



# STUDIOCENTRE

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629, 633 and 675 Eastern Avenue

City of Toronto

Toronto & East York District

Functional Servicing & Stage-1 Stormwater Management Report

Prepared for StudioCentre Developments Inc.

June 2013

Revised March 2015

Our Project# 13029 (2821619)

# Executive Summary

This Functional Servicing and Stage-1 Stormwater Management Report (FSSR) has been prepared in support of the Re-Zoning Application being submitted for the subject lands. This report demonstrates that the proposed development can be serviced through the utilization of both existing and new infrastructure, without any adverse impacts to the municipal services of the surrounding areas.

Water supply and fire flow requirements for the proposed redevelopment will be provided via an internal watermain that will feed off the existing 300mm diameter watermain located on Eastern Avenue. Flows from the existing main on Eastern Avenue have been tested and verified to provide adequate supply for the site.

Post-development stormwater runoff from the subject redevelopment site will be controlled on-site to the corresponding allowable release rate prior to discharging to the adjacent municipal storm sewers. The resulting storage volume will be met via the implementation of oversized storm pipes supplemented with subsurface storage systems where feasible. Storm runoff from minor rainfall events will be directed to the proposed private road, proposed private driveways and service lanes and will be captured by the roadway catchbasins and subsequently conveyed to the existing 1200x1050mm box storm subtrunk sewer located on Lake Shore Boulevard East via the proposed internal storm sewer system. A storm sewer connection with a control manhole at the property line will be required to convey flows from the internal storm sewer network to the aforementioned 1200x1050mm box storm subtrunk. Stormwater runoff from major rainfall events will be conveyed overland to the adjacent municipal road allowances, and will ultimately outlet to Lake Ontario. A 'Downstream Storm Sewer Analysis' was undertaken to evaluate the capacity for the downstream receiving storm sewer system the future internal storm sewer network will discharge to and determined whether any upgrade to the existing system would be required. The results of the analysis revealed that there is capacity within the downstream municipal storm infrastructure to accommodate post-development storm flows from the site. The proposed development will also be subject to the City of Toronto's 'Wet Weather Flow Management' guidelines for water balance and water quality control.

Under the proposed development scenario, the sanitary peak flows for the proposed redevelopment were determined to be approximately 7.8 litres per second. A 'Downstream Sanitary Sewer Analysis' was conducted to evaluate the capacity of the existing 250mm diameter receiving sanitary sewer the future internal sanitary sewer network will discharge to and determine whether any upgrade to this existing sewer would be required. The results of the analysis indicated there is capacity within the receiving sewer to accommodate the sanitary flows from the subject redevelopment site.

The proposed redevelopment site will include a private road with a municipal easement, a mix of private driveways and private service lanes, and a bike lane. Vehicular access to site is to be provided at four (4) locations along Eastern Avenue generally aligning with Pape Avenue, Winnifred Avenue, Caroline Avenue, and Larchmount Avenue and three (3) locations along Lake Shore Boulevard East. The details regarding these proposed roadway and driveways / laneways including right-of-way widths and pavement widths will be finalized as part of the formal site plan application.

Respectfully Submitted,  
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# 1. Purpose

This 'Functional Servicing and Stormwater Management Report' has been prepared in support of the Re-Zoning Application being submitted as part of the redevelopment proposal for the subject lands

The purpose of this report is to address conceptually the provision of site grading, storm and sanitary sewers, stormwater management, water distribution, and road servicing for the proposed commercial development. Additionally, the report will provide details on stormwater management in response to Toronto's Wet Weather Flow Management Master Plan (WWFMMP) guidelines.

This report is also intended to meet the requirements of development approval required under the Planning Act, which in turn satisfies the conditions for the Municipal Class Environmental Assessment process for the storm and sanitary sewers, stormwater management, water distribution and road servicing for the subject lands.

It is important to note that the Revival Site (formerly, the Toronto Film Studios), which occupies the majority of the western section of the subject lands is an existing site that is serviced via existing infrastructure and is not intended to conform to the Wet Weather Flow Management Master Plan (WWFMMP) guidelines.

## 2. Background

The subject site is located south of Eastern Avenue and north of Lake Shore Boulevard East, on the lands municipally known as 629, 633, and 675 Eastern Avenue, in the City of Toronto – Toronto & East York District. The subject lands are bounded by Eastern Avenue to the north, existing commercial properties to the east and west, and Lake Shore Boulevard East to the south.

The westerly portion of the site is presently occupied and used by the Revival Site (formerly, the Toronto Film Studios), and consists predominantly of several buildings and paved driveway surfaces. The Revival Site will continue to function as is, and such will be included from the analysis / calculations presented in this report.

The easterly portion of the site which is presently vacant was formally occupied by the A.R. Clarke Tannery, which manufactured patent leather until 1977. According to old photographs, a large portion of this section of the site was once covered with several buildings and pavement. Currently, only one (1) building remains within the eastern portion of the site and the rest is covered with a mixture of gravel and grassed / overgrowth surfaces. A key plan indicating the site location has been provided as **Figure 1.0** next page. A reduction of the proposed draft/site plan is included in **Appendix 'E'**.

Storm runoff from the western portion of the site (i.e: Revival Site) is captured by internal catchbasins, and directed to an existing 1050mm diameter storm sewer system along the western boundary of the site during minor storm events. According to the previous Functional Servicing Report prepared by Trafalgar Engineering Ltd. in 2007, the eastern portion of the site generally relied upon ground infiltration and several site catchbasins connecting to a combined sanitary / storm sewer to drain storm runoff during minor rainfall events.

Eastern Avenue adjacent to the site is a typical urban street with curbs on both sides. The south boulevard is approximately 3.5-metre wide and contains a sidewalk located adjacent the curb. The north curb of the westbound lane of Lake Shore Boulevard is located approximately 25 metres from the property boundary. This boulevard currently contains a 4-metre wide asphalt path, as well as a 1.5-metre wide concrete sidewalk.

The subject redevelopment proposal will retain most of the existing buildings on the western portion (Revival Site) and will incorporate six (6) new buildings throughout the rest of the site. Existing building grades and boundary grades shall be maintained where possible to avoid radical grade differences between the redeveloped site and the surrounding areas. A copy of the proposed site plan is attached in **Appendix 'E'**.

The equivalent combined population for the proposed redevelopment was estimated to be approximately two thousand six hundred and eighty-seven (2,687) persons.



\*Source: Google Maps

Figure 1.0 – Key Plan

## 2.1 Investigation of Existing Utilities on Site

The following action was undertaken to ascertain the presence and location of possible utilities:

City records were retrieved which showed storm sewer, sanitary, and watermain locations. The topographic survey identified manhole locations for the storm and sanitary sewer, and generally confirmed the existence and extent of these sewers.

## 3. Servicing Requirements

### 3.1 Watermains

Water distribution in the vicinity of the subject redevelopment site consists of an existing 300mm diameter watermain located in the westbound lane of Eastern Avenue and an existing 300mm diameter watermain on the south boulevard of Lake Shore Boulevard East.

The location and size of the existing watermains in the surroundings of the subject lands have been determined from information obtained from the City of Toronto and topographic surveys. A detailed survey of the existing internal water services has been completed in the near future and the interface between existing and proposed water services will be established at detailed design stage. Hydrant tests have been completed and the existing 300mm diameter watermain on Eastern Avenue has been verified to provide adequate fire and domestic flows to service the site.

Domestic water and fire flow requirements have been calculated for the proposed site as follows:

#### **Domestic Demand**

The City's Design Criteria for Sewers and Watermains – November 2009 (herein referred to as the City's Design Manual) does not define a specific domestic water consumption rate for office and / or commercial buildings. In the absence of a City-recommended domestic water consumption rate for office / commercial land use, we have utilized a domestic water consumption rate of 250 litres/capita/day (which consistent with the non-residential sanitary generation rate found in the City's Design Manual) to estimate the projected domestic water demand for the proposed redevelopment. Based on an equivalent population of 2,687 persons, the domestic demand for the proposed redevelopment is as follows:

Average Day = 250 litres/capita/day x 2,687 persons = 467 litres/min

Maximum Day = 1.10 x Average Day = 513 litres/min

Peak Hour = 1.20 x Average Day = 560 litres/min

#### **Fire Demand**

Based on the provided site plan, it is assumed that all buildings will have protected openings (as defined by the Fire Underwriters Survey) and sprinkler systems. It is also assumed that all new buildings will be constructed of fire resistive material. Given the above, the estimated fire flow required is given by the following formula (as based on the Fire Underwriters Survey):

$$F = 220 * C * A^{0.5}$$

For a building with fire resistive construction, C = 0.6.

For fire resistive buildings with adequately protected vertical openings, 'A' is taken as the area of the largest floor plus 25% of each of the two immediately adjoining floors (excluding the basement).

The fire demands for all proposed buildings were examined, and the associated calculations have been presented as part of **Appendix 'A'**. However, in this section of the report, we have included only the fire demand calculations for the building with the largest 'A' value amongst the proposed buildings (which in this case was determined to be 'Building 05').

As noted above, based on the proposed site plan the worst case fire flow will be generated by future Building 05, with an Area 'A' = 7,708 m<sup>2</sup>.

Therefore F = 12,000 litres/min.

As proposed 'Building 05' will consist of fire resistive material, the fire flow can be reduced by 25%, thus F = 9,000 litres/min.

As proposed 'Building 05' will be equipped with an automatic sprinkler system, the fire flow may be further reduced by 30% (equalling approximately 2,700 litres/min).

F = 6,300 litres/min.

Finally, the fire flow will be increased by 20% due to exposure to structures within a 45-metre radius of proposed Building 05 (equalling approximately 1,800 litres/min).

Thus, F = 8,000 litres/min.

Our calculations for each building can be found in **Appendix 'A'** at the back of this report.

### **Total Demand**

The total demand is the greater of Maximum Day Domestic Demand plus the Fire Demand or the Peak Hour Demand. Thus, the total demand for the site is approximately 8,513 litres per minute (142 litres per second or 2,249 U.S gallons per minute approximately).

Based on past discussions, City of Toronto staff were not aware of any flow and / or pressure issues within the vicinity of the subject site. However, to confirm the adequacy of the adjacent existing municipal water distribution system to meet domestic water supply and fire flow requirements for the proposed development, flow and pressure tests were undertaken adjacent to the subject site. At the direction of our firm, Peak Flow Water Consulting Services Ltd. conducted flow and pressure tests on the 300mm diameter watermain located on Lake Shore Boulevard East on June 28, 2013 at 8:45 AM. The testing of this 300mm diameter watermain revealed a static pressure of 89 pounds per square inch and a residual pressure of 82 pounds per square inch at a fire flow rate of 1,440 U.S gallons per minute. Based on the above information, we have calculated the available flow at the desired residual pressure of 20 pounds per square inch, as per the guidelines provided by the 'National Fire Protection Association (NFPA)', to be approximately 4,950 U.S gallons per minute (approximately 18,740 litres per minute or 312 litres per second). The test results and fire flow / protection calculations are included in **Appendix 'A'**.

Based on the above, it is our opinion that existing municipal water distribution system can adequately accommodate the proposed redevelopment without any adverse effects to the existing infrastructure. Therefore, we would propose servicing the subject redevelopment site for domestic water consumption and fire demand via a standard City of Toronto service connection configuration for commercial / industrial developments (a 300mm diameter firemain and 150mm diameter domestic line), off the existing 300mm diameter watermain located on Eastern Avenue. Water supply to the proposed buildings will be provided via an internal water distribution system. Fire hydrants will be placed to provide fire protection throughout the site. Per the City's requirements, a water meter inside an underground chamber will be located near the connection to the existing 300mm diameter Eastern Avenue watermain. The preliminary location of the proposed watermain

connection at the streetline on Eastern Avenue is shown on our 'Functional Servicing Plan' (Drawing FSP-1).

## 3.2 Stormwater Management

### *Existing Conditions*

There is an existing 1050mm diameter storm subtrunk sewer located within a service easement situated on the western property limits of the subject site that flows southerly from Eastern Avenue to Lake Shore Boulevard East and services the western portion of the existing site (i.e: Revival Site). It is our understanding based on discussions with City of Toronto staff that this existing 1050mm diameter storm sewer typically runs at capacity under minor storm events and is approximately one third full during dry weather conditions. Given that the subject lands are approximately 1.0 – 2.0 metres above the level of the lake, it can be inferred that this storm subtrunk sewer naturally receives backflow from the Lake Ontario. In addition to this 1050mm storm sewer, there is an existing 450mm diameter storm sewer that consists of the minor local system on Eastern Avenue that appears to primarily provide drainage for the roadway.

There are existing local 375-750mm diameter and 525-900mm diameter storm sewers, and an existing 1200x1050mm box storm subtrunk sewer located on Lake Shore Boulevard East that travel westerly to Carlaw Avenue where they discharges to an existing 2550x1800mm box storm trunk sewer which outlets southerly to Lake Ontario just south of Commissioners Street. The size of these local storm sewers indicates they have been sized to accommodate lands beyond the municipal right-of-way during minor storm events.

In addition the above, there is also a 450-900mm diameter local storm sewer that flows easterly to Leslie Street where it discharges to an existing 2550x2475mm box storm trunk sewer that travels southerly on Leslie Street then westerly on Commissioners Street and outlets to Lake Ontario. The size of the aforementioned mentioned local storm sewer indicates it has been sized to accommodate lands beyond the municipal right-of-way during minor storm events.

Finally, there is an existing 2750mm diameter storm trunk sewer within the site in a service easement that is located near the eastern boundary of the site. This is a very deep system that, according to City staff, is a trunk sewer that operates as a combined sewer overflow and storage facility during high flows and is eventually pumped back into the lake as flows subside. This trunk sewer runs directly to the Lake Ontario shoreline just south of Commissioners Street.

The sizes and locations of all of existing storm sewers in the vicinity of the subject lands have been determined from information provided by the City of Toronto, including Plan / Profile records drawings, topographic survey, and Toronto Mono Viewer (TMV).

As previously discussed, the site was originally occupied by industrial buildings and pavement. As such, the pre-development conditions for the subject site consisted mainly of rooftop areas and paved areas (with very little to no landscaping) with some overgrowth.

Under pre-development conditions, the majority of storm runoff from the site were captured by internal catchbasins, and directed to the aforementioned 1050mm diameter storm sewer and a combined / storm sewers on Lake Shore Boulevard East during minor storm events. Storm flows from major storms events are conveyed overland to both the Lake Shore Boulevard East and Eastern Avenue road allowances where flows are eventually conveyed southwards to Lake

Ontario. A reduced Pre-development Storm Drainage Area Plan has been included as part of **Appendix 'B'**.

Given the pre-development land use (which would have consisted almost entirely of roof areas and paved driveways), the 2-year, 5-year and 100-year pre-development storm flows for the subject redevelopment site were determined to be approximately 1,111.2 l/s, 1,660.6 l/s, and 3,154.0 l/s, respectively (based on a pre-development runoff coefficient of 0.90).

### ***Floodplain Management***

The site is located in the floodplain of the Don River watershed. This section of the watershed is subject to a Special Policy Area (SPA) designation. Development is allowed provided the buildings are flood proofed to 0.3 metres above the regional flood line. The development proposal has addressed this requirement as the proposed buildings at minimum will be set at finished floor levels of elevation 78.00 metres, which is above the Toronto & Region Conservation Authority (TRCA) flooding elevation of 77.70 metres.

The TRCA has reviewed the development proposal and analyzed the impact of raising the site above the regional flood line and possible impacts to adjacent lands. They have, as set out in their correspondence of November 11, 2013, concluded that the development of the site will not result in increases in water levels on other properties. Please see **Appendix 'C'**.

At the request of the TRCA, a risk change brief was prepared for the site to address the possible change in risk profile as the rezoning application does change the nature of the employment uses. The brief was submitted to the TRCA on November 24, 2014 and has been included herein as part of **Appendix 'C'**.

The requirements to allow for rezoning of the site have been addressed through the adherence to the SPA criteria and also through the submission of the risk change brief. At the time of the site plan application, the TRCA may, at its discretion, choose to remodel the proposed grading of the site however, the modelling for rezoning used a more conservative approach (the entire site was modelled as above the regional flood line) however, the exercise would be redundant.

### ***Stormwater Management Criteria***

Based on City of Toronto's Wet Weather Flow Management (WWFM) guidelines, it is our understanding that the applicable stormwater management criteria for the 7.48 hectares proposed redevelopment site is as follows:

#### **Contributing Area**

The City of Toronto has agreed to allow for the application of WWFM requirements to the new redevelopment areas of the site only given that approximately 2.44 hectares of the site (which consists of the Revival Site) is existing, and will be retained as part of the overall redevelopment scheme. As a result, the non-developable area of approximately 2.44 hectares has been excluded from the Stormwater Management calculations and results presented in this FSSR.

## **Water Quantity**

The 2-year post-development storm flows from the subject lands are to be controlled to the allowable release rate that is based on the lesser of the 2-year pre-development flow, the 2-year rainfall event based on a composite runoff coefficient of 0.50, or the capacity of the receiving sewer.

## **Water Balance**

On-site runoff retention from a 5mm, 24 hour storm event.

## **Water Quality**

80% removal of TSS on an average annual loading basis.

## **Erosion & Sediment Control During Construction**

Temporary erosion and sediment control is to be implemented on-site during construction.

## **Discharge Criteria to Municipal Infrastructure**

Discharge the minor flow to the 2-year design storm event using the Rational Method / IDF Curves, or at the capacity of the sewer whichever is less.

**The allowable release rate for the net redevelopment lands of approximately 50,400 m<sup>2</sup> was calculated to be approximately 617.3 l/s.** Our calculations are presented in **Appendix 'C'**. Since the pre-development conditions exceeded an imperviousness of 50%, the allowable release rate was based on a 2-year event at a composite runoff coefficient of 0.50 for the subject lands.

## **Proposed Conditions**

### **Water Quantity**

Given the proposed site plan for the subject redevelopment, post-development runoff rates were calculated for the 2-year, 5-year, and 100-year rainfall events. Our calculations were based on the following:

- Rooftop areas of approximately 20,380 m<sup>2</sup>
- Paved / impervious areas of approximately 29,010 m<sup>2</sup>
- Landscaped / pervious areas of approximately 1,010 m<sup>2</sup>

Based on the above, the 2-year, 5-year, and 100-year post-development flows were determined to be approximately 1095.1 l/s, 1,636.5 l/s, and 3,108.4 l/s. Our calculations are presented in **Appendix 'C'** at the back of this report.

Since the post-development storm flows for the 100-year rainfall event exceed the aforementioned allowable release rate of 617.3 l/s for the proposed redevelopment site, there will be requirements for quantity control and on-site storage. Approximately 1,439 m<sup>3</sup> of quantity storage will be required to attenuate the post-development flows to the allowable release rate of approximately 617.3 l/s for the subject redevelopment site. This storage volume will be accommodated via the provision of oversized storm pipes supplemented with the implementation of subsurface storage systems where feasible.

It should be noted that the final product for the subject redevelopment will include green rooftops within the proposed buildings which will reduce storm runoff rates and the on-site volume storage requirements. It is also likely that once detailed grading design is completed, the subject site will be broken down into several smaller blocks or sub catchments and stormwater management requirements will be applied on a block-to-block basis. However, these matters will be further investigated and discussed in a separate 'Stage-2 Stormwater Management Implementation Report' to be prepared at the time of detailed design during the Site Plan Approval stage.

As part of the overall preliminary studies undertaken for the subject redevelopment, a 'Downstream Storm Sewer Analysis' was also completed to assess the capacity of the downstream storm sewer system and determine whether any upgrade to the municipal storm infrastructure would be required. This analysis considered the existing 'Revival' Site, as a pre-existing and separate condition, and therefore excluded this area. The results of the analysis indicated that there is capacity within the downstream storm sewer system to accommodate the storm flows from the subject redevelopment site; see **Appendix 'G'**. Additionally, it is important to note that the post-development storm flows from the site will be discharged to the existing municipal storm sewer system under a controlled flow regime consistent with the previously identified allowable release rate of 617.3 l/s for the site, and as such will provide relief for the municipal downstream storm sewer system in comparison to the storm release rates of 1,111.2 l/s, 1,660.6 l/s, and 3,154.0 l/s for the 2-year, 5-year, and 100-year rainfall events respectively from the site under pre-development conditions.

We would propose that post-development storm flows from the subject redevelopment site be directed to the existing municipal 1200x1050mm box storm subtrunk sewer located on Lake Shore Boulevard East via an internal storm sewer network. A storm sewer connection with a control manhole at the property line will be required to convey flows from the aforementioned internal storm sewer network to the existing municipal 1200x1050mm box storm subtrunk. The preliminary location of the proposed internal storm sewer network and storm connection is shown on our '**Functional Servicing Plan' (Drawing FSP-1)**.

An orifice tube or eccentric reducer will likely be required to control post-development storm flows to the allowable release rate for the site. However, this issue will be discussed further in a separate 'Stage-2 Stormwater Management Implementation Report' to be prepared at the time of detailed design during the Site Plan Approval stage.

### **Water Balance**

The objective of the water balance target is to preserve pre-development hydrology through the combination of various SWM practices. According to the Wet Weather Flood Management Master Plan (WWFMMP) guidelines, the subject lands must be able to retain on-site all the runoff from a small design rainfall event. A 5mm 24-hour storm event was used for the small design rainfall event. This runoff must be retained through infiltration, evapotranspiration or rainwater reuse. As previously mentioned, the City has allowed for the exemption of an area approximately 24,400 m<sup>2</sup> which consists of the Revival Site on the grounds that this section of the site will not undergo redevelopment. As a result, only an area of approximately 50,400 m<sup>2</sup> which consists of the proposed redevelopment will be accounted for in the water balance calculations.

Given a site area of 50,400 m<sup>2</sup> for the subject redevelopment, a 5mm 24-hour storm is equivalent to approximately 252 m<sup>3</sup> of total site storage (50,400m<sup>2</sup> x 0.005m).

Under the City of Toronto stormwater management criteria and in accordance with the City's Wet Weather Flow Management (WWFM), methods to enhance infiltration are to be implemented where possible. A few issues arise that affect the ability to implement on-site infiltration of storm runoff.

The first issue to be considered is a shallow groundwater table. The existing groundwater table is approximately 0.50 metres below the existing surface. This limits the ability to permit infiltration into the ground.

The second issue is the presence of contaminated soils on site. Allowing surface runoff to infiltrate into the ground will promote further contamination of the surrounding lands.

Based on the above issues, we believe the City's Water Balance requirements as outlined in the WWFM guidelines cannot be met by any infiltration techniques.

Rainwater harvesting whereby runoff is collected and stored for later use in irrigation is another option that has been considered. The proposed redevelopment will have a limited amount of landscaping; therefore, rainwater harvesting methods would not be an economical solution.

Other techniques such as 'grey water' collection and usage are another option. The volume of required rainwater retention can be mitigated by the use of 'Green Roofs' to allow for evapotranspiration. This is an option which will be examined further at the time of design detailed during the Site Plan Approval stage.

### **Water Quality**

There are a number of Stormwater Management Practices (SWMPs) available to meet the various aspects of water quality control. However, site characteristics and the nature of the development will determine the applicability and possible usage of many of the different SWMPs.

The stormwater management approach endorsed by the Ministry of the Environment (MOE) is to preserve the natural hydrologic cycle. As discussed in the March 2003 MOE manual, the establishment of water quality criteria in the absence of a subwatershed study will have a certain degree of subjectivity. The level of protection is selected such that the existing aquatic habitat is maintained or enhanced. The levels of protection identified in the manual are given as Basic, Normal, and Enhanced, where a watercourse requiring Basic protection has less stringent control requirements than one requiring Normal protection. However, the strategy acknowledges that individual development plans cannot explicitly address cumulative effects.

Stormwater management measures are to be assessed in the following order:

- 1) stormwater lot level controls,
- 2) stormwater conveyance controls, and
- 3) end-of-pipe stormwater management facilities.

Lot level controls would include such measures as: rainwater leaders discharging to infiltration areas; rainwater leaders discharging to a subsurface soakaway pit; reducing grassed site grading to a minimum of 0.5%; separate foundation drains and routing of storm runoff along grassed swales.

Conveyance controls would include perforated storm sewers, pervious catchbasins, and grassed swales. The selection of conveyance control is very much dependent on municipal requirements. It must be an acceptable form of servicing for a municipality and the municipality must be willing to implement and maintain these controls.

End-of-pipe facilities receive water from the conveyance system and discharges the water to the receiving system. The March 2003 MOE Stormwater Management Planning and Design (SWMPD) Manual includes nine categories of end-of-pipe facilities as follows; wet ponds, wetlands, dry ponds, infiltration basins, infiltration trenches, filter strips, buffer strips, sand filters, and oil/grit separators.

Physical factors such as topography, soil stratification, depth to bedrock, depth to water table and drainage areas are factors to be assessed in determining SWMP type. The manual indicates that the selection and design of an end-of-pipe system in the absence of a subwatershed plan is driven by receiving water concerns.

The selection of the appropriate water quality measure is based on four factors, namely:

- physical suitability;
- conformity with development plan;
- cost;
- technical effectiveness

As defined by the March 2003 SWMPD Manual and as required by the City of Toronto's Wet Weather Flow Management Master Plan (WWFMMP) guidelines, an 'Enhanced' level of water quality control must be achieved for the subject site.

As previously noted, under the post-development conditions, the majority of the site will consist of rooftop areas and paved areas, with minimal landscaped areas. As such, it is likely that specific on-site water quality control measures will be required for the subject redevelopment to achieve the City of Toronto's requirement for 80% TSS removal. An Oil & Grit Separator (OGS) or a Media Filtration Systems (MFS) will be sized accordingly based on the calculated contributing flows and will be installed upstream of the discharge point in order to meet the required TSS Removal target.

### **Erosion and Sediment Control**

Erosion and sediment control will be provided on-site during construction, including the provision of a silt fence around the site perimeter, silt sacks on the external catchbasins adjacent to the site and a mud mat at the access point of the site to control mud tracking by construction traffic. Regular maintenance of the erosion / sediment control measures presented herein will be implemented during the duration of construction.

### **Proposed Storm Servicing**

Post-development storm flows from the subject site are to be directed to the existing municipal 1200x1050mm box storm sewer located on Lake Shore Boulevard East. A storm sewer connection with a control manhole at the property line will be required to convey flows from the aforementioned internal storm sewer network to the existing municipal 1200x1050mm box storm subtrunk. The preliminary location of the proposed internal storm sewer network and storm connection has been indicated on our '**Functional Servicing Plan**' (**Drawing FSP-1**).

It should be noted that the proposed internal storm sewer network, future connections and appurtenances will be watertight to prevent surcharging from the shallow groundwater table and to mitigate potential contamination of storm flows.

The 100-year post-development flows for the subject site will be attenuated to allowable level. The total resulting storage volume of approximately 1,439 m<sup>3</sup> will be accommodated via the provision of oversized storm pipes supplemented with the implementation of subsurface storage systems where feasible. Since the final product for the subject redevelopment will include green rooftops within the proposed buildings, it can be expected that there will be a reduction in storm runoff rates and in the on-site volume storage requirement.

As previously discussed, given that the subject redevelopment scenario will include mostly rooftop areas and paved areas and given the site's existing subsurface conditions, on-site infiltration is not feasible. Other methods including 'grey water' collection and usage will be explored at the time of detailed design as part of a separate 'Stage-2 Stormwater Management Implementation Report' to be prepared at the time of detailed design during the 'Site Plan Approval' stage of the project.

It is likely that the on-site specific water quality control measures will also be required for the proposed development to achieve 80% TSS removal as outlined in the WWFMMP guidelines. Water quality control measures such as an OGS or an MFS to be installed upstream of the discharge location in order to achieve the required TSS Removal target for the subject redevelopment will be investigated at the time of detailed design as part of a separate 'Stage-2 Stormwater Management Implementation Report' to be prepared at the time of detailed design during the 'Site Plan Approval' stage of the project.

Site grading is to be such that storm flows greater than the 2-year rainfall event will be directed overland away from the proposed buildings to the adjacent road allowances, and will ultimately drain to Lake Ontario.

Erosion and sediment control will be provided on-site during construction, including the implementation of a silt fence around the site perimeter, silt sacks on the external catchbasins adjacent to the site and a mud mat at the access point of the site to control mud tracking by construction traffic. Regular maintenance of the erosion / sediment control measures presented herein will be provided during the duration of construction.

Existing drainage patterns on the adjacent properties will not be altered and stormwater runoff from the subject development will not be permitted to drain onto adjacent private or public properties.

Details of the proposed stormwater management measures introduced herein will be discussed further in a separate 'Stage-2 Stormwater Management Implementation Report' to be prepared at the time of detailed design during the 'Site Plan Approval' stage of the project.

### 3.3 Sanitary Sewers

#### ***Existing Conditions***

According to drawings obtained from the City, a 300mm diameter local sanitary sewer exists on Eastern Avenue, approximately 2.5 to 3.0 metres below the road surface. This local sanitary sewer connects to an existing 1650mm diameter Low Level Interceptor (LLI) / Sanitary Trunk Sewer (STS) located on Eastern Avenue at Caroline Avenue. This LLI / STS is located beneath the

westbound lane of Eastern Avenue. In addition to providing service for the buildings fronting on Eastern Avenue, the aforementioned 300mm diameter sanitary sewer also conveys the sewage from the local systems on Pape Avenue, Winnifred Avenue and Caroline Avenue to the Eastern Avenue LLI / STS. Wastewater flows in the Eastern Avenue LLI / STS ultimately outlet to Ashbridges Bay Wastewater Treatment Plant (WWTP).

There is an existing 300mm diameter sanitary sewer under the northerly portion of the westbound lane of Lake Shore Boulevard. This existing sanitary sewer slopes easterly and appears to be at a depth of 2.5 to 3.0 metres below the road surface. This existing sanitary sewer discharges to an existing 600mm diameter sanitary sewer that flows northerly on Leslie Street and outlets to the existing Eastern Avenue LLI / STS. As previously, discussed sanitary flows within the Eastern Avenue LLI / STS are conveyed farther easterly to Ashbridges Bay WWTP.

The size and location of the existing sanitary sewers in the vicinity of the subject lands have been determined from information obtained from the City of Toronto, including Plan / Profile records drawings, topographic survey, and Toronto Mono Viewer (TMV).

Using the City's Design Manuel, the sanitary flows generated by the subject redevelopment site under pre-development conditions were based on the following design criteria:

- An industrial lot area of approximately 5.04 hectares (based on the pre-development zoning designation for the subject lands)
- An industrial population density of 136 persons / hectares
- A non-residential sanitary generation rate of 250 l/person /day (Industrial / commercial)

Given the above, we have estimated the pre-development equivalent population for the subject redevelopment lands at approximately 685 persons. As such, we have calculated the pre-development sanitary flows for the subject site to be approximately 2.0 l/s. Our calculations are presented in **Appendix 'D'**.

### **Proposed Sanitary Drainage**

Contributing sanitary flows from the proposed redevelopment were calculated based on the following design criteria:

- A non-residential sanitary generation rate of 250 l/person/day (Industrial / commercial)
- A combined commercial / retail GFA (gross floor area) of approximately 15,483 m<sup>2</sup>
- A combined office GFA of approximately 76,260 m<sup>2</sup>
- A commercial / retail population density of 1.1 persons/100m<sup>2</sup>
- An office population density of 3.3 persons/100m<sup>2</sup> (incl. the proposed hotel component)

Based on the above noted criteria, and a total equivalent population of approximately 2,687 persons, we have estimated the total post-development sanitary flows to be approximately 7.8 l/s. Our Calculations are provided in **Appendix 'D'**.

Given the above, the post-development sanitary flows will exceed the pre-development sanitary flows by approximately 5.8 l/s.

Based on our preliminary servicing design for the subject redevelopment, an internal sanitary sewer network will convey post-development sanitary flows from the site to the Eastern Avenue LLI / STS via an existing 250mm diameter receiving sanitary sewer also located on Eastern Avenue.

This receiving sanitary sewer, which connects to the LLI / STS is approximately 3.0 metres in length with a slope of 17%. A 'Downstream Sanitary Sewer Analysis' was conducted to evaluate the capacity of the existing 250mm diameter receiving sanitary sewer the future internal sanitary sewer will discharge to and determine whether any upgrade to this sewer would be required. The results of the analysis indicated there is capacity within the receiving sewer to accommodate the sanitary flows from the subject redevelopment site. The 'Downstream Sanitary Sewer Analysis' has been included as part of **Appendix 'G'**.

Sanitary drainage for the proposed buildings will be provided via the individual service connections to the aforementioned internal sanitary sewer network. The preliminary location of the proposed internal sanitary sewer is shown on our '**Functional Servicing Plan' (Drawing FSP-1)**.

It should be noted that the proposed internal sanitary sewer network, future connections and appurtenances will be watertight as to prevent surcharging from the shallow groundwater table. Construction of an impermeable sewer will ensure that the existing shallow groundwater table is not contaminated by raw sanitary sewage. In accordance with City of Toronto standards, backflow preventers will be provided for all future sanitary service connections.

### 3.4 Proposed Road Network

The proposed redevelopment site will include a private road with a municipal easement, a mix of private driveways and private service lanes, and a bike lane. Vehicular access to site is to be provided at four (4) locations along Eastern Avenue, generally aligning with Pape Avenue, Winnifred Avenue, Caroline Avenue, and Larchmount Avenue and three (3) locations along Lake Shore Boulevard East. The details regarding these proposed roadway and driveways / laneways including right-of-way widths and pavement widths will be finalized as part of the formal site plan application.

Appendix A  
Fire Flow Calculations  
Fire Protection Computations  
Flow & Pressure Test Results

# Fire Flow Calculations

As per Fire Underwriter's Survey Guidelines

PROPOSED BUILDING 01

PROJ: StudioCentre  
JOB#: 88-13029.100

DATE CREATED:  
DATE PRINTED:

March 20, 2015  
March 31, 2015

<b>C</b>	<b>Coefficient related to type of construction</b>	<u>[yes/no]</u>			
	• Wood frame		1.5		
	• Ordinary construction		1		
	• Non-combustible construction		0.8		
	• Fire resistive construction (< 2 hrs)		0.7		
	• Fire resistive construction (> 2 hrs)	yes	0.6		
	• Interpolation (Using FUS Tables)				
<b>A</b>	<b>Area of structure considered (m<sup>2</sup>)</b>	<b>3,066</b>	<==>	33,002 ft <sup>2</sup>	
<b>F</b>	<b>Required fire flow (L/min)</b>			<b>7,000 L/min</b>	
	$F = 220 C (A)^{0.5}$				
	<b>Occupancy hazard reduction of surcharge</b>	<u>[yes/no]</u>			
	• Non-combustible	yes	-25%		
	• Limited combustible		-15%		
	• Combustible		0%		
	• Free burning		15%		
	• Rapid burning		25%		
				<b>5,250 L/min</b>	<b>(1)</b>
	<b>Sprinkler Reduction</b>				
	• Non-combustible - Fire Resistive (3)	yes	30%	<b>1,575 L/min</b>	<b>(2)</b>
	<b>Exposure surcharge (cumulative (%), 4 sides)</b>	<u>[yes/no]</u>			
	0 - 3 m	Yes	25%	1 side	25%
	3.1 - 10 m	Yes	20%	1 side	20%
	10.1 - 20 m		15%		
	20.1 - 30 m	Yes	10%	2 side	20%
	30.1- 45 m		5%		
				<b>Cumulative Total</b>	<b>65%</b>
				<b>3,410 L/min</b>	<b>(3)</b>
<b>REQUIRED FIRE FLOW [(1) - (2) + (3)]</b>				<b>7,000 L/min</b>	
(2,000 L/min < Fire Flow < 45,000 L/min)				<b>or</b>	
				<b>or</b>	
				<b>116.67 L/s</b>	
				<b>or</b>	
				<b>1,849 USGPM</b>	

# Fire Flow Calculations

As per Fire Underwriter's Survey Guidelines

PROPOSED BUILDING 03

PROJ: StudioCentre  
JOB#: 88-13029.100

DATE CREATED:  
DATE PRINTED:

March 20, 2015  
March 31, 2015

<b>C</b>	<b>Coefficient related to type of construction</b>	<u>[yes/no]</u>			
	• Wood frame		1.5		
	• Ordinary construction		1		
	• Non-combustible construction		0.8		
	• Fire resistive construction (< 2 hrs)		0.7		
	• Fire resistive construction (> 2 hrs)	yes	0.6		
	• Interpolation (Using FUS Tables)				
<b>A</b>	<b>Area of structure considered (m<sup>2</sup>)</b>	<b>3,804</b>	<===	40,946 ft <sup>2</sup>	
	<i>(All floors excluding Basement, under 2-Storeys)</i>				
<b>F</b>	<b>Required fire flow (L/min)</b>			<b>8,000 L/min</b>	
	$F = 220 C (A)^{0.5}$				
	<b>Occupancy hazard reduction of surcharge</b>	<u>[yes/no]</u>			
	• Non-combustible	yes	-25%		
	• Limited combustible		-15%		
	• Combustible		0%		
	• Free burning		15%		
	• Rapid burning		25%		
				<b>6,000 L/min</b>	<b>(1)</b>
	<b>Sprinkler Reduction</b>				
	• Non-combustible - Fire Resistive (3)	yes	30%	<b>1,800 L/min</b>	<b>(2)</b>
	<b>Exposure surcharge (cumulative (%), 4 sides)</b>	<u>[yes/no]</u>			
	0 - 3 m		25%		
	3.1 - 10 m		20%		
	10.1 - 20 m		15%		
	20.1 - 30 m	Yes	10%	4 side	40%
	30.1- 45 m		5%		
				<b>Cumulative Total</b>	<b>40%</b>
				<b>2,400 L/min</b>	<b>(3)</b>
<b>REQUIRED FIRE FLOW [(1) - (2) + (3)]</b>					
(2,000 L/min < Fire Flow < 45,000 L/min)				or	7,000 L/min
				or	116.67 L/s
				or	1,849 USGPM

PROPOSED BUILDING 04

PROJ: StudioCentre  
 JOB#: 88-13029.100

DATE CREATED:  
 DATE PRINTED:

March 20, 2015  
 March 31, 2015

<b>C</b>	<b>Coefficient related to type of construction</b>	<u>[yes/no]</u>											
	♦ Wood frame		1.5										
	♦ Ordinary construction		1										
	♦ Non-combustible construction		0.8										
	♦ Fire resistive construction (< 2 hrs)		0.7										
	♦ Fire resistive construction (> 2 hrs)	yes	0.6										
	♦ Interpolation (Using FUS Tables)												
<b>A</b>	<b>Area of structure considered (m<sup>2</sup>)</b>	<b>3,995</b>	<==>	43,002 ft <sup>2</sup>									
	<i>(All floors excluding Basement, under 2-Storeys)</i>												
<b>F</b>	<b>Required fire flow (L/min)</b>			<u><u>8,000 L/min</u></u>									
	$F = 220 C (A)^{0.5}$												
	<b>Occupancy hazard reduction of surcharge</b>	<u>[yes/no]</u>											
	♦ Non-combustible	yes	-25%										
	♦ Limited combustible		-15%										
	♦ Combustible		0%										
	♦ Free burning		15%										
	♦ Rapid burning		25%										
				<u><u>6,000 L/min</u></u>	(1)								
	<b>Sprinkler Reduction</b>												
	♦ Non-combustible - Fire Resistive (3)	yes	30%	<u><u>1,800 L/min</u></u>	(2)								
	<b>Exposure surcharge (cumulative (%), 4 sides)</b>	<u>[yes/no]</u>											
	0 - 3 m		25%										
	3.1 - 10 m		20%										
	10.1 - 20 m		15%										
	20.1 - 30 m	Yes	10%	2 side	20%								
	30.1- 45 m	Yes	5%	2 side	10%								
				<b>Cumulative Total</b>	<b>30%</b>								
				<u><u>1,800 L/min</u></u>	(3)								
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"><b>REQUIRED FIRE FLOW [(1) - (2) + (3)]</b></td> <td style="width: 50%; text-align: right;"><b>6,000 L/min</b></td> </tr> <tr> <td>(2,000 L/min &lt; Fire Flow &lt; 45,000 L/min)</td> <td style="text-align: right;"><b>100.00 L/s</b></td> </tr> <tr> <td style="text-align: center;"><b>or</b></td> <td style="text-align: right;"><b>1,585 USGPM</b></td> </tr> <tr> <td style="text-align: center;"><b>or</b></td> <td></td> </tr> </table>						<b>REQUIRED FIRE FLOW [(1) - (2) + (3)]</b>	<b>6,000 L/min</b>	(2,000 L/min < Fire Flow < 45,000 L/min)	<b>100.00 L/s</b>	<b>or</b>	<b>1,585 USGPM</b>	<b>or</b>	
<b>REQUIRED FIRE FLOW [(1) - (2) + (3)]</b>	<b>6,000 L/min</b>												
(2,000 L/min < Fire Flow < 45,000 L/min)	<b>100.00 L/s</b>												
<b>or</b>	<b>1,585 USGPM</b>												
<b>or</b>													

PROPOSED BUILDING 05

PROJ: StudioCentre  
 JOB#: 88-13029.100

DATE CREATED:  
 DATE PRINTED:

March 20, 2015  
 March 31, 2015

**C Coefficient related to type of construction** yes/no

- Wood frame 1.5
- Ordinary construction 1
- Non-combustible construction 0.8
- Fire resistive construction (< 2 hrs) 0.7
- Fire resistive construction (> 2 hrs) 0.6
- Interpolation (Using FUS Tables) yes

**A Area of structure considered (m<sup>2</sup>)** 7,708 <==>

(All floors excluding Basement, under 2-Storeys)

82,968 ft<sup>2</sup>

**F Required fire flow (L/min)**

$F = 220 C (A)^{0.5}$

12,000 L/min

**Occupancy hazard reduction of surcharge** yes/no

- Non-combustible yes -25%
- Limited combustible -15%
- Combustible 0%
- Free burning 15%
- Rapid burning 25%

9,000 L/min (1)

**Sprinkler Reduction**

- Non-combustible - Fire Resistive (3) yes 30%

2,700 L/min (2)

**Exposure surcharge (cumulative (%), 4 sides)** yes/no

- 0 - 3 m 25%
- 3.1 - 10 m 20%
- 10.1 - 20 m 15%
- 20.1 - 30 m Yes 10%
- 30.1 - 45 m Yes 5%

1 side 10%  
 2 side 10%

**Cumulative Total** 20%

1,800 L/min (3)

**REQUIRED FIRE FLOW [(1) - (2) + (3)]**

(2,000 L/min < Fire Flow < 45,000 L/min)

or  
or

8,000 L/min

133.33 L/s

2,113 USGPM

# Fire Flow Calculations

As per Fire Underwriter's Survey Guidelines

PROPOSED BUILDING 06

PROJ: StudioCentre  
JOB#: 88-13029.100

DATE CREATED:  
DATE PRINTED:

March 20, 2015  
March 31, 2015

**C Coefficient related to type of construction** [yes/no]

- |   |     |
|---|-----|
| • Wood frame                            | 1.5 |
| • Ordinary construction                 | 1   |
| • Non-combustible construction          | 0.8 |
| • Fire resistive construction (< 2 hrs) | 0.7 |
| • Fire resistive construction (> 2 hrs) | 0.6 |
| • Interpolation (Using FUS Tables)      | yes |

**A Area of structure considered (m<sup>2</sup>)** 3,219 <==> 34,649 ft<sup>2</sup>

(All floors excluding Basement, under 2-Storeys)

**F Required fire flow (L/min)**

$F = 220 C (A)^{0.5}$

7,000 L/min

**Occupancy hazard reduction of surcharge** [yes/no]

- |                       |      |
|-----------------------|------|
| • Non-combustible     | -25% |
| • Limited combustible | -15% |
| • Combustible         | 0%   |
| • Free burning        | 15%  |
| • Rapid burning       | 25%  |

5,250 L/min (1)

**Sprinkler Reduction**

- |  |     |     |
|--|-----|-----|
| • Non-combustible - Fire Resistive (3) | yes | 30% |
|--|-----|-----|

1,575 L/min (2)

**Exposure surcharge (cumulative (%), 4 sides)** [yes/no]

- |             |     |     |        |     |
|-------------|-----|-----|--------|-----|
| 0 - 3 m     | Yes | 25% | 1 side | 25% |
| 3.1 - 10 m  |     | 20% |        |     |
| 10.1 - 20 m | Yes | 15% | 1 side | 15% |
| 20.1 - 30 m | Yes | 10% | 1 side | 10% |
| 30.1- 45 m  |     | 5%  |        |     |

**Cumulative Total** 50%

2,630 L/min (3)

**REQUIRED FIRE FLOW [(1) - (2) + (3)]**

(2,000 L/min < Fire Flow < 45,000 L/min)

or  
or

**6,000 L/min**  
**100.00 L/s**  
**1,585 USGPM**

# Fire Flow Calculations

As per Fire Underwriter's Survey Guidelines

PROPOSED BUILDING 07

**PROJ:** StudioCentre  
**JOB#:** 88-13029.100

**DATE CREATED:** March 20, 2015  
**DATE PRINTED:** March 31, 2015

<b>C</b>	<b>Coefficient related to type of construction</b>	<u>[yes/no]</u>												
	• Wood frame		1.5											
	• Ordinary construction		1											
	• Non-combustible construction		0.8											
	• Fire resistive construction (< 2 hrs)		0.7											
	• Fire resistive construction (> 2 hrs)	yes	0.6											
	• Interpolation (Using FUS Tables)													
<b>A</b>	<b>Area of structure considered (m<sup>2</sup>)</b>	<b>6,968</b>	<==>	75,003 ft <sup>2</sup>										
	<i>(All floors excluding Basement, under 2-Storeys)</i>													
<b>F</b>	<b>Required fire flow (L/min)</b>			<b>11,000 L/min</b>										
	$F = 220 C (A)^{0.5}$													
	<b>Occupancy hazard reduction of surcharge</b>	<u>[yes/no]</u>												
	• Non-combustible	yes	-25%											
	• Limited combustible		-15%											
	• Combustible		0%											
	• Free burning		15%											
	• Rapid burning		25%											
				<b>8,250 L/min</b>	<b>(1)</b>									
	<b>Sprinkler Reduction</b>													
	• Non-combustible - Fire Resistive (3)	yes	30%	<b>2,475 L/min</b>	<b>(2)</b>									
	<b>Exposure surcharge (cumulative (%), 4 sides)</b>	<u>[yes/no]</u>												
	0 - 3 m		25%											
	3.1 - 10 m	Yes	20%	1 side	20%									
	10.1 - 20 m		15%											
	20.1 - 30 m		10%											
	30.1- 45 m	Yes	5%	1 side	5%									
				<b>Cumulative Total</b>	<b>25%</b>									
				<b>2,060 L/min</b>	<b>(3)</b>									
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"><b>REQUIRED FIRE FLOW [(1) - (2) + (3)]</b></td> <td style="width: 10%;"></td> <td style="width: 40%; text-align: right;"><b>8,000 L/min</b></td> </tr> <tr> <td>(2,000 L/min &lt; Fire Flow &lt; 45,000 L/min)</td> <td style="text-align: center;">or</td> <td style="text-align: right;"><b>133.33 L/s</b></td> </tr> <tr> <td></td> <td style="text-align: center;">or</td> <td style="text-align: right;"><b>2,113 USGPM</b></td> </tr> </table>						<b>REQUIRED FIRE FLOW [(1) - (2) + (3)]</b>		<b>8,000 L/min</b>	(2,000 L/min < Fire Flow < 45,000 L/min)	or	<b>133.33 L/s</b>		or	<b>2,113 USGPM</b>
<b>REQUIRED FIRE FLOW [(1) - (2) + (3)]</b>		<b>8,000 L/min</b>												
(2,000 L/min < Fire Flow < 45,000 L/min)	or	<b>133.33 L/s</b>												
	or	<b>2,113 USGPM</b>												

# Fire Protection Computations

As per the 'National Fire Protection Association (NFPA)' Guidelines

PROJ: StudioCentre - 629, 633 & 675 Eastern Avenue  
JOB#: 88.13029-1400

DATE CREATED:  
DATE PRINTED:

25-Mar-2015  
31-Mar-2015

**Q<sub>F</sub>** Observed Flow  
**c** Coefficient; 0.90 - 0.95  
**d** Nozzle / Outlet Diameter  
**p** Pitot Pressure

**c** 0.90  
**d** 2.5 in.  
**p** 74 psi

$$Q_F = 29.83 * c * (d^2) * (p^{0.5}) \text{ U.S. GPM}$$

$$Q_F = \underline{\underline{1,440 \text{ U.S. GPM}}}$$

**Q<sub>R</sub>** Available Flow  
**h<sub>R</sub>** Drop in pressure from static pressure to  
desired residual baseline pressure  
**h<sub>F</sub>** Drop in pressure from static pressure to  
actual residual pressure measured during test

Static Pressure 89 psi  
Desired Residual Pressure 20 psi  
Measured Residual Pressure 82 psi

$$Q_R = (Q_F) * (h_R^{0.54}) / (h_F^{0.54}) \text{ U.S. GPM}$$

<b>Q<sub>R</sub></b>	<u>4,950 U.S. GPM</u>
or	18,740 L/min
or	312 L/s

### Hydrant Fire Flow Test Summary

Date: FRI JUNE 28, 2013 Time: 8:45am

Project Location: EASTERN AVE TORONTO

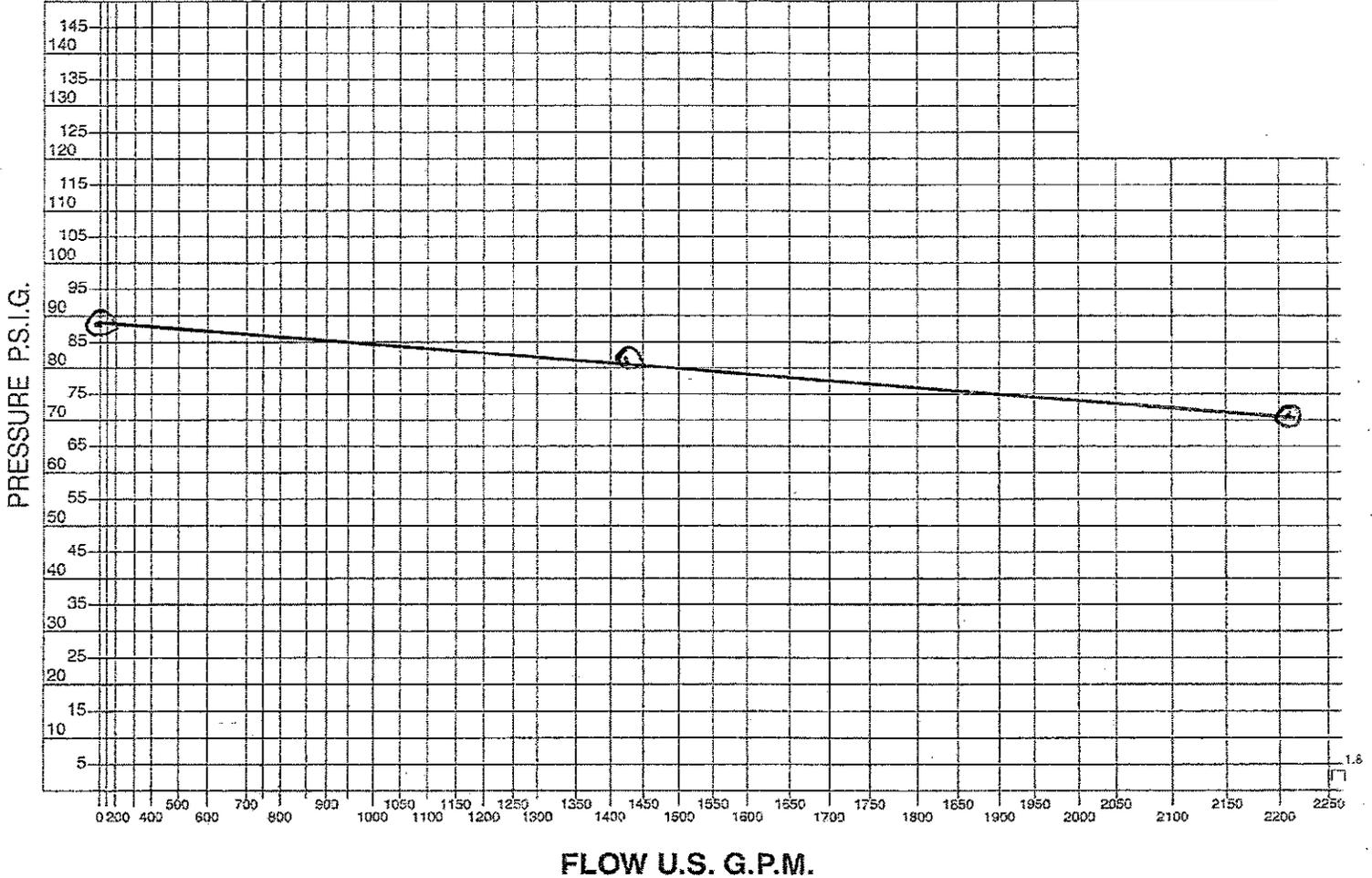
Name of Tester: C. PROSPERO + TONY CASCHERA

Witness Name	Representing	Phone Number	Initials

Location of: Residual: CARLINE + EASTERN Flow: WINNIFRED + EASTERN

Main Size: \_\_\_\_\_ Static Pressure: 89 PSI

Orifice Size & Outlets	Pitot Pressure	Residual Pressure	Flow (U.S.G.P.M)
<u>2.5" x 1</u>	<u>74</u>	<u>82</u>	<u>1,440</u>
<u>2.5" x 2</u>	<u>46</u>	<u>71</u>	<u>2,271</u>



Notes: \_\_\_\_\_

Peak Flow Signature: \_\_\_\_\_

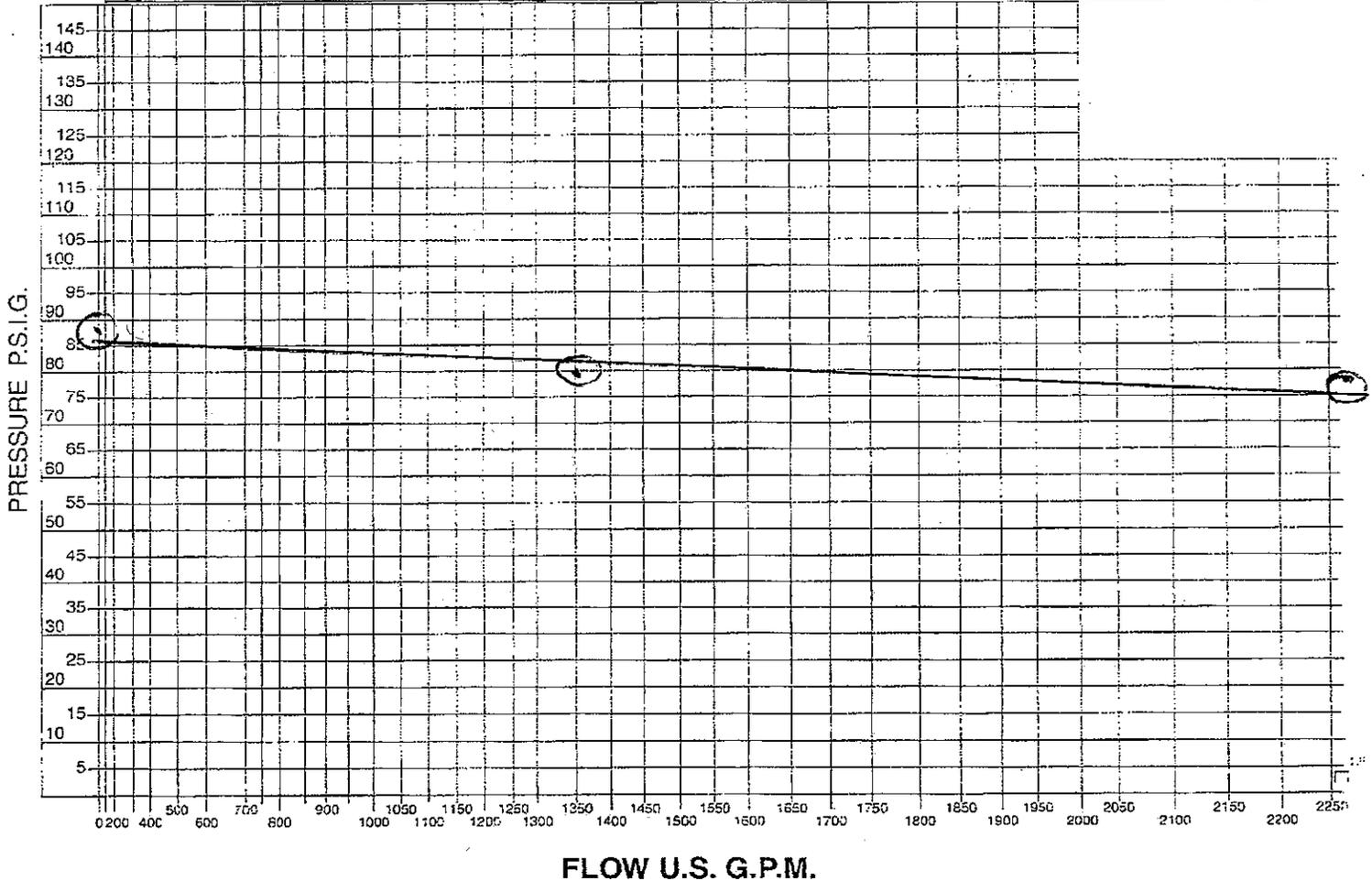
### Hydrant Fire Flow Test Summary

Date: FRI AUGUST 9, 2013 Time: 9 25AM  
 Project Location: LAKE SHORE BLUE EAST + CARLAW  
 Name of Tester: C. PROSPERO + T. CASCHERA

Witness Name	Representing	Phone Number	Initials

Location of: Residual: CORNER OF LAKE SHORE + CARLAW Flow: SECOND HYDRANT EAST OF LAKE SHORE + CARLAW  
 Main Size: — Static Pressure: 88ps, ON LAKE SHORE

Orifice Size & Outlets	Pitot Pressure	Residual Pressure	Flow (U.S.G.P.M)
<u>1 x 2.5'</u>	<u>65</u>	<u>80</u>	<u>1.350</u>
<u>2 x 2.5'</u>	<u>55</u>	<u>77</u>	<u>2.483</u>



Notes: \_\_\_\_\_

Peak Flow Signature: \_\_\_\_\_

# Appendix B

## Pre-development Storm Drainage Plan

Appendix C  
Stormwater Management Calculations

PROJECT: StudioCentre  
 PROJECT No: 88-13029.400  
 CREATED: March 19, 2015  
 PRINTED: March 31, 2015

**STORMWATER MANAGEMENT CALCULATIONS**  
**STUDIOCENTRE - 629, 633 & 675 EASTERN AVENUE**  
**PRE - DEVELOPMENT**  
**PROPOSED MIXED-USE (OFFICE / RETAIL) DEVELOPMENT**  
**CITY OF TORONTO - TORONTO & EAST YORK DISTRICT**

**SITE AREA** 50400 m<sup>2</sup>

**2 YEAR PRE-DEVELOPMENT FLOW**

	<u>Area (m<sup>2</sup>)</u>	<u>Area*RC</u>	<u>Runoff Coefficients</u>	
ROOFTOP AND PAVEMENT AREAS	50400	45360	Rooftop / Paved Areas	0.90
LANDSCAPED/PERVIOUS AREAS			Landscaped Areas	0.25
<b>TOTAL SITE AREA</b>	<b>50400</b>	<b>45360</b>		
Composite RC	0.90			
Time of Concentration	10 min			
2 year intensity	88.19 mm/hr			
			Peak Flow = CIA	1111.2 L/s

**5 YEAR PRE-DEVELOPMENT FLOW**

	<u>Area (m<sup>2</sup>)</u>	<u>Area*RC</u>	<u>Runoff Coefficients</u>	
ROOFTOP AND PAVEMENT AREAS	50400	45360	Rooftop / Paved Areas	0.90
LANDSCAPED/PERVIOUS AREAS	0	0	Landscaped Areas	0.25
<b>TOTAL SITE AREA</b>	<b>50400</b>	<b>45360</b>		
Composite RC	0.90			
Time of Concentration	10 min			
5 year intensity	131.79 mm/hr			
			Peak Flow = CIA	1660.6 L/s

**100 YEAR PRE-DEVELOPMENT FLOW**

	<u>Area (m<sup>2</sup>)</u>	<u>Area*RC</u>	<u>Runoff Coefficients</u>	
ROOFTOP AND PAVEMENT AREAS	50400	45360	Rooftop / Paved Areas	0.90
LANDSCAPED/PERVIOUS AREAS	0	0	Landscaped Areas	0.25
<b>TOTAL SITE AREA</b>	<b>50400</b>	<b>45360</b>		
Composite RC	0.90			
Time of Concentration	10 min			
100 year intensity	250.32 mm/hr			
			Peak Flow = CIA	3154.0 L/s

**2-YEAR RAINFALL EVENT @ RUNOFF COEFFICIENT OF 0.50**

Runoff Coefficient	0.50			
2 year intensity	88.19 mm/hr		<b>ALLOWABLE RELEASE RATE:</b>	<b>617.3 l/s</b>

PROJECT: StudioCentre  
 PROJECT No: 88-13029.400  
 CREATED: March 19, 2015  
 PRINTED: March 31, 2015

**STORMWATER MANAGEMENT CALCULATIONS**  
**STUDIOCENTRE - 629, 633 & 675 EASTERN AVENUE**  
**POST - DEVELOPMENT (CONTROLLED FLOWS)**  
**PROPOSED MIXED-USE (OFFICE / RETAIL) DEVELOPMENT**  
**CITY OF TORONTO - TORONTO & EAST YORK DISTRICT**

SITE AREA

50400 m<sup>2</sup>

CONTRIBUTING AREAS

	<u>Area (m<sup>2</sup>)</u>	# Controlled Roof Drains	0
		Controlled Roof Release Rate	0.0 l/s (# drains X 1.5 l/s each)
Controlled Rooftop Areas:	0 m <sup>2</sup>		
Green Rooftop Areas:	0 m <sup>2</sup>		
Uncontrolled Rooftop Areas:	<u>20380 m<sup>2</sup></u>		
Total Roof Areas:	20380 m <sup>2</sup>		
Paved / Impervious Areas:	29010 m <sup>2</sup>		
Landscaped / Pervious Areas:	<u>1010 m<sup>2</sup></u>		
TOTAL SITE AREA	50400 m <sup>2</sup>		
TOTAL AREA ( Excluding Controlled Roof Area )	50400 m <sup>2</sup>		

	<u>Area (m<sup>2</sup>)</u>	<u>Area*RC</u>	<u>Percent</u>	<u>Runoff Coefficients</u>	
CONTROLLED ROOF	0		0%		
GREEN ROOF	0	0	0%	Green Roof	0.25
UNCONTROLLED ROOF	20380	18342	40%	Uncontrolled Roof	0.90
PAVED	29010	26109	58%	Paved	0.90
LANDSCAPED	<u>1010</u>	<u>253</u>	2%	Landscaped	0.25
TOTAL AREA ( Excluding Controlled Roof Area )	50400	44704			
COMPOSITE RUNOFF COEFFICIENT		0.89			

2 YEAR POST-DEVELOPMENT FLOW

Time of Concentration	10 min			
2 year intensity	88.19 mm/hr			
		Controlled Roof Runoff:	0.0 l/s	
		Green Roof Runoff:	0.0 l/s	
		Uncontrolled Roof Runoff:	<u>449.3 l/s</u>	
		Contributing Roof Runoff:	449.3 l/s	
		Paved Runoff:	639.6 l/s	
		Landscaped Runoff:	<u>6.2 l/s</u>	
		RELEASE RATE:	1095.1 l/s	

5 YEAR POST-DEVELOPMENT FLOW

Time of Concentration	10 min			
5 year intensity	131.79 mm/hr			
		Controlled Roof Runoff:	0.0 l/s	
		Green Roof Runoff:	0.0 l/s	
		Uncontrolled Roof Runoff:	<u>671.5 l/s</u>	
		Contributing Roof Runoff:	671.5 l/s	
		Paved Runoff:	955.8 l/s	
		Landscaped Runoff:	<u>9.2 l/s</u>	
		RELEASE RATE:	1636.5 l/s	

100 YEAR POST-DEVELOPMENT FLOW

Time of Concentration	10 min			
100 year intensity	250.32 mm/hr			
		Controlled Roof Runoff:	0.0 l/s	
		Landscaped/Green Roof Runoff:	0.0 l/s	
		Uncontrolled Roof Runoff:	<u>1275.4 l/s</u>	
		Contributing Roof Runoff:	1275.4 l/s	
		Paved Runoff:	1815.4 l/s	
		Landscaped Runoff:	<u>17.6 l/s</u>	
		RELEASE RATE:	3108.4 l/s	

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**STORMWATER MANAGEMENT CALCULATIONS**  
**STUDIOCENTRE - 629, 633 & 675 EASTERN AVENUE**  
**REQUIRED STORAGE VOLUME**  
**PROPOSED MIXED-USE (OFFICE / RETAIL) DEVELOPMENT**  
**CITY OF TORONTO - TORONTO & EAST YORK DISTRICT**

**DESIGN** **100 YEAR POST TO 2 YEAR @ 0.5**  
 CONTROL 100-YEAR POST TO 2 YEAR PRE

SITE AREA (UNCONTROLLED ROOF) 50400 m<sup>2</sup>

ALLOWABLE RELEASE RATE **617.3 l/s**  
 COMPOSITE RUNOFF COEFFICIENT **0.89**  
 TIME OF CONCENTRATION **10 minutes**  
 100-YEAR STORM  $I = 59.7/(t/60)^{0.80}$

TIME minutes	RAINFALL INTENSITY mm/hr	CONTROLLED ROOF RUNOFF l/s	ROOF, IMPERVIOUS & PERVIOUS l/s	TOTAL RUNOFF l/s	STORAGE VOLUME m <sup>3</sup>
1.0	1579.4	0.0	19612.6	19612.6	1139.7
2.0	907.1	0.0	11264.5	11264.5	1277.7
3.0	655.8	0.0	8144.0	8144.0	1354.8
4.0	521.0	0.0	6469.7	6469.7	1404.6
5.0	435.8	0.0	5412.0	5412.0	1438.4
6.0	376.7	0.0	4677.5	4677.5	1439.3
7.0	333.0	0.0	4134.8	4134.8	1422.6
8.0	299.2	0.0	3715.9	3715.9	1400.8
9.0	272.3	0.0	3381.7	3381.7	1375.1
10.0	250.3	0.0	3108.4	3108.4	1346.2
11.0	231.9	0.0	2880.2	2880.2	1348.0
12.0	216.3	0.0	2686.5	2686.5	1347.2
13.0	202.9	0.0	2519.9	2519.9	1344.2
14.0	191.2	0.0	2374.8	2374.8	1339.2
15.0	181.0	0.0	2247.3	2247.3	1332.7
16.0	171.9	0.0	2134.2	2134.2	1324.6
17.0	163.7	0.0	2033.2	2033.2	1315.2
18.0	156.4	0.0	1942.3	1942.3	1304.6
19.0	149.8	0.0	1860.1	1860.1	1293.0
20.0	143.8	0.0	1785.3	1785.3	1280.4
21.0	138.3	0.0	1717.0	1717.0	1266.9
22.0	133.2	0.0	1654.2	1654.2	1252.6
23.0	128.6	0.0	1596.4	1596.4	1237.6
24.0	124.3	0.0	1543.0	1543.0	1221.9
25.0	120.3	0.0	1493.4	1493.4	1205.5
26.0	116.6	0.0	1447.3	1447.3	1188.5
27.0	113.1	0.0	1404.2	1404.2	1171.0
28.0	109.8	0.0	1364.0	1364.0	1153.0
29.0	106.8	0.0	1326.2	1326.2	1134.5
30.0	103.9	0.0	1290.7	1290.7	1115.5
31.0	101.3	0.0	1257.3	1257.3	1096.1
32.0	98.7	0.0	1225.8	1225.8	1076.3
33.0	96.3	0.0	1196.0	1196.0	1056.1
34.0	94.0	0.0	1167.8	1167.8	1035.6
35.0	91.9	0.0	1141.0	1141.0	1014.7
36.0	89.8	0.0	1115.6	1115.6	993.5

**REQUIRED STORAGE: 1439 m<sup>3</sup>**

PROJECT: StudioCentre  
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**STORMWATER MANAGEMENT CALCULATIONS**  
**PRE - DEVELOPMENT**  
**INITIAL ABSTRACTION & TSS REMOVAL COMPUTATIONS**  
**PROPOSED MIXED-USE (OFFICE / RETAIL) DEVELOPMENT**  
**CITY OF TORONTO - TORONTO & EAST YORK DISTRICT**

Site Area	50400 m <sup>2</sup>		<u>Area (m<sup>2</sup>)</u>	<u>Percent</u>
		Non-Green Roof Areas:	1540 m <sup>2</sup>	3%
		Green Roof Areas:	0 m <sup>2</sup>	0%
		Paved/Impervious Areas:	280 m <sup>2</sup>	1%
		Landscaped/Pervious Areas:	20 m <sup>2</sup>	0%
		TOTAL SITE AREA	1840 m <sup>2</sup>	4%

**INITIAL ABSTRACTION**

Site Description	Fraction of Site Area	Initial Abs. (mm)	Overall Initial Abs (mm)
Non-Green Roof Areas:	0.03	1	0.03
Green Roof Areas:	0.00	5	0.00
Paved/Impervious Areas:	0.01	1	0.01
Landscaped/Pervious Areas:	0.00	5	0.00
<b>TOTAL:</b>	<b>0.0</b>		<b>0.04</b>

Target	5	mm
Achieved	0.04	mm
<b>Shortfall</b>	<b>4.96</b>	<b>mm</b>
<b>Required RWH Vol.</b>	<b>250.0</b>	<b>m<sup>3</sup></b>

**TSS REMOVAL**

Site Description	Fraction of Site Area	TSS Removal (%)	Overall TSS Rem. (%)
Non-Green Roof Areas:	0.03	95	2.90
Green Roof Areas:	0.00	80	0.00
Paved/Impervious - (Non-Driveway Areas):	0.00	80	0.37
Paved/Impervious - (Driveway Areas):	0.00	0	0.00
Landscaped/Pervious Areas:	0.00	95	0.04
<b>TOTAL:</b>	<b>0.0</b>		<b>3.32</b>

Appendix D  
Sanitary Sewer Calculations

**Project Name:** StudioCentre - 629, 633 & 675 Eastern Avenue  
**Project Number:** 88-13029.100  
**Date Created:** March 19, 2015  
**Date Printed:** March 31, 2015

**Sanitary Sewer Calculations - Equivalent Populations and Wastewater Flows (Existing vs. Proposed)**

	Industrial Lot Area (Ha)	Comm. / Retail GFA (m <sup>2</sup> )	Office GFA (m <sup>2</sup> )	Industrial Population	Comm. / Retail Population	Office Population	Total Equivalent Population	Generation Rate (L/day)	Generation Rate (L/s)
Proposed Development		15,483	76,260		170	2,517	2,687	671,723	<b>7.8</b>
Existing Development	5.04			685			685	171,360	<b>2.0</b>

Non-Residential Generation Rate = 250 L/person/day  
 Commercial / Retail Population Density = 1.1 persons/100m<sup>2</sup> (Proposed)  
 Office Population Density = 3.3 persons/100m<sup>2</sup> (Proposed)  
 Industrial Population Density = 136 persons/ha (Existing)  
**Proposed Redevelopment Site Area = 5.04 Hectares (Excl. the area of approximately 2.44 Hectares for the existing Revival Site)**

Appendix E  
Reduced Proposed Site Plan  
Topographic / Boundary Survey Plan

Appendix F  
Certificate of Property Use

## Certificate of Property Use

Environmental Protection Act, R.S.O. 1990, c.E.19, s.168.6

Certificate of property use number 4078-7VGPJA  
Risk assessment number 7608-6L6T7T

**Client:** Eastern Avenue Developments Limited (Owner)  
700 Applewood Cres., Suite No. 100  
Vaughan, Ontario, L4K 5X3

Eastern Avenue Developments (629-1) Limited  
700 Applewood Cres., Suite No. 100  
Vaughan, Ontario, L4K 5X3

Rose Eastern Strata Inc.  
156 Duncan Mill Road Suite 12  
Toronto, Ontario, M3B 3N2

Bluefield Development Inc.  
#12 - 156 Duncan Mill Road  
Toronto, Ontario, M3B 3N2

Brownfield Developments Inc.  
#12 - 156 Duncan Mill Road  
Toronto, Ontario, M3B 3N2

**Site:** 629 and 633/675 Eastern Avenue (Property)  
Toronto

With a legal description as set out in Schedule 1 attached

The conditions of this Certificate of Property Use (CPU) address the Risk Management Measures in the Risk Assessment noted above and described in detail in Part 1 below (Risk Assessment). In the event of a conflict between the CPU and the Risk Assessment, the conditions of the CPU take precedence.

**Summary:**

*Refer to Part 1 of the CPU, Interpretation, for the meaning of all the defined capitalized terms that apply to the CPU.*

i) CPU requirements addressed in Part 4 of the CPU, Director Requirements, are summarized as follows:

- |  |     |
|--|-----|
| a. Installing any equipment  | Yes |
| b. Monitoring any contaminant  | Yes |
| c. Refraining from constructing any building specified   | Yes |
| d. Refraining from using the Property for any use specified  | Yes |
| e. Other: Maintaining a barrier to soils, implementing a health and safety plan and a soil management plan for the Property. | Yes |

ii) Duration of Risk Management Measures identified in Part 4 of the CPU is summarized as follows:

- a. The barrier including building footprint, concrete, asphalt, paving stones, paving slabs, gravel and stone or Soil Cap over the entirety of the Property shall be maintained for as long as the Contaminants of Concern are present on the Property.
- b. The ground water monitoring shall be conducted following the issuance of the CPU during the spring freshet in 2011 and every second year (during the spring freshet) thereafter until such time as the Director, upon application by the Owner, has reviewed the data available and either amends or revokes the CPU.
- c. The air monitoring shall be conducted prior to the occupancy of buildings on the Property and then during the first year of occupancy quarterly (every three months) and thereafter three times a year (spring, summer and winter) until such time as the Director, upon application by the Owner, has reviewed the data available and either amends or revokes the CPU.
- d. The site specific health and safety plan for workers exposed to site soils shall be required for as long as the Contaminants of Concern are present on the Property.
- e. A soil management plan for any activities potentially in contact with or exposing site soils shall be required for as long as the Contaminants of Concern are present on the Property.
- f. The other Risk Management Measures shall continue indefinitely until the Director amends or revokes the CPU.

### Part 1: Interpretation

In the CPU the following terms shall have the meanings described below:

“Adverse Effect” has the same meaning as in the Act; namely,

- (a) impairment of the quality of the natural environment for any use that can be made of it,
- (b) injury or damage to property or to plant or animal life,
- (c) harm or material discomfort to any person,
- (d) an adverse effect on the health of any person,
- (e) impairment of the safety of any person,
- (f) rendering any property or plant or animal life unfit for human use,
- (g) loss of enjoyment of normal use of property, and
- (h) interference with the normal conduct of business;

“Act” means the *Environmental Protection Act*, R.S.O. 1990, c. E. 19, as amended;

“Chlorinated Aliphatic Hydrocarbons” or “CAH” means 1,1 Dichloroethylene, cis-1,2-Dichloroethylene, trans-1,2-Dichloroethylene, Trichloroethylene, and Vinyl Chloride that have been identified as some of the Contaminants of Concern;

“Contaminant” has the same meaning as in the Act; namely any solid, liquid, gas, odour, heat, sound, vibration, radiation or combination of any of them, resulting directly or indirectly from human activities that causes or may cause an Adverse Effect;

"Contaminants of Concern" has the meaning as set out in section 3.2 of the CPU;

"CPU" means this Certificate of Property Use Number 4078-7VGPJA, as may be amended from time to time;

"Director" means the undersigned Director or any other person appointed as a Director for the purpose of issuing a certificate of property use;

"EBR" means the Environmental Bill of Rights, 1993, S.O. 1993, c.28, as amended;

"Ministry" means Ontario Ministry of the Environment;

"O.Reg. 153/04" means Ontario Regulation 153/04, "Record of Site Condition – XV.1 of the Act" as amended, made under the Act;

"Owner" means the owner(s) of the Property, including the persons to whom this CPU is issued, Eastern Avenue Developments Limited and Rose Eastern Strata Inc., and Eastern Avenue Developments (629-1) Limited, Bluefield Development Inc. and Brownfield Development Inc., the current registered and beneficial owners of the Property;

"OWRA" means the *Ontario Water Resources Act*, R.S.O. 1990, c.0.40, as amended;

"Property" means the property that is the subject of the CPU and described in the "Site" section on page 1 above;

"Property Specific Standards" means the property specific standards established for the Contaminants of Concern set out in the Risk Assessment and in section 3.2 of the CPU;

"Provincial Officer" means a person who is designated as a provincial officer for the purposes of the Act;

"Qualified Person" means a person who meets the qualifications prescribed in O. Reg. 153/04;

"Risk Assessment" means the Risk Assessment 7608-6L6T7T accepted by the Director on August 23, 2007, and set out in the following documents: "Risk Assessment on 629 and 633 Eastern Avenue, Toronto, (Revised), Bluefield Developments Inc., Bluefield 633 Developments Inc., Report No. 1005919.01" dated November 2006, "Response to MOE Comments March 30 \_ 07"; "Response to Ministry of the Environment Comment on RA873 – 629 and 633 Eastern Avenue, Toronto" dated April 4, 2007 and "Response to Ministry of the Environment" dated April 26, 2007 prepared by Jacques Whitford. These documents include the Risk Assessment conducted for entire Property; 633/675 Eastern Avenue is described in the Risk Assessment as 633 Eastern Avenue;

"Risk Management Measures" means the risk management measures specific to the Property described in the Risk Assessment and/or Part 4 of the CPU;

"Soil Cap" means the soil cap described in section 4.2(a) of the CPU;

"Tribunal" has the same meaning as in the Act; namely, the Environmental Review Tribunal.

## **Part 2: Legal Authority**

- 2.1 Section 19 of the Act states that a certificate of property use is binding on the executor, administrator, administrator with the will annexed, guardian of property or attorney for property of the person to whom it was directed, and on any other successor or assignee of the person to whom it was directed.

- 2.2 Subsection 132(1.1) of the Act states that the Director may include in a certificate of property use a requirement that the person to whom the certificate is issued provide financial assurance to the Crown in right of Ontario for any one or more of,
- (a) the performance of any action specified in the certificate of property use;
  - (b) the provision of alternate water supplies to replace those that the Director has reasonable and probable grounds to believe are or are likely to be contaminated or otherwise interfered with by a contaminant on, in or under the property to which the certificate of property use relates; and
  - (c) measures appropriate to prevent adverse effects in respect of the property to which the certificate of property use relates.
- 2.3 Section 168.6 (1) of the Act states that if the Director accepts a risk assessment relating to a property, he or she may, when giving notice under clause 168.5 (1)(a), issue a certificate of property use to the owner of the property, requiring the owner to do any of the following things:
- 1) Take any action specified in the certificate that, in the Director's opinion, is necessary to prevent, eliminate or ameliorate any adverse effect on the property, including installing any equipment, monitoring any contaminant or recording or reporting information for that purpose.
  - 2) Refrain from using the property for any use specified in the certificate or from constructing any building specified in the certificate on the property.
- 2.4 Subsection 168.6(2) of the Act states that a certificate of property use shall not require an owner of property to take any action that would have the effect of reducing the concentration of a contaminant on, in or under the property to a level below the level that is required to meet the standards specified for the contaminant in the risk assessment.
- 2.5 Subsection 168.6(3) of the Act states that the Director may, on his or her own initiative or on application by the owner of the property in respect of which a certificate has been issued under subsection 168.6(1),
- (a) alter any terms and conditions in the certificate or impose new terms and conditions; or
  - (b) revoke the certificate.
- 2.6 Subsection 168.6(4) of the Act states that if a certificate of property use contains a provision requiring the owner of property to refrain from using the property for a specified use or from constructing a specified building on the property,
- (a) the owner of the property shall ensure that a copy of the provision is given to every occupant of the property;
  - (b) the provision applies, with necessary modifications, to every occupant of the property who receives a copy of the provision; and
  - (c) the owner of the property shall ensure that every occupant of the property complies with the provision.
- 2.7 Subsection 196(1) of the Act states that the authority to make an order under the Act includes the authority to require the person or body to whom the order is directed to take such intermediate action or such procedural steps or both as are related to the action required or prohibited by the order and as are specified in the order.
- 2.8 Subsection 197(1) of the Act states that a person who has authority under the Act to make an order or decision affecting real property also has authority to make an order requiring any person with an interest in the property, before dealing with the property in any way, to give a copy of the order or decision affecting the property to every person who will acquire an interest in the property as a result of the dealing.
- 2.9 Subsection 197(2) of the Act states that a certificate setting out a requirement imposed under subsection 197(1) may be registered in the proper land registry office on the title of the real property to which the requirement relates, if the certificate is in a form approved by the Minister,

is signed or authorized by a person who has authority to make orders imposing requirements under subsection 197(1) and is accompanied by a registrable description of the property.

- 2.10 Subsection 197(3) of the Act states that a requirement, imposed under subsection 197(1) that is set out in a certificate registered under subsection 197(2) is, from the time of registration, deemed to be directed to each person who subsequently acquires an interest in the real property.
- 2.11 Subsection 197(4) of the Act states that a dealing with real property by a person who is subject to a requirement imposed under subsection 197(1) or 197(3) is voidable at the instance of a person who was not given the copy of the order or decision in accordance with the requirement.

### **Part 3: Background**

- 3.1 The Risk Assessment was undertaken for the Property to establish the risks that the Contaminants identified in the Risk Assessment may pose to future users and to identify appropriate Risk Management Measures to be implemented to ensure that the Property is suitable for the intended use: which is now described as industrial, commercial and community land uses as defined in O. Reg. 153/04.
- 3.2 The Contaminants on, in or under the Property that are present either above Table 3 of the *Soil, Ground water and Sediment Standards for Use under Part XV.1 of the Act published by the Ministry and dated March 9, 2004* or for which there are no such standards, are set out in the Risk Assessment (Contaminants of Concern). The Property Specific Standards for these Contaminants of Concern are set out in Schedule 'A' which is attached to and forms part of the CPU. Also attached to and forming part of the CPU are the Target Levels for Non-Encapsulated Surface Soil as set out in Schedule 'B', the Indoor Air Target Levels as set out in Schedule 'C' and for reference purposes a copy of Drawing #1 entitled "Existing Monitoring Wells and Areas of Impact Relative to Ground water Flow Direction, March 2009, 629/633/675 Eastern Avenue, Toronto, Ontario".
- 3.3 I am of the opinion, for the reasons set out in the Risk Assessment that the Risk Management Measures described therein and outlined in Part 4 of the CPU are necessary to prevent, eliminate or ameliorate an Adverse Effect on the Property.
- 3.4 The Risk Assessment indicates the presence of Contaminants of Concern that include Chlorinated Aliphatic Hydrocarbons, volatile organic compounds, metals, polycyclic aromatic hydrocarbons, and petroleum hydrocarbons which require on-going restriction of land use and pathway elimination. As such, it is necessary to restrict the use of the Property and impose building restrictions as set out in the Risk Assessment and in Part 4 of the CPU.

### **Part 4: Director Requirements**

Pursuant to the authority vested in me under section 168.6(1) of the Act, I hereby require the Owner to do or cause to be done the following:

#### **Risk Management Measures**

- 4.1 Implement, and thereafter maintain or cause to be maintained, the Risk Management Measures.
- 4.2 Without restricting the generality of the foregoing in Item 4.1, carry out or cause to be carried out the following key elements of the Risk Management Measures:
  - (a) The Property shall be covered by a barrier to the site soils designed, installed and maintained so as to prevent exposure to the Contaminants of Concern. The barrier shall

consist of building footprint, concrete, asphalt, paving stones, paving slabs, gravel or a Soil Cap specified below:

- i) A minimum of 1.5 m soil for all areas not covered by a hard surface or a loose hard surface (Soil Cap).
  - ii) Hard surface areas (concrete, asphalt, paving stones, paving slabs) with a granular sub-base of 15 cm or greater.
  - iii) Loose hard surface areas (gravel or stone) of 15 cm or greater.
  - iv) All barriers to site soils shall meet the target levels for non-encapsulated surface soil listed in Schedule 'B' or the Industrial/Commercial/Community Property Use Standards within Table 3 of the Soil, Ground water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act published by the Ministry and dated March 9, 2004.
  - v) The Property is now vacant and not being used and is secured by a fence around the perimeter of the Property. Until the Property is being used or developed, it is not necessary to cover the site soils on the Property with a barrier, provided that exposure to the Contaminants of Concern is prevented by the existing fencing risk management measure or such other risk management measures as may be accepted in writing by the Director .
  - vi) Where use or development commences on portion(s) of the Property, those portions of the Property not under development or in use need not be covered with a barrier, provided that exposure to the Contaminants of Concern is prevented by fencing or other risk management measures as may be accepted in writing by the Director.
- (b) An inspection and maintenance program shall be prepared and implemented to ensure the continuing integrity of the barrier and fence risk management measures. The inspection program shall include semi-annual (spring and fall) inspections of the barrier and fence and any barrier and fence deficiencies shall be repaired forthwith. The inspection results shall be recorded in a log book maintained by the Owner and available upon request by a Provincial Officer.
- (c) The ground water monitoring shall be conducted following the issuance of the CPU during the spring freshet in 2011 and every second year (during the spring freshet) thereafter until such time as the Director, upon application by the Owner, has reviewed the data available and either amends or revokes the CPU:
- i. The following monitoring wells shall be sampled; MW31, MW30, OW23, MW12-01, BH-04-02, BH203, BH98-4, BH98-9, and BH-A as shown on Drawing No. 1.
  - ii. Monitoring wells destroyed during construction or site activities shall be replaced with similarly constructed monitoring wells proximate to the same location as the destroyed monitoring wells.
  - iii. Water from all monitoring wells shall be sampled according to Ministry's Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (MOE, 2004b), and analyzed for CAH in the ground water.
  - iv. The Owner shall keep a copy of all sampling data available for inspection by a Provincial Officer upon request.
  - v. Should there be a reason to change the selected monitoring wells or should a measured ground water concentrations of any of the CAHs exceed the Property Specific Standards at any time, the Owner shall immediately notify the Director in writing.
- (d) Should the measured concentrations of the CAH show that off site migration (other than any migration between 629 and 633/675 Eastern Avenue) of contamination is likely to occur, the Owner shall upon request submit to the Director a report regarding remedial measures to prevent such off site migration which shall be designed by a Qualified

Person. These measures may include, but are not limited to, remediation, installation of a hydrogeological or reactive barrier, or otherwise altering ground water flow patterns. The Director shall as may be appropriate require the implementation of remedial measures by means of an amendment to the CPU.

- (e) Prior to the occupancy of a building on the Property, air monitoring shall be conducted in that building and then during the first year of occupancy monitoring shall continue quarterly (every three months) and thereafter three times a year (spring, summer and winter) until such time as the Director, upon application by the Owner, has reviewed the data available and either amends or revokes the CPU. Application to the Director for cessation of the indoor air monitoring may be made after completion of 2 years of indoor air sampling with concentrations below the indoor air target levels shown in Schedule 'C'. The indoor air monitoring shall be in accordance to EPA Method TO-15 for the VOC compounds listed in Schedule 'C' (indoor air target levels):
- i. Sampling locations shall be identified by an industrial hygienist or other appropriately qualified person to be protective of human health for any persons using or occupying the buildings on the Property.
  - ii. If the indoor air concentrations for the Contaminants of Concern exceeds Schedule 'C' (indoor air target levels), the Owner shall immediately notify the Director in writing of the exceedances.
  - iii. If three sampling events of the air concentrations for the Contaminants of Concern exceed Schedule 'C', then a Qualified Person shall develop a detailed remedial plan within 30 days and it shall be submitted to the Director.
  - iv. Should the measured ground water concentrations of any CAH exceed the Property Specific Standards in Schedule 'A', indoor air sampling as described above shall be resumed, if it has been discontinued, in order to determine whether additional remedial or Risk Management Measures are warranted and thereafter continued until such time as the Director, upon application by the Owner, has reviewed the data available and either amends or revokes the CPU. Application to the Director for cessation of the resumed indoor air monitoring may be made after completion of 2 years of indoor air sampling with concentrations below the indoor air target levels shown in Schedule 'C'.
- (f) A soil management plan shall be prepared and implemented for the Property during any activities potentially in contact with or exposing site soils. The plan shall be submitted to the Director prior to any activities potentially in contact with or exposing site soils and shall include, but not be limited to, provisions for soils excavation, stockpiling, characterization, disposal and record keeping as specified below:
- (i) The plan shall be overseen by a Qualified Person.
  - (ii) Dust control measures and prevention of soil tracking by vehicles and personnel from the Property, including wetting of soil with potable water, reduced speeds for on-site vehicles, tire washing stations and restricting working areas in high wind conditions.
  - (iii) Management of excavated materials including cleaning equipment, placement of materials for stockpiling on designated areas lined and covered with polyethylene sheeting, bermed and fenced to prevent access, runoff control to minimize contact and provisions for discharge to sanitary sewers or other approved treatment.
  - (iv) Characterization of excavated materials to determine if materials exceed the Property Specific Standards and require off-site disposal in accordance with the provisions of O. Reg. 347, as amended, made under the Act. Where excavated materials meets the Property Specific Standards it may be placed on-site below the barrier if deemed suitable by a Qualified Person and a geotechnical engineer.
  - (v) In order to prevent the downward migration of CAH DNAPL, a subsurface excavation (greater than 1.5 depth) within 10 m of the CAH DNAPL area as delineated on Drawing #1 as the estimated extent of DNAPL and as shall be

confirmed by up to date ground water sampling if data are more than two years old must be subject to risk management precautions. Piles should not be driven or other borings made within this area or any other type of activity undertaken that has any potential for breaching the aquitard underlying the DNAPL in this area unless risk management precautions are made to ensure that the downward movement of DNAPL is inhibited. Appropriate measures may involve techniques such as first sealing the area in the vicinity of the boring with concrete before driving piles through this zone.

- (vi) Record keeping including dates and duration of work, weather and site conditions, location and depth of excavation activities, dust control measures, stockpile management and drainage, all materials characterization results, names of the Qualified Person, contractors, haulers and receiving sites for any materials removed from the Property and any complaints received relating to site activities.
- (g) The Owner shall ensure that a health and safety plan which takes into account the presence of the Contaminants of Concern is prepared and implemented prior to any excavation work including the work described in item 4.2 (f) being done on the Property in order to protect workers from exposure to the Contaminants of Concern. The health and safety plan shall be prepared in accordance with applicable Ministry of Labour health and safety regulations, along with all potential risks identified in the Risk Assessment and include, but not limited to, occupational hygiene requirements, personal protective equipment, contingency plans and contact information. Prior to initiation of any project (as defined in the Occupational Health and Safety Act, as amended) on the Property, the local Ministry of Labour office shall be notified of the proposed activities and that the Property contains contaminated soils. The health and safety plan shall be overseen by an appropriately qualified person to review the provisions of the plan with respect to the proposed site work and conduct daily inspections.
- (h) Any new building(s) with any portion of the foundation within ten metres of the CAH impacted area as shown on Drawing #1 as defined by the ground water sampling data that is not older than two (2) years, will include a sub-slab vapour collection system and vapour barrier or other measures designed by a Qualified Person who is a professional engineer to prevent vapour intrusion from the sub-surface. The design shall be submitted to the Director in writing prior to construction and shall be designed to achieve lower levels than the indoor air target levels in Schedule 'C'.
- (i) The Owner shall prepare a site plan prior to any development of the Property which will describe the Property and placement of the barrier and Soil Cap. The site plan will include plan and cross section drawings specifying the vertical and lateral extent of the barrier and Soil Cap for the area(s) to be used or developed and any other risk management measures being utilized at the Property to prevent exposure to the Contaminants of Concern. This site plan shall be submitted to the Director and the Owner shall retain one copy for inspection upon request by a Provincial Officer. The site plan shall be revised and resubmitted to the Director following the completion of any alteration to the extent of the barrier or Soil Cap or the other risk management measures..
- (j) The Owner shall submit to the Director within three months (3) of the completion of any building on the Property, the as-built drawings for any vapour collection system and vapour barrier and any other measures designed by a Qualified Person to prevent vapour intrusion from the sub-surface.
- (k) The Owner shall prepare by March 31 each year, annual reports documenting activities relating to the Risk Management Measures undertaken during the previous calendar year. A copy of this report shall be kept at the Property for inspection and be available upon

request by a Provincial Officer. The report shall include as a minimum the following information:

- (i) A copy of the log of inspections of the barrier and fence risk management measures and any deficiency repairs carried out as a result of the inspections.
  - (ii) A copy of all records relating to the soil management plan.
  - (iii) A copy of all records relating to the health and safety plan.
  - (iv) A copy of all records relating to the air monitoring including, but not limited to the following:
    - a. all laboratory certificates;
    - b. identification of all compounds which have indoor air concentrations which exceed the indoor air target levels set out in Schedule 'C'.
  - (v) A copy of all records relating to the ground water monitoring including, but not limited to the following:
    - a. all laboratory certificates;
    - b. identification of all Contaminants of Concern that exceed the Property Specific Standard set out in Schedule 'A';
    - c. a copy of the hydrogeological report documenting the installation of any monitoring wells on the Property including all borehole logs.
- 4.3 Refrain from using the Property for any of the following use(s): agricultural or other, institutional, residential or parkland land uses as defined in O.Reg. 153/04.
- 4.4 Refrain from constructing the following building(s): building(s) without a vapour barrier designed by a Qualified Person who is a professional engineer to prevent vapour intrusion from the sub-surface.
- 4.5 N/A

#### Site Changes

- 4.6 In the event of a change in the physical site conditions or receptor characteristics at the Property that may affect the Risk Management Measures and/or any underlying basis for the Risk Management Measures, forthwith notify the Director of such changes and the steps taken, to implement, maintain and operate any further Risk Management Measures as are necessary to prevent, eliminate or ameliorate any Adverse Effect that will result from the presence on, in or under the Property or the discharge of any Contaminant of Concern into the natural environment from the Property. An amendment to the CPU will be issued to address the changes set out in the notice received and any further changes that the Director considers necessary in the circumstances.

#### Reports

- 4.7 Retain a copy of any reports required under the CPU, the Risk Assessment and any reports referred to in the Risk Assessment (until otherwise notified by the Director) and within ten (10) days of the Director or a Provincial Officer making a request for a report, provide a copy to the Director or Provincial Officer.

#### Property Requirement

- 4.8 For the reasons set out in the CPU and pursuant to the authority vested in me under subsection 197(1) of the Act, I hereby order you and any other person with an interest in the Property, before dealing with the Property in any way, to give a copy of the CPU, including any amendments thereto, to every person who will acquire an interest in the Property as a result of the dealing.

#### Certificate of Requirement

- 4.9 Within fifteen (15) days from the date of receipt of a certificate of requirement, issued under subsection 197(2) of the Act, register the certificate of requirement on title to the Property in the appropriate land registry office.

- 4.10 Immediately after registration of the certificate of requirement, provide to the Director written verification that the certificate of requirement has been registered on title to the Property.

Owner / Occupant Change

- 4.11 While the CPU is in effect, forthwith report in writing, to the Director any changes of ownership of the Property, except that if the Property is registered under the Condominium Act, no notice need be given of changes in the ownership of individual condominium units or any related common elements on the Property.

Financial Assurance

- 4.12 Within fifteen (15) days of the date of the CPU, the Owner shall provide financial assurance to the Crown in right of Ontario in the amount of one hundred and twenty thousand dollars (\$120,000) in a form satisfactory to the Director and in accordance with Part XII of the Act to cover costs for the performance of all actions required to be carried out under the CPU.
- 4.13 A written report reviewing the financial assurance required by the CPU shall be submitted to the Director annually on or before March 31<sup>st</sup> of each year with an updated cost estimate with respect to the matters dealt with in Item 4.12 above.

**Part 5: General**

- 5.1 The requirements of the CPU are severable. If any requirement of the CPU or the application of any requirement to any circumstance is held invalid, the application of such requirement to other circumstances and the remainder of the CPU shall not be affected thereby.
- 5.2 An application under sub section 168.6(3) of the Act to,  
a) alter any terms and conditions in the CPU or impose new terms and conditions; or  
b) revoke the CPU;  
shall be made in writing to the Director, with reasons for the request.
- 5.3 The Director may amend the CPU under subsections 132(2) or (3) of the Act to change a requirement as to financial assurance, including that the financial assurance may be increased or provided, reduced or released in stages. The total financial assurance required may be reduced from time to time or released by an order issued by the Director under section 134 of the Act upon request and submission of such supporting documentation as required by the Director.
- 5.4 Subsection 186(3) of the Act provides that non-compliance with the requirements of the CPU constitutes an offence.
- 5.5 The requirements of the CPU are minimum requirements only and do not relieve you from,  
a) complying with any other applicable order, statute, regulation, municipal, provincial or federal law; or  
b) obtaining any approvals or consents not specified in the CPU.
- 5.6 Notwithstanding the issuance of the CPU, further requirements may be imposed in accordance with legislation as circumstances require. In particular, the Director shall amend the CPU where the approval or acceptance by the Director is required in respect of a matter under the CPU and the Director does not grant the approval or acceptance or does not grant it in a manner agreed to by the Owner.
- 5.7 In the event that, any person is, in the opinion of the Director, rendered unable to comply with any requirements in the CPU because of,

- a) natural phenomena of an inevitable or irresistible nature, or insurrections,
- b) strikes, lockouts or other labour disturbances,
- c) inability to obtain materials or equipment for reasons beyond your control, or
- d) any other cause whether similar to or different from the foregoing beyond your control,

the requirements shall be adjusted in a manner defined by the Director. To obtain such an adjustment, the Director must be notified immediately of any of the above occurrences, providing details that demonstrate that no practical alternatives are feasible in order to meet the requirements in question.

- 5.8 Failure to comply with a requirement of the CPU by the date specified does not absolve you from compliance with the requirement. The obligation to complete the requirement shall continue each day thereafter.

**Part 6: Hearing before the Environmental Review Tribunal**

- 6.1 Pursuant to section 139 of the Act, you may require a hearing before the Environmental Review Tribunal (the "Tribunal"), if within fifteen (15) days after service on you of a copy of the CPU, you serve written notice upon the Director and the Tribunal.
- 6.2 Pursuant to section 142 of the Act, the notice requiring the hearing must include a statement of the portions of the CPU and the grounds on which you intend to rely at the hearing. Except by leave of the Tribunal, you are not entitled to appeal a portion of the CPU or to rely on a ground, that is not stated in the notice requiring the hearing.
- 6.3 Service of a notice requiring a hearing must be carried out in a manner set out in section 182 of the Act and Ontario Regulation 227/07: *Service of Documents*, made under the Act as they may be amended from time to time. The address, email address and fax numbers of the Director and the Tribunal are:

The Secretary  
Environmental Review Tribunal  
655 Bay Street, Suite 1500  
Toronto, ON, M5G 1E5  
Fax: (416) 314-4506  
Email: ERTTribunalSecretary@ontario.ca

and

Rod Adams, Director  
Ministry of the Environment  
5775 Yonge St., 8<sup>th</sup> Floor  
Toronto, Ontario  
M2M 4J1  
Fax: 416-325-6346  
Email: rod.adams@ontario.ca.

- 6.4 Unless stayed by application to the Tribunal under section 143 of the Act, the CPU is effective from the date of issue.
- 6.5 If you commence an appeal before the Tribunal, under section 47 of the Environmental Bill of Rights, 1993 (the "EBR"), you must give notice to the public in the EBR registry. The notice must include a brief description of the CPU (sufficient to identify it) and a brief description of the grounds of appeal.

The notice must be delivered to the Environmental Commissioner of Ontario who will place it on the EBR registry. The notice must be delivered to the Environmental Commissioner at 605-1075 Bay Street, Toronto, Ontario M5S 2B1 by the earlier of:

6.5.1 two (2) days after the day on which the appeal before the Tribunal was commenced; and

6.5.2 fifteen (15) days after service on you of a copy of the CPU.

6.6 Pursuant to subsection 47(7) of the EBR, the Tribunal may permit any person to participate in the appeal, as a party or otherwise, in order to provide fair and adequate representation of the private and public interests, including governmental interests, involved in the appeal.

6.7 For your information, under section 38 of the EBR, any person resident in Ontario with an interest in the CPU may seek leave to appeal the CPU. Under section 40 of the EBR, the application for leave to appeal must be made to the Tribunal by the earlier of:

6.7.1 fifteen (15) days after the day on which notice of the issuance of the CPU is given in the EBR registry; and

6.7.2 if you appeal, fifteen (15) days after the day on which your notice of appeal is given in the EBR registry.

**Part 7.0: CPU # 0752-732GPM**

7.1 This CPU revokes and replaces CPU # 0752-732GPM

Issued at Toronto this 28<sup>th</sup> day of May, 2010.



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Rod Adams  
Director, section 168.6 of the Act

Schedule 'A'  
Property-Specific Standards  
629 and 633/675 Eastern Avenue, Toronto

Environmental Medium	Contaminants of Concern (COC)	Property Specific Standard (µg/g)
Soil	Aluminum	27,000
Soil	Antimony	212
Soil	Arsenic	143
Soil	Beryllium	10
Soil	Cadmium	21.4
Soil	Calcium	58,000
Soil	Chromium	2,590
Soil	Copper	461
Soil	Iron	400,000
Soil	Lead	17,400
Soil	Magnesium	16,000
Soil	Manganese	11,300
Soil	Nickel	330
Soil	Phosphorus	1,300
Soil	Potassium	5,000
Soil	Sodium	1,400
Soil	Strontium	78
Soil	Sulphur	2,900
Soil	Tin	85
Soil	Titanium	4,800
Soil	Zinc	2,070
Soil	1,1-Dichloroethylene	50
Soil	cis-1,2-Dichloroethylene	2,300
Soil	trans-1,2-Dichloroethylene	50
Soil	Trichloroethylene	12,700
Soil	Vinyl Chloride	60
Soil	Acetone	1,610
Soil	Benzene	180
Soil	Methyl Ethyl Ketone	360
Soil	Benzo(a)pyrene	40
Soil	Benzo(b)fluoranthene	20
Soil	Chrysene	940
Soil	Dibenzo(a,h)anthracene	360
Soil	Fluoranthene	54
Soil	Phenanthrene	61
Soil	PHC F1	3,175
Soil	PHC F2	11,800
Soil	PHC F3	14,500

Schedule 'A'  
Property-Specific Standards  
629 and 633/675 Eastern Avenue, Toronto

<b>Environmental Medium</b>	<b>Contaminants of Concern (COC)</b>	<b>Property Specific Standard (µg/L)</b>
Ground water	Aluminum	519
Ground water	Calcium	320,000
Ground water	Copper	49.3
Ground water	Iron	77,100
Ground water	Magnesium	142,000
Ground water	Manganese	3,740
Ground water	Phosphorus	1,040
Ground water	Potassium	45,000
Ground water	Sodium	1,410,000
Ground water	Silicon	15,200
Ground water	Strontium	1,140
Ground water	Tin	7
Ground water	titanium	45
Ground water	1,1 Dichloroethylene	400
Ground water	cis-1,2-Dichloroethylene	636,000
Ground water	trans-1,2-Dichloroethylene	9,000
Ground water	Trichloroethylene	1,300,000
Ground water	Vinyl Chloride	131,000
Ground water	2-Hexanone	7.6
Ground water	Chloroethane	51
Ground water	Cresol (all isomers)	112

**Schedule "B"**  
**Target Levels for Non-Encapsulated Surface Soil**  
**629 and 633/675 Eastern Avenue, Toronto**

<b>Environmental Medium</b>	<b>Contaminants of Concern (COC)</b>	<b>Target levels (µg/g)</b>
Soil	Aluminum	27,000
Soil	Antimony	40
Soil	Arsenic	40
Soil	Beryllium	10
Soil	Cadmium	12
Soil	Calcium	58,000
Soil	Chromium	750
Soil	Copper	225
Soil	Iron	410
Soil	Lead	1000
Soil	Magnesium	16,000
Soil	Manganese	500
Soil	Nickel	150
Soil	Phosphorus	1200
Soil	Potassium	5,000
Soil	Sodium	910
Soil	Strontium	78
Soil	Sulphur	970
Soil	Tin	50
Soil	Titanium	4,800
Soil	Zinc	600
Soil	1,1-Dichloroethylene	50
Soil	cis-1,2-Dichloroethylene	4.7
Soil	trans-1,2-Dichloroethylene	6.5
Soil	Trichloroethylene	2.9
Soil	Vinyl Chloride	0.41
Soil	Acetone	3.8
Soil	Benzene	5.3
Soil	Methyl Ethyl Ketone	38
Soil	Benzo(a)pyrene	1.9
Soil	Benzo(b)fluoranthene	19
Soil	Chrysene	73
Soil	Dibenzo(a,h)anthracene	2.1
Soil	Fluoranthene	40
Soil	Phenanthrene	40
Soil	PHC F1	330
Soil	PHC F2	760
Soil	PHC F3	1700

**Schedule 'C'**  
**Recommended Indoor Air Target Levels (not standards)**  
**629 and 633/675 Eastern Avenue, Toronto**

<b>Environmental Medium</b>	<b>Contaminants of Concern (COC)</b>	<b>Indoor Air Target Levels (<math>\mu\text{g}/\text{m}^3</math>)</b>
Air	1,1 Dichloroethylene	180
Air	cis-1,2-Dichloroethylene	68
Air	trans-1,2-Dichloroethylene	81
Air	Trichloroethylene	12
Air	Vinyl Chloride	3.5

## **Schedule 1:**

### **UPDATED AND CONSOLIDATED LEGAL DESCRIPTION**

#### **629 EASTERN AVENUE - SURFACE PARCEL**

Part of Lot 5, Plan D81,  
Part of Lot 12, Broken Front Concession and  
Part of the Water Lot in front of  
Lot 12, Broken Front Concession,  
designated as Part 1, Plan 66R19449,  
City of Toronto,  
Land Titles Division of the Toronto Registry Office (No. 66),  
being all of PIN 21053-0076 (LT).

Together with easements as in Instrument Nos. AT609139 and AT609140.

#### **629 EASTERN AVENUE - SUBSURFACE PARCEL**

Part of Lot 5, Plan D81,  
Part of Lot 12, Broken Front Concession and  
Part of the Water Lot in front of  
Lot 12, Broken Front Concession,  
designated as Parts 4 and 7, Plan 66R19449,  
City of Toronto,  
Land Titles Division of the Toronto Registry Office (No. 66),  
being all of PIN 21053-0091 (LT).

Subject to easements as in Instrument Nos. AT609139 and AT609140.

#### **633/675 EASTERN AVENUE - SURFACE PARCEL**

Part of Lots 11 and 12, Broken Front Concession,  
and Part of Water Lot in front of  
Part of Lots 11 and 12, Broken Front Concession,  
designated as Parts 2 and 3, Plan 66R19449,  
City of Toronto,  
Land Titles Division of the Toronto Registry Office (No. 66),  
being all of PIN 21053-0092 (LT).

Together with easements as in Instrument Nos. CA805381, CA805382, CA805402 and  
CA805403, all as confirmed by Instrument No. CA810650.

**633/675 EASTERN AVENUE - SUBSURFACE PARCEL**

Part of Lots 11 and 12, Broken Front Concession,  
and Part of Water Lot in front of  
Part of Lots 11 and 12, Broken Front Concession,  
designated as Parts 5, 6, 8 and 9, Plan 66R19449,  
City of Toronto,  
Land Titles Division of the Toronto Registry Office (No. 66),  
being all of PIN 21053-0093 (LT).

Subject to an easement as in Instrument No. CT208553.

Subject to easements as in Instrument Nos. CA805381, CA805382, CA805402 and  
CA805403, all as confirmed by Instrument No. CA810650.

**REGISTERED OWNERS (All Parcels)**

Rose Eastern Strata Inc. and Eastern Avenue Developments Limited

**BENEFICIAL OWNERS**

**629 and 633/675 Surface Parcels**

Eastern Avenue Developments (629-1) Limited and Bluefield Development Inc., each as  
to an undivided 50% interest

**629 and 633/675 Subsurface Parcels**

Eastern Avenue Developments (629-1) Limited and Brownfield Developments Inc., each  
as to an undivided 50% interest



Appendix G

Downstream Sanitary & Storm Sewer Analyses



March 26, 2015

Mr. Pat Scanga, P.Eng.  
City of Toronto  
Toronto & East York District  
Engineering & Construction Services  
55 John Street, Metro Hall, Stn 1160, 20th Floor  
Toronto ON M5V 3C6

Our ref:13029/1400/(2821619)

Dear Mr Scanga

**RE: City File No.: 13 195390 STE OZ  
Downstream Sanitary and Storm Sewer Analyses  
Proposed Mixed-Use (Retail / Office) Redevelopment  
629, 633 & 675 Eastern Avenue  
StudioCentre Developments Inc.  
City of Toronto - Toronto & East York District**

## **1 Purpose**

GHD Inc (formerly, 'The Sernas Group') has been retained by StudioCentre Developments Inc. to provide professional engineering services related to the preparation of 'Downstream Sanitary / Storm Sewer Analyses' for a proposed mixed-use development to be located on the lands municipally known as 629, 633 & 675 Eastern Avenue, in the City of Toronto – Toronto & East York District.

## **2 Background**

The subject lands included in the proposed development are located on the municipal addresses of 629, 633 & 675 Eastern Avenue, north of Lakeshore Boulevard East and between Carlaw Avenue and Leslie Street, in the City of Toronto – Toronto & East York District. A key plan reflecting the site location has been provided as Figure 1.0 on the following page.

The westerly portion of the site is presently occupied and used by 'Revival' film and television studios. Several buildings occupy this portion of the site, and surfaces are generally paved. The easterly portion of the site, which is presently vacant, was formally occupied by A.R. Clarke Tannery, which manufactured patent leather until 1977. According to old photographs, a large portion within the easterly portion of the site was once covered with several buildings and pavement. Currently, only one building remains with the rest being covered with a mixture of gravel and grass / overgrowth within the easterly portion of the site

The proposed redevelopment will retain most existing buildings on the western portion and will incorporate approximately six (6) new retail and office buildings throughout the rest of the site.



\*Source: Google Maps

**Figure 1 – Site Location**

### **3 Downstream Sanitary Sewer Analysis**

The analysis of the downstream sanitary sewer system was completed in order to check for capacity constraints and determine whether any offsite improvements would be required to accommodate the proposed development. The request for the analysis was made because of the increase in equivalent populations due to the redevelopment that will be taking place in the near future within the subject lands.

The Downstream Sanitary Sewer Analysis was completed for the proposed sanitary sewer network within the site all the way to the existing receiving sanitary sewer leg that connects to the existing 1650mm diameter low level interceptor / sanitary trunk sewer located on Eastern Avenue. It should be noted that the sanitary servicing arrangement for the existing buildings located within 'Revival' portion of the site will remain as is, but will drain to the municipal sanitary infrastructure located on Eastern Avenue via the proposed internal sanitary sewer network. The wastewater contributions from these existing buildings have also been included in our Downstream Sanitary Sewer Analysis.

A sanitary generation rate of 250 litres/person/day for non-residential buildings, and population densities of 1.1 persons /100 m<sup>2</sup> and 3.3 persons/100 m<sup>2</sup> for commercial / retail and office buildings respectively as outlined in the City of Toronto guidelines were utilized in the analysis. The peaking factor used to determine peak sanitary flows was calculated based on Harmon's Equation.

The analysis also included an infiltration allowance of 0.26 litres/second/hectare to account for potential infiltration / inflow during rainfall conditions. However, it should be noted that the proposed sanitary sewers will be installed with water-tight connection as to eliminate / limit infiltration into the proposed sanitary sewer network.

Based on the results of the analysis, it has been determined that all sanitary sewer legs within the concerned system will be operating below capacity in the post-development conditions. The results of the analysis have been included in **Appendix 'A'** at the back of this letter-report.

#### **4 Downstream Storm Sewer Analysis**

The analysis of the downstream storm sewer system was also completed in order to verify capacity constraints and determine whether any offsite improvements would be required to accommodate the proposed development.

The downstream storm sewer analysis for the concerned storm sewer network was completed all the way to the outfall located southerly at Lake Ontario. Maps outlining the contributing areas that constitute the concerned storm sewershed have been included in **Appendix 'B'**.

The Rational Method was used for the calculation of the flows within the pipes. The recommended runoff coefficients from City of Toronto's 'Design Criteria for Sewers and Watermains Manual' were used for the different land uses within the concerned storm sewershed. The analysis was completed for a 2-year storm event, and thus the intensity was calculated accordingly based on the IDF curve equation. An initial time of concentration of 10 minutes was utilized.

Sewer capacities were computed using Manning's Equation, and a roughness coefficient of 0.013 was assigned to all pipes. City record drawings were used to obtain the slope, diameter, and length of the existing sewers. However, where data was missing, assumptions for the slopes were made.

We noted three (3) areas that appear to be serviced for storm drainage by combined sewers and overflow into the concerned storm sewershed. The contributions from combined sewer overflows (CSO's) for these areas were included in the analysis accordingly. Refer to the Maps presented in **Appendix 'B'** for the location of these areas.

Based on the above, the results of the analysis indicated that there is capacity within the existing storm sewers downstream to accommodate the storm runoff from the subject redevelopment site. The results of the analysis have been included in **Appendix 'B'** at the back of this letter-report.

Additionally, it is important to note that post-development storm flows from the site are to be discharged to the existing municipal storm sewer system under a controlled flow regime (which will result in on-site storage). As such, these flows will be attenuated to a level significantly below the 2-year, 5-year, and 100-year pre-development levels currently being conveyed to the municipal storm sewer system from the site. Given the above, the proposed development will constitute an improvement over the existing conditions and will provide a relief for the municipal downstream storm sewer system.

A proposed internal storm sewer network will convey storm runoff from subject redevelopment lands to the existing municipal 1200x1050mm box storm subtrunk sewer located on Lake Shore Boulevard under the post-development scenario. A storm sewer connection with a control manhole at the property line will be required to direct storm flows from the internal storm sewer network to the aforementioned Lake Shore storm subtrunk.

## 5 Conclusion

Based on the above, it is our opinion that the existing sanitary and storm sewer infrastructure can accommodate the proposed development with minimal impact to the sanitary and storm sewers.

Therefore, no additional off-site improvements would be required to accommodate the proposed development.

Should you have any questions or concerns, please do not hesitate to contact our office.

Sincerely  
GHD

**John Lopez, P.Eng.**

Design Engineer  
905 752 4382

**Rick Tranquada, P.Eng., M.B.A.**

Project Director & Senior Advisor  
905 752 4378

JL/lm/jlm

cc City of Toronto (Toronto & East York District); Attn: Mr Nhat-Anh Nguyen, Manager – Engineering & Construction Services

# Appendices

# Appendix A

Downstream Sanitary Sewer Analysis (Post-Development Conditions)

Sanitary Sewer Network Key Plan

**629-675 EASTERN AVENUE  
POST-DEVELOPMENT CONDITIONS  
DOWNSTREAM SANITARY SEWER ANALYSIS**

A = area ha  
p = person / A site  
P = population = sum p A site  
 $M = 1 + (14)/(4 + \sqrt{P/10^3})$   
q = 240 l/person/day (Residential)

q = 250 l/person/day (Commercial/Industrial)  
Pflow = M q P / 86400 = population flow l/s  
Infiltration (I) = 0.26 x A gross l/s  
Q TOTAL = P flow + I flow  
Designed by LM Checked by RS

Design Sheet N° \_\_\_\_\_  
Assess. Sheet N° \_\_\_\_\_  
Subdiv. File N° \_\_\_\_\_  
Date \_\_\_\_\_

STREET	MANHOLE		LENGTH (m)	INCREMENT			POPULATION P	M	P FLOW l/s	A GROSS ha	I l/s	Q TOTAL l/s	S %	D (mm)	TYPE OF PIPE	Q FULL (L/s)	Velocity Full (m/s)	SEWER CAP. (%)	ACTUAL VELOCITY v (m/s)	CAPACITY
	TO	FROM		p	A SITE ha	A SITE p														
<i>Contribution from Prop. Bldg 07 (Office Bldg)</i>	1A	2A	150.0	0.79	1532	1532	3.70	16.4	0.79	0.2	16.6	0.50	250	CONC.	43.9	0.87	37.8%		BELOW CAP.	
<i>Contribution from Prop. Bldg 06 (Retail &amp; Hotel Bldg)</i>		2A		0.40	128	128			0.40											
	2A	3A	60.0	0.05	0	1660	3.60	17.3	1.24	0.3	17.6	0.50	250	CONC.	43.9	0.87	40.1%		BELOW CAP.	
<i>Contribution from Prop. Bldg 05 (Retail Bldg)</i>	3A	4A	83.0	0.52	57	1717	3.60	17.9	1.76	0.5	18.4	0.50	250	CONC.	43.9	0.87	41.9%		BELOW CAP.	
	4A	5A	44.0	0.06	0	1717	3.60	17.9	1.81	0.5	18.4	0.50	250	CONC.	43.9	0.87	41.9%		BELOW CAP.	
	5A	6A	74.5	0.07	0	1717	3.60	17.9	1.89	0.5	18.4	0.50	250	CONC.	43.9	0.87	41.9%		BELOW CAP.	
<i>Contribution from Prop. Bldg 01 (Retail &amp; Office Bldg)</i>	7A	6A	73.0	0.32	626	626	3.90	7.1	0.32	0.1	7.2	0.50	250	CONC.	43.9	0.87	16.3%		BELOW CAP.	
<i>Contribution from prop. Bldg 03 &amp; Prop. Bldg 04 (Retail &amp; Office Bldgs)</i>	6A	8A	85.0	0.94	345	2688	3.50	27.2	3.14	0.8	28.0	0.50	250	CONC.	43.9	0.87	63.9%		BELOW CAP.	
<b>Eastern Ave @ Caroline Ave - Trunk Connection</b>	17A	TRUNK	3.0	0.03	0	2688	3.50	27.2	3.17	0.8	28.0	17.00	250	CONC.	255.8	5.05	11.0%		BELOW CAP.	

# Appendix B

Downstream Storm Sewer Analysis (Post-Development Conditions)

Storm Drainage Area Maps

Q = 2.78 X A X C X I / 1000  
 C = RUNOFF COEFFICIENT  
 2 YEAR RAINFALL INTENSITY = 21.8 I^0.78  
 A = AREA (Hectares)

**TORONTO & EAST YORK DISTRICT**  
 TECHNICAL SERVICES  
 629 - 675 EASTERN AVENUE  
**DOWNSTREAM STORM SEWER ANALYSIS**

DESIGN SHEET NO. \_\_\_\_\_  
 ASSESS SHEET NO. \_\_\_\_\_  
 SUBDIV. FILE NO. \_\_\_\_\_

DATE March 31, 2015

STREET	MANHOLE		INCREMENT					TOTAL CA	FLOW TIME (min)		I (mm/hr)	TOTAL Q (l/s)	LENGTH (m)	SLOPE S%	D (mm)	TYPE OF PIPE	ROUGH. COEFF.	Q FULL (l/s)	V FULL (m/s)	CAPACITY	Notes
	TO	FROM	C	A (ha)	C	A (ha)	CA		TO SECTION	IN SECTION											
Caroline Avenue	EX MH1	EX MH2	0.75	0.95			0.71	0.71	10.00	1.20	88.19	174	140.0	1.50	375	CONC	0.013	215	1.94	81.13	
Caroline Avenue	EX MH2	EX MH3	0.75	1.01			0.75	1.47	11.20	0.78	80.73	329	129.0	3.00	375	CONC	0.013	304	2.75	108.20	
Caroline Avenue	EX MH3	EX MH4	0.75	0.05			0.04	1.50	11.98	0.12	76.59	319	20.2	3.00	375	CONC	0.013	304	2.75	105.13	
Caroline Ave @ Eastern Ave	EX MH4	EX MH5					0.00	1.50	12.10	0.05	75.98	317	6.8	1.41	450	CONC	0.013	339	2.13	93.56	
Eastern Avenue	EX MH5	EX MH6	0.80	0.30			0.24	1.74	12.16	0.21	75.72	366	10.1	0.20	450	CONC	0.013	128	0.80	286.75	
Eastern Avenue	EX MH6	EX MH7	0.80	0.32			0.26	2.00	12.37	1.20	74.72	415	82.8	0.21	750	CONC	0.013	510	1.15	81.29	
Eastern Avenue	EX MH7	EX MH8	0.80	0.78			0.62	2.62	13.56	1.77	69.53	506	122.8	0.21	750	CONC	0.013	510	1.15	99.12	
TOTAL INPUT FROM UPSTREAM AREAS LOCATED NORTH OF THE SITE BETWEEN CAROLINE AVE AND CARLAW AVE		@ EX MH8	0.80	5.92			4.73	4.73													
Easement @ Eastern Avenue	EX MH8	EX MH9					0.00	6.73	13.56	0.08	69.53	1301	10.2	0.50	1050	CONC	0.013	1931	2.23	67.35	
Easement	EX MH9	EX MH10					0.00	6.73	13.64	0.79	69.23	1295	105.7	0.50	1050	CONC	0.013	1931	2.23	67.06	
Easement	EX MH10	EX MH11	0.90	2.44			2.20	8.93	14.43	0.75	66.25	1644	100.0	0.50	1050	CONC	0.013	1931	2.23	85.15	
Easement	EX MH11	EX MH12					0.00	8.93	15.18	0.68	63.69	1581	91.4	0.50	1050	CONC	0.013	1931	2.23	81.86	
Easement	EX MH12	EX MH13					0.00	8.93	15.86	0.12	61.54	1527	16.3	0.50	1050	CONC	0.013	1931	2.23	79.09	
Lakeshore Blvd East	EX MH19	EX MH18	0.75	0.33			0.25	0.25	10.00	0.54	88.19	61	64.4	1.00	525	CONC	0.013	430	1.99	14.29	
Lakeshore Blvd East	EX MH18	EX MH17	0.75	0.31			0.23	0.48	10.54	0.69	84.64	113	58.3	0.50	525	CONC	0.013	304	1.40	37.09	Assumed slope; Slope to be further confirmed in the field
Lakeshore Blvd East	EX MH17	EX MH16	0.75	0.38			0.28	0.76	11.23	0.73	80.55	170	73.2	0.50	675	CONC	0.013	594	1.66	28.67	Assumed slope; Slope to be further confirmed in the field
Lakeshore Blvd East	EX MH16	EX MH15	0.75	0.24			0.18	0.94	11.97	0.43	76.67	201	46.3	0.50	750	CONC	0.013	787	1.78	25.48	Assumed slope; Slope to be further confirmed in the field
Lakeshore Blvd East	EX MH15	EX MH14	0.75	0.17			0.13	1.07	12.40	0.31	74.57	222	37.6	0.50	900	CONC	0.013	1280	2.01	17.33	Assumed slope; Slope to be further confirmed in the field
Easement @ Lakeshore Blvd E	EX MH14	EX MH13					0.00	1.07	12.71	0.04	73.14	218	4.5	0.50	900	CONC	0.013	1280	2.01	16.99	Assumed slope; Slope to be further confirmed in the field
<b>@ Lakeshore Blvd E</b>	<b>PROP MH1</b>	<b>EX MH13</b>										<b>617</b>	<b>70.0</b>	<b>0.50</b>	<b>750</b>	<b>CONC</b>	<b>0.013</b>	<b>787</b>	<b>1.78</b>	<b>78.42</b>	<b>Incl. controlled storm flows of 617.3 l/s from the site</b>
Lakeshore Blvd E	EX MH13	EX MH20	0.75	0.29			0.22	10.22	15.98	0.52	61.18	2355	90.4	0.70	1200	CONC	0.013	3262	2.88	72.19	Actual size of pipe is 1200x1050mm box, as such an equivalent round pipe of 1200mm diameter was used in-lieu of. Assumed slope; Slope to be further confirmed in the field
Lakeshore Blvd E	EX MH20	EX MH21	0.75	0.28			0.21	10.43	16.50	0.52	59.66	2347	90.2	0.70	1200	CONC	0.013	3262	2.88	71.94	Actual size of pipe is 1200x1050mm box, as such an equivalent round pipe of 1200mm diameter was used in-lieu of. Assumed slope; Slope to be further confirmed in the field
Lakeshore Blvd E	EX MH21	EX MH22					0.00	10.43	17.02	0.18	58.23	2305	31.4	0.70	1200	CONC	0.013	3262	2.88	70.67	Actual size of pipe is 1200x1050mm box, as such an equivalent round pipe of 1200mm diameter was used in-lieu of. Assumed slope; Slope to be further confirmed in the field
Lakeshore Blvd E @ Carlaw Ave (receives flows from upstream areas along Carlaw Ave and Logan Ave)		@ EX MH22	0.75	44.66			33.49	33.49													
Carlaw Ave to Outfall	EX MH22	OUTFALL	0.80	3.55			2.84	46.76	17.21	1.56	57.75	8120	361.4	0.50	2400	CONC	0.013	17505	3.87	46.39	Actual size of pipe is 2550x1800mm box, as such an equivalent round pipe of 2400mm diameter was used in-lieu of. Assumed slope; Slope to be further confirmed in the field

NOTE: There is capacity in the downstream storm sewer system to accommodate the flows from the proposed development.

Appendix H  
TRCA Floodplain Analysis & Risk Management Brief



November 25, 2014

Ms Ornella Richichi  
StudioCentre Developments Inc.  
c/o SmartCentres  
700 Applewood Crescent  
Suite 100  
Vaughan ON L4K 5X3

Our ref: 13029 (2821333)

Dear Ms Richichi

**RE: StudioCentre Developments Inc.  
Brief on engineering issues related to risk change for site under proposed rezoning**

Pursuant to the request of the TRCA and City of Toronto we have prepared this outline brief on the engineering issues related to the risk change associated with the proposed rezoning of the site.

## **1. Purpose**

The site is situated in the floodplain of the Don River watershed. Under current conditions, based on modelling prepared by the TRCA, during the regional storm event, the site would flood to the range of elevations 77.64m to 77.69m. Generally this would entail flooding on site in the range of 1 metre. The site is located in the Special Policy Area (SPA) for the Don River watershed. Development is allowed, provided the buildings are flood proofed to 0.3 m above the regional floodline. The development proposal has addressed this requirement and the proposed site development plan sets building finished floor levels at elevation 78.00 m which marginally exceeds the minimum.

During the regional storm there is also flooding of the flanking roadways: Eastern Ave., in the north, and Lakeshore Blvd., to the south. The paved section of Eastern Ave. ranges in elevation along the frontage from approximately elevation 76.0m to 76.9m. Lakeshore Blvd ranges in elevation along the frontage from elevation 76.5m to 77.3m. Flooding of the flanking roads therefore is in the range of 0.4m to 1.7 m depending on the location.

The TRCA, have reviewed the development proposal and analysed the impact of raising the site above the regional flood line and possible impacts to adjacent lands. They have, as set out in their correspondence of Nov. 11, 2013 (copy attached) concluded that the development of the site will not result in increases in water levels on other properties.

Recently the TRCA have undertaken updated watercourse modelling for the Don River. They have provided attachment A which sets out the flood lines for the 1:350 year storm event. Flooding occurs along Lakeshore Blvd. however, neither the site nor Eastern Ave. are impacted by the 1:350 year event. At some storm event between the 1:350 year event and the regional storm, both the site and Eastern Ave. are impacted. The available modelling does not identify the precise storm event during which the site floods.

The TRCA and City of Toronto have recently concluded the Environment Assessment (EA) for the Don Mouth Naturalization and Port Lands Flood protection project. The EA identifies various phases of improvements to the Don River to remove the flood impact from the adjacent lands.

Under Phase 1 of the proposed works, the Cherry St. bridge abutments are to be reconstructed to remove a bottleneck in the watercourse. Under Phase 2 the lands adjacent to the Don River from Lakeshore Blvd. south are raised and the river contained. At Phase 2 the regional storm event will no longer impact the site or the adjacent roadways. The project is not funded at the present time.

The key conclusions are:

- The site is currently impacted by the regional storm but under the provisions of the SPA can be developed provided the buildings are flood-proofed;
- In the interim, flooding occurs somewhere between the 1:350 year and regional storm events;
- In the longer term, the site and adjacent roads will be removed from the flood zone of the Don River.

## 2. Land Use Change

Under the development application for the site, a rezoning is requested to permit a wider range of uses. The current approved Official Plan land use designation is Employment Area, which permits a range of office, warehousing and manufacturing uses as well as hotels and retail uses. The site is zoned Industrial (I2 D5), which permits a range of manufacturing, warehouse, workshops, and studios, and limited retail and service uses. The rezoning would allow for proposed office, hotel and retail uses in conformity with the Official Plan, but currently not encompassed in the I2 D5 zoning.

Bousfields Inc. have prepared an evaluation of the change in risk for the proposed land use change, dated November 13, 2014 (copy attached).

## 3. Engineering Risk Evaluation

Per the discussions with the City and TRCA, an evaluation of the engineering risk associated with the proposed development application encompassing the rezoning is required.

The scope of the evaluation would, in our discussions with the agencies, encompass the issues set out in the following:

1. Flood-proofing of the project and impact on the adjacent lands and floodplain;

As outlined above, the proposed development will have building floor levels set a minimum 0.3 m above the current regional flood line. The raising of the site has been evaluated by the TRCA and it has been confirmed that the development of the site will not result in increases in water levels on other properties.

2. Frequency of the potential risk event;

The current potential for flooding of the site is somewhere between the 1:350 year and regional storm events. The possibility of this occurring in the near term has an extremely low probability. The following chart outlines the risk potential for the 1:350 and 1:500 storm events. In any given year, there is less than 0.2% chance of the storm event occurring. In a 5 year period, there is less than 0.99 % chance.

Time Frame	Probability of occurring within the time frame (per cent)				
	1 year	5 years	10 years	350 years	500 years
1:350 year storm event	0.20	0.99	1.96	50	N.A.
1:500 year storm event	0.14	0.69	1.38	38.44	50

The implementation works identified in the EA for the Don Mouth Channelization will be undertaken at some point probably in the near term. Further, the flood plain mapping methodology is a conservative evaluation requiring the modelling to assume no upstream containment at culverts and bridges – an unrestricted flow creating the highest possible level of flow. The modelling scenario may actually overestimate the potential for flooding in the regional storm. All things considered, a flood situation has an extremely low probability of occurring based on the probability of the event and the conservative nature of the modelling.

3. Change in land use that would create a significantly higher risk to the City and TRCA;

The SPA designation allows for development in accordance with the current land use designation. The proposed development will be flood-proofed to 0.3 m above the regional flood line. Accordingly, for storms up to the regional storm event there is no possibility of flooding of the new buildings. The TRCA analysis as stated in their November 11, 2013 memorandum, found that site grading will not result in increases in water levels on other properties. The remaining risk, as discussed with the City and TRCA in consultation of the application, is the possibility of having people stranded during a major event. The question posed is whether there is a significant change in this type of risk for the proposed change in zoning. In terms of safety, for employment use, there does not appear to be any significant difference between the proposal and current permitted land use. Specifically, there would be no change whether someone is working in a warehouse or studio versus working in an office or retail space. However, the TRCA and City have identified the hotel use might incur some additional exposure, as a hotel would provide overnight accommodation, and requested this matter be examined.

4. Emergency Access during flood events;

In the regional flood scenario, emergency access to the site would be hindered by the high water levels on the boundary roads of both Eastern Ave. and Lakeshore Blvd. Typically emergency access can be facilitated through a flood zone where flood levels are 0.3m or less and velocity flow is less than 0.5 m/sec. As we understand, the City Emergency Services has no specific standard on this matter, so we have stated the generally accepted principle for emergency access on major arterial roads. The regional storm, as modelled, would see water levels in the range 0.4. to 1.7 m on adjacent roadways, mitigated somewhat as this is a spill situation, with likely slower velocities than 0.5 m/sec. The flow velocity is not available but the potential surrounding water would be overspill water from the Don River and not a flowing waterway.

The type of storm that would lead to a possible flooding of the area is so severe that it would be preceded by weather forecasts of either Extreme Storm Warning or in the case of the regional storm, such as Hurricane Hazel, an extended period of tracking a tropical storm as it travels up the continent. The risk of unwittingly being on the site, engaged in employment activities, during an event is unlikely as people will either not go to work, leave early, or in the case of retail, stay home.

In the case of the hotel, again, there would be considerable warning of a pending event. The existing residential lands to the north pose a huge risk to property and people. That risk is not related to this development but is inherent. With the considerable lead time and impending danger to that residential area an evacuation notice would be prudent. The operator of the hotel would also be aware of the potential risk in the area, and would certainly advise clientele. The risk to the hotel is not to property or person but the potential to be isolated from emergency vehicles. Unlike residential properties, occupants of the hotel can leave early or choose different lodging in anticipation of the event.

Due to the low probability of a flood event in the time horizon that the project could be exposed, and the ability to protect against the possibility of being stranded without access, the change in risk associated with the land use proposal appears to be minimal.

#### 4. Conclusion

- By adhering to the flood protection requirements for the regional storm event, as set out in the Special Policy Area criteria, flood proofing addresses the risk to property and person in the development proposal; there is no impact on adjacent property;
- For the Intended employment land use, other than hotel, whether allowed under current zoning, or as changed per the development proposal, there is no change to potential inherent risk for emergency access;
- For the proposed hotel use, due to the very low probability of an isolating event, the fact that the exposure is short term, and the ability to protect against isolation from emergency access during an event, there is a very low risk exposure; the likely advance notice would greatly mitigate any risk;
- As set out in the Bousfields Inc memorandum of November 13, 2014, the elimination of the tannery land use, examined from a planning perspective, finds there is a reduction in potential contamination and therefore risk;

Please do not hesitate to contact our office should you have any questions or concerns regarding this assessment.

Sincerely  
GHD Inc.



**Rick Tranquada, M.B.A., P.Eng.**  
Senior Advisor and Project Director  
905 752 4378

RFT/en

## Attachment A

Flood levels of the Don River watershed in the 1:350 year storm event as provided by the TRCA September 2014 based on 2014 modelling. Figure shows depth of flow.





# BOUSFIELDS INC.

## MEMORANDUM

To: Ornella Richichi  
Rick Tranquada

Project No.: 06120-2

From: Michael Bissett

Date: November 13, 2014

**Re: StudioCentre Developments Inc.  
629, 633 and 675 Eastern Avenue  
Risk Assessment - Review of Current Permitted Industrial Uses**

---

The risk assessment letter prepared by Rick Tranquada of GHD, dated November 13, 2014, addresses the engineering of the site to prevent flooding and the risks associated with ingress and egress under the pre-development and post-development scenarios. The GHD letter concludes that the increased risk associated with a hotel use is minimal.

As a further assessment of risk, TRCA has requested that an evaluation be undertaken of the potential for groundwater/stormwater contamination under the current zoning permissions as compared to the proposed land use permissions. In this regard, the site is subject to a site-specific permission 12(1)160 of By-law 438-86, which permits a tannery on the property (see Attachment "A"). It is our understanding that a tannery use may present significant risk of contamination of either the groundwater or stormwater system. In this regard, we have been provided with the following opinion from Conestoga Rovers & Associates, the environmental consultant retained by StudioCentre Developments Inc.:

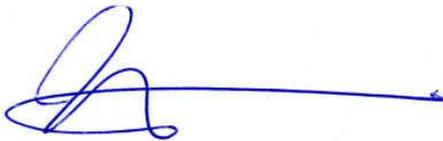
*Conestoga-Rovers & Associates (CRA) was requested to provide a comparison of the potential environmental impacts associated with a tannery operation, and that of the proposed office/retail and hotel uses for the Eastern Avenue site. CRA understands this opinion will be used to assess the potential environmental benefit of removing the currently allowed tannery use on the site, in favour of the office/retail and hotel use. Probably the most direct comparison of the potential environmental impacts associated with the two land uses can be found in Ontario Regulation 153/04, as amended (Reg 153/04). Reg 153/04 provides a detailed list of Potentially Contaminating Activities (PCAs) that the Ministry of the Environment and Climate Change (MOECC) has determined to be of concern. Tannery operations are directly identified as a PCA (No. 53). In addition numerous other activities that are associated with tannery operations are listed a PCAs, including; Chemical Bulk Storage, Dye Bulk Storage, Gasoline and Associated Product Storage and Use, Pesticide Bulk Storage, Salt Bulk Storage, and Solvent Bulk Storage. Office/retail and hotel uses do not involve any PCAs listed in Reg 153/04.*

The draft zoning by-law relating to the proposed development can be crafted to remove the tannery permission and thereby remove the potential for contamination associated with a tannery use described in detail by CRA above.

By removing the tannery use permission and adding permissions for office, retail, recreation, entertainment and hotel uses, it is our opinion that the potential for industrial accidents resulting in contamination of ground water or stormwater would be reduced.

Yours truly,

**Bousfields Inc.**



Michael Bissett, MCIP RPP

November 11, 2013

**BY E-MAIL ONLY** (e-mail address)

GHD  
11 Allstate Parkway, Suite 310  
Markham, ON  
L3R 9T8

Dear Mr. Tranquada.:

**Re: Studio Centre – 675 Eastern Avenue  
Preliminary Hydraulic Modelling**

Toronto and Region Conservation Authority (TRCA) received the survey for the above noted project on October 16, 2013. Staff has completed the modelling exercise and provides the following:

As per the original proposal, the following modelling was completed:

1. Update of existing conditions modelling based on the site based topographic information provided by the proponent on October 16, 2013. The survey was completed by Holding Jones Vanderveen Inc. on January 12, 2007.
2. A proposed conditions model that assumes the most conservative condition for the site. From a modelling perspective, this assumes that site would remain entirely dry during the Regional Flood event. The model does not require the specifics on how this would occur to be specified.

The two models were compared to determine the relative difference in water levels at the peak of the Regional storm event. **The results of the modelling exercise have indicated that the development of the site will not result in increases in water levels on other properties** (within the accepted tolerances of the model). The existing flood depths have been shown in the figure attached.

While the planning process will dictate the detailed site configuration and the acceptability of the proposed land uses within the Special Policy Area, the modelling has assumed that the most conservative configuration (in modelling for offsite impacts), which assumes 100% coverage or flood proofing of the site. While it is expected that several iterations of the site configuration may be considered, it is not necessary to model each configuration throughout the design process, as each option will not result in a worse condition than the proposed case modelled.

When the development grading and servicing plan is finalized, an as built plan (in CAD format) will need to be provided to TRCA in order to officially update the existing conditions modelling for the area.

Please note that this letter is related only to the hydraulic conditions that exists for the site, and is not meant to be an approval of any development on this site. Further review is required by TRCA in order to issue any permits and/or approvals for this location. Steve Heuchert should be contacted directly for further information on this issue.

November 11, 2013

Should you have any questions, or require any additional information, please contact me at extension 5220 or at [rgrech@trca.on.ca](mailto:rgrech@trca.on.ca).

Yours truly,

**Rob Grech**  
Water Resources Engineer

/

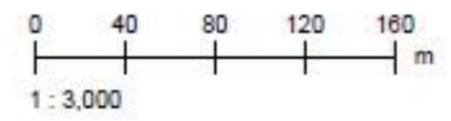
**BY E-MAIL**

cc: Kyle Knoeck, Manager, City Planning, City of Toronto (kknoeck@toronto.ca)  
TRCA: Steve Heuchert, Senior Manager, Planning and Development  
Sameer Dhalla, Senior Manager, Water Resources

F:\Home\Public\Ecology Division\Engineering WR\1Plan Review\Toronto\Dev Apps\Don\CFN- XXX 629-675 Eastern Ave\Studiocentrefloodresults-Nov13-Rg.Docx

# 629-675 Eastern Ave - Existing Flood Depths (m)

Created on: 11/05/2013 09:20:50  
**MAPWINDOW**



Site Extents - 675 Eastern

Water Depth - Regional - EC w 675 Eastern Topo

Categories

- 0 - 0.05
- 0.05 - 0.5
- 0.5 - 1.0
- 1.0 - 1.5
- 1.5 - 3.0
- 3.0 - 5.0
- 5.0 - 13

© 2009 Aerial Imago

\*Note that unlabeled locations in flood depths may be a result of modelled building locations

GHD

11 Allstate Parkway Suite 310  
Markham ON L3R 9T8  
T:905 752 4300 F: 905 752 4301 E: ytomail@ghd.com

GHD Inc.

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Document Status

Rev No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
1	L. MATOS J. LOPEZ			RF ROSSINI	[Signature]	March 26, 2015

[www.ghd.com](http://www.ghd.com)

