On The Park Residential Redevelopment

SITE SERVICING AND STAGE 1 STORMWATER MANAGEMENT REPORT

City of Toronto

FINAL

Prepared for IOTP Development Inc.

January 2015

RVA #142950

R.V. Anderson Associates Limited
engineering · environment · infrastructure
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January 16, 2015

ON THE PARK RESIDENTIAL REDEVELOPMENT

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APPENDICES

1.0 INTRODUCTION

Deltera Inc. is proposing a high-rise condominium redevelopment of the former Inn on the Park hotel site generally located at the north east corner of Leslie Street and Eglinton Avenue in the City of Toronto.

R.V. Anderson Associates Limited (RVA) has been retained to prepare a site servicing and Stage 1 Stormwater Management report in support of a zoning amendment application and draft plan of subdivisions for the proposed site redevelopment. The scope of this report specifically includes:

- identification and review of existing municipal storm, sanitary and water services available for the site;
- identification of the City of Toronto criteria with respect to sanitary, water and storm servicing including stormwater management;
- Calculation of sanitary, water and storm demands from the proposed redevelopment;
- investigate the capacity of existing municipal water and sanitary sewer mains;
- identify preliminary servicing for the site and proposed municipal roadway with water, sanitary and storm services; and
- Identify a concept stormwater management plan approach to meet the City's Wet Weather Flow Master Plan Guideline targets.

2.0 BACKGROUND

2.1 Site Location and Existing Condition

The proposed redevelopment site has the current municipal addresses of 1087, 1091 and 1095 Leslie Street. As previously mentioned, the site is the former Inn on the Park hotel Site, located at the north-east corner of Leslie Street and Eglinton Ave in the City of Toronto. Refer to Figure 1 for the site location.

Adjacent to the north of the site is high-rise residential condominium complex and along the east property line is a CPR railway track. Across from the site on the west side of Leslie Street is the Wilket Creek Park and valley lands.

The overall Inn on the Park Site is approximately 4.81 ha in size and extends from an aboveground parking garage at the north east corner to Eglinton Avenue at the south end. The south portion of the overall site is approximately 2.16 ha in size and was redeveloped and leased out as a Toyota/Lexus automobile dealership in 2007. Although the dealership site will be impacted by the proposed condominium development, it is intended to maintain the use and operation of the dealership throughout the construction of the redevelopment.

The north portion of the site, excluding the parking garage, is approximately 2.16 ha in size, and housed the remaining portions of the Inn on the Park hotel buildings, which were used as banquet hall facilities until recently. These buildings are now in the process of being demolished in preparation for the site redevelopment.

Access to automobile dealership is provided by a driveway onto Leslie Street located approximately 75 m north of Eglinton Avenue. A second access driveway to the dealership is provided via a private roadway through the existing adjacent condominium complex to the north, continuing through the subject redevelopment lands and into the dealership.

The parking garage located at the north east limit of the site, between the CPN railway and the existing condominium complex is approximately 0.49 ha in size and is currently used by the automobile dealership for storage of cars. Following the subdivision of the overall property for the purpose of the redevelopment, the parking garage will remain a part of the automobile dealership lands, connected by a narrow strip approximately 6.0m wide located along the east

limit of property. During the construction of the redevelopment, this strip of property will serve as access from the garage to dealership in a similar manner as it is today.

Figure 1 – Site Location

2.2 Proposed Redevelopment

The proposal residential redevelopment is generally comprised of a new municipal roadway with turning circle and a residential condominium complex consisting of 4 high-rise towers and 3 storey townhouses, totaling approximately 1400 units. The condominium complex will be divided into two property blocks, each with two condominium towers.

The above ground condominiums in each block will sit atop a single interconnected parking structure with joint uses. In turn, the underground parking structures for each of the two condominium blocks will also be interconnected to allow flexibility in the use of the overall 2 block, 4 condominium complex. The condominium tower which fronts onto Leslie Street will have at ground level commercial/retail use. In addition, the ground levels of all the condominiums are envisioned to contain townhouse style units.

The new municipal roadway will be aligned in a south-easterly direction from Leslie Street, terminating in a turning circle approximately 65 m from the east limit of the site.

An internal private roadway will “jog” through the site from the turning circle, connecting to the existing internal roadway within the condominiums to the north. This will effectively replace the function of the existing private north-south road and provide access to the entrance lobbies of the individual condominiums.

When completed, the new municipal roadway will also provide a driveway access for the automobile dealership to the south.

As indicated previously, the existing above ground parking garage at the north end of the site will remain in use throughout and following the redevelopment, as a part of the dealership property. Access to the parking garage is currently gained through a paved access along the east property limit, which will remain part of the dealership property, and a private access road along the north limit of the redevelopment property. Although this north limit private road will be contained within the residential redevelopment blocks, its form and function will remain. It is noted that this private road is used for access by the existing condominium to the north and as such, easements in favour of this condominium are in place.

Throughout the servicing related sections of this report the existing automobile dealership and the associated above ground parking garage are referred to as “uses to remain”.

The new municipal roadway alignment will facilitate a possible future extension of the roadway from the turning circle under the railway and into the lands to the east.

Refer to Appendix A for the proposed redevelopment Site Plan.

2.3 Resource Information

In preparing this report, the following information was obtained and reviewed:

- Hydrant Flow Tests completed by Jackson Waterworks in October of 2014.
- Site Servicing and Grading Drawings for the Toyota/Lexus Dealership site.
- Site Servicing and Grading Drawings for the condominium development to the north

- Plan and Profile Drawings obtained from the City of Toronto:
- Leslie Street Sanitary Plan and Profile, 2013
- Eglinton Avenue Watermain Plan and Profile, 1966
- Service Connection Cards obtained from the City of Toronto.
- Storm sewer design sheets and storm drainage mapping for Leslie Street, obtained from the City of Toronto
- Subsurface Utility Engineering performed by T2 in summer of 2014, related to the downstream storm sewer system
- Sewer and watermain network atlas drawings obtained from the City of Toronto.
- Topographical Survey Prepared by Pastushak Limited, dated October 21, 2014.
- Multiple site visits undertaken during the summer of 2014. Site visits included a general examination and photographs of the property to observe surface features that are representative of underground servicing, current surface drainage and to gather additional relevant information.

3.0 SITE GRADING

3.1 Existing Grading

The current redevelopment site lies elevated relative to Leslie Street by approximately 3 m at the north end of the site and approximately 6 m at the location of the proposed municipal road. This differential in elevation is facilitated by a steep slope within the Leslie Street boulevard, with the top of slope roughly located at the property line. The site generally relates in elevation to the existing condominiums adjacent to the north, the CPR railway line to the east and the automotive dealership to the south. The existing redevelopment site gently slopes to the southwest, where similar gentle sloping continues through the dealership to where it transitions into a steeper slope at the front face of the dealership buildings down towards Leslie Street and Eglinton Avenue.

3.2 Proposed Conditions

As a result of the existing grading condition, the new municipal roadway must cut into the slope and climb steeply from Leslie Street to reach an accessible elevation to the existing automobile dealership. The proposed vertical alignment for the new municipal (refer to Figure 2) road is generally based on a limiting the gradient to a maximum of between 5% and 6% and reducing flattening out the gradient at turning circle.

Figure 2 also illustrates that a potential future extension of the roadway with an underpass beneath the CPR railway is achievable.

The proposed condominium buildings will be designed to accommodate the relatively steep road gradient and will take advantage of opportunities to provide direct driveway access into a below building parking level. Ground level townhouse units will be designed to step up with gradient of the new municipal road. Townhouses that front onto Leslie street will also be designed to relate to the existing boulevard slope so that there is a gradual transition from a fully cut down of the slope at the new municipal roadway location, to the full height of the existing slope at the north end of the Leslie Street frontage.

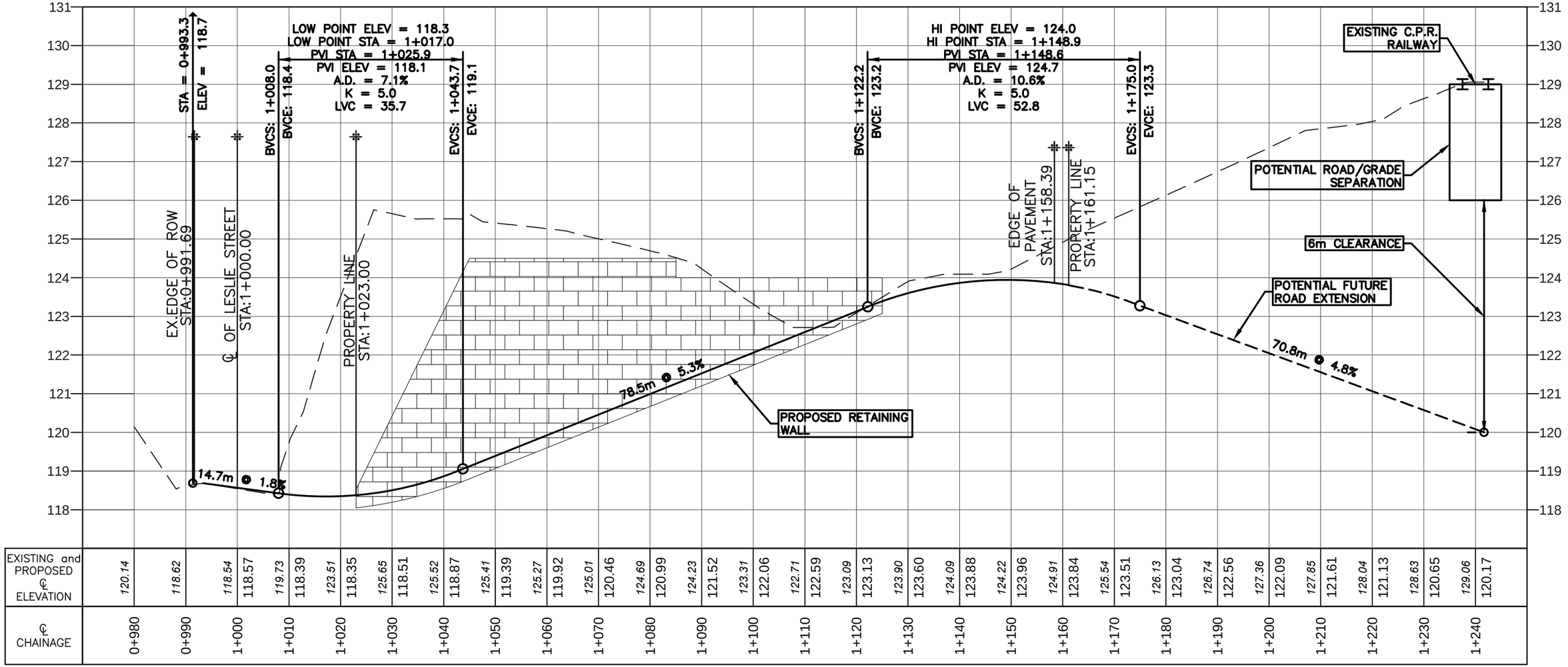
The existing private roadway that is located along the north property line will remain as a private roadway at generally same elevation and gradient. As indicated previously, this section of private road is under easement for that purpose.

The new internal private roadway that will connect from the existing condominiums at the north end of the redevelopment site to the new municipal turning circle will slope down towards the turning circle at gradients in the order of 2% to 3%.

In order to comply with City of Toronto Stormwater Management (SWM) requirements for self contained drainage, the internal roadway will employ a low point within the site near the property line with the municipal roadway. Perimeter strips of land around the proposed condominium buildings may result in minor surface drainage being directed to the municipal road right-of-way, however, this can be compensated and accounted for in the SWM Plan for the development Blocks.

While the proposed condominiums can be designed to accommodate and take advantage of the elevation and gradient of the new municipal roadway, the existing automobile dealership, as a pre-existing site, cannot be altered extensively. As a result, a retaining wall located on private property along the south property line of the new municipal roadway will have to be constructed to accommodate the vertical elevation differential. A driveway entrance to the dealership will be created from the turning circle of the new municipal road. Due to the relative elevation of the new municipal road, a second driveway entrance further to the west will not be possible. This will result in the need to make some adjustments in the curbing, parking and drive aisles configuration of the automobile dealership.

Refer to Appendix E for a General Grading Plan of the proposed redevelopment.



℄ CHAINAGE	EXISTING and PROPOSED ℄ ELEVATION
0+980	*120.14*
0+990	*118.62*
1+000	*118.54*
1+010	118.57 *119.73*
1+020	118.39 *123.51*
1+030	118.35 *125.65*
1+040	118.51 *125.52*
1+050	118.87 *125.41*
1+060	119.39 *125.27*
1+070	119.92 *125.01*
1+080	120.46 *124.69*
1+090	120.99 *124.23*
1+100	121.52 *123.31*
1+110	122.06 *122.71*
1+120	122.59 *123.09*
1+130	123.13 *123.90*
1+140	123.60 *124.09*
1+150	123.88 *124.22*
1+160	123.96 *124.91*
1+170	123.84 *125.54*
1+180	123.51 *126.13*
1+190	123.04 *126.74*
1+200	122.56 *127.36*
1+210	122.09 *127.85*
1+220	121.61 *128.04*
1+230	121.13 *128.63*
1+240	120.65 *129.06*
	120.17

PROFILE OF STREET A
FIGURE 1

HORIZONTAL 1:750
VERTICAL 1:100

4.0 SANITARY SERVICING

4.1 Sanitary Servicing Criteria

The City of Toronto's Design Criteria for Sewers and Watermains (Nov 2009) was referenced to estimate existing and proposed sanitary demand from the site. The criteria are generally summarized as follows:

- Average domestic (residential) sewage flows of 450 litres per capita per day for new sewer design.
- Average domestic (residential) sewage flows of 240 litres per capita per day for analysis of existing systems in fully separated sewer areas with no basement flooding concerns.
- The peak domestic sewage flow to be calculated by utilizing a calculated Harmon Peaking Factor [$M = 1 + 14 / (4+P^{0.5})$].
- Average commercial/industrial/institutional sewage flows of 180,000 litres per floor hectare per day for new local sewers (peaking factor included in average flow).
- A peak infiltration allowance of 0.26 L/s/ha is required for all sewers.
- Population Densities as follows:
    - 1-Bedroom – 1.4 persons per unit
    - 2-Bedroom – 2.1 persons per unit
    - 3-Bedroom – 3.1 persons per unit

It is noted that in the case of Zoning Amendment Applications, The City requires that the applicant demonstrate that there are no negative impact on the existing municipal sewer system and if so, identify how it will be mitigated. To undertake this review, the applicant must analyze the municipal system until it reaches a municipal trunk sewer.

4.2 Existing Sanitary Servicing

Sanitary servicing for the site is currently provided by internal sanitary sewers which provide service to the existing parking garage at the north-east end of the site, the old Inn on the park hotel buildings and the automobile dealership buildings. This private sanitary sewer system generally drains from north to south through the automobile dealership and connects to the 250mm dia. Leslie Street municipal sanitary sewer near the south driveway entrance to the dealership.

From that location the 250mm dia. Leslie Street sanitary sewer drains in a westerly direction an discharges into a 1350mm dia. sanitary trunk sewer, located approximately 60m to the west of Leslie which is aligned along the West Don river.

The 250mm dia. Leslie Street sanitary sewer north of the automobile dealership sewer was originally constructed to service the condominium complex adjacent to the north of subject redevelopment site. As such, the upstream terminus of the sewer is at that location.

4.3 Proposed Sanitary Servicing

4.3.1 Municipal Roadway

A sanitary sewer is proposed to be constructed within the new municipal roadway and outlet into the Leslie Street sanitary sewer. The new sanitary sewer will service the new redevelopment only as the automobile dealership lands will continue to be serviced by its existing service connection to the Leslie Street sanitary sewer further to the south.

4.3.2 Development Blocks

The Ontario Building Code (OBC) 7.1.5.4 requires separate service from each property to the municipal main. In this regard, condominium properties do not necessarily constitute the intent of the term “property” in the OBC. The context of the term “property” in the OBC is separate property. Multiple condominium complexes are design as a single building under the OBC have shared services, spaces, amenities and a common fire safety system. In such a scenario, multiple condominiums designed as single buildings do not necessarily represent multiple “properties” under the OBC as they cannot be separated without addressing the OBC issues that make them a single building. As such, a multi-condominium, single building can be serviced with a single service and comply with the OBC.

Likewise, the City of Toronto Municipal Sewer By-Law makes provision for single services to multi-condominium buildings provided that certain conditions can be met. Nevertheless, in general, it is desirable from both the City and the condominium’s perspective to have separate sanitary services for each condominium to avoid having one ownership entity take responsibility for another with respect to sanitary discharge.

Consequently, it is proposed to have a sanitary connection for each condominium. These sanitary services will be connected to the municipal sanitary sewer located within the new

municipal roadway. During detailed design of the condominium buildings, however it may be determined that the sanitary service for the westerly condominium that fronts onto Leslie Street should connect directly to the Leslie Street Sanitary sewer.

With respect to the two condominiums within the east development block, the frontage to the new municipal roadway is limited. As a result, on the south condominium will have municipal frontage and service access to the north condominium in this block will be via the internal private roadway.

Since both of these condominiums will be design as a single building collectively, the separate sanitary services from the north building can pass through a common easement space in the basement under the south condominium to the municipal sanitary sewer. To comply with municipal by-law requirements a sanitary control maintenance hole (MH) will be provided for each of the two condominiums near the municipal property line. In this scenario the MH for the north condominium would be located in an easement within the basement space under the south condominium.

Refer to APPENDIX F for a Concept Servicing Plan (drawing SS-1) for the conceptual sanitary servicing of the redevelopment.

4.3.3 Existing Uses to Remain

As indicated to in section 3.3.1 the automobile dealership is currently provided with sanitary service through internal on-site sanitary sewers that connect to the Leslie Street sanitary sewer near their south driveway entrance. The internal on-site sanitary sewer network that will be removed as part of the subject redevelopment is located upstream of the automobile dealership and therefore, the dealership will not be impacted.

Sanitary service for the aboveground parking garage located at the north end of the site will however, be impacted by the subject redevelopment. Currently, the parking garage is provided with sanitary service for its covered internal floor drains. This sanitary building sewer drains along the north property line of the redevelopment site before it turns south along the private roadway that runs through the site from the existing condominium complex at the north to the automobile dealership. As the north-south portion this on-site sanitary sewer will be removed as part of the construction of the subject redevelopment, it is proposed to provide sanitary

service to the parking garage by extending the east-west portion of the existing sewer directly out to the Leslie Street sanitary sewer through a new service connection. An easement in favour of the parking garage will be created for this purpose.

4.4 Sanitary Demand

The previous site use, being the Inn on the Park Hotel, closed in the early 2000's and was partially demolished to allow the development of the automobile dealership in and about 2007. The remaining Inn on the Park tower and conference facilities remained in use until 2014 and are now being demolished.

For reference purposes the sanitary demand from the tower and banquet facility located in the redevelopment site has been estimated at 1.86 l/s peak flow.

Based on current proposed development statistics the sanitary demands for the proposed redevelopment have been estimated and summarized in Table 1. This table also includes estimated demands for the above ground parking garage, as it will require a new service connection to the Leslie Street Sewer upstream of where it current discharges.

Refer to Appendix B–Sanitary Servicing Analysis for proposed sanitary flow calculations.

Table 1 – Estimated Development Sanitary Peak Flow

	PEAK FLOW (L/s) Based on 450L/c/day	PEAK FLOW (L/s) Based on 240L/c/day
Block 1, West Condo	13.09	7.17
Block 1, East Condo	13.72	7.36
Block 2, North Condo	11.81	6.35
Block 2, South Condo	13.54	7.27
Sub-total	46.46*	25.15*
Existing Parking Garage	0.27	0.27
Total	**46.73**	**25.42**

* Note Total Flow Based on peaking factor for total population not the sum of individual condominiums

As can be seen, the estimated sanitary demand from the new proposed development is significantly higher than the previous use within the redevelopment site. In this regard, it is noted that the automobile dealership would have represented a decrease in demand over the portion of the previous Inn on the Park hotel use that existing in that portion of the site.

4.5 Sanitary Sewer Capacity

A sanitary design sheet was created for the existing Leslie Street sanitary sewer. This design sheet includes both the existing flows and new flows that will be introduced from the proposed redevelopment. In addition, although negligible, the design sheet also considers a minor flow contribution from the existing above ground parking garage which will be introduced to the Leslie Street sanitary sewer near the upstream end of the sewer as opposed to the bottom of the system through the automobile dealership connection as it does currently. The parking garage does not have any domestic water uses or washrooms and as a result, the sanitary flow is comprised only of snowmelt and rain runoff from vehicles which in is collected by floor drains.

The sanitary design sheet indicates that there is sufficient capacity for the new development within the Leslie Street sanitary sewer to the trunk sanitary sewer. It is noted that the design sheet analysis is based on existing population at 240L/c/day and the flow for the redevelopment at 450L/c/day. As a result, the design sheet analysis is considered to conservative, since the City allows the analysis of existing sewer systems to be entirely based on 240L/c/day where there are separated systems which are not in a designated basement flooding area. For comparison purposes a second design sheet was prepared using 240L/c/day for both existing and proposed population. Refer to Appendix B–Sanitary Servicing Analysis for proposed sanitary flow calculations.

Consequently, in can be concluded that the proposed development will not have any negative impacts on the existing municipal sanitary drainage collection system.

5.0 WATER SERVICING

5.1 Water Servicing Criteria

The City of Toronto's Design Criteria for Sewers and Watermains (Nov 2009) was referenced to analyze the water demand from the proposed development. The City criteria are generally summarized as follows:

- Water supply systems should be designed to satisfy the greater of peak hour demand or maximum day demand plus fire flow;
- Average domestic water demands of 191 liters per capita per day for low-rise apartment buildings and condominiums with greater than six (6) units.
- Maximum day and peak hour factors for apartments are 1.30 and 2.50 respectively.
- Maximum day and peak hour factors for office/retail are 1.10 and 1.20 respectively.
- Population Densities as follows:
    - 1-Bedroom – 1.4 persons per unit
    - 2-Bedroom – 2.1 persons per unit
    - 3-Bedroom – 3.1 persons per unit

5.2 Existing Water Servicing

An existing 300 mm diameter watermain is located along the centre of Leslie Street. This watermain is interconnected to a watermain located along the north side of Eglinton Avenue.

It should be noted that the City's water Atlas mapping does not indicate the presence of a watermain along Eglinton Avenue in this area. However, other drawings that were obtained from the City do indicate a watermain along the north side of Eglinton Avenue and fire hydrants observed along Eglinton Avenue also indicate the presence of a watermain. Finally, servicing drawings for the automobile dealership indicate that there is a water connection from the site to a watermain along Eglinton Avenue.

Water servicing for the existing site is provided through a 150mm dia. watermain network that circulates throughout the site. This network is feed by two water service connections. As mentioned above, a water service and meter chamber is located at the south east corner of the

automobile dealership and a second water service connection from the Leslie Street Watermain is located approximately midway between the new proposed municipal road and the north limit of the redevelopment site.

The on-site watermain circulates through the site from the service connection and meter chamber located at the south east corner of the automotive dealership, north along the east property line to the above ground parking garage. It then travels along the north property line and follows the private roadway in a southerly direction where it interconnects with the second water service from Leslie Street. From that location, it follows the private roadway back into the dealership and eventually closes the loop with the watermain the site at the south east corner of that site. Both building fire services and domestic services are taken off this internal watermain loop and along with fire hydrants located throughout the entire site.

5.3 Proposed Water Servicing

5.3.1 Municipal Roadway

A 300mm diameter watermain is proposed within the new municipal roadway. As this roadway will terminate at the turning circle until such time in the future when it may be extended under the CP Railway to the west, there is no opportunity to interconnect the watermain to form a loop other than to create a looped watermain within the new municipal roadway by running the watermain up one side and down the other.

Since the east development block (Block2) will only have frontage onto the new municipal roadway and it will consist of two high-rise condominium towers the creation of the looped watermain is recommended. In addition, OBC 3.2.9.7(4) requires that a building over 84m high be serviced by no fewer than two sources of water supply from a public water system for fire service.

Fire hydrants will be spaced accordingly along the roadway and at the end of the watermain, in accordance with City guidelines to provide fire coverage to the development blocks and permit regular maintenance of the watermain.

Refer to APPENDIX F for a Concept Servicing Plan (drawing SS-1) and the conceptual watermain servicing of the redevelopment.

5.3.2 Development Blocks

The OBC separate services requirements described in Section 4.3.2 apply to water services as well. In addition, individual condominiums by nature desire to have separate domestic water meters. Consequently, each condominium will be serviced with a separate domestic water service to a meter room that will be incorporated into the building basement no more than 30m from the municipal road. Again, as indicated in section 4.3.2, a meter room and water service for a condominium that doesn't have municipal road frontage could be located in a shared/easement space in the basement of another condominium as long as the two condominiums where designed as s single building in accordance with OBC. In a similar manner to the sanitary service, the domestic water meter for the north condominium in Block 2 will be located in a shared meter room with the south condominium.

With respect to fire services, since all of the proposed condominium towers will be over 84m in height, the OBC requirement for two services for a building over 84m will be applicable. Since multiple condominiums can be serviced with a single set of services if designed as a single building, it is envisioned that a shared fire system will be employed in each of the two development blocks, resulting in the need for two fire services connections for each block.

For the east development block (Block2), the location of the two fire services will be dictated relatively narrow municipal frontage. To create diversity between the two services, a line valve will be installed between the fire services connections on the municipal watermain.

The final location of water services for the Block 1 will be determined during detailed design. If possible, fire connections from both the Leslie Street watermain and the watermain on the new municipal road should be employed to create a higher degree of source diversity.

5.3.3 Uses to Remain

The proposed redevelopment will result in the removal of portions the existing watermain network the loops through the existing site.

As a result, the water service and meter located at the south-east corner of the automotive dealership will become the sole source of water for that property. Internal watermain segments that are no longer required will be cut and capped.

With respect to the above ground parking garage since the water main feed from the automotive dealership that runs along the east property line is located within the narrow strip of property that will remain part of the dealership property, it is possible to maintain this water supply for the purpose of providing fire protection. Since this feed is only 150mm dia. and a relatively long distance from the source, there is a question as to whether it will be sufficient for this purpose once the watermain looping is effect is removed. In this regard, hydrant it is planned install/operate valves to isolate it from the second Leslie Street water connection and the remainder of the loop and undertake hydrant flow tests. If it is found to provide insufficient flow, then the watermain will be disconnected from the automobile dealership feed and a new water service extended from Leslie Street in a similar manner to the sanitary service extension described in section 4.3.3, within the private road easement that runs along the north limit of the site. Since the new water service would strictly be a fire service, it is assumed that it would only require a double check valve assembly housed in a chamber within a servicing easement near the Leslie Street right of way line.

5.4 Water Demand

5.4.1 Domestic Flow Demand

Based on current proposed development statistics the domestic water demands for the proposed redevelopment have been estimated and summarized in Table 1. Refer to Appendix C–Water Servicing Analysis for calculation details.

Table 2 – Estimated Domestic Water Demand

	AVERAGE DEMAND (L/s)	MAXIMUM DAY DEMAND (L/s)	PEAK HOUR DEMAND (L/s)
Block 1, West Condo	1.40	1.81	3.46
Block 1, East Condo	1.48	1.93	3.70
Block 2, North Condo	1.26	1.64	3.15
Block 2, South Condo	1.46	1.90	3.65
TOTAL	5.60	7.28	13.96

5.4.2 Fire Flow Demand

In accordance with the City of Toronto Design Criteria for Sewers and Watermains, fire flows will not be less than 80 L/s (4,800 L/min) for a 2-hour duration in addition to the maximum daily domestic demand. This flow is to be delivered with a residual pressure of not less than 140 kPa (20 psi).

The water supply system should be designed to satisfy the greater of peak hour demand or maximum day demand plus fire flow. Table 3 summarizes estimated fire flows and based on calculations using the Fire Underwriters Survey (FUS). Refer to Appendix C – Water Servicing Analysis for detailed calculations.

Table 3 – Peak Demand

	FIRE FLOW (L/s)	MAXIMUM DAY DEMAND (L/s)	TOTAL PEAK WATER DEMAND (L/s)
Block 1, West Condo	133.3	1.81	135.1
Block 1, East Condo	116.7	1.93	118.6
Block 2, North Condo	150.0	1.64	151.6
Block 2, South Condo	166.7	1.90	168.6

* Note Fire Flow is worst case of Tower vs. stand alone townhouses

5.5 Water Capacity

A Hydrant flow test was performed by Jackson Waterworks on October 31, 2014 on a hydrant located on Leslie Street approximately at the location of the proposed new municipal road. The results of these tests indicate that the existing watermain is capable of providing 309L/s (4902 USGPM) at 20 psi.

Using the software program EPA Net the available flow at the end of the new municipal road was estimated to be 262L/s at 20 psi.

In conclusion, it is apparent that the existing watermain system on Leslie Street has sufficient capacity to service the proposed development.

6.0 STORM STORMWATER MANAGEMENT & DRAINAGE

6.1 Stormwater Management Criteria

The City of Toronto Wet Weather Flow Management (WWFM) Guidelines, dated November 2006, identify targets and guidelines for conformance to the City's Wet Weather Flow Management Master Plan (WWFMMP) policy adopted by Council in September of 2003.

The guidelines outline the principals of the WWFMMP, including the management of rainwater and snowmelt where it falls and before it enters the storm sewer, and incorporating a hierarchy approach to Stormwater management (SWM), starting with "at source", then "conveyance" and finally "end-of-pipe" solutions.

Targets identified in the November 2006 guidelines that are applicable to the subject site redevelopment can be generally summarized as follows:

- Water Balance: Retain stormwater on-site to achieve the same level of pre-development annual runoff and/or, as a minimum, retain 50% of the total average annual rainfall.
- Water Quality: 80% long-term average annual removal of Total Suspended Solids (TSS).
- Water Quantity: Control the 100 year post-development peak discharge rate to the municipal storm sewer to the 2 year peak pre-development rate (with a maximum allowed runoff coefficient of C=0.50)

With respect to water quantity, during detailed design, further discussions with the City will clarify whether major system control event frequency can be reduced from the 100year storm event to TRCA Don River watershed requirements. Neither the site or the downstream portion of Leslie Street are within a designated basement flooding area and that there are no existing properties fronting the downstream portion of Leslie Street that would be negatively impacted by major system conveyance along Leslie Street. Finally the low point of Leslie is adjacent to the West Don River valley.

6.2 Existing Stormwater Management and Drainage

Leslie Street fronting the site is serviced by a 525mm dia. storm sewer which drains to the south. Approximately 100m north of Eglinton Ave., this storm sewer increases to a 750mm diameter and turns to the west, down the valley slope and discharges into the West Don River.

The upstream termination of the 525 Leslie Street storm sewer is at a height of land approximately 150m north of the subject development site.

As indicated in section 3.1 of this report, the existing redevelopment site slopes from north to southwest and as such the overland flow from the existing site will generally follow the internal private roadway through the automobile dealership and down its driveway to Leslie Street.

The existing 2.16ha redevelopment site is largely impervious with grassed areas primarily located along the perimeter of west property line and as a landscape area in the centre of the site.

The existing runoff coefficient for the redevelopment lands is estimated to be C=0.79. Refer to Appendix D - Stormwater Management and Drainage Analysis for calculations.

The entire 4.8ha Inn on the Park site, including the above ground parking garage at the north east corner, the subject development site and the automobile dealership to the south, is currently serviced with an on-site storm drainage system in a similar manner to the on-site sanitary sewer and watermain systems.

This storm drainage system consists of a storm sewer network that collects storm drainage from the various building sewers and storm drainage from the internal roadways and parking lots. The on-site storm system discharges to the 750mm dia. Leslie Street storm sewer at a location just to the north of the south driveway to the automobile dealership.

As part of the redevelopment of the south portion of the site into the automobile dealership in 2007, All Underhill & Associates Limited developed a SWM plan for the entire Inn on the Park site. Based on their SWM report dated April 27, 2006 and revised September 14, 2007, three detention storage elements were implemented to provide detention storage, which in

conjunction with an orifice pipe, serves to control the rate of discharge to the Leslie Street storm sewer.

An 80 m long 1660mm dia. CSP which provides 173m^3 of detention storage under the main parking area of the dealership. Above it, an additional 100m^3 of surface detention storage was designed to a maximum depth of 250mm. Finally, a second 45m long 2000mm dia. CSP located under the internal private roadway just to the north of the main dealership parking area, provides 141m^3 for a total of 414m^3 of detention storage.

The criteria used to design the dealership SWM plan was based on controlling direct discharge to the municipal sewer to that of a 2year storm based on a runoff coefficient of C=0.5 and a 5 minute time of concentration. Overland flow discharge was also permitted from the site at a rate equal to the 100 year storm at a runoff coefficient of C=0.5. A CDS oil-grit separator designed to provide 80% TSS was installed to provide quality control for the entire site.

6.3 Proposed Stormwater Management and Drainage

The relatively small overall size of the proposed redevelopment coupled with the high building coverage of the development blocks, are not conducive to a central municipal SWM facility. Consequently, the overall SWM approach is based primarily on the provision of individual SWM measures for each property block of the development.

6.3.1 Municipal Roadway

The proposed municipal road will be a 20m right-of-way approximately 150 m in length and 0.32ha in area. It is envisioned that it will have sidewalks on both sides of the roadway. The resulting runoff coefficient has been estimated to be C=0.74. As a result, the post development condition of the roadway will be slightly more pervious than the predevelopment condition. Nevertheless, the WWFM Guidelines Targets are based on minimum requirements to control discharge and water balance and therefore, stormwater management measures will be required to be implemented for the new municipal roadway.

Rate Control

To address the discharge rate target, it is proposed to employ oversized sewers or “super pipes” which will discharge through a smaller orifice pipe to the Leslie Street storm sewer. The orifice pipe will be sized based on an allowed discharge rate equal to that of a 2 year design storm with

a runoff coefficient of C=0.5 and the detention volume based on a 100 year storm event. Since the oversized sewer pipes must be relatively flat and entirely to make effective use of the pipe volume and maintain a hydraulic grade line that is below the low point of the new municipal road, it is proposed to limit the extent of the oversized pipe segments to the lower section of road near Leslie Street. This will reduce the sewer depth where the new road climbs steeply toward the turning circle. The remaining storm sewers within the new road will be designed only for conveyance to the oversized sewer pipes and can therefore follow the road gradient at a reasonable depth.

Quality Control

The inherent nature of an urbanized 20m wide right of way with vertical gradients as great as 6% do not present many opportunities for the use of natural or Low Impact Development (LID) treatment measures such as enhanced grass swales or gutter inlet bio-retention cells, etc. Consequently, a storm treatment unit is proposed to address water quality. A filter technology based system that is certified through the New Jersey Department of Environmental Protection's, (NJDEP) Technology Acceptance and Reciprocity Partnership (TARP), process will be required. As this treatment unit would ultimately be municipally owned and operated, further discussions with the City regarding the specific manufacturer and unit type would be required during the detailed design stage of the project. It is proposed to install the storm treatment unit downstream of the orifice control if possible, to reduce the exposure of the treatment unit to tail-water/surcharging. A bypass system would likely be incorporated into the design to reduce the load on the filters, thus improving the maintenance requirements.

Water Balance

With respect to water balance, although the post development infiltration will be similar to the predevelopment infiltration, (i.e. pre C=0.79 verses post C=0.74) this level will not meet the minimum target (5mm) set out in the City WWFM Guideline. The sodded boulevards of the new roadway would typically be capable of capturing and retaining 5mm to 10mm of rainfall that falls on them in addition to capturing runoff from adjacent sidewalk surfaces. It is estimated that the characteristics of the various right-of-way surfaces would result in an average depth of capture of just over 2mm over the entire right-of-way.

The primary available means of addressing the water balance short fall is through direct infiltration facilitated by a perforated pipe system. During detailed design, alternatives will be

explored further, following discussions with the City to confirm their position regarding operation and maintenance related issues. It is noted that if a storm filter system is implemented then it could also serve as a supply of "clean" runoff to a direct infiltration / exfiltration pipe system to extend its longevity.

Overland Flow

Overland flow for storm events in excess of a 100 year storm from new municipal roadway will be directed to Leslie Street. The slope of Leslie Street and the fact that its low point is directly adjacent to valley lands and the West Don River, make it an ideal overland flow route.

6.3.2 Development Blocks

As outlined in sections 4 and 5 of this report, each development block will be comprised of two condominiums and the two condominiums within a development block will be designed as a single building, per OBC. As such, the OBC requirements with respect to separate services can be met with a single storm service to each development block. The City sewer use bylaw also makes provision for a single connection to service a multi-condominium development if certain conditions related to ownership responsibility are met.

As indicated previously, it is generally desirable to employ separate water and sanitary services for each condominium due to the inherent metering and discharge/effluent responsibilities associated with them. Stormwater, on the other hand, is inherently more difficult to associate with specific condominium in a multi-condominium building, as the source derived by surfaces exposed to the sky as opposed to plumbing fixtures.

Furthermore, each storm connection is coupled with an associated SWM system that is typically comprised of detention tanks, rainwater harvesting tanks, storm treatment filters, etc., which can be made to be more efficient if consolidated. Physical constraints related to surface maintenance access and low point spillover elevations also dictate where SWM facilities can be located within a site. Finally, phasing and anticipated building schedules for the development are considerations for the consolidation of a single SWM system in a multi-condominium building verses the employment of separate SWM systems for each condominium.

During the detailed design of the development blocks the above identified issues will be reconsidered for the preparation of detailed (Stage 2) SWM Plans.

At this time, based on the proposed condo configuration, it is proposed that a separate storm connection and associated SWM system be provided for each of the two condominiums in Block 1, but, only a single storm connection and SWM system be provided for the two condominiums in Block 2.

In this regard, Block 1 is relatively large and the two main condominium towers are envisioned to be relatively distinct. The two condominiums in Block 1 also both have reasonable lengths of frontage onto the municipal roadway with which to locate SWM facilities that will meet low point spillover and surface access requirements, etc.
With respect to the Block 2 condominiums on the other hand, only the south condominium will have frontage onto the municipal roadway and this frontage is relatively small, limiting the available space low point spillover and surface access requirements. Block 2 is also much smaller in size than Block 1 and the two Block 2 condominium towers will be more closely integrated at podium level, resulting in smaller and less distinct roof and ground surfaces associated with each condominium. As a result, a single SWM system for Block 2 will be a more practical and effective approach to meeting the City's WWFM requirements.

The following sections will describe the primary components of the proposed SWM plan for the redevelopment blocks.

Rate Control

Rate or quantity control for the redevelopment blocks will be facilitated with the use of detention tanks that discharge by gravity through an orifice sized for the allowable discharge rate (2 year storm based on C=0.5). The volume of the tanks would be based on providing 100 year storm event detention, before spill over to the surface would occur. As such, the storm piping from roof and area drains located within the site will be designed to convey the 100 year storm event to the detention tank.

Since the underground parking structures will extend almost to the limits of the redevelopment blocks, these detention tanks will be incorporated into the basement structures as opposed to outside of the building. It is good practice to place the tanks in a location where the basement structure extends out from the above ground building face so that direct surface access for maintenance and emergency spill-over to the surface can be facilitated. With regard to the

latter, the spillover location should be at or near the lowest elevation of the site, recognizing that any direct hydraulic connection to the detention tank from a lower elevation within the site will be subject to potential surcharge.

Accordingly, the detention tanks for the west condominium (Tower A) in Block 1 will be located at the lowest point of the site which is the north-east corner of Leslie Street and the new municipal road. At that location direct access into the tank to facilitate emergency spillover, maintenance and the control MH requirements of the municipal sewer code will be provided from the adjacent municipal road.

Similarly, the detention tanks for the east condominium (Tower D) of Block 1 will be located at west limit of its frontage onto the new municipal road. Again, the basement will be designed to extend out beyond the aboveground building at this location in order to provide the required surface access into the tank and spillover functionality.

The detention tank for redevelopment Block 2 will be located so that the required surface access and spillover functionality is within the driveway access to the site. As indicated above, this tank will provide rate control and detention storage for both condominiums in Block 2.

Quality Control

The high density, urbanized nature of the redevelopment limits the alternatives available to treat runoff from ground level hard surfaces such as the internal private roadways and driveways/drop-offs. Consequently, a stormwater treatment unit will be utilized for this purpose. Similarly to the proposed roadway treatment unit, a filter technology based system that is certified through the New Jersey Department of Environmental Protection's, (NJDEP) Technology Acceptance and Reciprocity Partnership (TARP), process will be required. The specific treatment unit will be selected during detailed design. The ability to house the treatment components within a vault or chamber cast into the basement structure as opposed to placing a precast unit within the basement will be considered in the selection of the treatment unit.

The Stormwater treatment units will require regular maintenance to exchange filters and clean out captured sediment and as such, their location constraints are similar to those of the detention tank. In addition, to ensure that the treatment unit can capture and treat all of the

ground level hard surfaces, it will be located near the low point of the respective site adjacent to the detention tank in each block/condominium.

The runoff from conventional flat ballast stone rooftops is generally considered to "clean" and not requiring further water quality treatment, as they are not exposed to significant particle sources other than airborne particles. Similarly, grassed or other landscaped surfaces or runoff from hard surfaces that is directed to landscaped surface may not require additional water quality treatment. In this regard, it is noted that with respect to LEED certification, the Canada Green Building Council does not support the approach that rooftops do not require specific treatment measures in order to meet the 80%TSS removal requirement. Consequently the treatment units employed for the condominiums will be likely be designed to treat the entire catchment, in order to ensure compliance.

Water Balance

Since the predevelopment condition of the redevelopment site has a high level of impervious surfaces (i.e. C=79), the predevelopment condition results in greater than 50% of the total average annual rainfall leaving the site as runoff. Therefore, the minimum WWFM target of capturing 50% average annual runoff (5mm of daily rainfall) will apply to the redevelopment blocks.

Since the condominium basements will occupy the majority of the development blocks, there is effectively no opportunity to employ infiltration measures as means of addressing the water balance targets. The limited perimeter areas available for buried infiltration galleries would be too close to the building basement structure to ensure that infiltrated runoff did not "short-circuit" to the building weeper drain system.

As a result, the water balance plan will be based on maximizing the vegetated surfaces on the site including intensive and extensive green roofs and planters to capture and take up 5mm or more of precipitation water through evaportranspiration. While hard/paved surfaces will contribute to the water balance target through the evaporation of approximately 1.0mm to 1.5mm of rainfall events, the hard surface coverage will be too large to meet the overall 5mm water balance target. The strategy to address that short fall is to employ rainwater harvesting for reuse. The primary demand for reuse will be irrigation, however other uses such as wash-down facilities will be considered during detailed design.

Rainwater harvesting tanks or cisterns will likely be housed in the basement adjacent or near to the detention tanks and treatment units . The runoff from select rooftops which are not contaminated with significant particle loading or winter salting and sanding, will be conveyed directly to the rainwater harvesting tanks to avoid contamination with the other runoff. A piped over-flow conveyance will be provided from the rainwater harvesting tanks to the detention tanks.

Overland Flow

The grading of the redevelopment blocks will be designed to ensure that overland flow will be safely conveyed to the municipal right-of-way. The building drainage system will be designed giving consideration to the spill-over elevation of the detention tank relative to the finished spaces of the building. The internal private roadway will serve as the primary overland flow route through the redevelopment with individual condominium sites in turn, draining to the private roadway. It is noted that the private roadway will connect to the existing private in Block 1 before crossing through Block 2 before connecting to the new municipal road at the turning circle. It is noted that some overland drainage from the private roadway through the adjacent condominiums to the north will also be directed into the private roadway within the redevelopment in a similar manner as it does today. Therefore, easements for the purpose of surface drainage from the respective properties will be established in addition to those required for access.

With respect to minor overland drainage from the adjacent condominium to the north, it is proposed that this be treated as “flow-through” drainage. In other words, the on-site detention storage designed within the redevelopment blocks will be sized based on the redevelopment blocks only. As a result, during a large event equivalent to the 100year storm, when the full capacity of the redevelopment detention storage is reached, any external drainage will simply flow through the site and to the new municipal road. During smaller storm events, any external runoff can be captured by the catchbasins and drains within the redevelopment blocks and directed to detention tanks where it will be discharge at a controlled rate.

6.3.3 Uses to Remain

Rate Control

The SWM Plan for the automobile dealership was based on providing rate control for 4.13ha of the Inn on The Park site. Consequently the subject 2.16ha redevelopment represents removing 50% of the catchment area from that dealership stormwater detention system. Consequently the required detention storage would be reduced to approximately half or 207m^3 of the original 414m^3 that is currently provided

The 45m long 2000mm dia. CSP located under the internal private roadway just to the north of the main dealership parking area will be removed as part of the construction of the new municipal road. This pipe provides 141m^3 or 34% of the total 414m^3 of detention storage required for the SWM plan. Therefore, , the available detention storage after the removal of the 2000mm dia. CSP will leave 273m^3 to service the dealership alone, which based on the assumption that the SWM criteria for the automobile dealership which will remain unchanged from its original design, will be more than sufficient to meet that criteria. However, since the catchment area for that SWM plan would be reduced by approximately half, the allowed discharge rate would have to be adjusted accordingly. This could be addressed through the installation of a suitable orifice plate in the storm existing dealership control MH.

The existing parking garage at the north end of the site has a storm connection that discharges into the on-site storm sewer system that eventually drains into the automobile dealership SWM system. Similarly to the sanitary drainage for the parking garage, this existing storm sewer that drains through the redevelopment site will be removed, thus requiring a new storm connection for the parking garage. A new storm connection could be provided by extending the east west storm sewer that drains along the north limit of the development site directly out to connect to the Leslie Street storm sewer, in a similar manner to the new sanitary connection proposed for the garage.

With a new connection to the Leslie Street storm sewer it is assumed that the City will require SWM for the existing parking garage. As the parking garage structure effectively occupies the majority of the property in which it situated in, the area available to implement SWM is limited. During detailed design, use if the narrow strip of land between the garage structure and the east property line will be explored to house SWM measures, however, the most likely solution would

be to replace the storm building drain for the garage located in the easement along the north property line of the redevelopment site with oversized pipes for detention storage and rate control through an orifice pipe.

A control MH would be located within the easement near the Leslie Street Property Line in a similar manner as the new proposed sanitary connection for the parking garage.

Quality Control

The automobile dealership SWM system includes a CDS type oil-grit separator (OGS) that was designed to provide 80%TSS removal, based on the catchment of the entire Inn on the Park site. Although the use of an OGS alone to provide 80%TSS removal would not meet the City's current stormwater quality policy, it was acceptable at the time of the automobile dealership development. Following the subject redevelopment of lands to the north of the dealership, the OGS catchment will be effectively reduced by 50% which will in turn allow the existing dealership OGS to be even more effective than it is today.

With respect to the above ground parking garage, as it will no longer benefit from the automobile dealership OGS for quality control and will require a new storm connection to the Leslie Street storm sewer, it is assumed that the City will require quality control to be implemented. Is indicated previously there is little space available for the implementation of measures and as a result, the likely solution would be to employ a storm treatment device within easement along the east-west private roadway along the north limit of the development block. The treatment unit would be installed downstream of the detention storage provided for the parking garage to take advantage of the controlled discharge, reducing the need for bypass of the treatment unit.

Water Balance

Water balance was not a requirement at the time when the automobile dealership SWM plan was developed and constructed. As an existing site which will remain intact, it is assumed that no new SWM requirements will be required for the dealership site.

With respect to the parking garage, notwithstanding the need for a new storm service connection to the Leslie Street storm sewer the limited area which is available to place buried infrastructure combined with the close proximity of the basements structures for the garage

itself, the existing adjacent condominiums and the new condominium redevelopment will severely limit the opportunities for employing water balance measures. On the basis that the parking garage is an existing condition that did not previously employ any water balance measures and will continue to discharge to the same municipal sewer system it is a reasonable position that it be exempt from the water balance requirement.

Overland Flow

The previously established overland flow routes within the automobile dealership will remain unchanged following the subject redevelopment. This overland flow route is primarily represented by the south driveway to Leslie Street.

With respect to the parking garage, overland flow and flow in excess of the oversized sewer detention will spill onto the east-west private roadway along the north limit of the subject redevelopment. The redevelopment itself will be design to provide a safe conveyance of overland flow (in excess of the 100 year detention provided for the redevelopment) to the new municipal road.

6.4 Post Development Hydrology

Table 4 summarizes the respective estimated discharge rate and detention/retention requirements for the redevelopment. Refer to Appendix D - Stormwater Management and Drainage for calculations.

Table 4 – Estimated Post Redevelopment Hydrology

	Allowed Discharge Rate (L/s) Based on 2yr Storm, C=0.5	100 Year Storm Detention Storage Required (m^3)	5mm Retention Volume Required (m^3)	Estimated Min. Volume for Rainwater Harvesting Cistern (m^3)
Block 1, West Condominium	77.5	164.8	31.6	21.4
Block 1 East Condominium	46.3	98.5	18.9	12.8
Block 2, both condominiums	95.1	218.2	38.8	28.7
New Municipal Road	39.2	75.4	16.0	9.6
Existing Parking Garage	59.8	108.8	24.4	N/A

6.5 Storm Capacity

While the overall catchment of the Leslie Street storm sewer is not being altered by the redevelopment and the SWM that will be implemented for the redevelopment is more stringent that the SWM that is currently in place, the redevelopment will result in storm water being introduced to the Leslie Street storm sewer upstream of the existing automobile dealership storm service connection.

A storm sewer design sheet was prepared for the existing Leslie Street storm sewer based on a runoff coefficient of C=0.5 for the subject redevelopment and new municipal road, the existing parking garage, the existing private properties to the north of the site.

The storm design sheet indicates that the impact of the new municipal road storm sewer connection to the Leslie street storm sewer will result in surcharge of that sewer to the location where the Leslie Street Storm sewer increases to the 750mm dia. and turns west into the valley.

To resolve the surcharge, the existing segments of 525mm dia. sewer from the new municipal to the existing 750mm dia. sewer segments would be required to be replaced with 750mm dia. storm sewer.

The replacement of these segments of storm sewer will also provide an opportunity to lower the storm sewer to better service the new municipal roadway and redevelopment.

7.0 UTILTIES

Hydro, Gas, Telephone and Cable TV all currently have buried infrastructure within Leslie Street, fronting the site. Rogers Cable is located on the west side of the road and Toronto Hydro, Bell and Enbridge Gas infrastructure are located within the east boulevard.

Through utility circulations with these public utilities it was discovered that both Toronto Hydro and Bell plant are located within the steep embankment at an elevation that is above the Surface of Leslie Street. Enbridge gas on the other hand, gas is located along the east curb line below the pavement surface.

As a result, both the Toronto Hydro and Bell plant will be required to be lowered to allow the construction of the new municipal roadway. In this regard, discussions related to the lowering of these utilities are currently underway in addition to discussions pertaining to the servicing of the new development.

8.0 CONCLUSION

Sanitary

The proposed redevelopment can be provided with sanitary service through the existing Leslie Street sanitary sewer and a connected sanitary sewer within a new municipal roadway.

Separate sanitary service connections will be provided to each of the four (4) proposed residential condominiums. The north condominium (Tower C) in Block 2 will not have frontage onto a municipal road and as a result, its sanitary service will pass through an easement space within the shared basement of the adjacent south condominium (Tower B). Since both condominiums will be designed as one single building per OBC, this arrangement will conform to both OBC and current City of Toronto municipal sewer code requirements.

The existing parking garage at the north east corner of the site will require a new sanitary service on easement to the Leslie Street sanitary sewer as its existing sanitary sewer that drains south into the automobile dealership will be removed to allow the construction of the redevelopment.

Through a sewer design sheet analysis, the existing City sanitary collection sewer system is shown to have sufficient capacity to the sanitary trunk sewer located in the West Don River valley for proposed redevelopment

Water

Hydrant flow tests of the Leslie Street watermain and FUS fire flow demands for the condominium development indicate that the existing City watermain system has sufficient capacity for proposed redevelopment.

The redevelopment will be serviced with watermain located within the new municipal road. This watermain is proposed to be a looped with two connections to the Leslie Street watermain and an alignment that runs up one side of the new municipal road, across the road at the tuning circle and down the other side. Such an arrangement will provide a level of redundancy for the condominiums in Block 2, that don't have frontage onto Leslie Street.

Separate domestic water service connections will be provided to each of the four (4) proposed residential condominiums. Two fire connections will be provided to each of the two development blocks. In that regard, it is noted that the two condominiums in each development block will be designed as one single building per OBC.

The north condominium (Tower C) in Block 2 will not have frontage onto a municipal road and as a result, its domestic water service and meter will be housed in a common shared space in basement of the adjacent south condominium. Again, since both condominiums will be designed as one single building per OBC, this arrangement will conform to both OBC and current City of Toronto municipal sewer code requirements.

As a result of the redevelopment, the existing sanitary service that connects into the automobile dealership to the south will be removed. Therefore, a new sanitary service will be provided to the Leslie Street sanitary sewer through a servicing easement located along the north limit of the redevelopment lands.

Storm

A design sheet analysis of the Leslie Street storm sewer indicates that two segments of existing 525mm dia. storm sewer totaling approximately 160m in length, from the new municipal road downstream to the location where the sewer turns to the west into the valley, would have to be increased in size to 750mm dia. to convey the discharge from the redevelopment without surcharge.

The proposed redevelopment will be provided with storm servicing through a storm sewer within the new municipal roadway, connected to the Leslie Street storm sewer. The New municipal road will provide a major system to Leslie Street, which in turn drains south to a low point north of Eglinton Avenue and into the West Don river valley.

To meet the requirements of the WWFM Guidelines, stormwater quantity, quality and water balance measures will be provided on an individual block / condominium basis.

The 2 condominiums within Block 1 will each have independent storm service connections and SWM systems comprised of orifice controlled detention tanks, filter type stormwater treatment units and rainwater harvesting tanks. To address the City's quantity, quality and water balance requirements respectively. With respect to the latter, vegetated services including intensive and extensive green roofs will be employed where possible throughout the redevelopments to maximize the evaportranspiration component of the water balance target. Detention storage will be designed to control storm events up to the100yr storm to a discharge rate based on a 2 year storm with a C=0.5.

During detailed design, further discussions with the City will clarify whether major system control event frequency can be reduced from the 100year storm event to TRCA Don River watershed requirements, on the basis that the site and the downstream portion of Leslie Street are not within a designated basement flooding area and that there are no existing properties fronting the downstream portion of Leslie Street that would be negatively impacted by major system conveyance along Leslie Street.

The condominiums in Block 2 will provide the same SWM measures as Block 1 to address the WWFM Guideline targets. However, since Block 2 has relatively short frontage onto the new municipal road and the north condominium (Tower C) within Block 2 will nt have any frontage onto the municipal road, it is proposed to provide a single storm service connection and associated SWM system to service both condominiums. In this regard, the Block 1 condominiums will be designed as s single building will be designed as one single building per OBC, this arrangement will conform to both OBC and current City of Toronto municipal sewer code requirements.

In addition to providing major and minor system conveyance to the condominium redevelopment, the new municipal road storm sewer will include an oversized pipe component sized to provide detention storage for the road itself. In addition, a filter type treatment unit will e employed to provide treatment of the road runoff. With respect to water balance, the roadway will exceed the City's minimum target of 5mm without further measures. The most appropriate measure that can be infiltrated is a buried exfiltration pipe which would be feed by runoff treated by the filter system provided for quality control.

As all of the SWM measures for the road will be municipally owned and operated, further discussion with the City will be required during detailed design to establish the final operation and performance parameters.

Finally, the above ground parking garage at the north east end of the site will require a new storm connection to Leslie Street in a similar manner to the sanitary connection described previously. SWM measures to address rate control, quality in the form of an over sized sewer pipe with orifice outlet to a filter treatment unit can be provided within the servicing easement along the north limit of the property. Meeting the current water balance requirement however,

may not be possible. As the parking will remain unchanged will also remain a part of the automobile dealership lands, it is proposed that it be subject to the original SWM criteria established for the development of the dealership site, which did not include water balance.

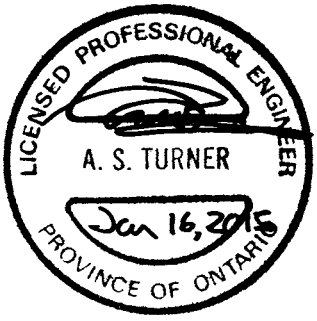
Utilities

Required public utilities, including Bell, gas, hydro and cable, are located within Leslie Street frontage the proposed redevelopment, and are likely available to service the site.

The existing Toronto Hydro and Bell duct banks located within the east boulevard of Leslie Street are installed within the embankment at an elevation above the existing pavement. As a result, these two utilities are required to be lowered to allow the new municipal roadway to be constructed.

We trust that this report satisfies the requirements of the City of Toronto with respect to the subject development. Should you have any questions, please do not hesitate to contact the undersigned.

R. V. ANDERSON ASSOCIATES LIMITED



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