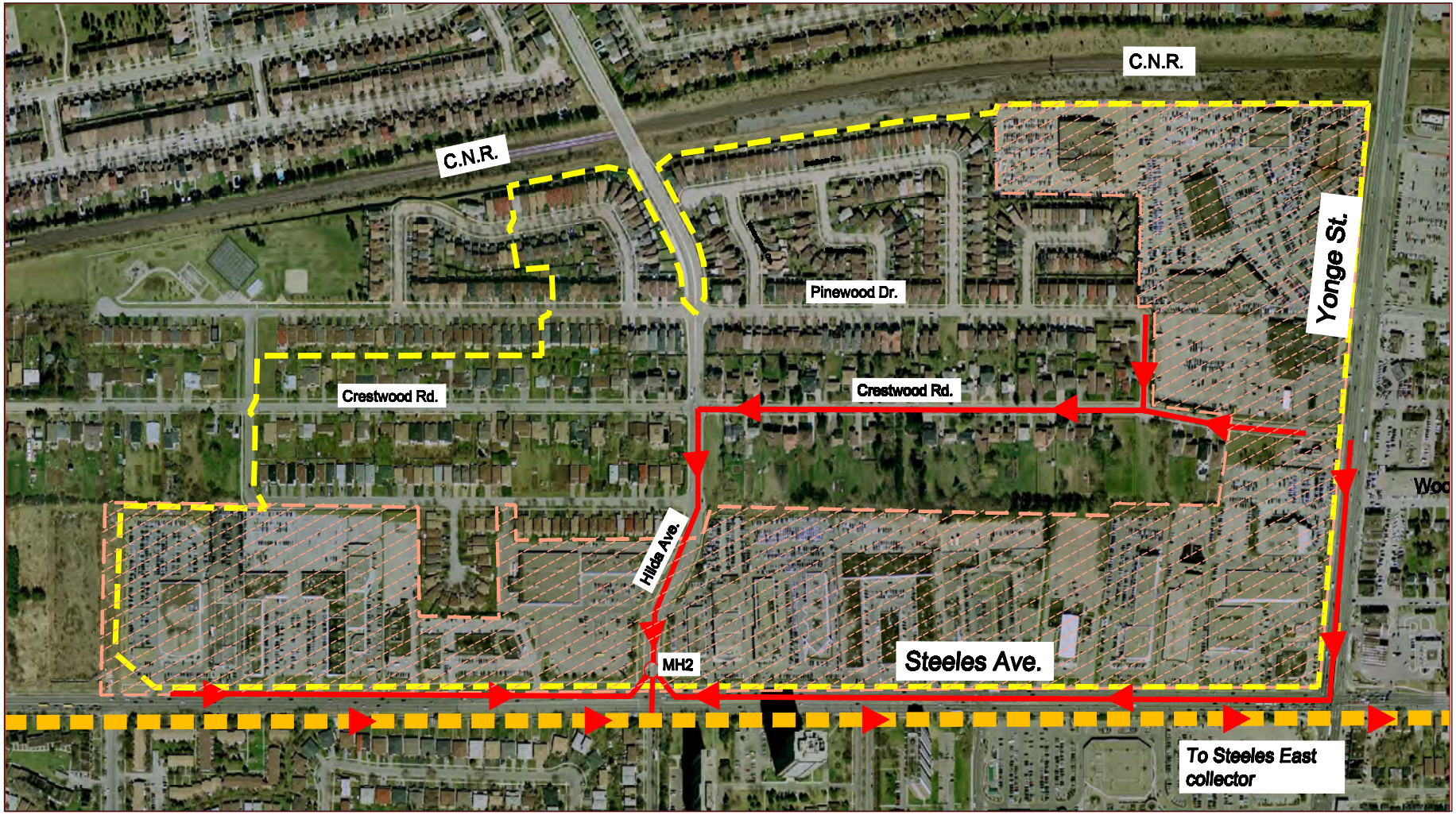


Fig. 35

Table 11: Sanitary Capacity Analysis Sheet

Minimum Dia. =	**200**	**mm**							**SANITARY SEWER CAPACITY ANALYSIS**																		
Mannings "n"=	**0.013**								**Yonge Street Corridor (Existing Drainage)**																		
Minimum Velocity =	**0.6**	**m/s**							**The Regional Municipality of York**																		
Minimum Grade =	**0.1**	**%**																									
Avg. Domestic Flow =	**450**	**l/c/d**																**Project:**					**Yonge Street Corridor Study**				
Infiltration =	**0.23**	**l/s/ha**																**Project No:**					**088877**				
Max. Peaking Factor=	**4.0**																	**Date:**					**Dec. 04, 2008**				
Min. Peaking Factor=	**2.0**																	**Designed by:**					**BA**				
Maximum Velocity =	**3**	**m/s**																**NOMINAL PIPE SIZE USED**									
G:\CAD\088877-Yonge Corridor Study\Pipedesign\[Yonge-SAN-SOUTH.xls]EXISTING																											

			RESIDENTIAL							COMMERCIAL/INDUSTRIAL/INSTITUTIONAL/EXTERNAL					FLOW CALCULATIONS						PIPE DATA				
STREET	FROM MH	TO MH	AREA (ha)	ACC. AREA (ha)	UNITS (#)	DENISTY (P/ha)	DENSITY (P/unit)	POP	ACC. RES. POP.	AREA (ha)	ACC. AREA (ha)	EQUIV. POP. (p/ha)	FLOW RATE (l/s/ha)	ACC. EQUIV. POP.	INFILTRATION (l/s)	TOTAL ACC. POP.	PEAKING FACTOR	RES. FLOW (l/s)	COMM. FLOW (l/s)	TOTAL FLOW (l/s)	DIA. (mm)	SLOPE (%)	Q FULL (l/s)	V FULL (m/s)	V ACT (m/s)
PINEWOOD DRIVE	1A	2A	0.37	0.37	7		4	28	28	0	0	0	0	0	0.1	28	4.00	0.6	0.0	0.7	200	1.30	37.4	1.19	0.45
0	2A	3A	0.61	0.98	11		4	44	72	0	0	0	0	0	0.2	72	4.00	1.5	0.0	1.7	200	1.00	32.8	1.04	0.54
0	3A	4A	0.65	3.05	10		4	40	340	0	0	0	0	0	0.7	340	4.00	7.1	0.0	7.8	200	0.50	23.2	0.74	0.66
0	4A	5A	0.66	4.83	9		4	36	452	0	0	0	0	0	1.1	452	4.00	9.4	0.0	10.5	200	0.56	24.5	0.78	0.75
0	5A	6A	0.54	8.00	10		4	40	700	0	0	0	0	0	1.8	700	3.89	14.2	0.0	16.0	200	0.50	23.2	0.74	0.80
0	6A	7A	0.57	8.57	11		4	44	744	0	0	0	0	0	2.0	744	3.88	15.0	0.0	17.0	200	0.50	23.2	0.74	0.80
0	7A	8A	0.44	10.18	8		4	32	860	0	0	0	0	0	2.3	860	3.84	17.2	0.0	19.5	200	0.60	25.4	0.81	0.89
HILDA AVE.	8A	9A	0	13.29	0			0	1096	0	0	0	0	0	3.1	1096	3.77	21.5	0.0	24.6	250	0.50	42.0	0.86	0.88
0	9A	10A	0	27.99	0			0	1488	0	10.63	0	0	797.25	8.9	2285.25	3.54	42.1	0.0	51.0	400	0.40	131.6	1.05	0.98
0	10A	11A	0	32.41	0			0	1804	2.67	18.21	75	0	1365.75	11.6	3169.75	3.42	56.5	0.0	68.1	400	0.27	108.2	0.86	0.91
0	11A	12A	0	32.41	0			0	1804	1.45	19.66	75	0	1474.5	12.0	3278.5	3.41	58.2	0.0	70.2	400	0.30	114.4	0.91	0.95
0	12A	13A	0	32.41	0			0	1804	0	40.82	0	0	3061.5	16.8	4865.5	3.26	82.5	0.0	99.4	450	0.70	238.4	1.50	1.43
PORTOFINO CRT.	14A	15A	1.09	1.09	29		4	116	116	0	0	0	0	0	0.3	116	4.00	2.4	0.0	2.7	200	1.00	32.8	1.04	0.62
0	15A	3A	0.33	1.42	28		4	112	228	0	0	0	0	0	0.3	228	4.00	4.8	0.0	5.1	200	1.00	32.8	1.04	0.75
BRADBER CRES.	16A	17A	0.64	0.64	11		4	44	44	0	0	0	0	0	0.1	44	4.00	0.9	0.0	1.1	200	0.50	23.2	0.74	0.37
0	17A	4A	0.48	1.12	8		4	32	76	0	0	0	0	0	0.3	76	4.00	1.6	0.0	1.8	200	0.50	23.2	0.74	0.44
0	16AA	18A	0.56	0.56	11		4	44	44	0	0	0	0	0	0.1	44	4.00	0.9	0.0	1.0	200	1.33	37.8	1.20	0.51
0	18A	19A	0.72	1.28	18		4	72	116	0	0	0	0	0	0.3	116	4.00	2.4	0.0	2.7	200	0.70	27.4	0.87	0.55
SILVERPINE AVE.	19A	20A	0.45	1.73	7		4	28	144	0	0	0	0	0	0.4	144	4.00	3.0	0.0	3.4	200	1.04	33.4	1.06	0.67
0	20A	21A	0.45	2.18	7		4	28	172	0	0	0	0	0	0.5	172	4.00	3.6	0.0	4.1	200	1.30	37.4	1.19	0.77
0	21A	5A	0.45	2.63	9		4	36	208	0	0	0	0	0	0.6	208	4.00	4.3	0.0	4.9	200	0.84	30.0	0.96	0.70
BRADBER CRES.	23A	24A	0.54	0.54	10		4	40	40	0	0	0	0	0	0.1	40	4.00	0.8	0.0	1.0	200	3.45	60.9	1.94	0.67
WINTERGREEN CRS.	24A	25A	0	0.54	0			0	40	0	0	0	0	0	0.1	40	4.00	0.8	0.0	1.0	200	0.71	27.7	0.88	0.40
0	25A	26A	0.33	0.87	6		4	24	64	0	0	0	0	0	0.2	64	4.00	1.3	0.0	1.5	200	0.51	23.3	0.74	0.41
0	26A	7A	0.3	1.17	5		4	20	84	0	0	0	0	0	0.3	84	4.00	1.8	0.0	2.0	200	0.63	26.1	0.83	0.48
CRESTWOOD RD.	27A	28A	0	0.00	0		4	0	0	3.33	3.33	75	0	249.75	0.8	249.75	4.00	5.2	0.0	6.0	200	0.58	25.0	0.79	0.65
0	28A	29A	0.82	0.82	4		4	16	16	0	3.33	0	0	249.75	1.0	265.75	4.00	5.5	0.0	6.5	200	0.59	25.3	0.80	0.67
0	29A	30A	1.48	2.72	7		4	28	60	0	10.63	0	0	797.25	3.1	857.25	3.84	17.2	0.0	20.2	250	0.43	39.2	0.80	0.80
0	30A	31A	1.75	4.47	11		4	44	104	0	10.63	0	0	797.25	3.5	901.25	3.83	18.0	0.0	21.4	250	0.43	38.8	0.79	0.81
0	31A	32A	1.43	5.90	8		4	32	136	0	10.63	0	0	797.25	3.8	933.25	3.82	18.6	0.0	22.4	250	0.49	41.5	0.85	0.86
0	32A	33A	1.8	7.70	11		4	44	180	0	10.63	0	0	797.25	4.2	977.25	3.81	19.4	0.0	23.6	250	0.48	41.1	0.84	0.86
0	33A	9A	1.56	9.26	8		4	32	212	0	10.63	0	0	797.25	4.6	1009.25	3.80	20.0	0.0	24.5	250	0.53	43.2	0.88	0.90
POWELL RD.	34A	29A	0.42	0.42	4		4	16	16	7.3	7.3	75	0	547.5	1.8	563.5	3.95	11.6	0.0	13.4	200	0.46	22.1	0.70	0.74
ROYAL PALM DR.	PL	35A	0.55	0.55	9		4	36	36	4.91	4.91	75	0	368.25	1.3	404.25	4.00	8.4	0.0	9.7	250	0.50	42.0	0.86	0.69
0	35A	36A	0.17	0.72	3		4	12	48	0	4.91	0	0	368.25	1.3	416.25	4.00	8.7	0.0	10.0	250	0.60	46.0	0.94	0.74
0	36A	37A	0.42	1.14	6		4	24	72	0	4.91	0	0	368.25	1.4	440.25	4.00	9.2	0.0	10.6	250	0.48	41.2	0.84	0.70
0	37A	38A	0.58	2.58	10		4	40	184	0	4.91	0	0	368.25	1.7	552.25	3.95	11.4	0.0	13.1	250	0.42	38.5	0.78	0.71
0	38A	39A	0.86	3.44	16		4	64	248	0	4.91	0	0	368.25	1.9	616.25	3.93	12.6	0.0	14.5	250	0.40	37.6	0.77	0.72
0	39A	10A	0.98	4.42	17		4	68	316	0	4.91	0	0	368.25	2.1	684.25	3.90	13.9	0.0	16.0	250	0.60	46.0	0.94	0.85
SYLVESTER CRT.	40A	37A	0.86	0.86	18		4	72	72	0	0	0	0	0	0.2	72	4.00	1.5	0.0	1.7	200	0.94	31.8	1.01	0.52
CRESTWOOD RD.	41A	42A	1.05	1.05	8		4	32	32	0	0	0	0	0	0.2	32	4.00	0.7	0.0	0.9	200	1.29	37.3	1.19	0.48
0	42A	43A	1.24	2.29	11		4	44	76	0	0	0	0	0	0.5	76	4.00	1.6	0.0	2.1	200	0.95	32.0	1.02	0.57
0	43A	44A	1.04	3.33	9		4	36	112	0	0	0	0	0	0.8	112	4.00	2.3	0.0	3.1	200	0.72	27.9	0.89	0.58
0	44A	45A	1.1	4.43	9		4	36	148	0	0	0	0	0	1.0	148	4.00	3.1	0.0	4.1	200	0.54	24.0	0.77	0.56
0	45A	9A	1.01	5.44	8		4	32	180	0	0	0	0	0	1.3	180	4.00	3.8	0.0	5.0	200	0.51	23.3	0.74	0.59
PINEWOOD DRIVE	46A	47A	0.77	0.77	15		4	60	60	0	0	0	0	0	0.2	60	4.00	1.3	0.0	1.4	200	1.50	40.1	1.28	0.58
0	47A	8A	0.56	3.11	11		4	44	236	0	0	0	0	0	0.7	236	4.00	4.9	0.0	5.6	200	1.70	42.7	1.36	0.93
CROTEAU CRS.	48A	49A	0.9	0.90	18		4	72	72	0	0	0	0	0	0.2	72	4.00	1.5	0.0	1.7	200	0.85	30.3	0.96	0.52
0	49A	50A	0.59	1.49	11		4	44	116	0	0	0	0	0	0.3	116	4.00	2.4	0.0	2.8	200	0.62	25.7	0.82	0.53
0	50A	47A	0.29	1.78	4		4	16	132	0	0	0	0	0	0.4	132	4.00	2.8	0.0	3.2	200	0.59	25.1	0.80	0.53
0	48AA	51A	0.36	0.36	8		4	32	32	0	0	0	0	0	0.1	32	4.00	0.7	0.0	0.7	200	1.50	40.1	1.28	0.48
0	51A	52A	0.37	0.73	5		4	20	52	0	0	0	0	0	0.2	52	4.00	1.1	0.0	1.3	200	1.31	37.5	1.19	0.54
0	52A	53A	0.1	0.83	0			0	52	0	0	0	0	0	0.2	52	4.00	1.1	0.0	1.3	200	1.15	35.1	1.12	0.53
0	53A	55A	0.68	1.51	15		4	60	112	0	0	0	0	0	0.3	112	4.00	2.3	0.0	2.7	200	0.57	24.8	0.79	0.51
STEELES AVE.	60A	61A	0	0.00	0			0	0	0.87	3.24	75	0	243	0.7	243	4.00	5.1	0.0	5.8	250	0.47	40.7	0.83	0.58
0	61A	62A	0	0.00	0			0	0	2.76	6	75	0	450	1.4	450	4.00	9.4	0.0	10.7	250	0.48	41.2	0.84	0.70
0	62A	63A	0	0.00	0			0	0	1.3	7.3	75	0	547.5	1.7	547.5	3.95	11.3	0.0	13.0	250	0.43	39.0	0.79	0.71
0	63A	64A	0	0.00	0			0	0	2.31	9.61	75	0	720.75	2.2	720.75	3.89	14.6	0.0	16.8	250	0.48	41.2	0.84	0.79
0	64A	65A	0	0.00	0			0	0	2.21	11.82	75	0	886.5	2.7	886.5	3.83	17.7	0.0	20.4	250	0.41	38.1	0.78	0.79
0	65A	66A	0	0.00	0			0	0	1.87	13.69	75	0	1026.75	3.1	1026.75	3.79	20.3	0.0	23.4	250	0.53	43.1	0.88	0.89
0	66A	67A	0	0.00	0			0	0	0	13.69	0	0	1026.75	3.1	1026.75	3.79	20.3	0.0	23.4	250	0.57	44.9	0.91	0.92
0	67A	12A	0	0.00	0			0	0	0	13.69	0	0	1026.75	3.1	1026.75	3.79	20.3	0.0	23.4	250	0.68	49.0	1.00	0.98
YONGE STREET	80A	81A	0	0.00	0			0	0	1.95	1.95	75	0	146.25	0.4	146.25	4.00	3.0	0.0	3.5	200	0.39	20.5	0.65	0.48
0	81A	60A	0	0.00	0			0	0	0.42	2.37	75	0	177.75	0.5	177.75	4.00	3.7	0.0	4.2	200	0.49	22.9	0.73	0.56
STEELES AVE.	82A	83A	0	0.00	0			0	0	2.67	2.67	75	0	200.25	0.6	200.25	4.00	4.2	0.0	4.8	200	0.41	21.0	0.67	0.54
0	83A	84A	0	0.00	0			0	0	2.13	4.8	75	0	360	1.1	360	4.00	7.5	0.0	8.6	200	0.54	24.2	0.77	0.70
0	84A	85A	0	0.00	0			0	0	1.89	6.69	75	0	501.75	1.5	501.75	3.97	10.4	0.0	11.9	200	0.48	22.7	0.72	0.73
0	85A	86A	0	0.00	0			0	0	0.78	7.47	75	0	560.25	1.7	560.25	3.95	11.5	0.0	13.2	200	0.36	19.7	0.63	0.67
0	86A	87A	0	0.00	0			0	0	0	7.47	0	0	560.25	1.7	560.25	3.95	11.5	0.0	13.2	200	0.57	24.7	0.79	0.80
0	87A	12A	0	0.00	0			0	0	0	7.47	0	0	560.25	1.7	560.25	3.95	11.5	0.0	13.2	450	0.70	238.4	1.50	0.81

Existing Sanitary Sewer System - North

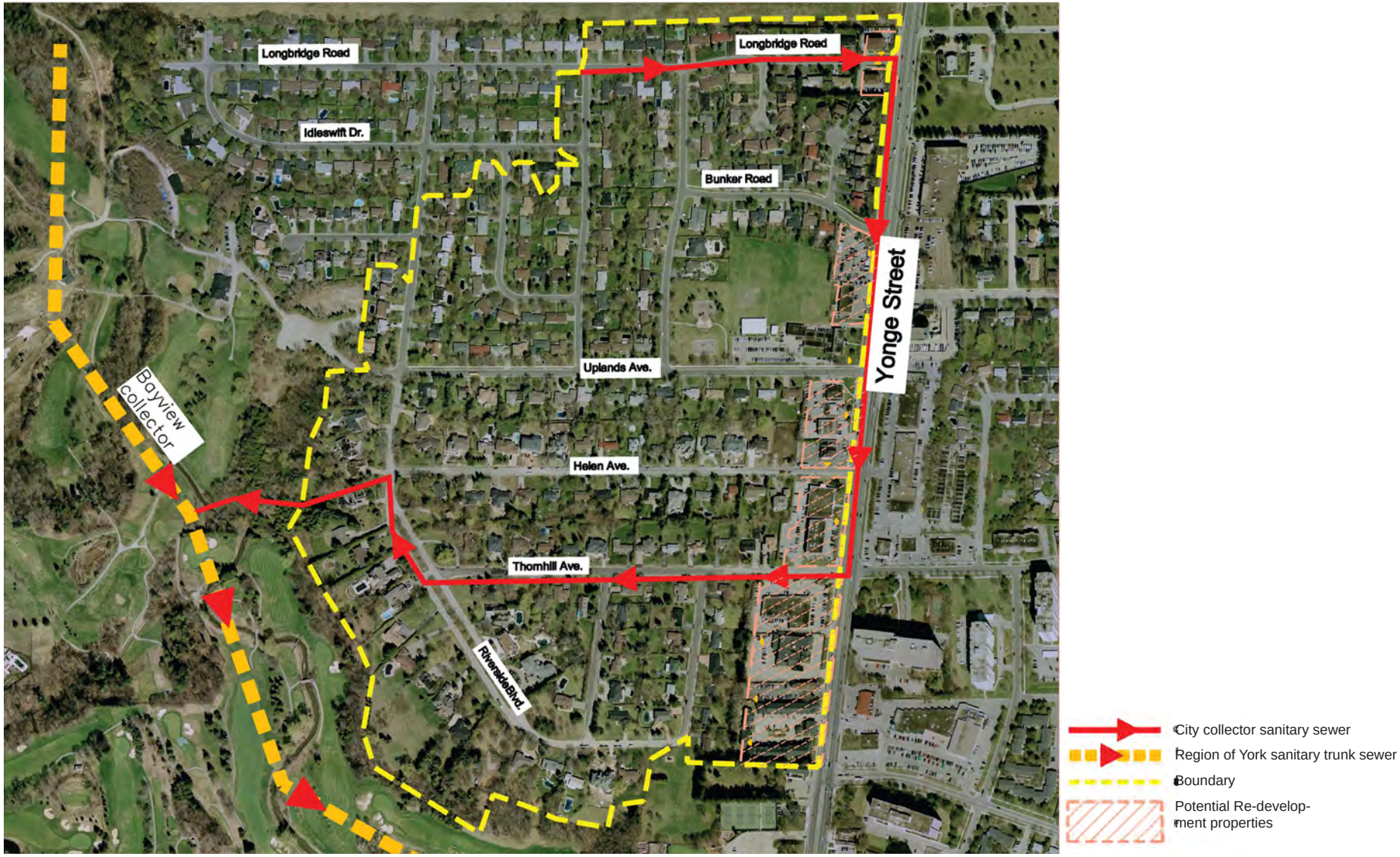


Fig. 36

pacities. The maximum ratio between total flow and 100% pipe capacity is well below maximum, with highest levels on Hilda Avenue and one section on Steeles Avenue just west of Hilda Avenue (between 62% and 67%). However, the sanitary pipes on Yonge Street as well as the first leg of the Steeles Avenue system from Hilda Avenue heading east have velocities under the minimum allowable design amount.
It is, however, unlikely that this system will be able to accommodate the level of redevelopment contemplated without significant improvements being undertaken.

The Region of York has confirmed that they expect their York-Durham trunk sewer, which services the Study Area, has (or will have) sufficient capacity to handle intensification of this area until the year 2051 and reported no known problems with the Steeles Avenue East Collector at this time.

Sanitary Sewers – North Study Area
The current sanitary sewer system providing service to the potential redevelopment properties is as follows (also see figure 36). Sanitary sewage from the properties fronting Yonge Street, between Longbridge Road and Thornhill Boulevard, outlet via City of Vaughan sanitary sewers located within the Yonge Street right-of-way. These flows then proceed to the Thornhill Avenue and Riverside Boulevard sanitary sewers and eventually down the Don River ravine system to discharge into the Bayview Collector. The sanitary pipes within the Yonge Street right of way outletting to the Bayview collector are asbestos cement material, and are 250mm to 300mm in diameter. The properties fronting Yonge Street between Thornhill Avenue and Royal Orchard Boulevard are serviced by the sanitary system running along the rear property lines and tying into the Thornhill Avenue sanitary sewers, merging with sewage coming from properties fronting Yonge Street.

Analysis is provided in the spreadsheet entitled “Sanitary Capacity Analysis” (table 11). These calculations identify no existing problem regarding pipe capacities. The maximum ratio between total flow and 100% pipe capacity is well below maximum, with highest level (48%) in the last pipe which connects to the Bayview collector. The actual velocities in pipes servicing the potential development properties are within acceptable limits. Due to the steep slopes (8.53% and 7.59%) the first two pipes in Don River ravine have a full flow velocity slightly over City’s maximum, 3.54 and 3.54 m/s respectively (the City’s maximum is 3m/s).

The sanitary sewer system is largely incapable of accommodating increased development without significant capacity improvement being undertaken. The downstream receiving York-Durham sewer system is however capable of accepting additional flows.

3.8.2 Storm Sewers

1. Major System

South Study Area: Based on the contour information received from the City of Vaughan, overland flow is naturally directed south-east to Newton Brook system which outlets into East Don River.

As per as-built drawings received from the City of Vaughan overland flow for the area west of Yonge Street and east of Bathurst Street between the CNR and Steeles Avenue is directed as follows:

Overland flow west of Payson Avenue is directed directly to the West Don River, whereas overland flow east of Payson Avenue and south of the CNR drains south across Steeles Avenue into the City of Toronto, presumably to the West Don River system. (See figure 38).

North Study Area: The overland flow drainage, for the area on the west side of Yonge Street between the CNR and Longbridge Road, is draining directly west to the East Don River. The narrow strip of re-development land along Yonge Street is either directed north or south at Yonge Street to the East Don River (Refer to figure 38).

2. Flood Plain
Flood plain maps received from Toronto Region Conservation Authority (TRCA) and shown on figures 39 and 40, indicate 100 year flood and regional flood elevations. Based on our review of this mapping it is clear that there is no flood plain concern for the re-development lands.

3. Minor System

South Study Area: There are currently three storm sewer systems providing service to the potential redevelopment properties, all contributing to Don River watershed. These systems are as follows (see figure 37):

A. Yonge Street north (Region of York) system
B. Yonge Street south (Region of York/City of Toronto) system
C. Steeles Avenue/ Crestwood Road (City of Vaughan) system

Systems which drain south or east will be discharging to the East Don River system, while those storm systems draining west outlet to the West Don River system. The Yonge Street north and south storm sewer systems are characterized by a parallel two or three pipe layout. It appears that the centrally located sewer serves the Yonge Street roadway itself, while the other sewers in the boulevard serve abutting lands.

A. The Yonge Street north system heads north along Yonge Street to almost the CNR tracks and then turns east to the Town of Markham storm system. The properties fronting Yonge Street between the CNR and Pinewood Drive outlet to this system. The single exception is the most northerly redevelopment property which has an internal storm system which drains north to the CNR tracks and evidently connects into that system.

B. The Yonge Street south system heads south along Yonge Street as a two-pipe or three-pipe sewer system to Steeles Avenue. The most westerly sewer, located in the boulevard, continues west along Steeles Avenue is part of the Steeles Avenue/Crestwood Road system as described below. The other two sewers continue south along Yonge Street into the City of Toronto and connect to the trunk sewer system that forms the upper reaches of Newton Brook. This sewer discharges to the open valley portion of that stream near Cummer and Willowdale Avenues. The properties fronting Yonge Street between Pinewood Drive and Crestwood Road outlet to the Yonge Street south system.

C. The Steeles Avenue/Crestwood Road storm system commences along Yonge Street, as per above, and then turns west along Steeles Avenue. This sewer extends west from Yonge Street to Hilda Avenue, while another branch extends from the west, eastward from Cactus Avenue to Hilda Avenue, where the two sewers merge. Storm flows from the properties to the north are collected via this storm sewer. The flow then heads north on Hilda Avenue to Crestwood Road and then west on Crestwood Road to Bathurst Street, and thence ultimately to the West Don River.

Internally, the properties west of Powell Road and south of CNR discharge via Powell Road storm sewer to the Crestwood Road and outlet to the Crestwood Road storm system

On Steeles Avenue itself, the sewer system is similarly characterized by a parallel pipe layout. Sewers located at the south side of the Steeles Avenue within right-of-way are likely collecting road run-off only and head south into the City of Toronto.

These three storm systems are evidently in good operating condition with no known issues related to flooding or capacity. A conservative analysis by Dillon indicated that the majority of the sewer collection system has enough capacity to serve the existing development, with the possible exception of the storm sewers along Steeles Avenue west of Hilda Avenue and along Hilda Avenue from Steeles Avenue and Crestwood Road. This analysis has indicated the possibility of minor surcharging of the system during the 5-year event. (See analysis sheet, table 12). However, neither the City of Vaughan nor the Region of York report any issues with these storm sewers. It is important to note that the existing properties consist of mostly impermeable surfaces with very little landscaped areas and likely little or no storm management. It can be assumed that this system's current capacity will be more than adequate for the future redevelopment, as long as Stormwater Management Techniques are implemented to some degree.

North Study Area: The entire re-development area will be draining towards Yonge Street, where two storm system directions can be differentiated: one draining north (north of Bunker Road) and one draining south (south of Bunker Road). (See figure 37).

The system which drains south conveys storm sewer to the Thornhill storm system and outlets to the East Don River. This system consists of two parallel storm sewer systems, both located within the Yonge Street right-of-way. It is likely that the storm sewer on the east side of the road

captures road run-off, and system on the west side of the road captures road run-off and run-off from the abutting areas west of Yonge Street Both systems are fairly large in size and currently there are no known flood or capacity issues.

The storm sewer system that drains north of Bunker Road consists of a single pipe system which captures road run-off and run-off from abutting areas, conveying it to the Markham storm system and presumably thence to the East Don River system.

Furthermore, the existing properties have probably very little or no storm water management implemented, owing to their age. It can be assumed that this system's current capacity within the City of Vaughan will be more than adequate for the future redevelopment as long as stormwater management techniques are implemented.

Storm Sewers Major System - South

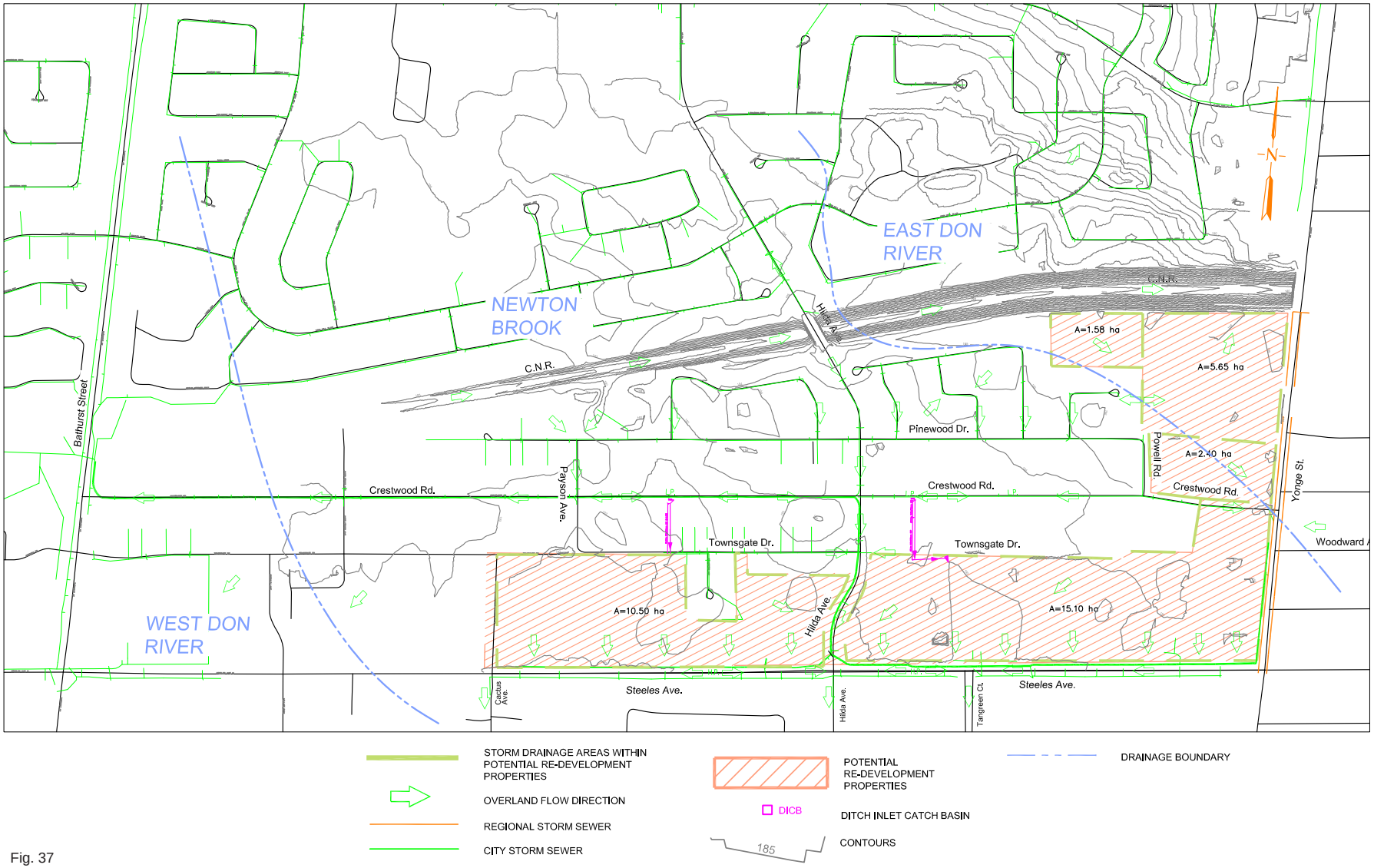


Fig. 37

Storm Sewer Major System - North

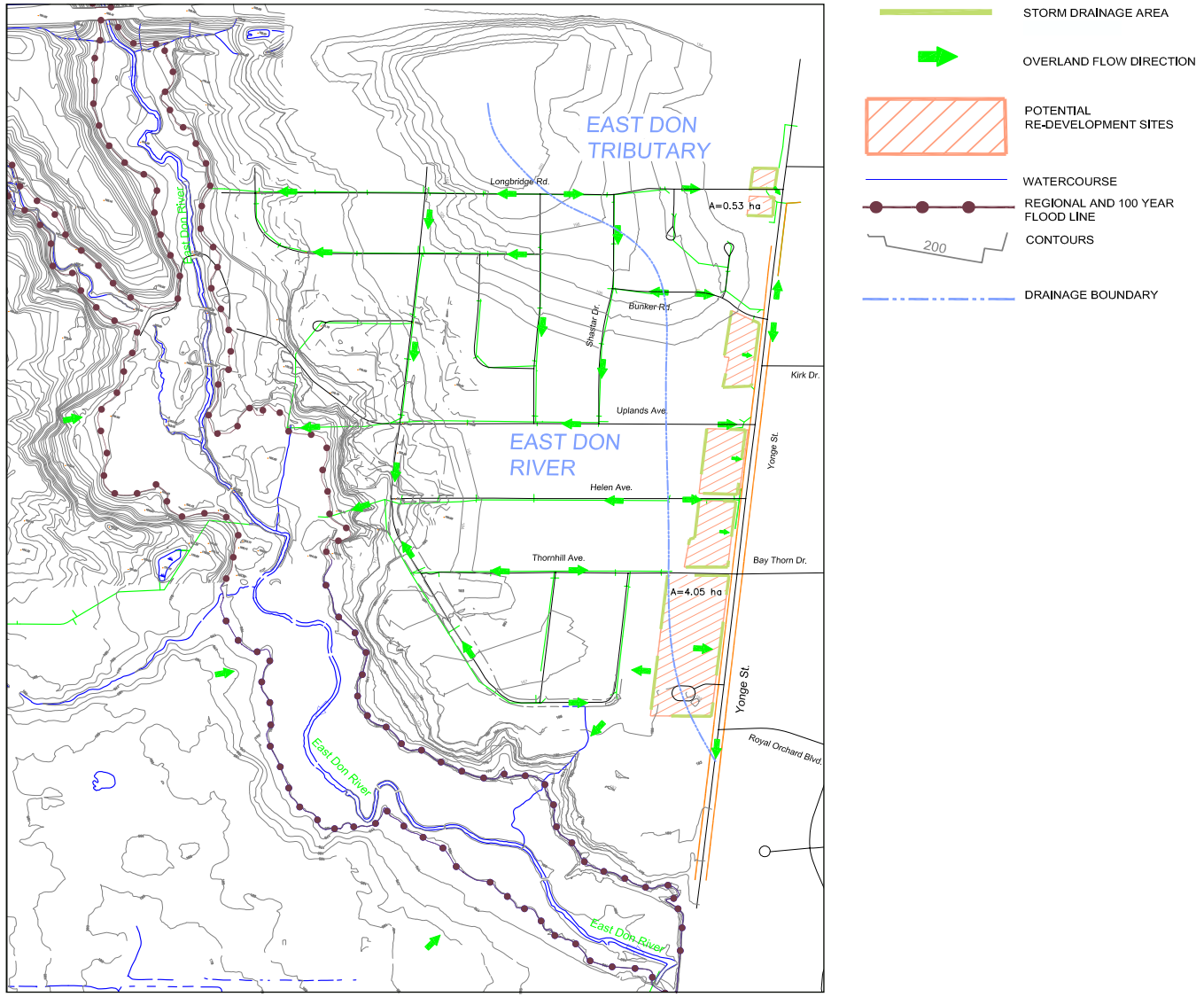


Fig. 38

Don River Flood Plain Map - Sheet No. 19

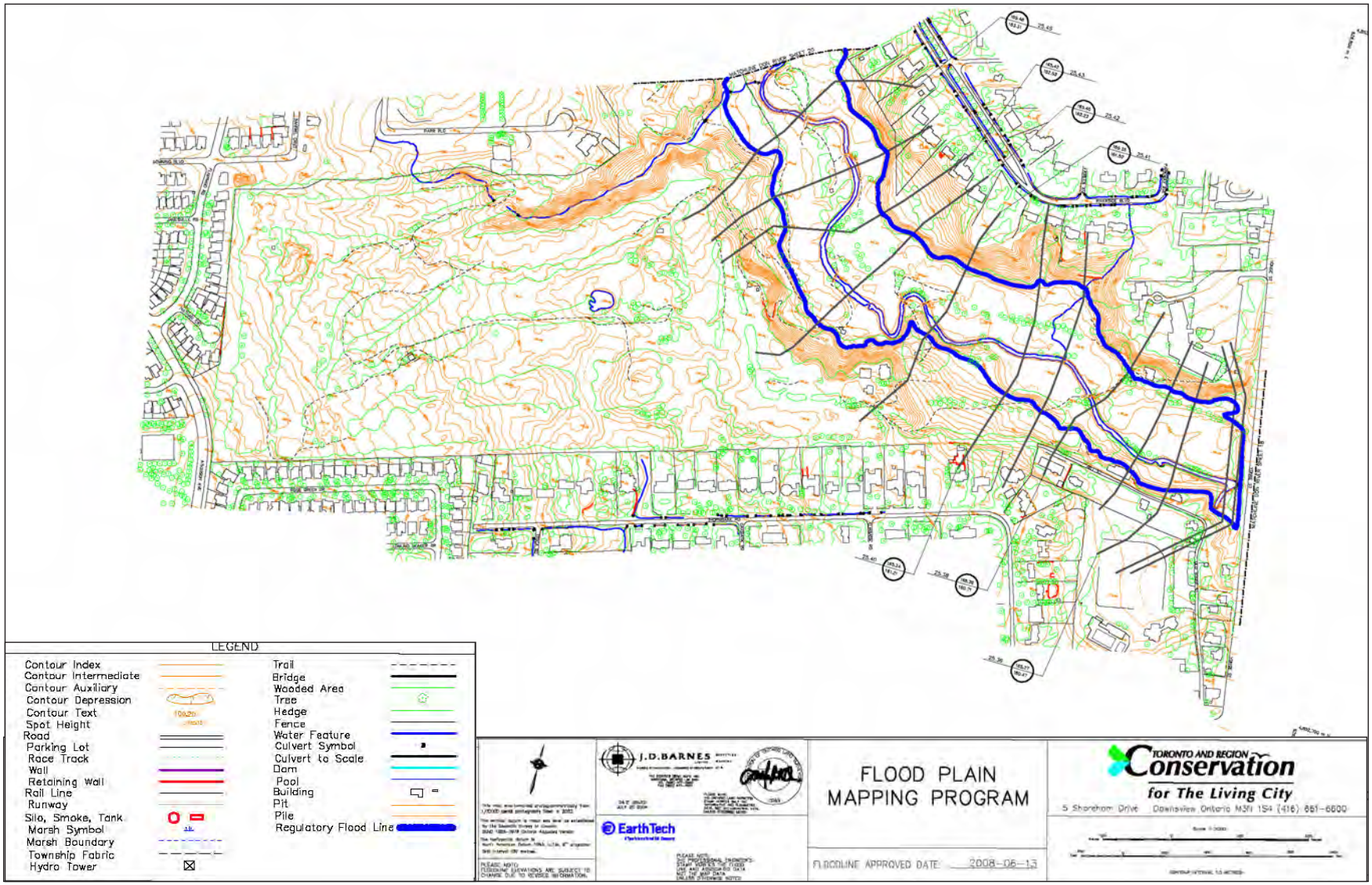


Fig. 39

Don River Flood Plain Map - Sheet No. 20

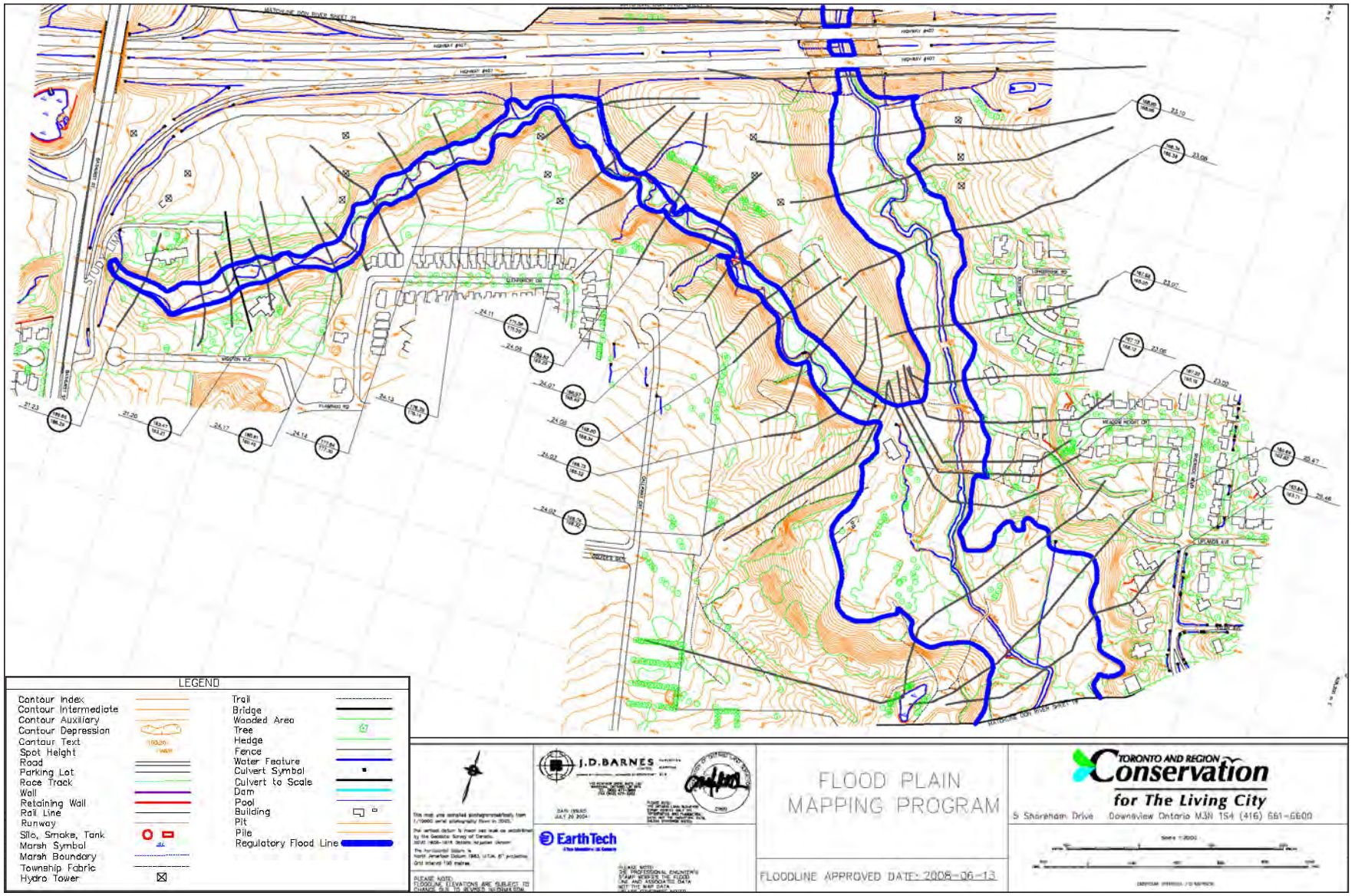


Fig. 40

Existing Storm Water Sewer Service - South

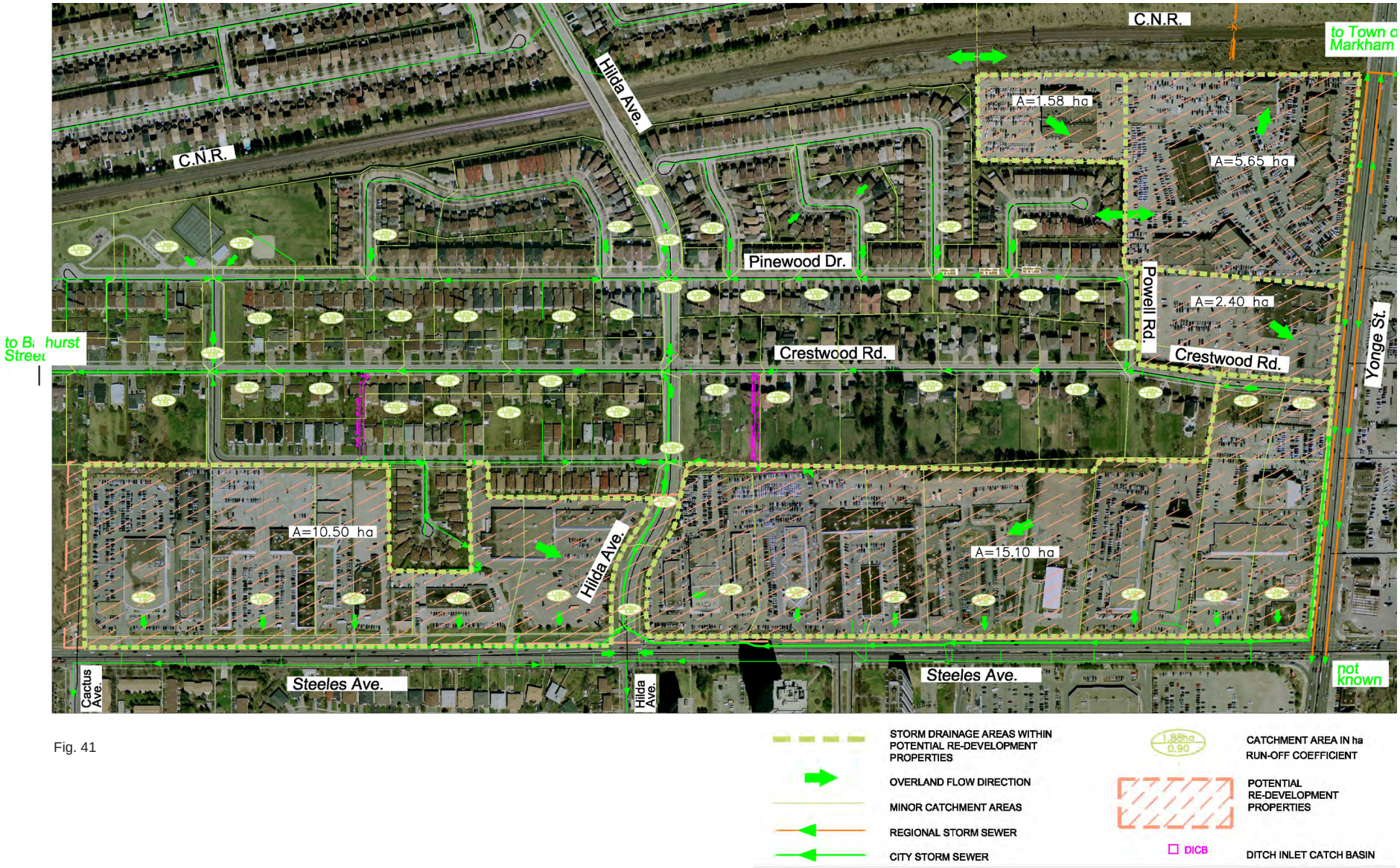


Fig. 41

Existing Storm Water Sewer Service - North

Fig. 42

3.8.3 Watermains

South Study Area: The watermain distribution system servicing the Study area is comprised of watermains ranging in diameter sizes from 150mm to 300mm (see figure 44). These mains are all located within Pressure District No. 6 (as designated by the City of Vaughan). The City of Vaughan Engineering Department indicated that there are no known issues at this time. As the watermains servicing the study area are primarily designed for fire protection and are, in essence, oversized for domestic use, significant issues with respect to providing adequate fire protection are unlikely and domestic service via this system to the potential redevelopment area.

North Study Area: The watermain distribution system servicing the Study Area is comprised of PVC watermains ranging in diameter sizes from 150mm to 300mm (see figure 43). These mains are all located within the Pressure District No. 6 (as designated by the City of Vaughan). The City of Vaughan t Engineering Department indicated that there are no known issues at this time.

As the watermains servicing the Study Area are primarily designed for fire protection and are, in essence, oversized for domestic use, significant issues with respect to providing adequate fire protection are unlikely and domestic service via this system to the potential redevelopment area.

3.8.4 Water Supply

North & South Study Area: The Region has indicated that the supply of water to {either area} is not an issue, and local mains appear adequate to supply the needed future requirements, subject to minor immediate delivery matters such as servicing along any new roads proposed.

Fig. 43 Existing Watermain Sewer System - North

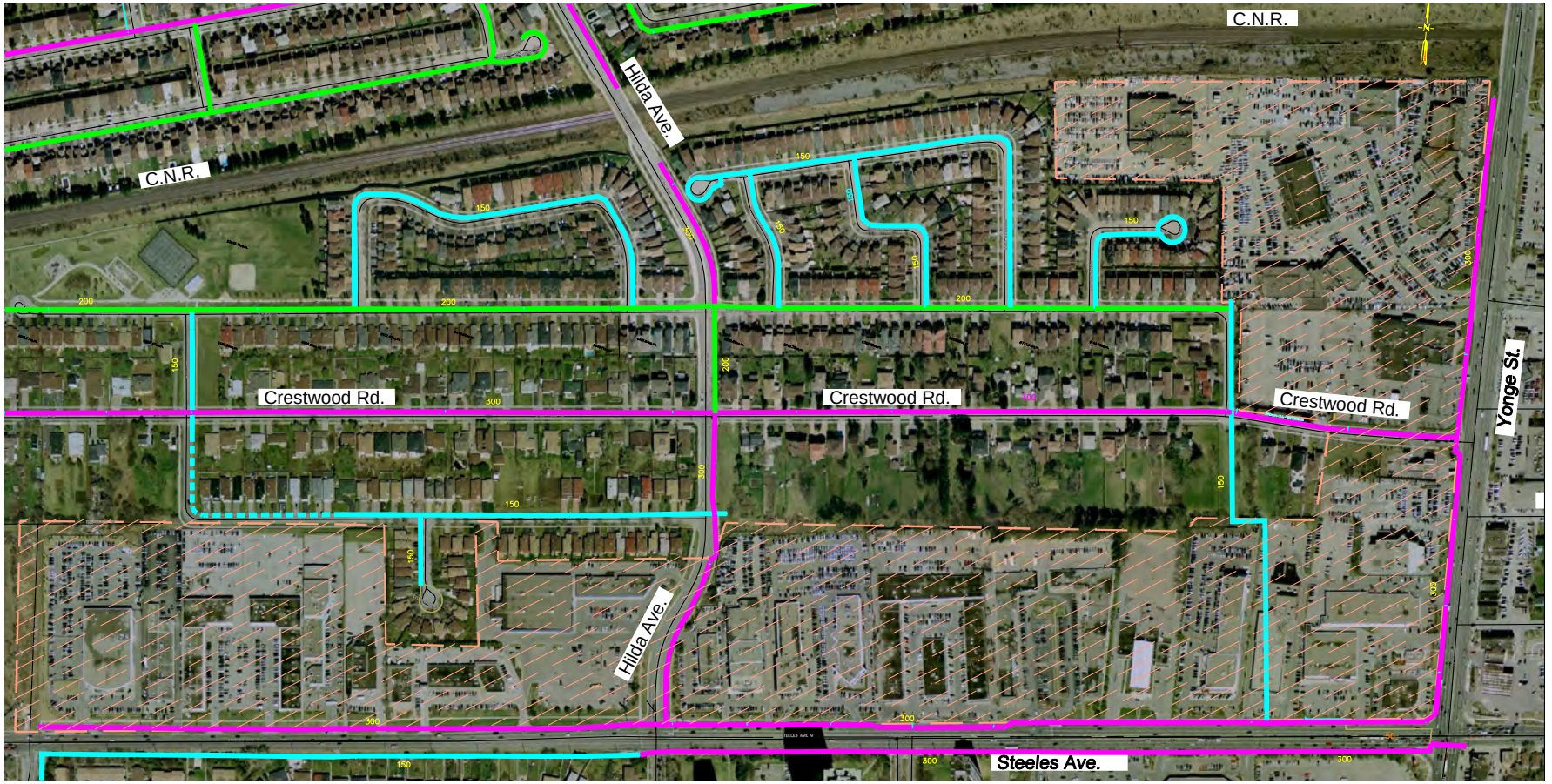


Fig. 44 Existing Watermains System - South

LEGEND:

EXISTING 150mmØ WATERMAIN

EXISTING 200mmØ WATERMAIN

EXISTING 300mmØ WATERMAIN

POTENTIAL RE-DEVELOPMENT PROPERTIES

Table 12: Storm Design Analysis Sheet (5 Year) - City of Vaughan

STORM SEWER DESIGN SHEET - 5 YEAR STORM
CITY OF VAUGHAN

Intensity Option # 1

Project Name: Yonge Corridor Study
Project Number: 08-8877

1) Intensity (i) = a/(t+b)^c **2) Intensity (i) = a*t^c** **3) Insert Intensity**

a=	929.600	**a=**	32.000	**i=**
b=	4.000	**c=**	-0.790	
c=	0.798			

Total Area (ha)= 39.96

Location																	
													Sewer Design / Profile				
Road /Stations	**From MH**	**To MH**	**Area (ha)**	**Run. Coef.**	**2.78AC**	**Accum. 2.78AC**	**T of In (min)**	**T of F (min)**	**T of Conc. (min)**	**Intensity (mm/hr)**	**Exp. Flow (L/s)**	**Capacity (L/s)**	**Velocity (m/s)**	**Wall Thickness (mm)**	**Length (m)**	**Pipe Dia. (mm)**	**Slope (%)**
Steels Ave. (from Yonge S .to Hilda Av.)																	
Steels Ave.			1.39	0.90	3.48	3.48	10.0	1.60	10.00	113.16	394	194	0.69	90	66.10	600	0.10
Steels Ave.			1.27	0.90	3.18	6.66	10.0	1.21	11.60	103.77	691	347	0.97	101	70.50	675	0.17
Steels Ave.			2.42	0.90	6.05	12.71	10.0	1.60	12.82	97.76	1,242	677	1.06	135	102.50	900	0.14
Steels Ave.			3.57	0.90	8.93	21.64	10.0	1.99	14.42	90.90	1,967	1,002	1.34	146	160.50	975	0.20
Steels Ave.			1.22	0.90	3.05	24.69	10.0	0.65	16.41	83.75	2,068	1,392	1.61	158	62.75	1050	0.26
Steels Ave.			2.35	0.90	5.88	30.57	10.0	1.82	17.07	81.68	2,497	1,849	1.29	203	140.95	1350	0.12
Steels Ave.			1.88	0.90	4.70	35.28	10.0	1.13	18.88	76.45	2,697	2,025	1.41	203	96.20	1350	0.14
Steels Ave.			0.00	0.90	0.00	35.28	10.0	0.08	20.02	73.56	2,595	3,540	2.47	203	12.04	1350	0.44
Steels Ave. (from Cactus Av. to Hilda Av.)																	
Steels Ave.			2.69	0.90	6.73	6.73	10.0	3.94	10.00	113.16	762	133	0.47	90	111.42	600	0.047
Steels Ave.			2.20	0.90	5.50	12.23	10.0	1.55	13.94	92.82	1,136	507	1.15	113	106.68	750	0.21
Steels Ave.			1.75	0.90	4.38	16.61	10.0	1.70	15.50	86.88	1,443	572	1.07	124	108.98	825	0.16
Steels Ave.			1.34	0.90	3.35	19.97	10.0	1.36	17.19	81.29	1,623	832	1.31	135	106.50	900	0.21
Steels Ave.			1.74	0.90	4.35	24.32	10.0	1.11	18.55	77.36	1,881	883	1.39	135	92.12	900	0.24
Steels Ave.			0.00	0.90	0.00	24.32	10.0	0.27	19.66	74.46	1,811	868	1.16	146	19.00	975	0.15
Royal Palm Dr (West of Hilda Av.)																	
Royal Palm Dr			0.60	0.90	1.50	1.50	10.0	1.35	10.00	113.16	170	109	0.99	30	80.30	375	0.39
Royal Palm Dr			0.55	0.90	1.38	2.88	10.0	0.96	11.35	105.14	303	176	1.11	68	63.40	450	0.38
Royal Palm Dr			1.08	0.90	2.70	5.58	10.0	1.50	12.31	100.19	559	239	1.11	79	99.80	525	0.31
Royal Palm Dr			1.20	0.90	3.00	8.58	10.0	1.50	13.81	93.38	801	347	1.23	90	110.30	600	0.32
Royal Palm Dr (East of Hilda Av.)																	

3.9 Existing Sustainability Performance

Storm Water

South Study Area

In the South Study Area, especially at the southern and eastern boundaries, the predominant ground surface is impervious paved concrete and asphalt. A preliminary visual assessment reveals that at present there are no green roofs or other storm water management measures to divert storm water, filter it and return it in a clean state to the natural system. All storm water is directed to the centralised drainage system. Over time this situation can be improved as development evolves.

The sustainable management of storm water will be addressed in the planning and design phase of the study.

North Study Area

In the North Study Area the proportion of imperviously paved surfaces is smaller. However, the small scale commercial establishments along the edge have asphalt or concrete paved parking areas towards Yonge Street. These areas can be substituted over time with pervious materials.

Sustainable storm water management strategies will be similar to those in the South Study Area.

Sewage

South Study Area

With the exception of recently constructed car showrooms, the buildings in this area are approximately ten to fifteen years old. They do not demonstrate any special attention to high sewage reduction strategies such as the use of low-flow toilets and water saving fixtures in kitchens, bathrooms and laundries.

Sustainable sewage management strategies including an emphasis on low flow fixtures and grey water recycling will be addressed in the planning and design phase of the study.

North Study Area

In general, non-residential buildings in this area are older than those found in the South Study Area, and are not likely to place special emphasis on sewage reduction strategies as described above.

Sustainable sewage management strategies will be similar to those in the South Study Area and will be addressed in the planning and design phase of the study.

Energy Conservation

South Study Area

With the exception of recently constructed car showrooms, the buildings in this area are approximately ten to fifteen years old. They do not demonstrate any special attention to high performance building envelopes. There is little evidence of passive solar design considerations such as shading for south facing windows. It is assumed that the buildings are constructed with standard design and construction practices for their time. Sustainable energy conservation strategies will be addressed in the planning and design phase of the study.

Central to energy conservation is a reduction in the energy component devoted to transportation. The existing multiple unit residential buildings are constructed with the number of parking spaces per dwelling unit exceeding 1.0, supporting the use of private automobiles.

As described in Section 3.7, there are High Occupancy Vehicle lanes on Yonge Street in either direction, encouraging a reduction in automobile use through vehicle sharing. Promotion of other energy saving strategies is not clearly evident – for example policies and planning and design strategies which foster

- working from home
- active transportation

- alternative energy vehicles
- car pooling and
- autoshare systems.

The area of energy conservation and reduction in green house gas emissions through reductions in fossil fuel based transportation energy (Transportation Demand Management) will be addressed in the planning and design phase of the study.

North Study Area

The majority of non-residential buildings in this area are older than those found in the South Study Area and do not place special emphasis on high performance building envelopes or passive solar design. It is assumed that the buildings are constructed with standard design and construction practices for their time.

Energy saving strategies addressing reductions in fossil fuel based transportation energy will aligned with those in the South Study Area.

Renewable Energy

South Study Area

A visual assessment of existing buildings in the South Study Area revealed no solar thermal or solar PV installations, nor existing wind energy generation in the area or substantive geothermal installations.

The most successful energy reduction strategies involving the urban fabric integrate energy strategies in this sequence:

1. Design and construct high performance buildings using advanced envelopes and passive solar strategies for heating and cooling.

2. Provide district energy systems that maximize the use of renewable fuels, relying as little as possible on the conversion of energy from one form to another. Such a system would be integrated with the buildings and/or public areas such that it would provide landscapes and urban spaces of high quality and employ different owner/operator arrangements. The level of intensification and resulting population increase envisaged for the Study Area makes this approach highly suitable;

3. Use building integrated solar thermal, geothermal, and other renewable energy sources for heating, cooling, hot water and power. High density, multiple-unit residential and mixed use buildings are very suitable for this approach, as are clusters of single family houses or medium density multiple unit buildings.

North Study Area

The North Study Area, involves smaller building parcels and lower densities – this setting would be approached using similar energy conservation and renewable energy strategies. However the economies of scale would result in energy system configurations different than in the South Study Area.

Materials

South Study Area

The buildings in the South Study Area largely use typical design and construction practices with regard to building materials. There is no special emphasis on the selection of local, renewable, recycled, reused and healthy building materials.

Emphasis on sustainable materials for paved surfaces, public spaces and buildings will be addressed in the planning and design phase of the study.

North Study Area

The existing conditions regarding materials stock in the North Study Area are similar to those in the South Study Area.

Outdoor Environmental Quality

South Study Area

The high volume of heavy transport trucks, buses, and cars results in a noisy outdoor environment, with poor air quality, along Yonge Street and Steeles Avenue. Reductions in fossil fuelled surface vehicles will assist in

reducing the noise, dust and gaseous pollution.

Existing conditions, especially in the South Study Area contribute to heat island effect. Reductions in impervious surfaces in outdoor spaces and on roofs is to be combined with the use of high albedo characteristics to minimise this effect as much as possible.

Light pollution at night is noticeable, especially along the Yonge Street and Steeles Avenue edges of the South Study Area.

In the development of urban forms and spaces, avoidance of and protection from these factors is to be considered.

North Study Area

The Yonge Street edge of the northern Study Area is similarly exposed to air and noise pollution, heat island effect and nigh-time light pollution. Strategies to be used here will be similar to the strategies for the South Study Area.

Solid Waste Management

South Study Area

Vaughan has tackled the issues of solid waste reduction and management through the Greening Vaughan program, the City's multi-phased waste management strategy that focuses on enhancing and/or introducing opportunities and programs to divert waste from landfill, incrementally introducing recycling and compost collection while reducing the frequency and volume of garbage collection. The result has been a significant increase in landfill diversion.

The existing strategies, especially the composting of organic wastes and the recycling of suitable solid wastes are currently more effective for single family housing than for medium to high density, multiple unit dwellings and mixed use buildings. This issue will be addressed in the planning and design phase of the study.

Urban space and form strategies as well as building design and construction factors for successful waste management strategies in high density environments will be addressed in the planning and design phases of the study.

North Study Area

The Yonge Street edge of the North Study Area produces waste management challenges similar to the northern portion of the South Study Area, although the densities are lower here. Typically, the single family residential neighbourhood is most successful in the recycling and composting programmes available.

Urban space and form strategies, as well as building design and construction factors for successful waste management in medium and lower density environments will be addressed in the planning and design phases of the study.

Place Making

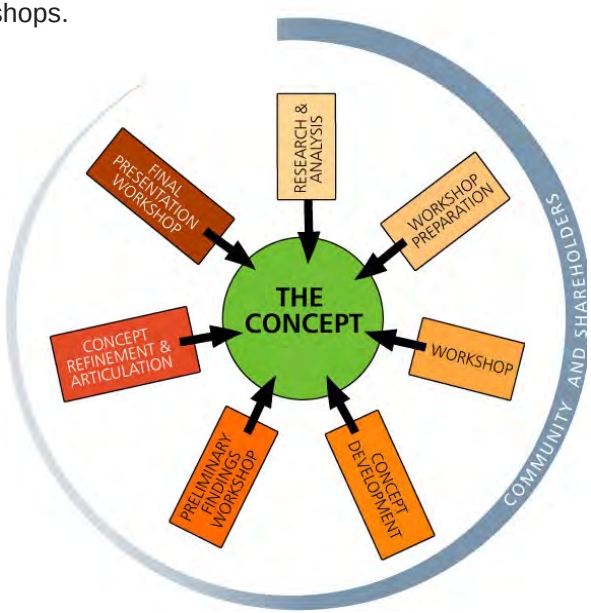
North and South Study Areas

Vaughan's particular heritage is linked to a strong history of native and colonial settlements that have impacted the landscape. Also prevalent is a pride in the natural history of the region based on a previous era of pastoral rural-agrarian living and in relation to the lush green of Don Valley that runs between the two Study Areas. Awareness of community specific heritage and culture sustains a distinct sense of this community identity. An example of ongoing place making efforts is a strong community interest in protecting several heritage sites fronting onto to Yonge Street in the Central Yonge area.

In the planning and design phases of the study, urban places, parks and gardens, landmarks and spatial features such as performance and display areas can assist the community in celebrating and reviving cultural heritage and fostering a sense of local and regional identity. Of particular interest is an emphasis on the naming of buildings, places, and landmarks to commemorate the history and the achievements of the local community.

4.0 Summary of Public Consultation

The purpose of public consultation in this study is to engage the community by inviting Vaughan residents and members of the business and development communities to be part of a Community Consultation Group. Observers from neighbouring municipalities were also welcome to participate and contribute their ideas and opinions in the public meetings and workshops.



4.1 Summary of Background Information Public Open House

In June 2008, residents in Vaughan were invited to attend an open house at the Thornhill Presbyterian Church. The purpose of the meeting was to introduce the Study to area stakeholders and discuss the Study's timing and process. Following a panel display, a presentation was given by the consultant team manager Tom Emodi (IBI Group/Young + Wright Architects), planner John Gladki (GHK Canada) and engineer Mike Walters (Dillon Consulting). The presentation consisted of a review of the study timeline, policy framework, and existing conditions. It also provided some examples of precedents that illustrated key issues pertinent to the Study such as revitalizing avenues, designing appropriate mid-rise buildings and streetscapes, and deploying density. A discussion period followed the presentation. Approximately 70 people were in attendance including City planning and design staff and a local councillor.

Community participants at the Public Information Open House

4.2 Summary of Strengths Weaknesses Opportunities Constraints (SWOT) Workshop

4.2.1 Strengths

The study area has a number of strengths which will contribute to the future success of the community and help to facilitate positive growth and development including

- A high profile location with huge growth potential.
- A comprehensive public transit system (subway to be confirmed).
- Positive community interest and support.
- Large existing properties that are suitable for redevelopment.