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PROPOSED MIXED USE DEVELOPMENT AT 189 MILNER, TORONTO

DEVELOPMENT OVERVIEW DOCUMENT

**Consultant Team** 



+ Martin Rendl Associates

#### Client

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Sanstha Sanstha is the Sanskrit word for community/society/foundation. Metro Zen (Canada) Inc. is a Canadian corporation with a head office in Toronto. Our team leverages a depth of professional knowledge that is united in a common vision to shape a sustainable and holistic metropolis lifestyle. We are committed to the triple bottom-line of the LEED philosophy of Ecology, Society and Economy and strive to attain the highest level of LEED certification in our developments.

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# **1 INTRODUCTION**



## Introduction

The purpose of this document is to provide a summary of the property to a mixed development and present preliminary information related to the proposed redevelopment of the property to a mixed use development.





# **2 DEVELOPMENT** CONCEPT

### 189 Milner Avenue Brampton Civic Centre Scarborough Civic Centre 52.3 km / 38 min 3.6 km / 8 min Pearson Int. Airport 34.8 km / 25 min Toronto City Hall 6.4 km / 25 min Mississauga Civic Centre 6.7 km / 35 mir

# **Development Concept**

189 Milner Avenue will be developed for a mix of uses centred on spirituality and meditation to care for the mind, traditional medicines to care for the body, hotels and convention space for visitors, accommodating the needs of an aging population, and a business incubator centre. The development has been conceived and designed to meet the needs of ethnic communities in the areas of health, spirituality, care for the aged, and economic development.

In consideration of the city's overall guidelines for urban grid development and thinking beyond the goals of increasing property tax bases, generating new revenue streams and solid job creation, Metro Zen is uniquely poised to bring together cost-effectively all of the above including sound elements in

- environmental design
- holistic lifestyle
- integrated innovation centre, and
- community collaborating and co-existing in harmony

Metro Zen has thoughtfully addressed future trends by incorporating into its developments the societies that are already successfully using strategies to bridge the chasms between economics, environmentalism and social justice.

The overall Development Concept for the property consists of several integrated components.

The proposed hotels and convention facilities; commercial and retail complex; meditation centre; natural healing and wellness facilities; independent centre for seniors along with the innovation incubators intends to fuel revenue growth and create long-term employment. The innovation incubator and healing centre, transforms the way people live and work. It provides the opportunity for:

- knowledge through research and development; and
- meditation to reduce stress.

• collaboration and sharing of resources both economically and in the transfer of

• seniors to contribute to their community by mentoring others; invest in start-ups and fund the business expansion; and tap into natural healing, wellness programs and

Dhyanalinga Yogic Temple, India Image from www.dhyanalinga.org





### a) Meditation Centre (Isha Foundation)

The Meditation Centre anchors the overall development. The building contains approximately 950 square metres of space for meditation.

It is proposed that the meditation centre will be operated by the Isha Foundation as one of its 150 centres worldwide. The Isha Foundation uses a customized system of yoga to create physical, mental, and emotional wellbeing for all through a meditative process that is widely practiced by multi-faith ethnic communities.

The Isha Foundation was founded by Sadhguru, a yogi, mystic, humanitarian and spiritual leader. Sadhguru's work is aimed at achieving the physical, mental, and spiritual well being of all persons.





"A wellness centre based on natural healing concepts."

# **b) Ayurvedic Centre**

he Ayurvedic Centre is a space for practitioners of Ayurvedic medicine. Ayurveda is a system of traditional medicine native to India and a form of alternative medicine. It is estimated that 80 percent of persons in India use some form of traditional medicines, including traditional medicines like Ayurveda.

The Ayurvedic Centre contains approximately 8,500 square metres of floor area.









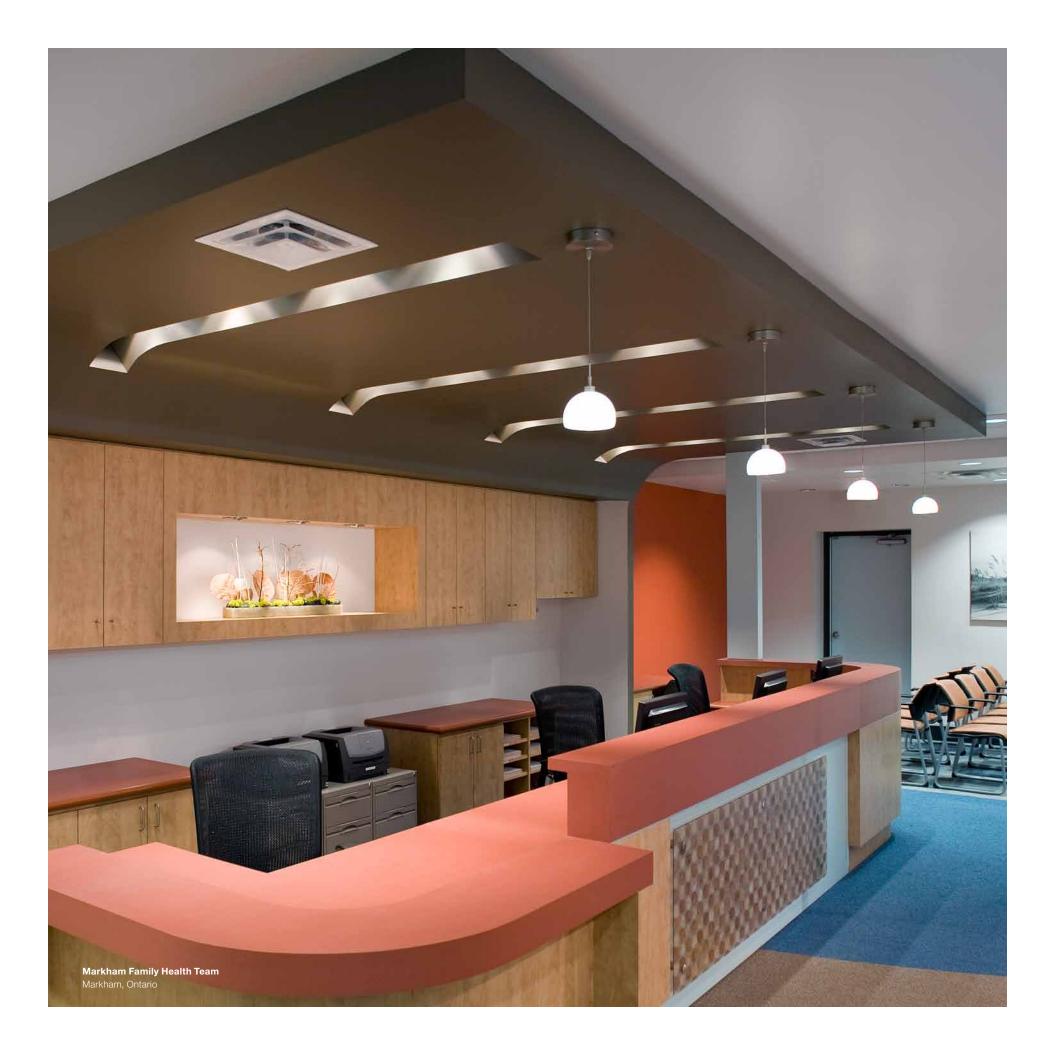
### Development Concept









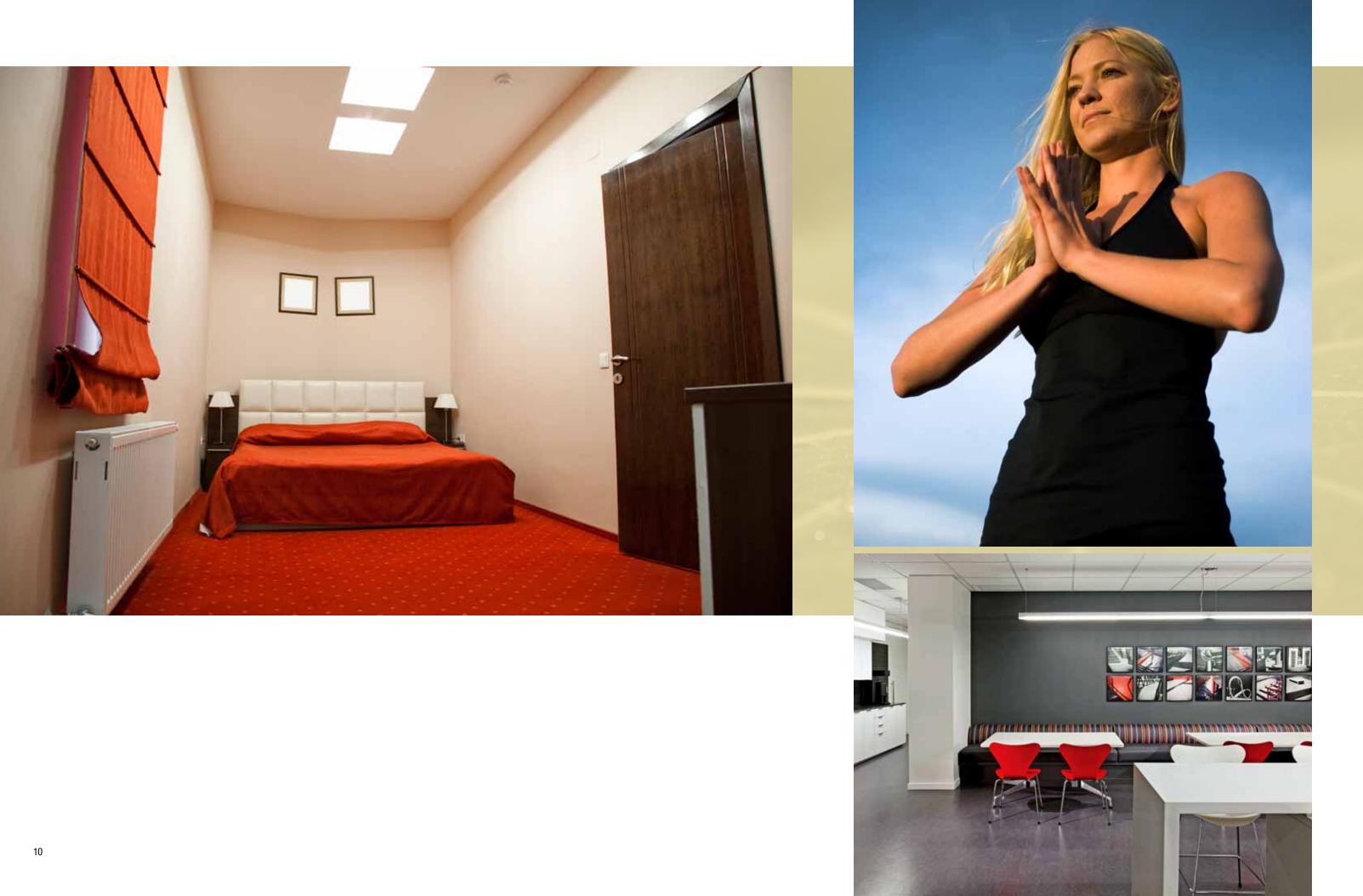


# c) Hotel

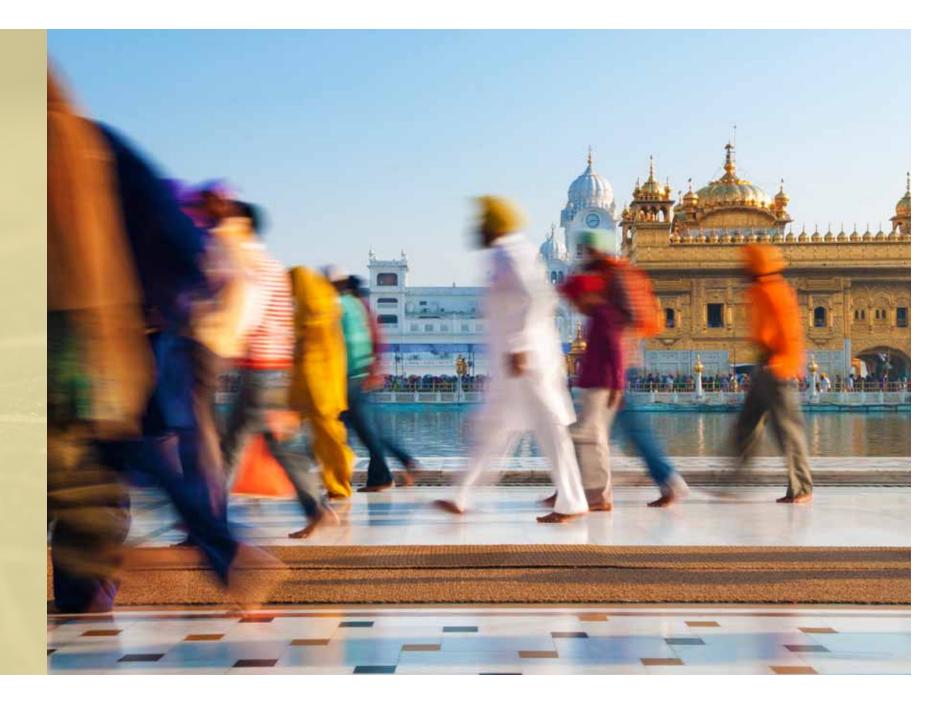


A high-end hotel of approximately 24,000 square metres of floor area will accommodate visitors to Toronto. The hotels will serve visitors coming to Toronto and the site to use the Meditation Centre or to be treated in the Ayurvedic Centre.

5,500 square metres of convention centre space along with approximately 5,500 square metres of complementary commercial space



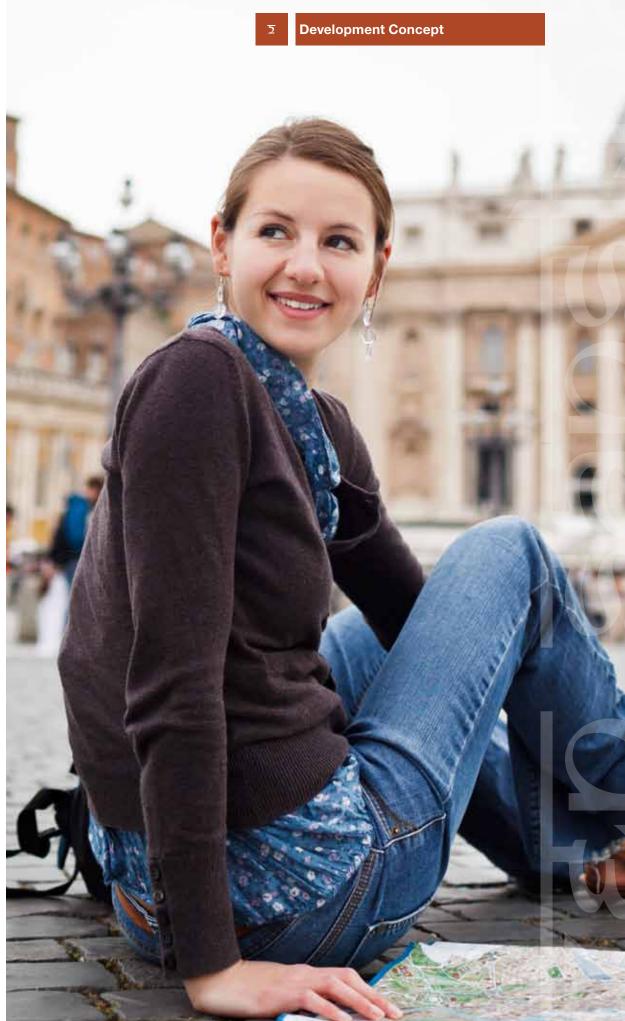


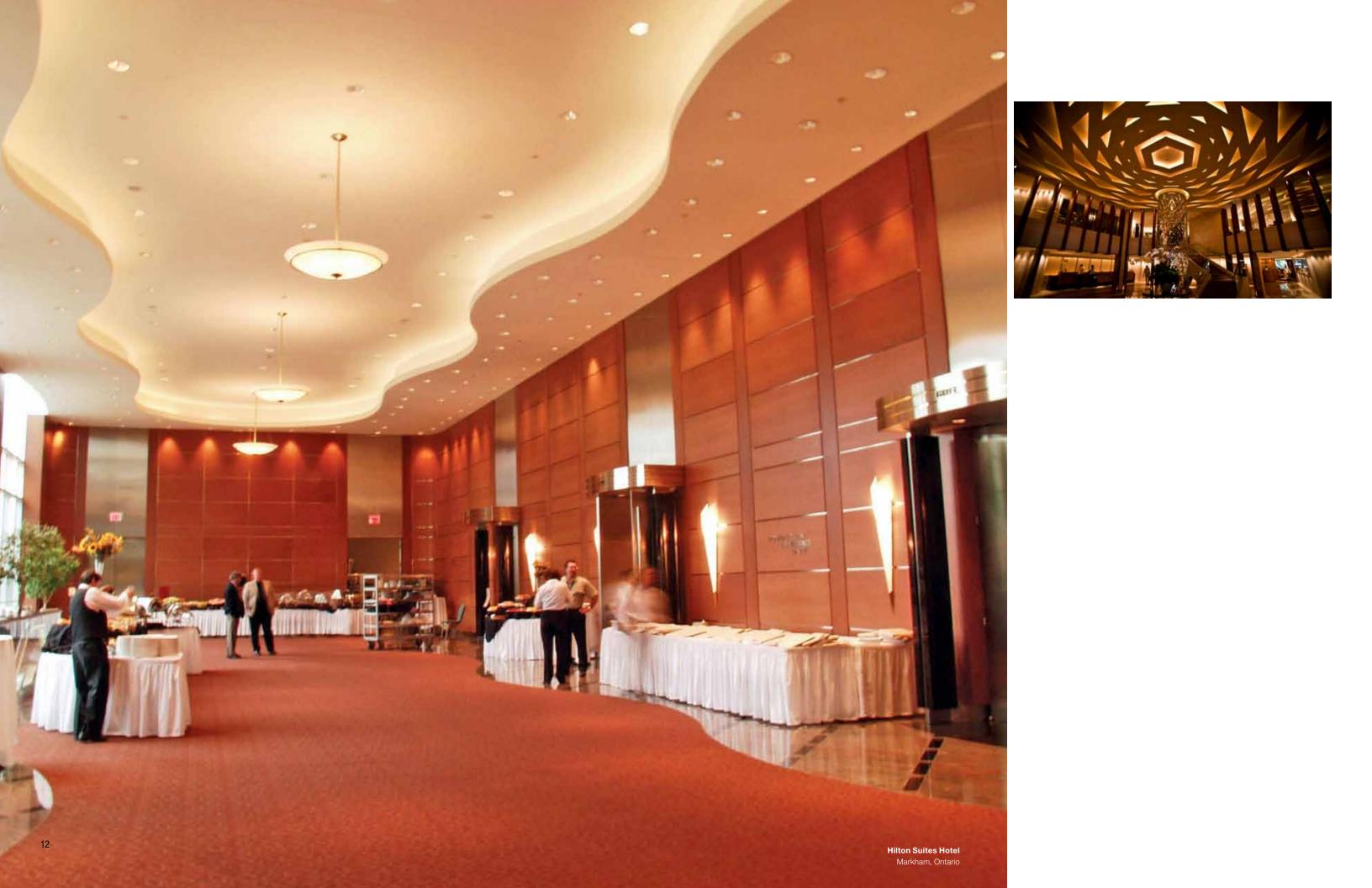


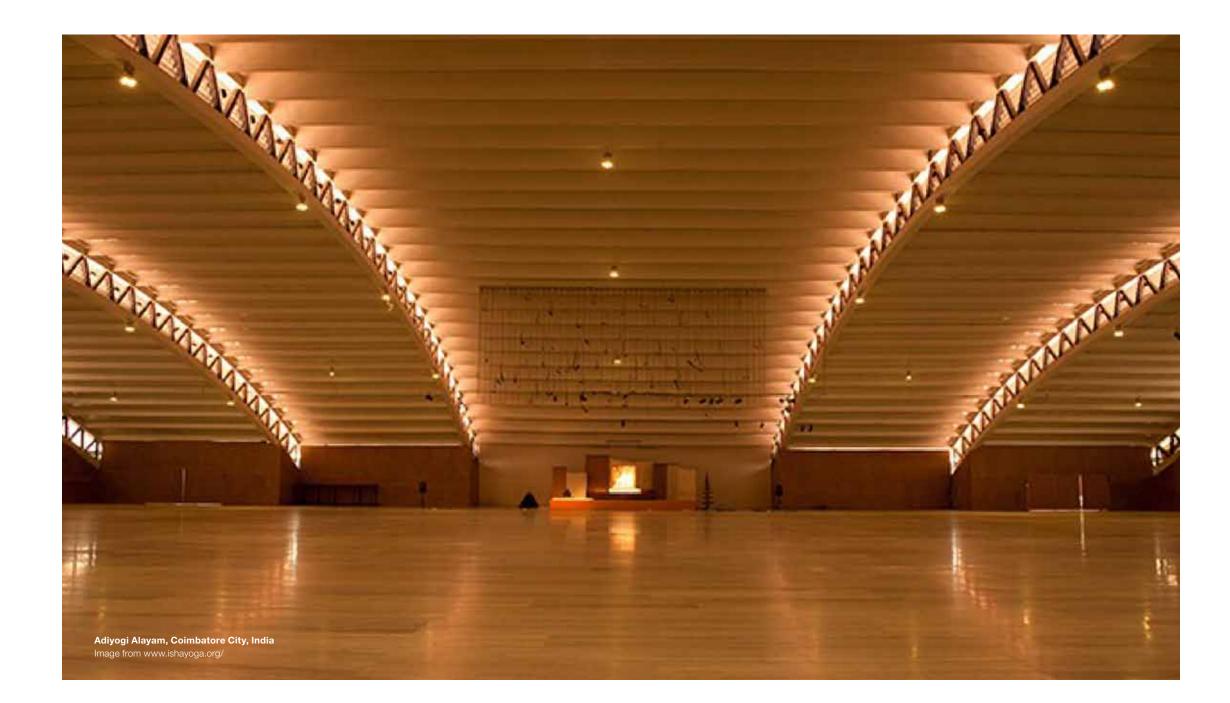
# d) Dharamshala Hotel

A Dharamshala hotel of approximately 24,000 sq m floor area is also proposed on the site.

Dharamshalas are budget-hotels for spiritual/religious tourists and backpackers on budget. The hotels will provide basic accommodation and communal kitchens and dining. This hotel is closely tied to the Meditation and Ayurvedic Centre/ Health Facility.

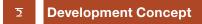






# e) Convention Centre

Be included in the high-end hotel.



### f) Zen Innovation Centre

The Zen Innovation Centre in its 19,000 square metres of space will provide a place where persons can access each other's resources, experience, connections and ideas. The Centre is designed to address the capacity and resource challenges faced by recent graduates and immigrants to Canada. It will provide a stage for hardworking knowledgeable entrepreneurs of all ethnic backgrounds to develop their ideas. They will fulfill their dreams and create business opportunities for themselves and their families. This will in-turn help in creating more jobs. Mature immigrants and recent graduates with vast amount of oversees experience will receive guided Canadian experience to achieve personal success in Canada.

The Zen Innovation Centre is a co-working space and incubator for employment and business creation. The interactions between recent graduates, entrepreneurs, and mentors will catalyze innovation and trigger innovation. The interactions between mature immigrants, recent graduates, entrepreneurs, and mentors will catalyze innovation and trigger innovation.

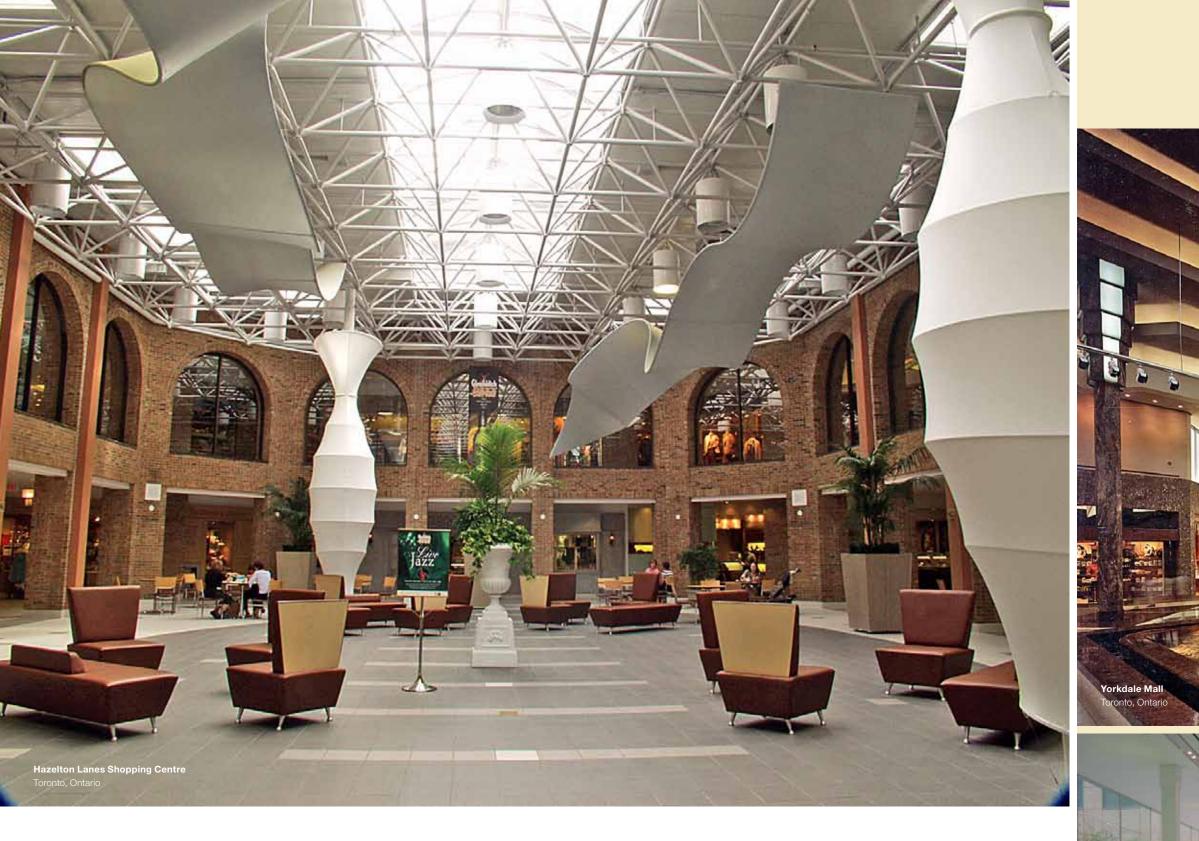
Co-working spaces as proposed in the Zen Innovation Centre have proven popular with freelancers, entrepreneurs, independent professionals, startups or persons who seek an alternative to the isolation of working in a home office. Such work places respond to the nature of work and business networks in today's economy.

"An incubator for technology and social service organizations and not-for-profits. Shared office spaces; nurturing a culture of interaction and idea generation"













# g) Commercial Uses

Balong with the convention centre and high-end hotel.



#### **Development Concept**

2





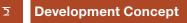






### Each building contains a floor area of approximately 15,000 square metres.

These buildings will provide culturally appropriate facilities, support and fellowship for aged members of the South Asian community. Other uses on the property provide additional support for seniors and opportunities for social interaction.



# h) Avkash Sanstha (Seniors Retirement)

Two buildings providing retirement facilities will be developed on the site.



# **3 DEVELOPMENT STATISTICS**

# a) **Development Statistics**

Table 1 summarizes the development statistics for the proposed development.

Table 1: Development Statistics **Meditation Centre** Hotel Dharmshala Hotel Avkash Sanstha (Seniors Retirement) Avkash Sanstha (Seniors Retirement) Zen Innovation Centre **Ayurvedic Centre** Commercial **Convention Centre** TOTAL

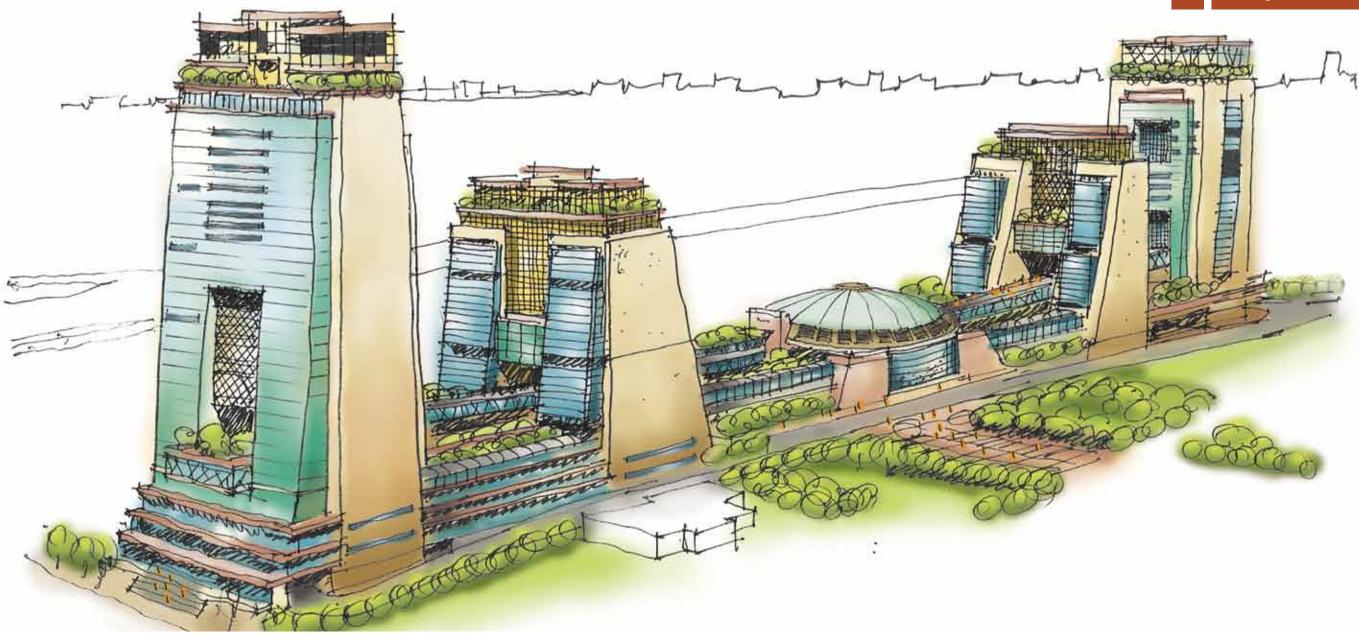
Square Metres
950
23,000
24,000
15,000
15,000
19,000
8,500
5,500
5,500
116,450

189 Milner Avenue is designated Employment Area by the Toronto Official Plan. Uses that support business and economic activity such as hotels, offices and small scale stores and services are permitted in Employment Areas. Places of worship are permitted on major streets like Markham Road.

Many of the uses proposed for 189 Milner Avenue conform to the land use policies for development in Employment Areas. Some of the uses proposed for this mixed use development such as the proposed seniors retirement facilities require approval of an amendment to the Employment Area policies to permit limited residential uses as part of the mixed use development.

The City of Toronto is currently completing a Municipal Comprehensive Review of the policies and designations for Employment Areas. The owner of 189 Milner Avenue has asked that the property and proposed development be included by staff in the Municipal Comprehensive Review.

# 4 PLANNING OVERVIEW



The mixed use development proposed for 189 Milner Avenue is located within a precinct bounded by Markham Road, Milner Avenue and Executive Court. This precinct is currently developed with a range of land uses. Adjacent land uses consist of a mix of institutional, senior's residential apartments as well as employment uses. These include:

- Saints Peter and Paul Ukrainian Catholic Church (1490 Markham Road)
- Saints Peter and Paul Seniors Apartments and Retirement Home (221 Milner Avenue)
- Saints Peter and Paul Banquet Hall (231 Milner Avenue)
- Blaisdale Montessori School (231 Milner Avenue)
- Malvern Baptist Church (185 Milner Avenue)
- Storwell Self Storage (85 Executive Court)

The majority of the existing land uses adjacent to 189 Milner Avenue consist of non-employment uses. The adjacent Saints Peter and Paul residential and institutional development is similar in its land uses to portions of the mixed use development proposed for 189 Milner Avenue. The Saints Peter and Paul uses are non-employment uses and have coexisted in harmony with nearby employment uses since the early 1980s.

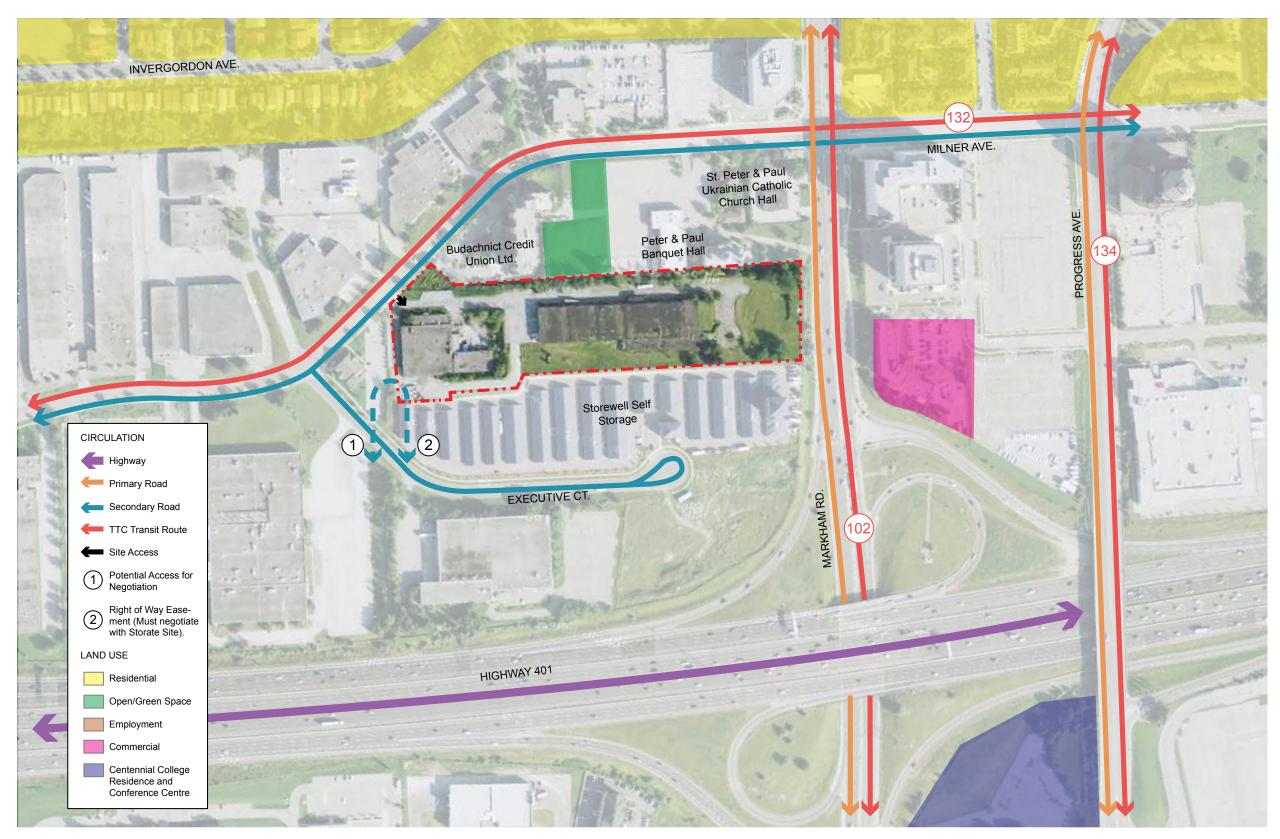
Storwell Self Storage is located immediately to the south of 189 Milner Avenue. This warehouse development supports quite minimal on-site employment since it is self storage warehousing.

The immediate land use context for 189 Milner Avenue is created by existing development which consists primarily of nonemployment uses. This context is relevant to the consideration of the mixed use development proposed for 189 Milner Avenue.

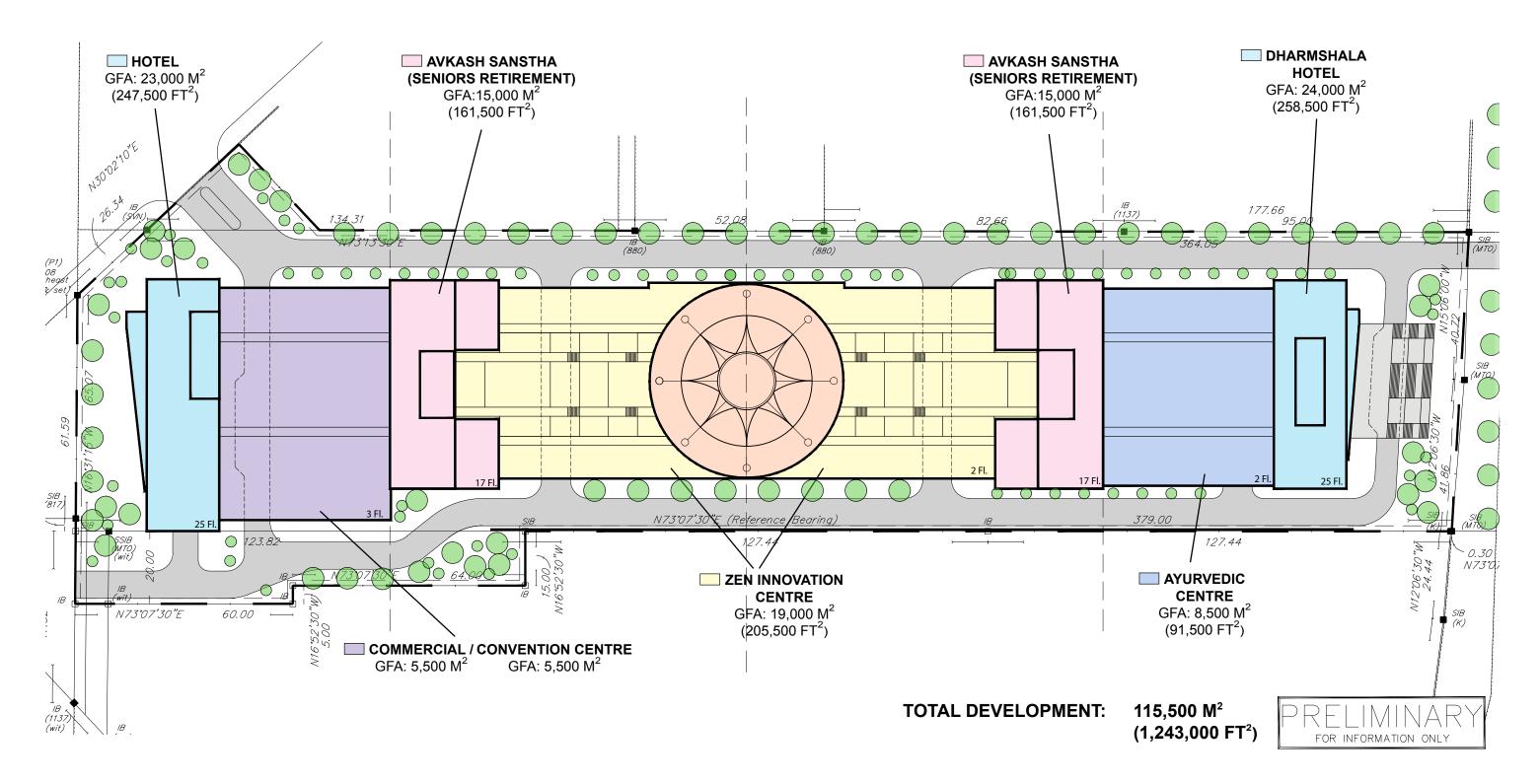
In view of the almost 30 year history of non-employment uses in this precinct coexisting with employment uses in the area, the proposed mixed use development at 189 Milner Avenue complies with every intention of creating jobs. The proposed development works well with adjacent residential, institutional and employment uses and not expected to undermine business activity in the immediate area.

#### Image: 4Planning Overview

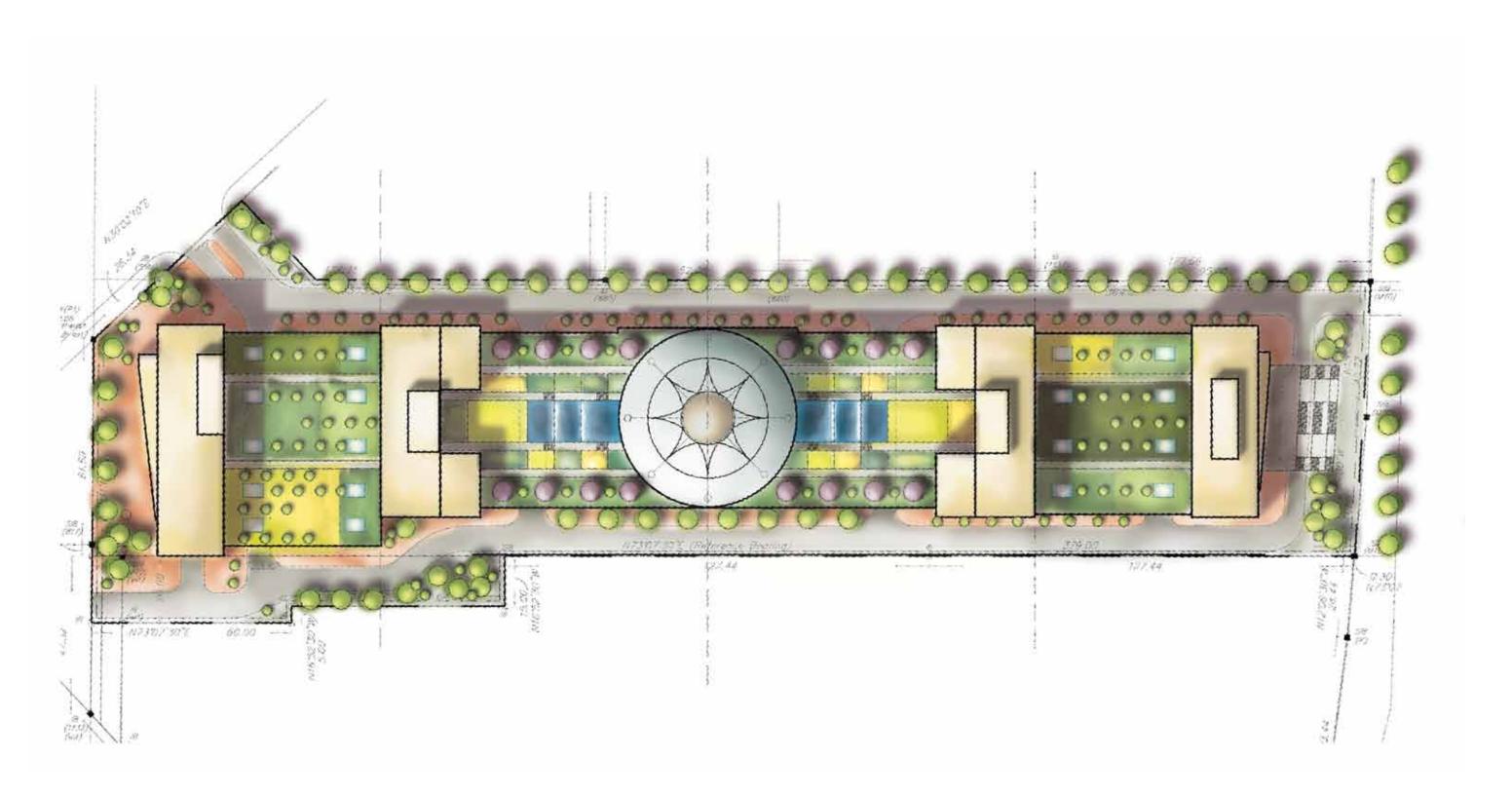
# a) Context Plan



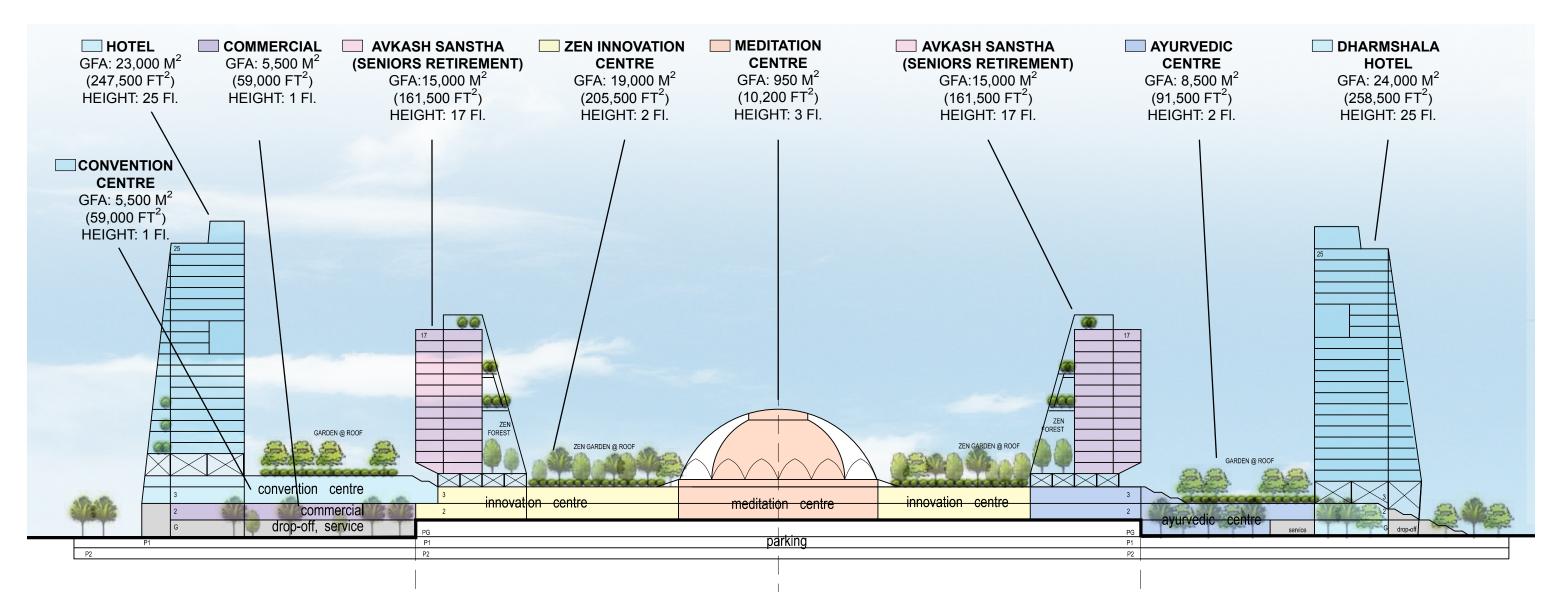
# b) Proposed Land Use Plan



# c) Proposed Site Plan



# d) Proposed Site Section



TOTAL DEVELOPMENT:

115,500 M<sup>2</sup> (1,243,000 FT<sup>2</sup>)

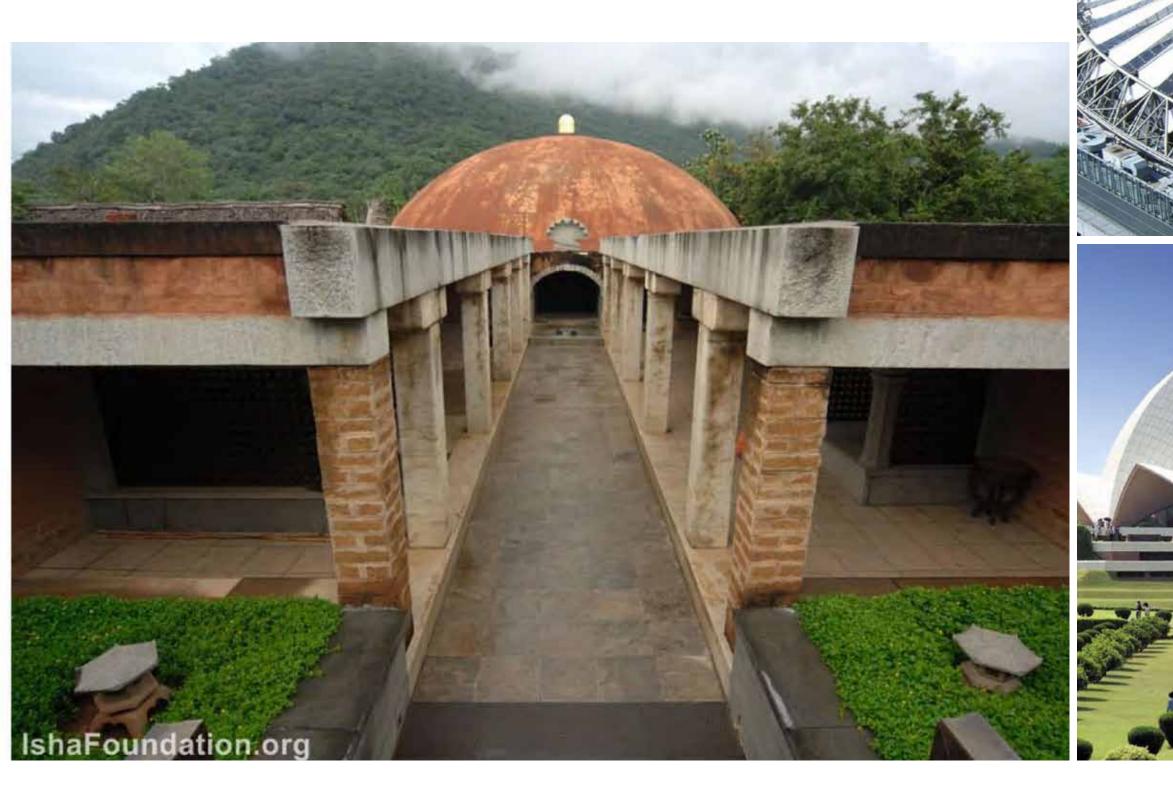
# e) Precedents - Built Form

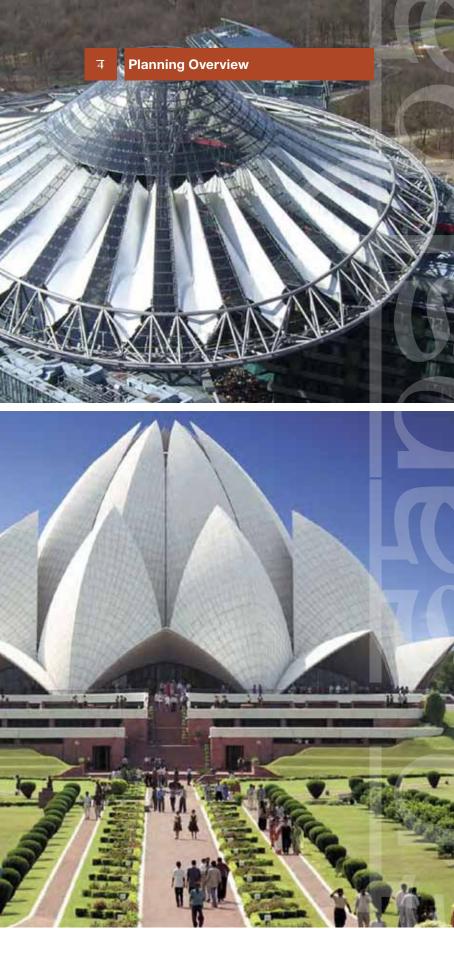




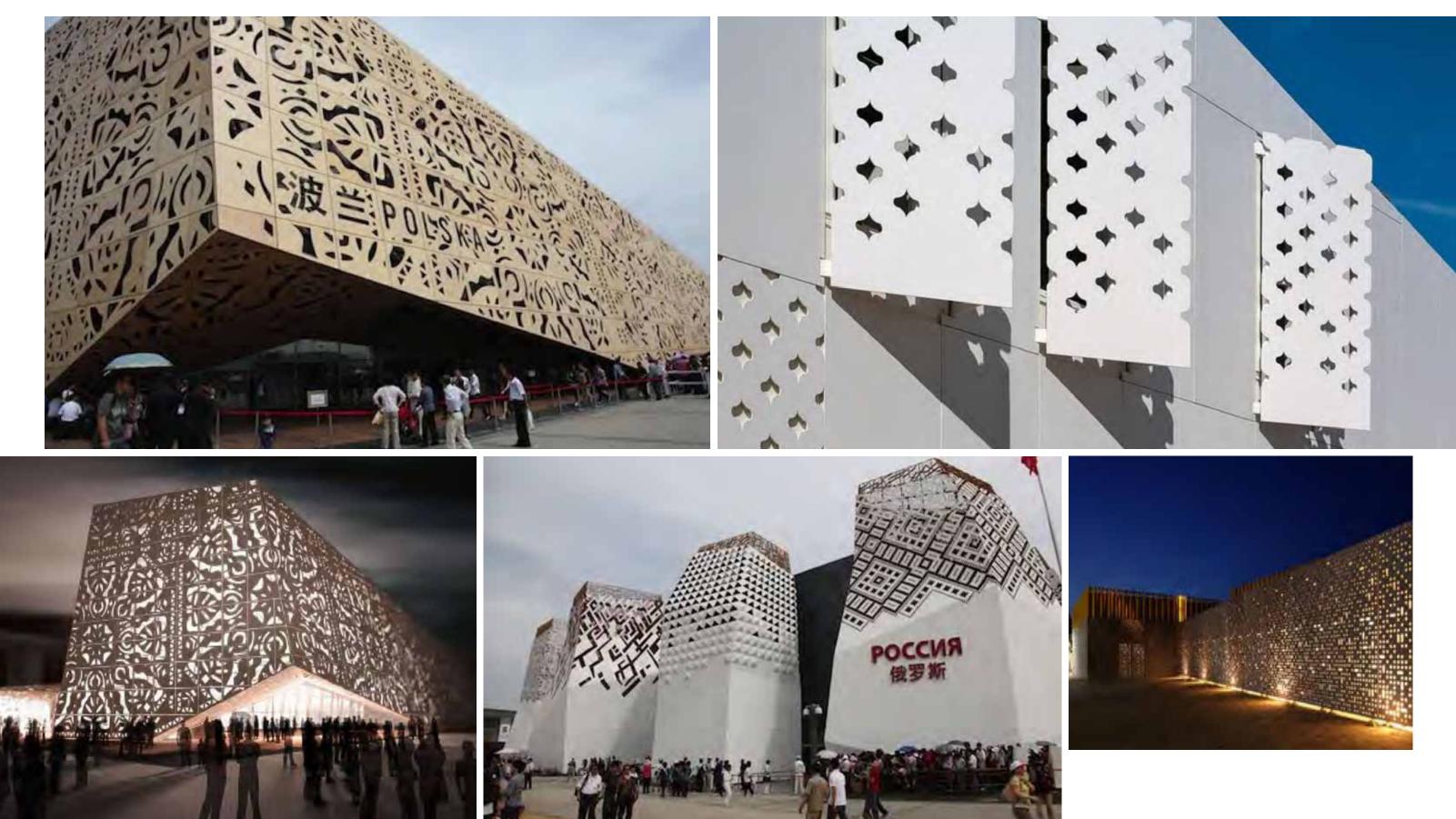


# f) Precedents - Meditation Centre





# g) Precedents - Building Facades



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# **5 EMPLOYMENT**



189 Milner Avenue (the site), located within the Scarborough 401 Corridor Employment District and consists of two vacant industrial buildings on 8.25 acres. There is currently no employment on site. IBI Group, in order to understand the impact of the proposed development on the site in terms of City employment, has projected employment yields based on the proposed size and uses. A range of employment densities were established for each proposed use on the site and employment yields were calculated. The current proposed uses constitute an employment land conversion from the site's Official Plan designation of Employment Area (Core Employment in the Draft Official Plan policy) to Mixed Use.

The City of Toronto's Official Plan states that Employment Districts "will be protected and promoted exclusively for economic activity." (OP 2.2.4) The City does not have explicit policies for addressing conversion requests in their Official Plan, but during the concurrent Official Plan Review and the Municipal Comprehensive Review (MCR), the City has adopted an approach which reflects the Province's criteria for conversions. From the August 27 2012 Staff Report, conversions are to be evaluated as a part of the MCR, using Growth Plan criteria. One of the questions to be answered, in the case of employment land conversions is:

Will the City meet the employment forecast in the Growth Plan, and are they (the lands) needed in the long term?<sup>1</sup>

The site, if permitted to redevelop to the density and uses proposed, will assist the City in meeting growth forecasts by accommodating significantly more employment that could be accommodated on the site if kept within its current designation.

It is estimated that the proposed development could supply between 500 and 700 new jobs.

## a) City of Toronto Employment Densities

The City of Toronto's 2013 Development Charges Background Study was used to establish Office, Retail and Commercial employment densities. (See Figure 1) These densities represent future densities for new construction, and do not reflect current densities occurring on existing employment lands. These multipliers are used by the City in their land use analysis, and are based on a floor space per worker approach.

#### Figure 1 - 2013 DC Background Study New Employee Densities

	Office	Retail	Other Commercial	Industrial	Institutional
Floor Space per Worker (SM)	27	40	40	75	60
Floor Space per Worker (SF)	290	430	430	807	645

Source: Table 10 (Employees in New Space 2013 to 2022) Hemson Consulting Forecast New Construction of Space and Employees. City of Toronto DC Background Study.

For this analysis, a range of employees per square foot was created using the Background Study numbers at the basis. The range allows for low, medium and high employment projection.

## **b) Proposed Development**

The proposed mixed-use development will have a significant employment component. In total the development is projected to have a total Gross Floor Area (GFA) of over 1,200,000 square feet. There are several different uses that will make up this development. Figure 2 indicates the uses and their projected areas.

#### Figure 2 - Proposed Development Area by Use

Use	SF	SM
Commercial	59,000	5,500
Hotel	247,500	23,000
Convention Centre	59,000	5,500
Senior's Retirement Facility	161,500	15,000
Zen Innovation Centre	205,500	19,000
Meditation Centre	10,200	950
Senior's Retirement Institute	161,500	15,000
Ayurevic Centre	91,500	8,500
Dharmshala Hotel	258,500	24,000
TOTAL	1,254,500	116,450

Some of the uses in the proposed development are not addressed in the DC Background Study, IBI Group therefore sought out industry professionals is order to establish a potential range of employees for use and area. In the case of the Hotels and the Seniors Retirement Facility, employment densities were applied per room, rather than per square foot, the method employed in the Background Study.

Additionally, the proposed development has a number of unique employment uses which were excluded from the initial calculation. These uses are undocumented in the current research or immediate geography, and the large scale of the uses made applying an employee range difficult to establish with certainty.

Using the density ranges available from the DC Background Study and those gleaned from Industry Experts, the initial analysis demonstrates a possible range of 386 to 596 employees.

(See Figure 3)

#### Figure 3 - Proposed Uses and Employment Yields

Commercial (SQ FT)		59,000
Scenario A - 400 SQ FT per Employee	148	
Scenario B - 450 SQ FT per Employee	131	
Scenario C - 500 SQ FT per Employee	118	
Hotel (Rooms/SQ FT)	350	247,500
Scenario A - 1 Employee per 2 Rooms	175	
Scenario B - 1 Employee per 3 Rooms	117	
Scenario C - 1 Employee per 4 Rooms	88	
Dharmshala Hotel (Rooms/SQ FT)	330	258,500
Scenario A - 1 Employee per 15 Rooms	22	
Scenario B - 1 Employee per 20 Rooms	17	
Scenario C - 1 Employee per 25 Rooms	13	
Convention Centre (SQ FT)		59,000
Scenario A - 450 SQ FT per Employee	131	
Scenario B - 500 SQ FT per Employee	118	
Scenario C - 550 SQ FT per Employee	107	
Senior Retirement Institute (Rooms/SQ FT)	600	323,000
Scenario A - 1 Employee per 5 Rooms	120	
Scenario B - 1 Employee per 7.5 Rooms	80	
Scenario C - 1 Employee per 10 Rooms	60	
JOB CREATE ON SITE SCENARIO A	596	
SCENARIO B	462	
SCENARIO C	386	
	000	

Those uses excluded from the initial employment yields included over 300,000 sf of GFA. Omitted from the original estimate are the:

- Zen Innovation Centre (205,500 sf)
- Meditation Centre (10,200 sf)
- Ayurevic Centre (91,500 sf)

IBI Group has estimated that these uses will provide a minimum of 100 jobs, but as they are currently loosely defined, the estimate must be conservative in nature.

It is therefore estimated that the total proposed development will have an employment yield of between 486 and 696 jobs.

This is a significant number of jobs accommodated on the site, and is a density of 59 to 84 jobs per acre. This is much higher than the currently density provided on the majority of employment lands which area characterized by industrial type uses.

## c) Average Industrial Employment Densities

As a part of the Official Plan Review, and MCR, the City hired a consulting firm to review the City of Toronto's Employment Lands and Employment Land policies. The 2012 Malone Given Parsons et. al. (MGP) Report established, using the 2011 City-wide Employment Survey and Cushman & Wakefield's industrial building data base, that the average employment density in "industrial-type properties" is 14 jobs per acre (36 jobs per hectare). This is a blend of the many different users of industrial space. (See Figure 4)

#### Figure 4 - Average Industrial Employment Densities (2011)

Industrial-Type	Jobs Per Net Acre	Jobs Per Net Hectare
Manufacturing	16	40
Construction	12	30
Wholesale Trade	12	30
Transportation & Warehousing	8	20

Source: MGP Sustainable Competitive Advantage and Prosperity: Planning for Employment Uses in Toronto, October 2012

Based on the calculations and densities of the MGP Report, if 189 Milner Avenue was to develop with "typical industrial uses", based on the size of the site, average industrial lot coverage and the average density of each type of job, **a range of 66 to 134 jobs is estimated.** 

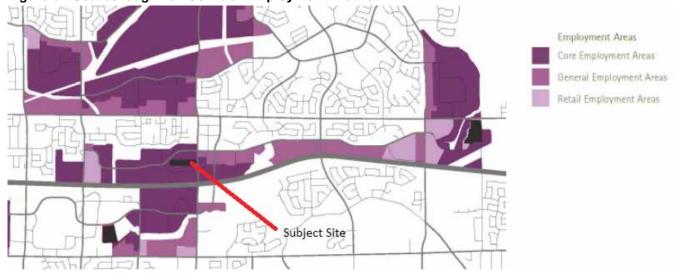
#### Figure 5 - Milner Industrial Employment Yield Estimate

	Ac	На
Site Size	8.25	3.34
Job Estimate	Jobs (ac)	Jobs (ha)
Manufacturing	132	134
Construction	99	100
Wholesale Trade	99	100
Transportation & Warehousing	66	67

This is significantly less employment that the estimated employment yields of the proposed mixed-use development on the same site. The site has been vacant for a number of years, not accommodating employment, and the previous owners were unable to find a suitable industrial tenant. The site's configuration and access issues lessen its appeal to traditional employment land users. Additionally, to the south of the site, a formally vacant industrial piece of land has been converted to self-storage, which is estimated to have a significantly lower employment density than warehousing or logistics.

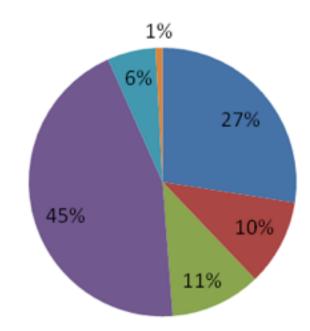
## d) Scarborough 401 Corridor Employment District Employment Densities

Figure 6 - Scarborough 401 Corridor Employment District



The 2011 Employment Survey<sup>2</sup> indicated that there were 16,669 jobs within the Employment District. Almost half of those jobs are Office jobs (45%) with Manufacturing (or Industrial) jobs representing 27% of the total Employment District Jobs.

#### Figure 7 - 2011 Scarborough 401 Corridor Employment District Sector Breakdown





- Retail
- Service
- Office
- Institutional
- Other

According to the MGP Report, as of 2011, the Employment District, containing 189 Milner Avenue, had an total area of 289 net hectares and just under 7,000,000 square feet of Industrial space, with an average vacancy rate of 5%. This results in an overall employment density of 58 jobs per net hectare, which is not surprising considering the prevalence of Office uses in the Employment District.

Using the MGP and City employment numbers we can establish that employment densities (per square foot) in industrial buildings measures approximately 1 employee per 900 square feet. (see Figure 8)

Ma	anufacturing	Retail	Service	Office	Institutional	Other	TOTAL
2011 Employment	4,579	1,736	1,820	7,423	972	139	16,669
% In Industrial Space	100%	15%	10%	30%	15%	5%	
	4,579	260	182	2,227	146	7	7,401
				Indi	ustrial Space Em	ployment	7,401
				E	mployees per Inc	dustrial sf	897
				I	Employees per ha	a (overall)	58

This is number is slightly higher than the 2013 DC Background study which was looking at new or future construction. In addition considering the age and location of industrial buildings in the Employment District, it is still not a high as some logistics uses. It is unlikely that any industrial type buildings would create any higher employment yields (based on employees per sf) that which already exist in the area.

Considering the site, using the 40% coverage ratio used in the MGP Report, and a range of employment densities based on those demonstrated in the Employment District, and the DC Background Study:

# The total site, if it were to be development today for industrial-type uses would only have a potential employment yield of between 160 and 178 jobs.

#### Figure 9 - 189 Milner Density with Typical Industrial Employment

8.25
40%
143,750
178
160

Figure 8 - Employment in Industrial Space

## e) Summary

The proposed development, even in the most conservative analysis, will provide almost over 200 more jobs on the site that projected employment densities presented by the City and their Consultant and almost 400 more jobs that are currently occurring on the site. In this case, the conversion to mixed use will assist the City in meeting the employment forecast, by taking a site which currently has no jobs, and providing a minimum of approximately 400 jobs, based on the City and Industry Expert's projected employment densities.

#### Figure 10 - Proposed and Typical Industrial Range of Employment Yields

	Low	High
Proposed Mixed Use Development (Partial)	386	596
Proposed Mixed Use Development (Full)	486	696
MGP Report - Typical Industrial Employment (employment per acre)	66	134
MGP Report & DC Background - Typical Industrial Employment (per sf)	160	178



# 6 PRELIMINARY TRAFFIC ANALYSIS

## a) Site Access

The site at 189 Milner Avenue in Scarborough is easily accessible from existing roadways.

- from the Highway 401 interchange at Markham Road;
- Access from points north will be provided via Markham Road at the Milner Avenue intersection;
- interchange with some additional volume along Milner Road.

Given its location, the site at 189 Milner Avenue is also well serviced by public transit. Currently, TTC maintains two routes in the vicinity of the site. The TTC 132 Markham Bus runs east/west along Milner, servicing the site near Executive Court, while the TTC 134 Progress Bus runs east/west in the area around McCowan and the Scarborough Town Center where transfers can be made to/from the SRT. Current ridership estimates for these routes range from 2200 to 8100 customers per weekday for the TTC 132 and TTC 134 Bus, respectively.

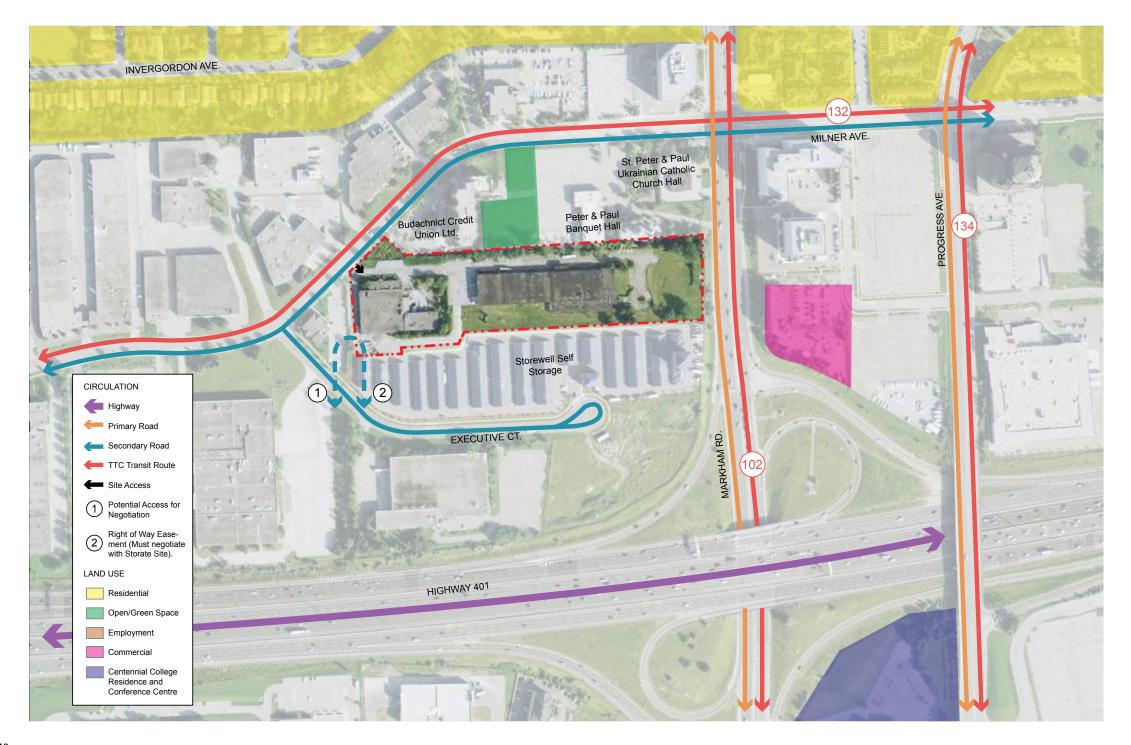
Direct access to the site is provided via a driveway just east of Executive Court. Potential access is also being considered to Executive Court just south of the Milner Avenue intersection. An emergency access is also being considered on the east end of the site with controlled access from Markham Road (Right-In Only) to facilitate access for emergency services.

• Access from points south will be provided via Markham Road and Progress Road with additional demand

• Access from points east and west of the site will be provided primarily by Highway 401 at the Markham Road

## **b) On Site Circulation**

The main access to the site is provided via a driveway just east of Executive Court along Milner Avenue. Vehicles enter the site and head east with various internal access driveways provided with right-in movements which reduces inbound site congestion. Internal site driveways provide access to all points of the site in both clockwise and counterclockwise directions. Vehicles exit at the Milner Avenue driveway access. Given the site layout, providing access via counterclockwise direction only may also be possible.



## c) Road and Intersection Impacts

Given the proposed uses of the site, it is understood that the City of Toronto will require a Traffic Impact Study to be submitted which indicates the potential impacts of the site as they pertain to traffic and congestion on the nearby roadway network. To that end, a preliminary study area including signalized intersections has been identified for further consideration once an acceptable Terms of Reference document guiding the traffic impact study has been submitted to and approved by the City:

- Markham Road / Milner Avenue
- Markham Road / Sheppard Avenue
- Markham Road at Highway 401 Westbound Off Ramp
- Markham Road at Highway 401 Eastbound Off Ramp
- Markham Road at Progress Avenue
- Markham Road at Centennial College Driveway
- Milner Avenue at Progress Avenue
- Milner Avenue at Scunthorpe Road (unsignalized)
- Milner Avenue at Executive Court (unsignalized); and,
- Milner Avenue at McCowan Road.

It is at these locations where potential traffic impacts of the site are most likely to be experienced. The study area, once established, will be evaluated under the new traffic impact study criteria as detailed in the "Guidelines for the Preparation of Transportation Impact Studies – 2013" published by the City of Toronto. Areas under MTO influence will also be evaluated based on current MTO guidelines and direction.

## d) Proposed Road and Traffic Operations Improvements

Given the diversity of land uses at the site, a number of trip generation schemes could be envisioned, and these will be identified through the study process in collaboration with City staff. The site trips combined with the future background traffic volumes will provide future year scenarios for analysis where the need for improvements can be best determined. City of Toronto traffic data suggests that Milner Avenue in the area of the proposed site access driveway currently experiences 7221 vehicles per day westbound and 6754 vehicles per day eastbound between McCowan Road and Markham Road. These volumes combined with the site volumes accessing the proposed driveway on Milner Avenue may warrant the need for some improvements to the driveway intersection, such as the provision of a signal should it meet warrants as identified in the Ontario Traffic Manual.

Given the maturity of the area and the infrastructure currently in place, major improvements such as roadway or bridge widening are not anticipated. Transportation Demand Management strategies will be implemented to the extent feasible to manage potential impacts. A Traffic Management Plan will be developed which identifies the traffic demands associated with normal use as well as anticipated traffic during events and the operations plan to contain queuing on the site internal roadways and not on City of Toronto roadways. Safety for all road users will drive recommendations for improvements to internal roadways as well as along City facilities serving the site.



# 7 PRELIMINARY SERVICING ANALYSIS

## a) Sanitary Sewer System

Two local City sanitary sewer systems exist at the road frontages of the site. Both sewer systems outlet to the existing 1050mm diameter East Highland Creek sanitary trunk sewer that follows the East Highland Creek river valley. The local sewer systems comprise the following:

- A 250mm diameter sanitary sewer along Milner Avenue that drains west to the East Highland Creek trunk sewer located approximately 995m from the site
- A 250mm diameter sanitary sewer along Markham Road that drains south to the East Highland Creek trunk sewer (near Progress Avenue) located approximately 825m from the site

A preliminary analysis was undertaken of both existing sanitary sewer systems to review potential available surplus capacity for additional development.

An average water consumption rate of 450 Litres/capita/day is assumed in this analysis as per normal City design criteria.

We note that the City may permit the use of a lesser average per capita daily water consumption rate for analysis of existing wastewater flows as noted below where sewer networks are fully separated storm and sanitary sewer areas, where no downspout and foundation drains are connected to the sanitary sewer and where inflow and infiltration has been establish by the a city sponsored study:

- 240 litres/capita/day-residential
- 250 litres/capita/day-industrial/commercial/institutional

Consequently, application of the above reduced design criteria for analysis of the proposed development is subject to City approval. Nevertheless, this reduced was also considered using 250 litres/capita/day for all uses for this preliminary assessment, including residential.

Dwg. No. DR-03A shows the existing sanitary sewer network along Milner Avenue and Markham Road and the existing contributing development areas to each sewer system.

## **Existing Condition**

Table 1.1 provides a preliminary analysis of existing sanitary flows along the Milner Avenue sanitary sewers under existing conditions, excluding the proposed development. Table 2.1 provides a preliminary analysis of existing sanitary flows along the Markham Road sanitary sewers under existing conditions, excluding the proposed development.

As indicated, approximately 824m of existing sanitary sewer is theoretically undersized on Milner Avenue to provide for existing development and approximately 528m of existing sanitary sewer is theoretically undersized along Markham Road to provide for existing development when the standard 450 Litres/capita/day average water consumption rate is applied.

For comparison, Tables 2A and 2B apply the reduced 250 Litres/capita/day water consumption rate. In this case, approximately 672m of existing sanitary sewer is theoretically undersized on Milner Avenue to provide for existing development and approximately 0m of existing sanitary sewer is theoretically undersized along Markham Road to provide for existing development.

## **Proposed Condition**

Since the existing sewers are theoretically deficient to provide for existing development, it is expected that sanitary sewer system improvements would be necessary to the City sewer network to accommodate any proposed additional development.

The proposed development is expected to generate the following equivalent site population based on proposed development floor space and City of Toronto sanitary sewer design criteria:

Building
Hotel
Convention Centre
Commercial Space
Seniors Retirement Facility
Zen Innovation Centre (Retail/Commercial)
Mediation Centre
Seniors Retirement Facility
Ayurvedic Centre
Dharmshala Hotel
TOTALS
For the purpose of this prelimina

For the purpose of this preliminary analysis, it is assumed that the entire development forms one block of land under single ownership. Both the existing Milner Avenue and the Markham Road sanitary sewer systems were assessed separately to accommodate the proposed entire development, given the City's practice is to provide one sanitary service connection for each separate blocks of land ownership.

Gross Floor Area (GFA) (sq.m)	Design Criteria	Equivalent Population (persons)
23,000	1 person/bed; 1 bed/30m² GFA	766
5,500	1.1 person/100m <sup>2</sup> GFA	60
5,500	1.1 person/100m <sup>2</sup> GFA	60
15,000	1 person/bed; 1 bed/30m² GFA	500
19,000	1.1 person/100m <sup>2</sup> GFA	209
950	0.0258 person/m <sup>2</sup> GFA	25
15,000	1 person/bed; 1 bed/30m² GFA	500
8,500	0.0258 person/m² GFA	219
24,000	1 person/bed; 1 bed/30m² GFA	800
116,450		3,139

Table 1.3 provides a preliminary analysis of proposed sanitary flows along the Milner Avenue sanitary sewer with the entire proposed development when the standard 450 Litres/capita/day average water consumption rate is applied. Table 2.3 provides a preliminary analysis of the proposed sanitary flows along the Markham Road sanitary sewer with the entire proposed development when the standard 450 Litres/ capita/day average water consumption rate is applied.

As indicated, approximately 995m of existing sanitary sewer is theoretically undersized on Milner Avenue if the entire proposed development is serviced to the Milner Avenue sanitary sewer. Approximately 825m of existing sanitary sewer is undersized along Markham Road if the entire proposed development is serviced to the Markham Road sanitary sewer.

For comparison, Tables 1.4 and 2.4 apply the reduced 250 Litres/capita/day water consumption rate along Milner Avenue and Markham Road respectively. In this case, approximately 763m of existing sanitary sewer is theoretically undersized on Milner Avenue and approximately 242m of existing sanitary sewer is undersized along Markham Road to provide for the existing and proposed development.

Based on the above preliminary analysis, it is expected that sanitary sewer system improvements would be required to the Milner Avenue or Markham Road existing sanitary sewers, depending on which sewer system is selected to service the site regardless of whether the normal or reduced average water consumption rate is applied. However, given the extent of sewers that are noted as theoretically undersized, and given that these sewer systems are operating with no regular apparent issues, sanitary sewer flow monitoring is recommended to confirm actual sewage flows for comparison against theoretical flows. It may be that theoretical flows based on the current City design criteria over-estimates actual sewage flows in these sewer systems. Therefore, sanitary sewer flow monitoring is recommended to confirm the need for existing sewer system upgrades.

Where City sewer network improvements are proposed to accommodate additional development, proponents should consider cost sharing arrangements with the City since the improvements would also benefit existing development, given the existing sewers are theoretically deficient to provide for existing development when the standard 450 Litres/capita/day average water consumption rate is applied.

Servicing the portions of the proposed development to the Milner Avenue and Markham Road sanitary sewer systems is also possible, subject to City approval. Servicing to both sewer systems may allow for better optimization of existing sewer capacity, particularly if the development is phased.

#### TABLE 1.1 : MILNER AVENUE SEWER SANITARY SEWER DESIGN SHEET

EXISTING CONDITION @ 4501 (capito/da

EXISTING CONDITI	014 8 45000	capita/day			
IBI Group	TORONTO	ESION CRITERIA: EQUIVALENT POPULAT	IONS		
230 Richmond St. W.	Type 1:	Medium Density	270	personaha	
Toronto, Ontario	Type 2:	Apartmente	400	personalta	Manning's 'n'
M5V 1V6	Type 3:	Industrial	136	personalta	Infibration (/was/Hi
Phone: (416) 596-1930	Type 4:	retirement home/hotais (note 1)	0.0333	(persona/QFA)	Peaking Factor as
	Type 5:	Commercializatal (note 2)	0.0110	(persona/QFA)	Average Water Co

Project

					PROPOSED DEVE	LOPMENT					Res.	Peak				PROPO	SED SEW	ER DESIG	IN		
FROM	TO	L	AREA	Type	Туре	Type	Type	Туре	Туре	Sum	Peak	San.	SUM OF	Infii-	Design	Pipe	Pipe	Pipe	Full Flow	Actual	% Full
MH	MH			1	2	3	4	5	6	Pop.	Factor	Flow	AREA	tration	Flow	Dia.	Slope	Capacity	Valocity	Velocity	Capad
_		(m)	(Ha)	(H4)	(Ha)	(Ha)	Tel. OFA (m2)	Tot. GFA (m2)	Tot. GFA (m2)	(persona)	(Herneric)	(LA)	()(a)	(L40)	0.40	(mm)	(m/m)	(1.49	(11/1)	(m/s)	
MH14A	,	_	1.01	_	_	1.01				137	4.20	3.0	1.01	0.3	3.3						
	1 1	-	0.57		0.57		-		-	365	4.04	7.7	1.58	0.4	8.1	-	-				
_	MH13A	55.8	0.14	-			-		-	365	4.04	7.7		0.4		250	0.000				1.1
MH13A	MH12A	46.7	0.12	-	-		-	- V -	-	365	4.04	7.7	1.72		8.1		2.54%	94.8	1.93	2.2	
MH12A			1.31	_		1.31	-		_	544			1.84	0.5	8.2	250	1.63%	75.9	1.55	1.8	
an in the second	MH11A	77.3	0.19	-	-	1.01	-		-		3.96	11.2	3.15	0.8	12.0						
MH11A	MITTIA	11.0		-		-	-		-	544	3.96	11.2	3.34	0.9	12.1	250	0.71%	50.1	1.02	1.2	
	-		0.81	_	0.81		-		-	868	3.84	17.3	4.15	1.1	18.4	-	_				
BITE			3.34			3.34	1			1322	3.72	25.6	7.49	1.9	27.5					1	
	MH10C	15	0.04	-		_	-		-	1322	3.72	25.6	7.53	2.0	27.6	250	0.54%	43.7	0.89	1.0	
MH10C	MH10B	88	0.22	_	-		-		-	1322	3.72	25.6	7.75	2.0	27.6	250	0.60%	46.1	0.94	1.1	
MH10B	MH10A	15	0.04	-	_		-		-	1322	3.72	25.6	7.78	2.0	27.6	250	1.27%	67.0	1.37	1.6	4
MH10A	MH9A	53	0.13	_	-	-	_		-	1322	3.72	25.6	7.92	2.1	27.7	250	0.99%	59.2	1.21	1.4	
MH9A			26.29	22.21	_	4.08	-			7873	3.06	125.4	34.21	8.9	134.3	_	_				
_		-	0.31	-	_	0.31			-	7916	3.05	125.9	34.52	9.0	134.9	_					
_	_	_	7.70	_	-	7.70	_		_	8963	3.00	140.1	42.22	11.0	151.1		-				
_	MHBA	50	0.13	_	_	_				8963	3.00	140.1	42.34	11.0	151.1	300	0.66%	78.6	1.11	surcharge	10
MH8A	_	_	4.05	_	_	4.05			-	9514	2.98	147.5	46.39	12.1	159.5		0.0074	10.0		and an Ba	
	MH7A	91	0.23				-		-	9514	2.98	147.5	46.62	12.1	159.6	300	0.51%	69.1	0.98		23
MH7A			2.59	-	-	2.59	-		-	9866	2.96	152.1	49.21	12.8	164.9	300	0.51%	08.1	0.98	surcharge	-
	-	-	2.59		-	2.59	-		-	10218	2.95	156.7				-	-				
_	MHEA	91	0.23	-	-	2.00	-		-				51.80	13.5	170.2						
MHGA	miner				-		-		-	10218	2.95	156.7	52.03	13.5	170.3	375	0.40%	110.9	1.00	surcharge	15
M/16A	1000	-	2.21	-	-	2.21	-		-	10519	2.93	160.7	54.24	14.1	174.8	_	-				
	MH5A	91	0.23	-	-	-	-			10519	2.93	160.7	54.46	14.2	174.8	375	0.24%	85.9	0.78	surcharge	20
MHSA		-	1.70	-	-	1.70	_		-	10750	2.92	163.7	56.16	14.6	178.3	_	-				
_	-	-	0.53	-		0.53			_	10822	2.92	164.6	56.69	14.7	179.4	_					
-	MHMA	91	0.23	-	-	-	-		_	10822	2.92	164.6	56.92	14.8	179.4	375	0.36%	105.2	0.95	surcharge	17
MH4A	-	_	1.77	-		1.77			-	11063	2.91	167.7	58.69	15.3	183.0	-	_				
_	_	_	1.53	-	-	1.53			_	11271	2.90	170.4	60.22	15.7	188.1	_	_				
_		-	1.11	_	_	1.11				11422	2.90	172.3	61.33	15.9	168.3						
_	MH3A	159	0.40	_						11422	2.90	172.3	61.73	16.0	188.4	375	0.32%	99.2	0.90	surcharge	15
MH3A			0.96			0.96			-	11552	2.89	174.0	62.69	16.3	190.3	0.0	W.A.E. 79	00.2	0.90	auro au ge	
	MH2A	91	0.23	-	-	0.00	-		-	11552	2.89	174.0	62.69			375	0.000	100.1	0.00		
MH2A			1.38	-	· - ·	1.38	-		-					16.4	190.4	3/5	0.38%	108.1	0.98	surcharge	12
MURU .	-	-		-	-		-		-	11740	2.89	176.4	64.30	16.7	193.1	-	-				
-	10.00		2.35	-	-	2.35	-		-	12059	2.87	180.5	66.65	17.3	197.8	_	-				
	MH1A	99	0.25	-		_	-		-	12059	2.87	180.5	66.89	17.4	197.9	375	0.31%	97.6		surcharge	
MH1A	TRUNK	61	0.15	-	-	-	-			12059	2.87	180.5	67.05	17.4	197.9	450	0.25%	142.6	0.90	surcharge	13
CHECK:		-	67.05	22	1	41	0		0	12059			67.05								

189 Milner Ave, Toronto

	0.013
(#He	0.260
r as per Harmon tormula.	
Consumption (ilp/day)	450

1 personalized \* 1bed/50m2(GFA) = 0.0333 (persona/GFA) Note 2: 1.1 persona/100m/2(GFA) = 0.0110 (persona/0FA

#### TABLE 1.2 : MILNER AVENUE SEWER

#### SANITARY SEWER DESIGN SHEET EXISTING CONDITION @ 2501 /capita/day

EXISTIN	IG CO	NDIT	ION @	250L/ca	pita/day																	PROPO	DSED (
IBI Group					ON CRITERIA EQUI	WALENT POPULAT	IONS			1												IBI Group	
230 Richmon	d St. W.			Type 1:	Medium Density		270		personalita	1												230 Richmo	ond St. W.
Toronto, Onta	ario			Type 2:	Apartmenta		400		presente	1	Manning's			0.013	1							Toronto, On	ntario
M5V 1V6				Type 3:	industrial		136		pressie	1	infilmation (			0.260	1							M5V 1V6	
Phone: (416) 594	6-1930			Type 4:	retirement bomefix	ciels (note 1)	0.0333		(persona/QFA)	1		actor as per Ham	une fromula	0.000	1	Note 1:	1 courses	d to be without		.0333 (person	-	Phone: (416) 5	86-1880
				Type 5:	Commercialhetal		0.0110		(persona/GFA)	1		atar Consumptio		250	1		1.1 persona/				wark)		
				Type 6:	Church		0.0258		(service)(FA)	•	Contraction of	and consumption	en (jegenolegi)	1.00		NOTE 2:	1.1 personer	10082 UFA	0.0110 0	erecna/3PA)			
									( and a design of the	-													_
			1		PROPOSED DEV	ELOPMENT					Res.	Peak				PROPO	SED SEW	ER DESIC	IN		_	FROM	то
FROM	TO	L	AREA	Туре	Туре	Туре	Type	Туре	Type	Sum	Peak	San.	SUM OF	Infi-	Design	Pipe	Pipe	Pipe	FullFlow	Actual	5.64	MH	M
MH	MH			1	2	3	4	5	6	Pop.	Factor	Flow	AREA	tration	Flow	Dia.	Slope	Capacity	Valocity	Velocity	Capacity	Min	
_		6mg	0140	(14)	(944)	(Ha)	Tot, GFA (m2)	Tot. OFA (m2)	Tot. GIFA (m2)	(persons)	(Hermonia)	(1.4)	(14)	0.40	(.4)	(mm)	(mim)	0.40	(m/s)	(m/w)			+
																						MH14A	
MH14A		-	1.01			1.01	_		-	137	4.20	1.7	1.01	0.3	1.9	-	_						
_			0.57		0.57		_		-	365	4.04	4.3	1.58	0.4	4.7	_	_					_	MHI
	MH13A	55.8	0.14	-	-		-		-	365	4.04	4.3	1.72	0.4	4.7	250	2.54%	94.8	1.93	2.2	5%	MH13A	MHI
MH13A	MH12A	46.7	0.12		-	-	1000		-	365	4.04	4.3	1.84	0.5	4.7	250	1.63%	75.9	1.55	1.8	6%	MH12A	
MH12A			1.31	-	-	1.31			-	544	3.96	6.2	3.15	0.8	7.0	_	_						MH11
	MH11A	77.3	0.19	-	-		_			544	3.96	6.2	3.34	0.9	7.1	250	0.71%	50.1	1.02	1.2	14%	MH11A	_
MH11A	-	-	0.81	-	0.81		_		-	868	3.84	9.6	4.15	1.1	10.7	-						HOTEL	
SITE			3.34			3.34				1322	3.72	14.2	7.49	1.9	16.2							CONV CEN	TRE
-	MH10C	15	0.04			1.	1000			1322	3.72	14.2	7.53	2.0	16.2	250	0.54%	43.7	0.89	1.0	37%	COMMERC	JAL
MH10C	MH10B	88	0.22	-	-		-		- 1	1322	3.72	14.2	7.75	2.0	16.2	250	0.60%	46.1	0.94	1.1	35%	SENIORS F	RTRMT IN
MH10B	MH10A	15	0.04		-	-	-		- 1	1322	3.72	14.2	7.78	2.0	16.2	250	1.27%	67.0	1.37	1.6	24%	ZEN CENTR	RE
MH10A	MH9A	53	0.13				-	1	-	1322	3.72	14.2	7.92	2.1	16.3	250	0.99%	59.2	1.21	1.4	28%	MED CENT	RE
MH9A	- 1		26.29	22.21	-	4.08				7873	3.06	69.6	34.21	8.9	78.5	-	_					SENIORS P	
	- 1	- 1	0.31	-		0.31	-		-	7916	3.05	70.0	34.52	9.0	78.9	-	_					AYUR CEN	
_	-	- I	7.70		-	7.70	-	1	-	8963	3.00	77.8	42.22	11.0	88.8	_	_					DHARM HO	
	MHBA	50	0.13		-		-		-	8963	3.00	77.8	42.34	11.0	88.9	300	0.66%	78.6	1.11	surcharge	113%	-	MH10
MH8A	-	-	4.05		-	4.05	-		-	9514	2.98	81.9	46.39	12.1	94.0	_	_					MH10C	MH10
_	MH7A	91	0.23		-	-			-	9514	2.98	81.9	46.62	12.1	94.0	300	0.51%	69.1	0.98	surcharge	136%	MHIOB	MH10
MH7A	-	-	2.59	-	-	2.59	-		-	9866	2.96	84.5	49.21	12.8	97.3	_	_					MHIOA	MH9
_	-	1 -	2.59		-	2.59				10218	2.95	87.1	51.80	13.5	100.6	-	<u> </u>					MH9A	
	MHGA	91	0.23	-	1 -	-	-		-	10218	2.95	87.1	52.03	13.5	100.6	375	0.40%	110.9	1.00	1.0	91%	- 1	
MH6A		-	2.21	-	-	2.21	-		-	10519	2.93	89.3	54.24	14.1	103.4	_	_					-	MHB
	MHSA	91	0.23	-	-	-	-		-	10519	2.93	89.3	54.46	14.2	103.4	375	0.24%	85.9	0.78	surcharge	120%	MHSA	Mrits
MHSA	-	-	1.70		-	1.70	-		-	10750	2.92	90.9	56.16	14.6	105.5	-	_						MH7
-		=	0.53	-	-	0.53			-	10822	2.92	91.5	56.69	14.7	106.2	-	_					MH7A	
	MH4A	91	0.23		-	-	-			10822	2.92	91.5	56.92	14.8	106.3	375	0.36%	105.2	0.95	surcharge	101%		
MH4A	-	-	1.77	-	-	1.77	-		-	11063	2.91	93.2	58.69	15.3	108.4	- 1	_					-	MHG
-	-	-	1.53	-	-	1.53	-		-	11271	2.90	94.7	60.22	15.7	110.3	-	_					MHGA	
-			1.11	-	-	1.11			-	11422	2.90	95.7	61.33	15.9	111.7	-	- 1						MHS
	MH3A	159	0.40	- 1	-		-		-	11422	2.90	95.7	61.73	16.0	111.8	375	0.32%	99.2	0.90	surcharge	113%	MHSA	
MH3A		-	0.96	-	-	0.96	-		-	11552	2.89	96.7	62.69	16.3	113.0	- I	_						-
	MH2A	91	0.23	-	-	-	-		-	11552	2.89	96.7	62.92	16.4	113.0	375	0.38%	108.1	0.98	surcharge	105%	_	MH4
MH2A	-	-	1.38	-	-	1.38			- 1	11740	2.89	98.0	64.30	16.7	114.7	-	_					MH4A	
-		-	2.35	- 1	-	2.35	-			12059	2.87	100.3	66.65	17.3	117.6	-	_					_	
	MH1A	99	0.25	- 1	-	-	-		-	12059	2.87	100.3	66.89	17.4	117.7	375	0.31%	97.6	0.88	surcharge	121%	-	1.2
MHIA	TRUNK	61	0.15		-	-	-		-	12059	2.87	100.3	67.05	17.4	117.7	450	0.25%	142.6	0.90	0.9	83%	-	MH3
																						MH3A	-
CHECK:			67.05	22	1	41	0		0	12059			67.05										MH2A

67.05

12059

	230 Richmon	nd St. W.			Type 1:	Medium Density		270		personafia												
	Toronto, Ont	ario			7/5+2	Appriments		400		personalita		Marening's 1	~		0.013	1						
	M5V 1V6				Type 3:	industrial		126		personalta		Infitnation (			0.260	1						
	Phone: (416) 59	6-1980			Type 4	retrement home ho	() elorite ()	0.0005		(www.wig/A)			ctor as per Harm	or freemate	0.200	1	hists fr	1 name to the	41.00.0000	-	0.00303 (perso	10541
GFA)					Type S:	Commercial/retail (		0.0110		(personalQFA)			aler Consumption		450	•						
					Typett	Church	tote ty	0.0056		(personal/GFA)		NUMBER OF STREET	ee caraurpar	(ipany)	400		Note 2	1.1 personal	100+210PA	0.0110	persona/GFA)	
								1 40.00		(Jacob and Tark)												
		_				PROPOSED DEVI	B.OPMENT					Res.	Peak		r	_	88080	SED SEW	CR PER	-		
	FROM	TO	L	AREA	Туре	Type	Type	Туре	Type	Туре	Sum	Peak	San,	SUM OF	Infi-	Davies			-	T	_	
SFul	MH	MH			1	2	3	4	5	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Pap.					Design	Pipe	Pipe	Pipe	Full Flor		N.F.d
Capacity			100	214	914	1944	0144	Tot. OFA (m2)	-			Factor	Flow	ANEA	tration	Flow	Dia.	Slope	Cepecity	Velocity	Velocity	Gepecity
		-	10	100	1744	- 24	2.4	TOUR OF A (This)	Tot. GFA (m2)	Tot. GFA (w2)	(persona)	Plamonia	(J.N)	(Hai)	(UN)	(L/4)	(mm)	(m/m)	6.40	(196)	(1999)	
	MH14A			1.01			1.01				137	4.00										
				0.57	- 1	0.57	1.01	-		-	365	4.20	3.0	1.01	0.3	3.3	-	-				
	-	MHI3A	55.8	0.14	-	0.67		-		-		4.04	7.7	1.58	0.4	8.1	-	_				
5%	MH13A	MH12A	46.7	0.12		-	-	-		-	365	4.04	7.7	1.72	0.4	8.1	250	2.54%	94.8	1.93	2.2	9%
6%	MH12A	MITTEA	40.7		1 -	- 1		- 1		-	365	4.04	7.7	1.84	0.5	8.2	250	1.63%	75.9	1.55	1.8	11%
0.4	MITTER		-	1.31		-	1.31			-	544	3.96	11.2	3.15	0.8	12.0		_				
1.00		MH11A	77.3	0.19	- 1	-	-	- 1		-	544	3.96	11.2	3.34	0.9	12.1	250	0.71%	50.1	1.02	1.2	24%
14%	MH11A			0.81	-	0.81		-		-	868	3.84	17.3	4.15	1.5	18.4	_	_				
	HOTEL	1		3.34				23,000.00			1633	3.65	31.1	7.49	1.9	33.0						
	CONV CENT				1				5,500.00		1694	3.64	32.1	7.49	1.9	34.1						
37%	COMMERCI							1	5,500.00		1754	3.63	33.2	7.49	1.9	35.1						- I
35%	SENIORS R		1					15,000.00			2254	3.54	41.6	7,49	1.9	43.6						
24%	ZEN CENTR								19,000.00		2463	3.51	45.1	7.49	1.9	47.0						
28%	MED CENTR									950.00	2487	3.51	45.5	7.49	1.9	47.4						
	SENIORS R		1					15,000.00			2987	3.44	53.6	7.49	1.9	55.5						
	AYUR CENT	RE								8,500.00	3206	3.42	57.1	7.49	1.9	59.0						
	DHARM HO	TEL.						24,000.00			4005	3.33	69.5	7.40	1.9	71.5						
113%	-	MH10C	15	0.04	-	-	-			_	4005	3.33	69.5	7.53	2.0	71.5	250	0.54%	43.7	0.89	surcharge	164%
	MH10C	MH10B	88	0.22		_	_			_	4005	3.33	69.5	7,75	2.0	71.5	250	0.60%	46.1	0.94	surcharge	
136%	MH10B	MH10A	15	0.04	_	_		_			4005	3.33	69.5	7.78	2.0	71.6	250	1.27%	67.0	1.37	surcharge	
130%	MHIOA	MH9A	53	0.13	_	_	-			-	4005	3.33	69.5	7.92	2.1	71.6	250	0.99%	59.2	1.21	aurcharge	121%
	MH9A			26.29	22.21	_	4.08	_		-	10557	2.93	161.2	34.21	8.9	170.1	~~~	0.30%	30.4	1.21	aurenauge	161.9
	_	1 -		0.31		-	0.31	-		-	10599	2.93	161.7	34.52	9.0	170.7	-	_				
91%		-	-	7.70	-	-	7.70	-		-	11646	2.89	175.2	42.22	11.0	186.2	-	_				4 1
	-	MHBA	50	0.13		-	1.10	-		-	11646	2.89	175.2	42.34								
120%	MHBA		~	4.05	-		4.05	-							11.0	186.2	300	0.66%	78.6	1.11	surcharge	237%
		MH7A	91	0.23	-	-	4.05	-		-	12197	2.87	182.2	46.39	12.1	194.3						
	MH7A	Mil/A	9.		-	-		-			12197	2.87	182.2	46.62	12.1	194.4	300	0.51%	69.1	0.98	surcharge	281%
101%	MH/A	-		2.59	-	-	2.59	-			12549	2.86	186.7	49.21	12.8	199.5	_	-		1		
	-			2.59	-	-	2.59	-			12902	2.84	191.1	51.80	13.5	204.6	-	_				
		MH6A	91	0.23	-	-	-	-		-	12902	2.84	101.1	52.03	13.5	204.6	375	0.40%	110.9	1.00	surcharge	185%
	MHGA		-	2.21	-	-	2.21				13202	2.83	194.9	54.24	14.1	209.0	_	- 1				
113%		MHSA	91	0.23	_	-	-	-		-	13202	2.83	194.9	54.46	14.2	209.0	375	0.24%	85.9	0.78	surcharge	243%
	MH5A	-		1.70		-	1.70	-		-	13433	2.83	197.8	56.16	14.6	212.4	_	_				
1055	-	-	-	0.53	-	-	0.53	-		- 1	13505	2.82	198.7	56.69	14.7	213.4	_	_				
105%	-	MH4A	91	0.23	-	_	-			_	13505	2.82	198.7	56.92	14.8	213.5	375	0.36%	105.2	0.95	surcharge	203%
	MH4A		-	1.77	-	-	1.77	-			13748	2.82	201.6	58.69	15.3	216.9	_					
	_	-	·	1.53			1.53			_	13954	2.81	204.2	60.22	15.7	219.9	_	_				
121%	-	1	-	1.11	-	-	1.11	_			14105	2.81	206.1	61.33	15.9	222.0		_				
83%	-	MH3A	159	0.40	_		_	-		_	14105		206.1	61.73	16.0	222.1	375	0.32%	99.2	0.90	surcharge	224%
	MH3A	-	-	0.96			0.96				14236	2.80	207.7	62.69	16.3	224.0						
	_	MH2A	91	0.23			_	_			14236	2.80	207.7	62.92	16.4	224.0	375	0.38%	108.1	0.98	surcharge	207%
	MH2A			1.38		_	1.38			-	14423	2.80	210.0	64.30	16.7	226.7			100.1	0.00	in a crue ge	evite
		-	-	2.35		-	2.35	-		-	14743	2.79	213.9	66.65	17.3	231.2	-	-				
	-	MH1A	99	0.25	-	-		-		-	14743	2.79	213.9	66.89	17.4	231.3	375	0.31%	97.6	0.00		00770
	MHTA	TRUNK	61	0.15	-		-	-		_	14743		213.9	67.05	17.4	231.3	450			0.88	surcharge	237%
				0.10	-	-	-	-		-	14143	6.10	£10.0	07.00	17.4	231.3	400	0.25%	142.6	0.90	surcharge	162%
	CHECK:	_	-	67.05	22	1	37	71000		9450	1.03.02			10.45								
	UNCUA:			87.05	- 22	-	3/	77000	_	9450	14743	1		67.05								

<b>TABLE 1.3</b> :	MILNER AVENUE	SEWER
SANITARY SEWER	DESIGN SHEET	

Preject

TORONTO DESIGN CRITERIA: EQUIVALENT POPULATIONS

#### PROPOSED CONDITION @ 450L/capita/day

189 Milner Ave. Toronto

Project:

#### 189 Milner Ave. Toronto

#### TABLE 2.1 : MARKHAM ROAD SEWER SANITARY SEWER DESIGN SHEET 189 Milner Ave. Toronto Project:

#### EXISTING CONDITION @ 450L/capita/day

Group				TORONTO DES	SIGN CRITERIA: EQUI	VALENT POPUL	ATIONS			1	
0 Richmon	d St. W.			Type 1:	Medium Density		270		personate	1	
ronto, Onta	ario			Type 2:	Apertments		400		personate	1	Manning's
5V 1V6				Type 3:	industrial		136		personaha	1	Infibration
one: (416) 594	6-1930			Type 4:	retirement homothe	stels (note 1)	0,0833		(persona/GFA)	1	Peaking F
				Type 5:	Commercie/Install (	note 2)	0.0110		(persona/G/FA)	1	Avampe V
				Type 6:	Church		0.0258	_	(persona/GFA)	]	
			-		PROPOSED DEVE	LOPMENT	_				Res.
FROM	то	L	AREA	Type	Type	Туре	Туре	Туре	Type	Sum	Peak
MH	MH			1	2	3	4	5	6	Pop.	Factor
		(m)	(Hia)	(91a)	(Ha)	(Ha)	Tot. GFA (m2)	Tot. GFA (m2)	Tot. GFA (m2)	(persons)	Plamonik
MH22			2.96	2.96						799	3.86
	-	-	3.02		-	3.02			_	1210	3.75
	-	-	2.56	1.2.2	2.56	3.04				2234	3.55
	-	-	1.01		2.00	1.01	1.1.1		-	2371	3.53
_	-	-	2.02			2.02				2646	3.49
_	MH126	480	2.40			5.0A				2646	3.49
MH126		_			1					2646	3.49
SITE		-	3.34			3.34				3100	3.43
_	MH127	144	0.72							3100	3.43
MH127			9.89			9.89				4445	3.29
_	MH128	101	0.51							4445	3.29
MH128	MH129	54	0.27		1			_		4445	3.29
MH129	MH130	131	0.66				_	_		4445	3.29
MH130	MH131	124	0.62					_		4445	3.29
MH131		_	3.85			3.85			_	4969	3.25
_	MH132	118	0.59			1000				4969	3.25
MH132	MH133	96	0.48					_	-	4969	3.25
MH133	MH134	42	0.21	-		_	_	_	-	4969	3.25
MH134	TRUNK	15	0.08							4969	3.25

23

0

Project

0.0258

0

#### TABLE 2.3 : MARKHAM ROAD SEWER

SANITARY SEWER DESIGN SHEET

189 Milner Ave. Toronto

personates personates personates

(persons/OFA) (persons/OFA)

(persone/GFA)

0

#### PROPOSED CONDITION @ 450L/capita/day

35.18

IBI Group 230 Richmond St. W. Toronto, Ontario M5V 1V6 Phone: (416) 596-1930

CHECK:

Type 1: Туре 2: Туре 3: Type 4:

3

industrial

Apartments Type 5: Type 6: Church

TORONTO DESIGN CRITERIA: EQUIVALENT POPULATIONS Medium Density retirement home/hotels (note 1) Commercial/retail (note 2)

3

270 400 136 0.0333 0.0110

Manning's " Infilmation (J Peaking Fas Average We

4969

					PROPOSED DEVE	LOPMENT					Res.	Peak			-	PROPO	SED SEW	ER DESK	GN		
FROM	TO	L	AREA	Туре	Type	Туре	Type	Type	Туре	Sum	Peak	San.	SUM OF	Infil-	Design	Pipe	Pipe	Pipe	Full Flow	Actual	% Full
MH	MH			1	2	3	4	5	6	Pop.	Factor	Flow	AREA	tration	Flow	Dia.	Slope	Capacity	Velocity	Velocity	Capaci
	-	(m)	(Ha)	(Ha)	(Ha)	()44)	Tot. GFA (m2)	Tot. GFA (m2)	Tot. GFA (m2)	(persons)	(Harmonia)	(L/#)	(Ha)	(L/s)	(1./a)	(mm)	(mim)	(L/4)	(m/s)	(m/s)	
MH22			2.96	2.96						799											
INT SALE		-	3.02	2.00	-	3.02			-		3.86	16.1	2.96	0.8	16.8	_	-				
		-	2.56		2.56	3.02				1210	3.75	23.6	5.98	1.6	25.2	_	-				1
	1 - 1	-			2.56					2234	3.55	41.3	8.54	2.2	43.5	_	_				
_		-	1.01			1.01				2371	3.53	43.6	9.55	2.5	46.0	_	- 1				
_			2.02			2.02				2646	3.49	48.1	11.57	3.0	51.1						1.0
	MH126	480	2.40							2646	3.49	48.1	13.97	3.6	51.7	250	1.16%	64.0	1.30	1.5	1 6
MH126		- 1								2646	3.49	48.1	13.97	3.6	51.7	250	2.00%	84.1	1.71	1.8	
HOTEL			3.34				23,000.00			3412	3.39	60.3	17.31	4.5	64.8						
CONV CENT								5,500.00		3472	3.39	61.3	17.31	4.5	65.8						
COMMERCI								5,500.00		3533	3.38	62.2	17.31	4.5	66.7						
SENIORS R	TRM INST	S					15,000.00			4032	3.33	69.9	17.31	4.5	74.4				- 11		
ZEN CENTR	E							19,000.00		4241	3.31	73.1	17.31	4.5	77.6						I
MED CENTR	RE		1 1						950.00	4266	3.31	73.5	17.31	4.5	78.0						
SENIORS R	TRM INST						15,000.00			4765	3.26	81.0	17.31	4.5	85.5						
YUR CENT	TRE								8.500.00	4985	3.25	84.3	17.31	4.5	88.8						I .
DHARM HO	TEL						24,000.00			5784	3.19	96.0	17.31	4.5	100.5						
	MH127	144	0.72							5784	3.19	96.0	18.03	4.7	100.7	250	1.50%	72.8	1.48	surcharge	1
MH127			9.89			9.89				7129	3.10	115.1	27.92	7.3	122.3	~~~	1.007	12.0	1.40	ource ange	1 "
	MH128	101	0.51							7129	3.10	115.1	28.43	7.4	122.5	250	1.50%	72.8	1.48	surcharge	16
MH128	MH129	54	0.27							7129	3.10	115.1	28.70	7.5	122.5	250	1.50%	72.8	1.48	surcharge	
MH129	MH130	131	0.66					-		7129	3.10	115.1	29.35	7.6	122.7	250	1.50%				
MH130	MH131	124	0.62					-	-	7129	3.10	115.1	29.35	7.8		250		72.8	1.48	surcharge	1
MH131	minor	16.4	3.85			3.85	-		_						122.9	250	0.90%	56.4	1.15	surcharge	e 2'
	MH132	118	0.59			3.65		-	-	7653	3.07	122.3	33.82	8.8	131.1		4				
MH132	MH132 MH133	96	0.48						12	7653	3.07	122.3	34,41	8.9	131.3	250	1.57%	74.5		surcharge	
MH132	MH134	42					-	-	-	7653	3.07	122.3	34.89	9.1	131.4	300	1.10%	101.4	1.43	surcharge	
MH133 MH134	TRUNK	42	0.21	-	-	-			-	7653	3.07	122.3	35.10	9.1 9.1	131.5	300 UNK	1.10% NOWN	101.4	1.43	surcharge	e 13
				-	-	-	-	-	-		0.07	122.0	00.10	0.1	101.0	UNIN					
CHECK:			35.18	3	3	20	77000	30000	9450	7653			35.18								

s 'n'	0.013
(Feec/Ha)	0.260
Factor as per Harmon formula.	
Water Consumption (Voltiey)	450

Note 1: 1 persona/bed \* 1bed/30m2(GFA) = 0.0333 (persona/GFA) Note 2: 1.1 persona/100m2(GFA) = 0.0110 (persona/GFA)

	Peak				PROPC	SED SEW	ER DESK	3N		
	San.	SUM OF	Infil-	Design	Pipe	Pipe	Pipe	Full Flow	Actual	% Full
r	Flow	AREA	tration	Flow	Dia.	Slope	Capacity	Velocity	Velocity	Capacity
•)	(L/s)	(Ha)	(L/s)	(L/s)	(mm)	(m/m)	(L/s)	(m/a)	(m/s)	
	16.1	2.96	0.8	16.8	_	_				
	23.6	5.98	1.6	25.2	_	_				
	41.3	8.54	2.2	43.5	_					
	43.6	9.55	2.5	46.0	_	_				
	48.1	11.57	3.0	51.1				2.00		
	48.1	13.97	3.6	51.7	250	1.16%	64.0	1.30	1.2	811
	48.1	13.97	3.6	51.7	250	2.00%	84.1	1.71	1.5	619
	55.4	17.31	4.5	59.9						
	55.4	18.03	4.7	60.1	250	1.50%	72.8	1.48	1.4	825
	76.2	27.92	7.3	83.5	C					
	76.2	28.43	7.4	83.6	250	1.50%	72.8	1.48	surcharge	1155
	76.2	28.70	7.5	83.7	250	1.50%	72.8	1.48	surcharge	1159
	76.2	29.35	7.6	83.8	250	1.50%	72.8	1.48	surcharge	1155
	76.2	29.97	7.8	84.0	250	0.90%	56.4	1.15	surcharge	1495
	84.0	33.82	8.8	92.8						
	84.0	34,41	8.9	93.0	250	1.57%	74.5	1.52	surcharge	1259
	84.0	34,89	9.1	93.1	300	1.10%	101.4	1.43	1.6	925
	84.0	35.10	9.1	93.2	300	1.10%	101.4	1.43	0.0	925
	84.0	35.18	9.1	93.2		NOW				
		35.18			_					

"n"	0.013
(Veec/Ha)	0.260
actor as per Harmon formula.	
Vater Consumption (Vp/day)	450

 Note 1:
 1 persona/bed \* 1bed/30m2(GFA) = 0.0333 (persona/GFA)

 Note 2:
 1.1 persona/100m2(GFA) = 0.0110 (persona/GFA)

#### TABLE 2.2 : MARKHAM ROAD SEWER

SANITARY SEWER DESIGN SHEET

189 Milner Ave. Toronto

personalte

personaha personaha

(persona/QFA)

(A<sup>1</sup>(D'ancered)

(persona/GFA)

### EXISTING CONDITION @ 250L/capita/day

IBI Group 230 Richmond St. W. Toronto, Ontario M5V 1V6 Phone: (416) 596-1930

TORONTO DESIGN CRITERIA: EQUIVALENT POPULATIONS Type 1: Medium Density 270 Type 2: Apertments 400 Type 3: Type 4: industrial 136 retirement home/hotels (note 1) 0.0333 Type 5: Type 6: Commercial/retail (note 2) 0.0110 Church 0.0258

Project:

Manning's 'n' Infiltration (VsecHa) 0.013 0.260 Peaking Factor as per Harmon formula. Average Water Consumption (/p/day) 250

Note 1: 1 persons/bed \* 1bed/30m2(GFA) = 0.0333 (persons/GFA) Note 2: 1.1 persona/100m2(GFA) = 0.0110 (persona/GFA)

					PROPOSED DEVE	LOPMENT					Res.	Peak				PROPO	SED SEW	ER DESK	3N		
FROM	TO	L	AREA	Туре	Туре	Туре	Туре	Туре	Type	Sum	Peak	San.	SUM OF	Infil-	Design	Pipe	Pipe	Pipe	Full Flow	Actual	% Full
MH	MH			1	2	3	4	5	6	Pop.	Factor	Flow	AREA	tration	Flow	Dia.	Slope	Capacity	Valocity	Valocity	Capacity
_		(m)	(Pta)	(Ha)	(Ha)	(He)	Tot. GFA (m2)	Tot. GFA (m2)	ToL GFA (m2)	(persons)	(Harmonia)	(L/s)	(Ha)	(L/s)	(1/1)	(mm)	(m/m)	(L/e)	(m/e)	(m/a)	
MH22			2.00	2.96													-				
MILLEE	-	-	2.96	2.90	-				-	799	3.86	8.9	2.96	0.8	9.7	_	_				
	-	-	3.02			3.02				1210	3.75	13.1	5.98	1.6	14.7	_	_				
		- 1	2.56		2.56					2234	3.55	22.9	8.54	2.2	25.2	_	_				
-	-	-	1.01			1.01				2371	3.53	24.2	9.55	2.5	26.7		_				- 8
_			2.02			2.02				2646	3.49	26.7	11.57	3.0	29.7						
-	MH126	480	2.40							2646	3.49	26.7	13.97	3.6	30.3	250	1.16%	64.0	1.30	1.2	47%
MH126		-								2646	3.49	26.7	13.97	3.6	30.3	250	2.00%	84.1	1.71	1.5	36%
SITE			3.34			3.34				3100	3.43	30.8	17.31	4.5	35.3	200	2.00 /4	04.1		1.2	307
-	MH127	144	0.72							3100	3.43	30.8	18.03	4.7	35.5	250	1.50%	72.8	1.48	1.4	49%
MH127	_		9.89			9.89				4445	3.29	42.3	27.92	7.3	49.6	2.00	1.00%	12.0	1.40	1.4	4074
	MH128	101	0.51			0.00				4445	3.29	42.3	28.43	7.4		050	4 500	70.0	4.40		
MH128	MH129	54	0.27												49.7	250	1.50%	72.8	1.48	1.4	68%
MH129	MH130	131	0.66				-	-	-	4445	3.29	42.3	28.70	7.5	49.8	250	1.50%	72.8	1.48	1.6	68%
				1			-	-	-	4445	3.29	42.3	29.35	7.6	50.0	250	1.50%	72.8	1.48	0.0	69%
MH130	MH131	124	0.62					-		4445	3.29	42.3	29.97	7.8	50.1	250	0.90%	56.4	1.15	0.0	89%
MH131		-	3.85			3.85		_	-	4969	3.25	46.7	33.82	8.8	55.5		1.1				
_	MH132	118	0.59							4969	3.25	46.7	34.41	8.9	55.6	250	1.57%	74.5	1.52	1.7	75%
MH132	MH133	96	0.48					_	-	4969	3.25	46.7	34.89	9.1	55.8	300	1.10%	101.4	1.43	1.6	55%
MH133	MH134	42	0.21	-		-	-	_		4969	3.25	46.7	35.10	9.1	55.8	300	1.10%	101.4	1.43	0.0	55%
MH134	TRUNK	15	0.08	-	-	-	-	-	-	4969	3.25	46.7	35.18	9.1	55.8	UN	NOW				
HECK:			35.18	3	3	23	0	0	0	4969			35.18								

#### **TABLE 2.4 : MARKHAM ROAD SEWER**

#### SANITARY SEWER DESIGN SHEET

189 Milner Ave. Toronto

Manning's 'n'

diffestion (Vsec/Ha)

personate

#### PROPOSED CONDITION @ 250L/capita/day TORONTO DESIGN CRITERIA: EQUIVALENT POPULATIONS

Type 1:

Type 2: Type 3: Type 4: Type 5:

Type 6:

Medium Density

IBI Group	
230 Richmond St. W.	
Toronto, Ontario	
M5V 1V6	
Phone: (416) 596-1930	

Apartments 400 personaha 138 industrial personalite retirement home/hotels (note 1) 0.0333 (persona/GFA) Commercial/retail (note 2) 0.0110 (persona/GFA) Church 0.0258 (persons/GFA)

270

Project:

0.260 Peaking Factor as per Harmon formula. Note 1: 1 persona/bed \* 1bed/30m2(GFA) = 0.0333 (persona/GFA) Average Water Consumption (Vp/day) 250 Note 2: 1.1 persona/100m2(GFA) = 0.0110 (persona/GFA)

0.013

					PROPOSED DEVE	LOPMENT					Res.	Peak			1.	PROPO	SED SEW	ER DESI	GN		
FROM	TO	L	AREA	Туре	Type	Туре	Type	Туре	Туре	Sum	Peak	San.	SUM OF	Infil-	Design	Pipe	Pipe	Pipe	Full Flow	Actual	% Full
MH	MH			1	2	3	4	5	6	Pop.	Factor	Flow	AREA	tration	Flow	Dia.	Slope	Capacity	Velocity	Velocity	Capacity
		(m)	(Ha)	(Ha)	(Ha)	(Ha)	Tot. GFA (m2)	Tot. GFA (m2)	Tot. GFA (m2)	(persons)	(Harmonia)	(1/%)	(Ha)	(L/s)	(L/H)	(mm)	(m/m)	(L/s)	(m/s)	(m/s)	
MH22	1.1		2.96	2.96						799	3.86	8.9	2.96	0.8	9.7	5.1					1.1
	-	-	3.02		-	3.02			-	1210	3.75	13.1	5.98	1.6		-	_				
		-	2.56		2.56	0.04				2234	3.55	22.9	8.54		14.7		_				
	-	-	1.01		2.00	1.01				2371	3.53	24.2	9.55	2.2	25.2	-	-	t I			
_		-	2.02			2.02	10 IL 11			2646	3.49			2.5	26.7	-	_				
_	MH126	480	2.40			2.02					3.49	26.7	11.57	3.0	29.7						
MH126	MITTED	400	2.40		1.1.2					2646	3.49	26.7	13.97	3.6	30.3	250	1.16%	64.0	1.30	1.5	47%
HOTEL		-	3.34		51		23,000.00	100 100		2646		26.7	13.97	3.6	30.3	250	2.00%	84.1	1.71	1.8	36%
CONV CENT	DF		3.34				23,000.00	5,500.00	2 A	3412	3.39	33.5	17.31	4.5	38.0						
COMMERCIA								5,500.00	1			34.0	17.31	4.5	38.5						
SENIORS RT	-						15 000 00	5,500.00		3533	3.38	34.6	17.31	4.5	39.1						
ZEN CENTRE		1.1					15,000.00	10.000.00		4032	3.33	38.9	17.31	4.5	43.4						1.1
MED CENTRE	_							19,000.00		4241	3.31	40.6	17.31	4.5	45.1						
SENIORS RT							15 000 00		950.00	4266	3.31	40.8	17.31	4.5	45.3						
AYUR CENTR							15,000.00			4765	3.26	45.0	17.31	4.5	49.5						
DHARM HOT							04 000 00		8,500.00	4985	3.25	46.8	17.31	4.5	51.3						
DHAMM HOT	MH127		0.72				24,000.00		1	5784	3.19	53.3	17.31	4.5	57.8						
MH127	Mm12/	144								5784	3.19	53.3	18.03	4.7	58.0	250	1.50%	72.8	1.48	1.7	80%
MH12/	141100	101	9.89		1.1.1	9.89				7129	3.10	63.9	27.92	7.3	71.2						
111100	MH128	101	0.51						-	7129	3.10	63.9	28.43	7.4	71.3	250	1.50%	72.8	1.48	1.7	96%
MH128	MH129	54	0.27				-	-		7129	3.10	63.9	28.70	7.5	71.4	250	1.50%	72.8	1.48	1.7	98%
MH129	MH130	131	0.66				-		-	7129	3.10	63.9	29.35	7.6	71.6	250	1.50%	72.8	1.48	1.7	98%
MH130	MH131	124	0.62					-	-	7129	3.10	63.9	29.97	7.8	71.7	250	0.90%	56.4	1.15	surcharge	127%
MH131			3.85			3.85	-	-	_	7853	3.07	68.0	33.82	8.8	76.8						
	MH132	118	0.59						1	7653	3.07	68.0	34.41	8.9	76.9	250	1.57%	74.5	1.52	surcharge	103%
MH132	MH133	96	0.48				-	-	-	7653	3.07	68.0	34.89	9.1	77.0	300	1.10%	101.4	1.43	1.6	76%
MH133	MH134	42	0.21	-	-		-		-	7653	3.07	68.0	35.10	9.1	77.1	300	1.10%	101.4	1.43	1.6	76%
MH134	TŔŲNK	15	0.08	-	-	-	-		-	7653	3.07	68.0	35.18	9.1	77.1	UNK	NOWN				
CHECK:			35.18	3	3	20	77000	30000	9450	7853			35.18								

#### TABLE 3.1

2 YEAR POST TO PRE DEVELOPMENT STORAGE VOLUME MODIFIED RATIONAL METHOD

to pre

Project: 189 Milner Avenue Location: Toronto Proj No.: 33471

Rational formula: Peak Flow given by Q = C i A /360 m3/s Outlet Control Req'd: Limit 2yr post dev. flow to 2yr pre-dev. flow; store excess on-site.

SITE AREA PRE-DEVELOPME Site statistics	ENT CONDITION
Area (A) =	3.340 ha

Runoff Coef (C) = 0.50 Rainfall Intensity-Duration-Frequency:

Q =	0.4091	m3/s	Allowable p
Thus, i=	88.2	mm/hr	
tc =	10.00	min	Calculated in
tc =	0.17	hours	

Q =	0.4091 m3/s	Allowable pre-development peak flow	
POST DEV	ELOPMENT CON	DITION	
100		C Area (ha)	CA
Uncontroll	ed post developm	ent areas 0.00 0.000	0.000
tc =	10.00 min	0.00 0.000	0.000
Thus,		0.00 0.000	0.000
i =	88.2 mm/hr	Total Area & CA = 0.000	0.000
Q =	0.000 m3/s	Uncontrolled post development peak flow	
Therefore,		ollowing release rate:	
	0.4091 m3/s	Allowable predevelopment peak flow	
	0.0000 m3/s	less uncontrolled post development flow	
ess Q =			
Q =	0.0000 m3/s 0.4091 m3/s	less uncontrolled post development flow	
Q =	0.0000 m3/s 0.4091 m3/s	less uncontrolled post development flow Allowable release rate	
Q = Peak relea	0.0000 m3/s 0.4091 m3/s se rate of actual fil	less uncontrolled post development flow Allowable release rate ow control device (basis for storage calcs)	CA
Q = Peak relea Q =	0.0000 m3/s 0.4091 m3/s se rate of actual fil	less uncontrolled post development flow Allowable release rate ow control device (basis for storage calcs) using control device	CA 3.006
Q = Peak relea Q =	0.0000 m3/s 0.4091 m3/s se rate of actual fi 0.4091 m3/s	less uncontrolled post development flow Allowable release rate ow control device (basis for storage calcs) using control device C Area (ha)	
Q = Peak relea Q =	0.0000 m3/s 0.4091 m3/s se rate of actual fi 0.4091 m3/s	less uncontrolled post development flow Allowable release rate ow control device (basis for storage calcs) using control device C Area (ha)	3.006
Q = Peak relea Q =	0.0000 m3/s 0.4091 m3/s se rate of actual fi 0.4091 m3/s	less uncontrolled post development flow Allowable release rate ow control device (basis for storage calcs) using control device C Area (ha)	3.006
Q = Peak relea Q =	0.0000 m3/s 0.4091 m3/s se rate of actual fi 0.4091 m3/s	less uncontrolled post development flow Allowable release rate ow control device (basis for storage calcs) using control device C Area (ha)	3.006 0.000 0.000
Q = Peak relea Q = Doost develo	0.0000 m3/s 0.4091 m3/s se rate of actual fi 0.4091 m3/s	less uncontrolled post development flow Allowable release rate ow control device (basis for storage calcs) using control device C Area (ha)	3.006 0.000 0.000
Q = Peak relea Q = Doost develo	0.0000 m3/s 0.4091 m3/s se rate of actual fi 0.4091 m3/s	less uncontrolled post development flow Allowable release rate ow control device (basis for storage calcs) using control device C Area (ha) 0.90 3.340	3.006 0.000 0.000 0.000
Q = Peak relea Q =	0.0000 m3/s 0.4091 m3/s se rate of actual fil 0.4091 m3/s opment areas	less uncontrolled post development flow         Allowable release rate         ow control device (basis for storage calcs)         using control device         C       Area (ha)         0.90       3.340         40 ha       Total Area & CA =       3.340	3.006 0.000 0.000 0.000 0.000

			while not development and the	
Q =	0.4091 m3	S Allov	vable pre-development peak flow	
POST DEV	ELOPMENT	ONDITION		
100			C Area (	ha) C/
Uncontrol	led post devel	opment area	s 0.00 0.0	0.00
tc =	10.00 min	1	0.00 0.0	00.00
Thus,			0.00 0.0	00.00
i =	88.2 mm	vhr	Total Area & CA = 0.0	00.00
Q =	0.000 m3	/s Unco	introlled post development peak flow	
Therefore,	over-control to			
	0.4091 m3	/s Allow	able predevelopment peak flow	
055	0.0000 m3		incontrolled post development flow	
Q =	0.0000 m3 0.4091 m3		Incontrolled post development flow	
Q =	0.4091 m3	s Allow	vable release rate	
Q =	0.4091 m3	al flow cont		
Q = Peak relea	0.4091 m3	al flow cont	vable release rate rol device (basis for storage calcs)	
Q = Peak relea Q =	0.4091 m3	/s Allow ual flow cont /s using	vable release rate rol device (basis for storage calcs) a control device	
Q = Peak relea Q =	0.4091 m3 se rate of actu 0.4091 m3	/s Allow ual flow cont /s using	vable release rate rol device (basis for storage calcs) g control device C Area (1	
Q = Peak relea Q =	0.4091 m3 se rate of actu 0.4091 m3	/s Allow ual flow cont /s using	vable release rate rol device (basis for storage calcs) g control device C Area (1	40 3.006
Q = Peak relea Q =	0.4091 m3 se rate of actu 0.4091 m3	/s Allow ual flow cont /s using	vable release rate rol device (basis for storage calcs) g control device C Area (1	40 3.000
Q = Peak relea Q =	0.4091 m3 se rate of acts 0.4091 m3 opment areas	/s Allow ual flow cont /s using	vable release rate rol device (basis for storage calcs) g control device C Area (1	40 3.000 0.000 0.000
Q = Peak relea Q = coat devel	0.4091 m3 se rate of acts 0.4091 m3 opment areas	/s Allow ual flow cont /s using	vable release rate rol device (basis for storage calcs) g control device C Area (1	40 3.000 0.000 0.000 0.000
Q = Peak relea Q = coat devel	0.4091 m3 se rate of acts 0.4091 m3 opment areas	/s Allow ual flow cont /s using	vable release rate rol device (basis for storage calcs) g control device C Area (1	40 3.000 0.000 0.000 0.000 0.000 0.000
Q = Peak relea Q =	0.4091 m3 se rate of actt 0.4091 m3 opment areas	/s Allow ual flow cont /s using	vable release rate rol device (basis for storage calcs) g control device C Area (1 0.90 3.3	40 3.000 0.000 0.000 0.000 0.000 0.000

	- (	0.4091	m3/s	Allowable pre-development peak flow	
POST D		OPMEN	TCOND	NTION	
10310		or man	COND	C Area (ha)	C
Uncontro	olled	post de	velopme	ent areas 0.00 0.000	0.00
to		10.00 1		0.00 0.000	0.00
Thus	s.			0.00 0.000	0.00
1		88.2 r	mm/hr	Total Area & CA = 0.000	0.00
Q		0.000 #	m3/s	Uncontrolled post development peak flow	
Therefore				pllowing release rate:	
		0.4091		Allowable predevelopment peak flow	
less		0.0000 r		less uncontrolled post development flow	
less Q :		0.0000 r 0.4091 r		less uncontrolled post development flow Allowable release rate	
Q	= (	0.4091 r	m3/s	Allowable release rate	
Q : Peak rek	= (	0.4091 m ate of a	m3/s	Allowable release rate	
Q	= (	0.4091 r	m3/s	Allowable release rate	
Q : Peak rek	= (	0.4091 m ate of a	m3/s	Allowable release rate	C
Q : Peak rek Q i	= ( 8850 r = (	0.4091 m ate of a 0.4091 m	m3/s ictual fic m3/s	Allowable release rate ow control device (basis for storage calcs) using control device	
Q : Peak rele Q :	= ( 8850 r = (	0.4091 m ate of a 0.4091 m	m3/s ictual fic m3/s	Allowable release rate ow control device (basis for storage calcs) using control device C Area (ha)	3.00
Q : Peak rele Q :	= ( 8850 r = (	0.4091 m ate of a 0.4091 m	m3/s ictual fic m3/s	Allowable release rate ow control device (basis for storage calcs) using control device C Area (ha)	3.00
Q : Peak rek	= ( 8850 r = (	0.4091 m ate of a 0.4091 m	m3/s ictual fic m3/s	Allowable release rate ow control device (basis for storage calcs) using control device C Area (ha)	3.000 0.000 0.000
Q : Peak rek Q i	ease r	0.4091 m ate of a 0.4091 m	m3/s ictual fic m3/s	Allowable release rate ow control device (basis for storage calcs) using control device C Area (ha)	C/ 3.000 0.000 0.000 0.000
Q : Peak rele Q : post dev	elopm	0.4091 m ate of a 0.4091 m	m3/s ectual flo m3/s	Allowable release rate ow control device (basis for storage calcs) using control device C Area (ha)	3.000 0.000 0.000
Q : Peak reli Q : post dev Site statis	elopm	0.4091 m ate of a 0.4091 m	m3/s ectual flo m3/s	Allowable release rate ow control device (basis for storage calcs) using control device C Area (ha) 0.90 3.340	3.000 0.000 0.000 0.000
Q : Peak reli Q : post dev Site statis	ease r ease r elopm stics	0.4091 m rate of a 0.4091 m nent are	m3/s ectual flo m3/s	Allowable release rate ow control device (basis for storage calcs) using control device C Area (ha) 0.90 3.340 10 ha Total Area & CA = 3.340	3.000 0.000 0.000 0.000 0.000

Calculate time of conce	Calculate time of concentration				
inlet time	10.00 min				
tc =	10.00 min				

Duration		Q peak	Volume
(min)	(mm/hr)	(m3/s)	(m3)
10.00	88.2	0.736	141.8 <
12.00	76.5	0.639	121.2
14.00	67.8	0.566	98.0
16.00	61.1	0.510	72.9
18.00	55.8	0.466	46.1
20.00	51.4	0.429	18.0
22.00	47.7	0.398	-11.1
24.00	44.6	0.372	-41.2
26.00	41.9	0.349	-72.1
28.00	39.5	0.330	-103.7
30.00	37.4	0.313	-135.9
32.00	35.6	0.297	-168.6
34.00	34.0	0.283	-201.9
36.00	32.5	0.271	-235.6

J:33471\_189Milner/5.0 Design (Work) Phase/Civil/Stormi(CS-TABLE 3\_Modified Rational Method\_2013-07-15.xls]100YR post

	С	Area (ha)	CA
	0.50	3.340	1.670
			0.000
			0.000
			0.000
			0.000
Tota	I Area & CA =	3.340	1.670
<===== (	Composite C =		0.50
Toronto 2yr stm	i = 21.8/ (tc)^0.7	'8 m	m/hr

in post development condition below

ing greatest storage volume with pre-dev outflow control:

<=== Critical duration & req'd storage volume Thus, Storage = 141.8 m3 Tot. Runoff = 441.8 m3 Thus, % of total runoff to be stored is: 32.1%

#### TABLE 3.2

#### 100 YEAR POST TO PRE DEVELOPMENT STORAGE VOLUME MODIFIED RATIONAL METHOD

J:33471\_189Milner/5.0 Design (Work) Phase/Civil/Storm/(CS-TABLE 3\_Modified Rational Method\_2013-07-15.xis)100YR post to pre Project: 189 Milner Avenue Location: Toronto Proj No.: 33471

Rational formula:	Peak Flow given by Q = C i A /360 m3/s
Outlet Control Reg'd:	Limit 100yr post dev. flow to 100yr pre-dev. flow; store excess on-site.

#### SITE AREA

PRE-DEVELOPMENT C	ONDITION		C /	Area (ha)	CA
Site statistics	1000 C		0.50	3.340	1.670
Area (A) =	3.340 ha				0.000
					0.000
					0.000
					0.000
		Total	Area & CA =	3.340	1,670
Runoff Coef (C) =	0.50	<==== C	omposite C =		0.50
Rainfall Intensity-Duratio	n-Frequency:	Toronto 100yr stm	i = 59.7/ (tc)^0.8	0 mn	n/hr

tc = Thus,	10.00 min	Calculated in post development condition below
i=	250.3 mm/hr	
Q =	1.1612 m3/s	Allowable pre-development peak flow

#### POST DEVELOPMENT CONDITION

Q =	1.1612 m3/s	using control device			
			с	Area (ha)	CA
post developm	ent areas		0.90	3.340	3.006
					0.000
					0.000
					0.000
Site statistics					0.000
Area (A) =	3.34	40 ha			0.000
		To	stal Area & CA =	3.340	3.006
Runoff Coef (C)	= 0.9	90 <====	Composite C =		0.90
Rainfall Intensity	-Duration-Frequen	cy: Toronto 100yr stn	n i = 59.7/ (tc)	0.80 mr	n/hr

Calculate time of concentration

28.00

30.00 32.00

34.00

36.00

inlet time 10.00 min tc = 10.00 min

109.8 0.917

103.9 0.868 98.7 0.824

94.0 0.785

89.8 0.750

Determine critical 100yr storm duration producing greatest storage volume with pre-dev outflow control: Duration (min) Q peak Volume (m3/s) (m3) 1 (mm/hr) (m3) 
 402.6 <=== Critical duration & req'd storage volume</td>

 340.2
 Thus, Storage = 402.6 m3

 270.9
 Tot. Runoff = 1254.1 m3

 196.5
 Thus, % of total runoff to be stored is:
 10.00 250.3 2.090 12.00 216.3 1.806 14.00 191.2 1.597 16.00 18.00 196.5 117.8 171.9 1.435 156.4 1.306 35.7 -49.2 20.00 143.8 1.200 22.00 133.2 1.112 124.3 1.038 116.6 0.973 24.00 -136.5 26.00 -226.0

-317.3

-410.2

-600.2

-697.0

32.1%

#### TABLE 6 - Estimated Average Day, Maximum Day and Peak Hour Domestic Water Demand

J/33471\_189Mitrer/5.0 Design (Work) Phase/CM9Water/(CCS-Avg water consump & fire flow\_2013-07-17.ds)Water Cons

189 Milner Avenue, Toronto

	Residential density	Residential Units	I Residential Population (Site population) (persons)	Non residential Equivalent Population	Retail GFA (m2)	Non Residential Population (Site population) (persona)	Average Day Water Consumption Rate (as per sankary design) (Ucspikaday)	Total Population (persons)	Total Average Day Weter Consumption in LMay (Sta population x Aug Day Water Consumption Rate) (Uday)	Total Average Day Water Consumption in Lisec (Total Cons. Liday) / 88400 (Lisec) (Total Cons. Liday) / 86400	Maximum Day Consumption in Liseo 1.65 Peaking Fector (As per City peaking factor table)	Peak Hour Consumption in Lisec 2.50 Peaking Factor (As per City peaking factor table)
	(person/unit)	(units)										
Proposed Development												
Hotel			0	765		766	450	766	344700	3.990	6.583	9.974
Convention Centre			0	60		60	450	60	27000	0.313	0.516	0,781
Commercial Space			0	60		60	450	60	27000	0.313	0.516	0.781
Seniors Retirement Institute			500			0	450	500	225000	2.604	4.297	6.510
Zen Innovation Centre			0	209		209	450	209	94050	1.089	1.796	2.721
Mediation Centre			0	25		25	450	25	11250	0.130	0.215	0.326
Seniors Retirement Institute			500			0	450	500	225000	2.604	4.297	6.510
Ayurvedic Centre			0	219		219	450	219	98550	1.141	1.882	2.852
Dhamshala Hotel			0	800		800	450	800	360000	4.167	6.875	10.417
				1.00								
TOTAL =	-			2139	_	2139	TOTAL =	3,139	TOTAL =	16.349	26.976	40.872
									Conversion to USGPM =	259.2	427.6	647.9

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# Boot Parties -10



ECEND

The City of Toronto has a green roof by law which requires and governs the construction of green roofs on new development. It was adopted by Toronto City Council in May 2009, under the authority of Section 108 of the City of Toronto Act.

The section 492-2 of the bylaw states that the following green roofs are required:

Α following chart:

# Gross Floor Area (Size of Building)

2,000 - 4,999 m<sup>2</sup> 5,000 - 9,999 m<sup>2</sup>

10,000 - 14,999 m<sup>2</sup>

15,000 - 19,999 m<sup>2</sup>

20,000 m<sup>2</sup> or greater

Green roofs will be provided in the proposed development to meet the green roof by-law requirements.

## b) Storm Drainage and **Storm Water Management Existing Condition**

Municipal storm sewers exist across the Milner Avenue and Markham Road frontage of the site. These sewers include the following:

- A 825mm diameter storm sewer on Milner Avenue that drains west
- A 975mm diameter storm sewer on Markham Road that drains south
- A 600mm diameter storm sewer may extend into the site from Markham Road based on City records

with the same runoff coefficient of 0.75.

The existing site is partially covered by building roof and surface asphalt pavement. The existing site imperviousness is approximately 65%. The balance of the site generally comprises sod covered areas.

The site lies within the Highland Creek watershed.

## **Proposed Condition**

Guidelines (WWFMG).

**Green Roof By-law** 

City drainage records indicate that approximately 50% of the site area is allocated into the Milner Avenue storm sewer at a runoff coefficient of 0.75, with the balance of the site allocated to the Markham Road sewer, presumably

The proposed development will be subject to the City's Green Roof By-Law and Wet Weather Flow Management

Every building or building addition constructed after January 30, 2010 with a Gross Floor Area of 2,000 square metres or greater shall include a Green Roof with a coverage of Available Roof Space in accordance with the

Coverage of Available Roof Space (Size of Green Roof)	
20%	
30%	
40%	
50%	
60%	

## STORM WATER MANAGEMENT

The City's WWFMG emphasises a hierarchical approach to manage wet weather flows, with consideration of source controls first, conveyance controls second, and lastly end-of-pipe controls.

Various requirements of the WWFMG are noted below:

#### WATER BALANCE

The City's WWFMG require new developments to provide a water balance. Where it is not possible to achieve a water balance, developments must retain the storm runoff from a 5mm rainfall and dispose this runoff volume onsite, as a minimum. This quantity of runoff must be disposed by methods other than discharging to the municipal sewer system such as, but not limited to, infiltration systems, evaporation, green roofs or rainwater reuse.

The runoff volume resulting from a 5mm storm, assuming 90% of the 33,400m<sup>2</sup> site area is impervious may be estimated as follows:

Pervious site areas:	3,340m <sup>2</sup>
Rainfall from a 5mm storm, where 2mm of the storm is lost due to initial rainfall abstractions on pervious site areas (infiltration and depression storage):	0.003m
Total Runoff Volume from pervious areas resulting from the 5mm storm event:	10.0m <sup>3</sup>
Impervious site areas:	30,060m <sup>2</sup>
Impervious site areas: Rainfall from a 5mm storm (no loses):	<b>30,060m²</b> 0.005m
•	•

Thus, the first approximately 160m<sup>3</sup> of rainfall-runoff from every storm event must be disposed onsite. This may be achieved by combinations of green roofs, and various rainfall harvesting and re-use measures such as landscape irrigation and grey water plumbing.

### WATER QUALITY

The WWFMG require Level 1 water quality treatment for development site up to 5.0ha in area. Thus, Level 1 treatment is required for the subject development.

The subject site has no exterior surface vehicle parking areas or extensive private roads, where water quality contaminants are typically generated (primarily from vehicles) and accumulate, nor does the site discharge directly to any lake or waterfront area. The majority of the site is occupied by building structure and the roof areas of the development are deemed to generate clean water since they are exposed to the atmosphere only (no vehicles). Also, the land use does not pose a high risk for spills creating potential water quality impacts that are typically associated with industrial land uses (such as refuelling stations). Thus, the site is not expected to generate any significant water quality contaminants.

It is anticipated that water quality treatment will be required only for the at-grade private access drives within the site. Water quality treatment for these drives may be achieved by combinations of bioswale and oil-grit separator measures.

### WATER QUANTITY

As noted, the subject site lies within the Highland Creek watershed. According to the WWFMG, this watershed requires post to predevelopment control (not over control) for 2-year up to 100year storm events. Thus, the proposed development requires that outflows from the site to city storm sewers be controlled.

The allowable release rate from the site to the municipal storm sewer system (minor system) during a 2-year design storm event will not exceed the peak runoff rate from the site under predevelopment conditions during the same storm event, or the existing capacity for the receiving storm sewer, whichever is less. Regardless of post development conditions, WWFMG require that the maximum runoff coefficient used in calculating the pre-development peak runoff rate is limited to 0.5.

As indicated, the predevelopment imperviousness of the site is 65% (or c=0.65 +/-). Since the 65% runoff rate exceeds the allowable coefficient of 0.5, the allowable post development discharge from the site is restricted to a 0.5 runoff coefficient.

Tables 3.1 and 3.2 indicate that the allowable discharge rates for the 2-year and 100-year storms respectively for the site based on a runoff coefficient of 0.5 are as follows:

- Allowable 2-year storm peak discharge rate 409 L/s.
- 1161 L/s. Allowable 100-year storm peak discharge rate

Thus, discharges from the site must not exceed the above allowable discharge rates.

Storm water peak flow discharges from the site may be controlled to within the allowable discharge rate by providing a control flow pipe (that is, an intentionally reduced outlet pipe size to restrict outflows) to the City storm sewers.

### **EROSION CONTROL**

As per the City's WWFMG, specific onsite erosion control measures are not required for this site since the site is not located in close proximity to any watercourse.

### FLOOD FLOW MANAGEMENT

The WWFMG require flood flow management up to the 100-year storm. Thus, on-site storm water detention is required to detain the difference between post and pre-development discharge for all storms up to the 100-year storm.

Tables 3.1 and 3.2 provide preliminary estimates based on the Modified Rational Method for onsite storm water detention storage volumes for the 2-year and 100-year storm. Preliminary onsite detention storage requirements are as follows:

٠	2-year storm onsite detention storage	142 m³
-	2 you storm onsite determon storage	174 111

 100-year storm onsite detention storage 403 m<sup>3</sup>

Onsite storm water detention may be achieved by storm water detention tank measures located in the underground parking garage in the development. Other detention storage measures may also be suitable and can be explored at the detailed design stage of the development.



### **EROSION AND SEDIMENT CONTROL DURING CONSTRUCTION**

Best management practices for erosion and sediment controls are recommended during construction. General erosion and sediment controls may include silt fence, straw bales, erosion check dams and mud mats to prevent vehicle mud tracking on City roadways. Appropriate measures will be implemented, as warranted, on a daily basis as part of the contractor's daily construction responsibility. Actual controls will be dictated by construction staging and activities, which are not yet known at this preliminary stage of the development process.

General erosion and sediment control recommendations that can be made at this time are as follows:

- Install a silt fence such as per Ontario Provincial Standard Drawing OPSD- 219.110 where required along the down slope construction limits in conjunction with any necessary construction hoarding to prevent silt laden drainage to the adjacent roads and properties
- Prevent silt laden water during building foundation excavation from entering storm sewers by installing appropriate filtration at pump locations
- Install mud mats to prevent construction vehicles tracking mud on City roads

### **FOUNDATION DRAINS**

As with all buildings with basement levels and/or deep foundation, it will be necessary to pump any accumulated groundwater at foundation and under-slab sub-drains in order to prevent water infiltration into the building. Thus, it will be necessary to pump foundation drains directly to the City storm sewer. Due to the urban nature of this site, it is recommended that groundwater be pumped to the proposed storm service connection and discharged directly to the City's sewer via the proposed storm service connection rather than be discharged at ground level for surface drainage on the City sidewalks and roads.

Groundwater discharges should connect to the proposed storm service connection pipes downstream of any proposed storm water controls, which are intended to control storm water runoff only.

## c) Water Supply Existing Condition

Municipal water mains exist across the Milner Avenue and markham Road frontages of the site. These water mains include the following:

- A 300mm diameter water main on the west side of Milner Avenue
- A 300mm diameter water main on the east side of Markham Road

Preliminary information obtained from the City indicates that the subject site is located within Pressure Area No. 4 of the City's water supply network. The geodetic top water level elevation of the reservoir serving this area is 230.1 m and the reservoir water level maintains an approximate static water pressure of approximately 80 psi at the site.

## **Proposed Condition**

Table 6 provides preliminary estimated average day, maximum day and peak hour domestic water supply requirements for the proposed development.

Based on the size of the existing boundary City water mains and the available static pressure at the site, it is anticipated that the domestic water and fire flow requirements of the proposed development may be adequately serviced by extending private water mains into the proposed development from existing City water mains.

As per normal building design practice, necessary building fire protection measures for the proposed building will be addressed during the detailed building design stage. At that time, appropriate fire protection measures will be included in the building design to meet building and fire code requirements based on actual available water supply and pressures. Fire hydrant flow tests are recommended prior to the detailed design stage to confirm existing water supply and pressures to provide for necessary fire protection measures.

# **8 CURRENT /** PROPOSED **INITIATIVES & STUDIES**

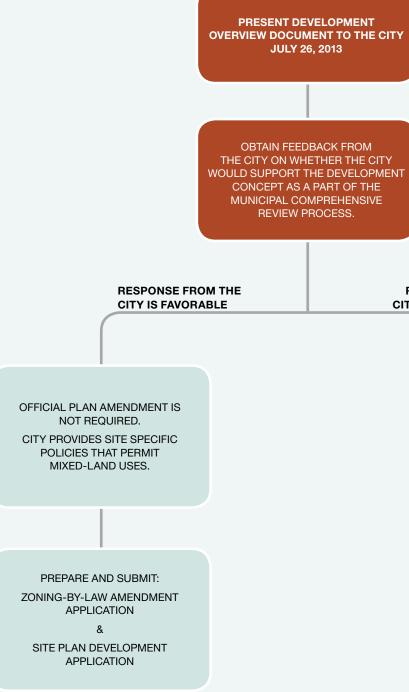
## Legal Survey Update Topographical Survey Update Underground Utilities Survey Update Archaeological Study Phase 1 & 2 Environmental Site Assessment Noise, Vibration & Wind Studies **Toronto Green Standards Checklist** Sun/Shadow Study & Building Mass Model Engineering & Technical Studies (Transportation/ SWM/Servicing/Contaminated Site Assessment)

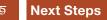
Arborist/Tree Preservation Report/Statement

**Concept Development** 

	Ongoing
	Ongoing
	Ongoing
	Ongoing
	Completed
	To be undertaken once concept is finalized
	To be undertaken once concept is finalized
	To be undertaken once concept is finalized
/ )	To be undertaken once concept is finalized
	To be undertaken once survey is updated
	Ongoing











#### **RESPONSE FROM THE** CITY IS NOT FAVORABLE

PREPARE AND SUBMIT: OFFICIAL PLAN AMENDMENT APPLICATION ZONING-BY-LAW AMENDMENT APPLICATION

& SITE PLAN DEVELOPMENT APPLICATION

