





LYDON LYNCH
ARCHITECTURE

STREETSCAPE VIEW LOOKING NORTH



LYDON LYNCH
ARCHITECTURE

VIEW FROM PARK





WELLINGTON APARMENTS: Issued for Plan Ammendment Application

PROJECT SUMMARY:
LOT AREA:19,818 square feet
BUILDING FOOTPRINT:15,318 square feet
SITE COVERAGE: 77.2%

COMMUNITY ROOM AMENITY: 957square feet
FITNESS ROOM AMENITY SPACE: 1300 square feet

UNIT TYPES: One Bed Room:65
Two Bedroom: 24
Townhouse: 6
Penthouse: 1
Total Units: 96

PARKING: Standard size: 87
Barrier free: 4
Small: 2
Total Parking 93

DENSITY: 65 One Bedrm Units x 2 people =130 people
24 Two Bedrm Units x 2.25 people = 54 people
6 Townhouse Units x 3 people = 18 people
Penthouse = 4 people
total = 206 people

- Drawing List
- COVER SHEET A-000
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- Related Documents (Separately Bound):
GRIFFIN Transportation Group - Traffic Impact Statement
DesignPoint Engineering - Downstream Sewer Calculations & Description
Lydon Lynch Architects - Shadow Study
Lydon Lynch Architects - Sample Finish Materials

LYDON LYNCH

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B3N 0C6

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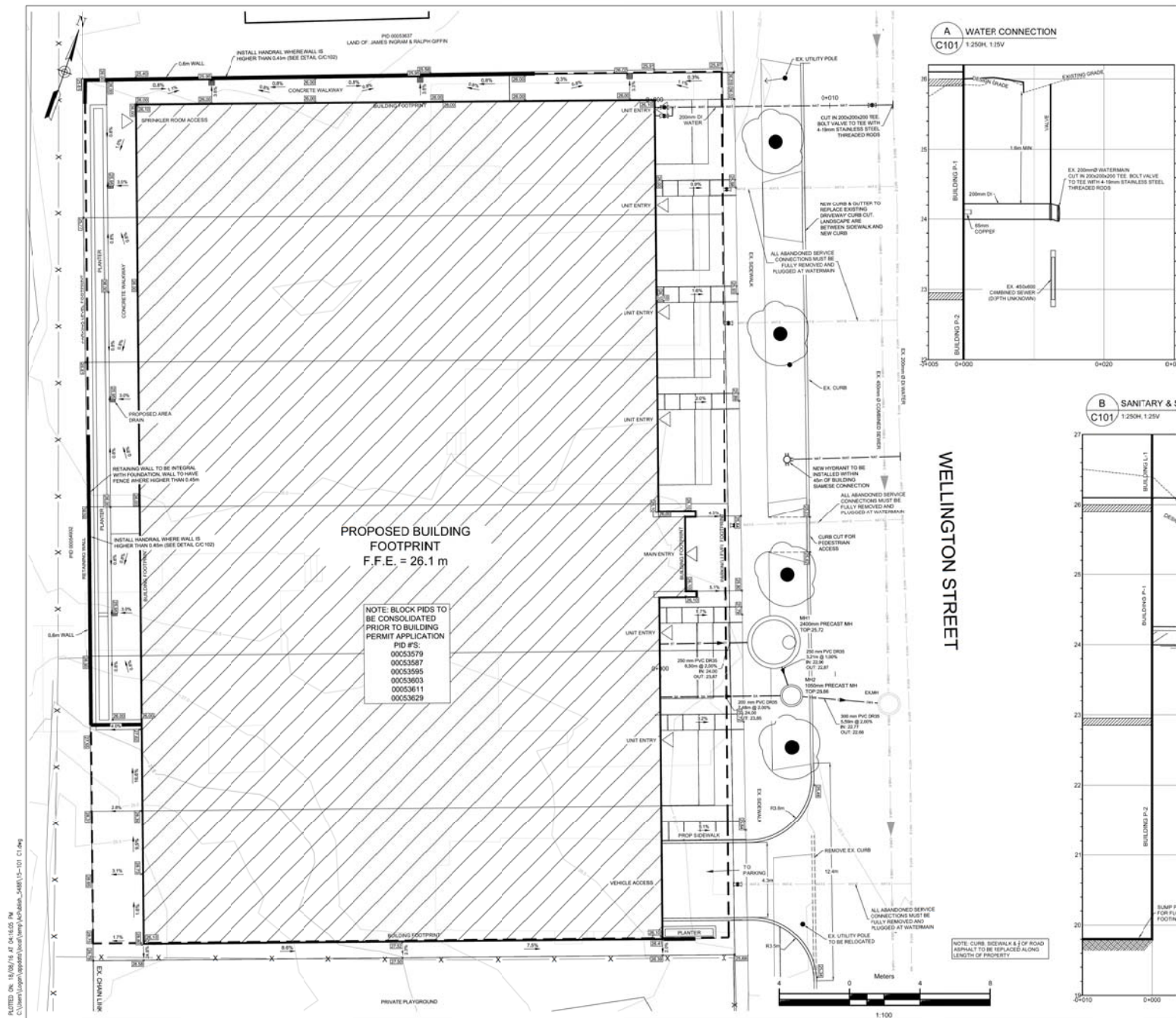
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No	Date	Issued
1	2016/08/18	FOR PLAN AMENDMENT

COVER SHEET

Drawing Scale: 1" = 16'00"
Project No.: 16008
Drawn By: LLA
Checked By: LLA

A-000



[illegible][illegible]

TOTAL AREA	0.18 ha
PRE-DEVELOPMENT SITE CN	81
POST-DEVELOPMENT SITE CN	95
PRE-DEVELOPMENT PEAK 5 YEAR FLOW	24.8 L/s
POST-DEVELOPMENT PEAK 5 YEAR FLOW	35.7 L/s
POST-DEVELOPMENT PEAK 5 YEAR FLOW (CONTROLLED)	21.3 L/s
PEAK STORAGE	9900 L

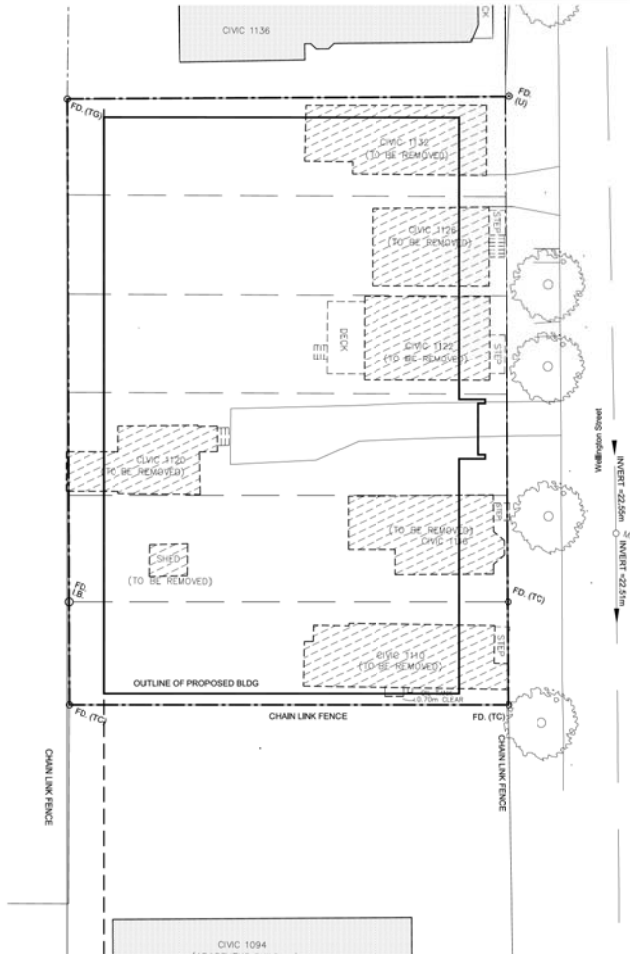
* 5 YEAR RAINFALL BASED ON ENVIRONMENT CANADA DATA FOR HALIFAX. TOTAL 24-HR DEPTH = 116 mm
* STORMWATER STORAGE ACHIEVED WITH A 2400mmØ MANHOLE.
* CONTROL = 100mmØ ORIFICE AT 23.39m, WITH A 250mmØ OVERFLOW AT 25.1m

Technical drawing of a retaining wall cross-section showing reinforcement details. The wall is 150mm thick and 775mm high. It features 13mm diameter reinforcement bars spaced at 120mm, with 20mm diameter bars at the top. The wall is topped with a 60mm diameter pipe and a 60mm diameter post. A 125x125x12 mm plate is used for the top reinforcement, with 13mm diameter bars and 60mm diameter anchors. The wall is labeled "RETAINING WALL" and the top section is labeled "WALKER".

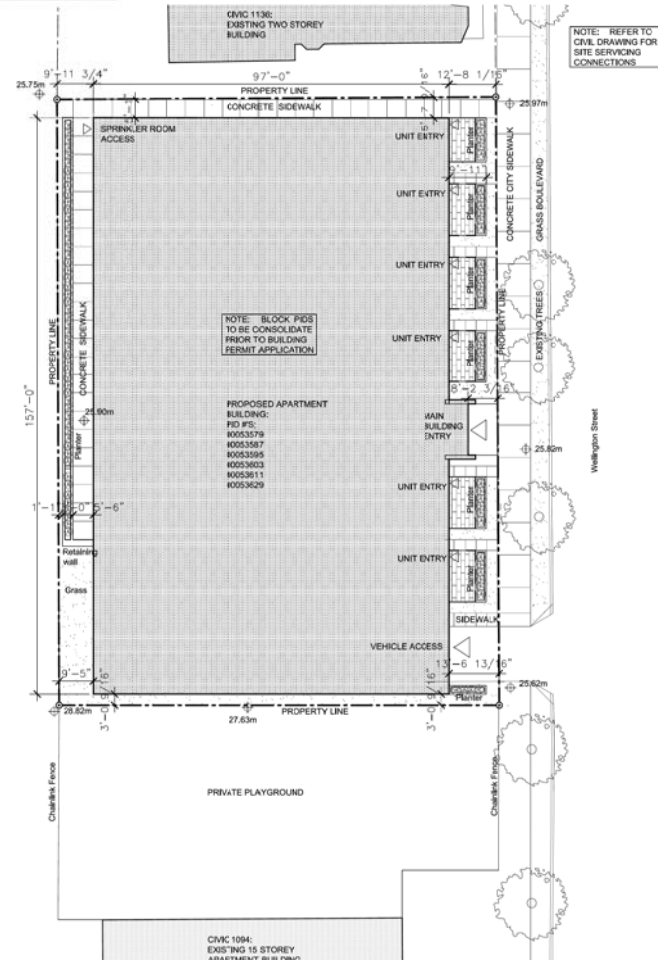




3 AERIAL PHOTO
NTS



1 SITE PLAN - EXISTING REMOVALS
1/16" = 1'-0"



2 SITE PLAN - NEW
1/16" = 1'-0"



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NOTE: REFER TO CIVIL DRAWING FOR SITE SERVING CONNECTIONS

NOTE: BLOCK PIDS TO BE CONSOLIDATE PRIOR TO BUILDING PERMIT APPLICATION

PROPOSED APARTMENT BUILDING:
PID #S:
K053379
K053387
K053395
K053603
K053611
K053629

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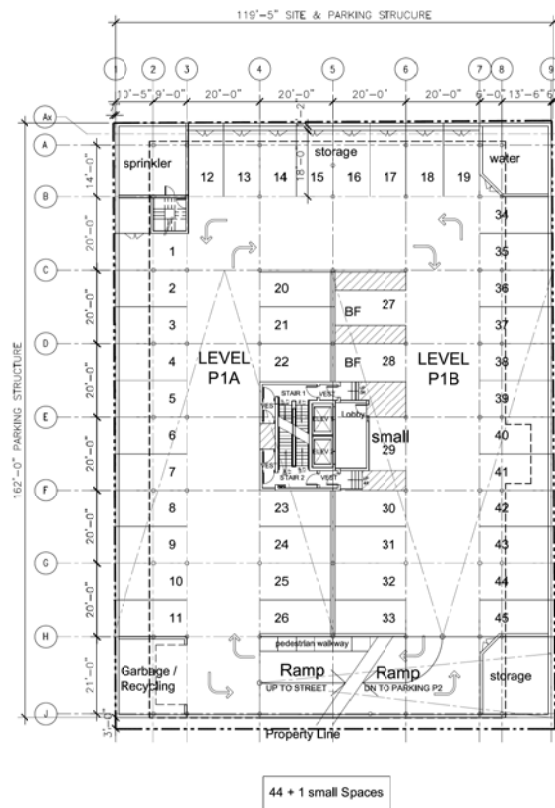
1 2016/08/18 FOR PLAN APPROVEMENT
No Date Issued

SITE PLAN REMOVALS & NEW SITE PLAN

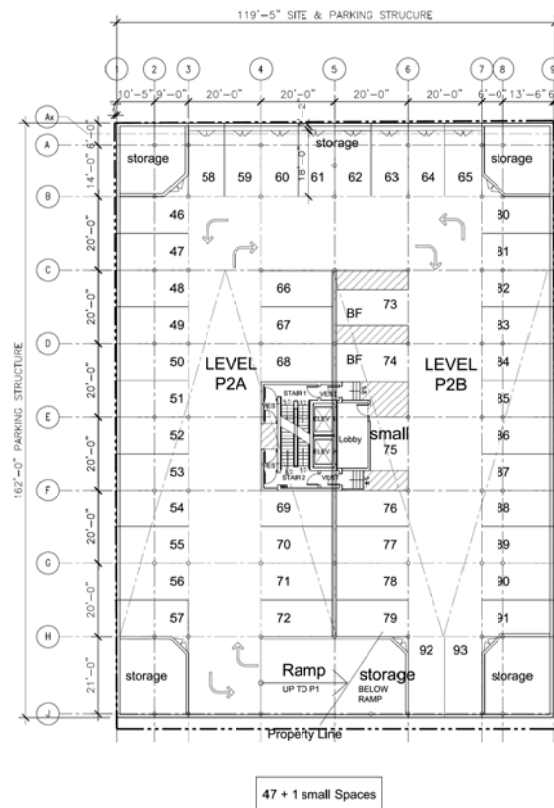
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Project No.: 16008
Drawn By: LLA
Checked By: LLA

A-100

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1 PARKING LEVEL P1
1/16" = 1'-0"



2 PARKING LEVEL P2
1/16" = 1'-0"



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UNDERGROUND PARKING
LEVEL PLANS

Drawing Scale: 1/16" = 1'-0"
Project No.: 16008
Drawn By: LLA
Checked By: LLA

A-101

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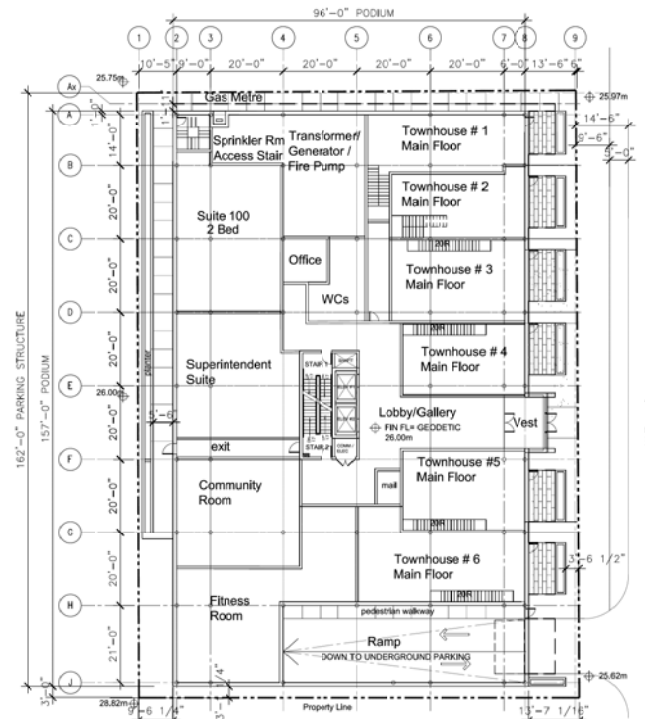
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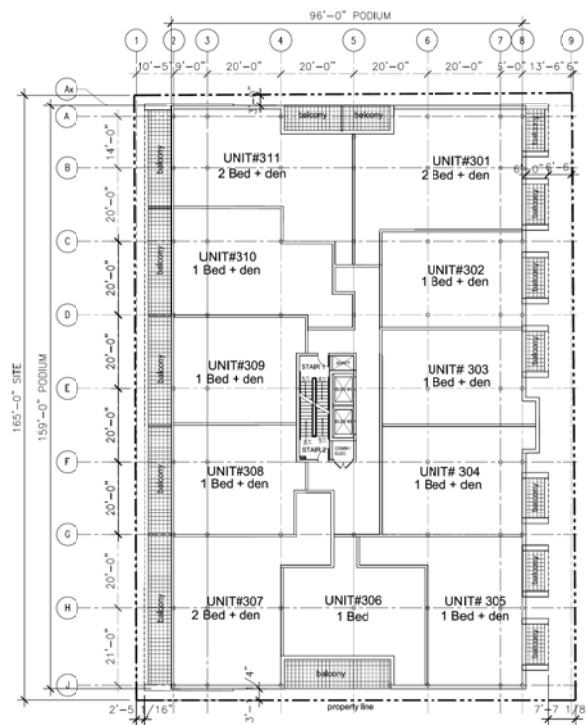
2 MAIN FLOOR PLAN
1/16" = 1'-0"

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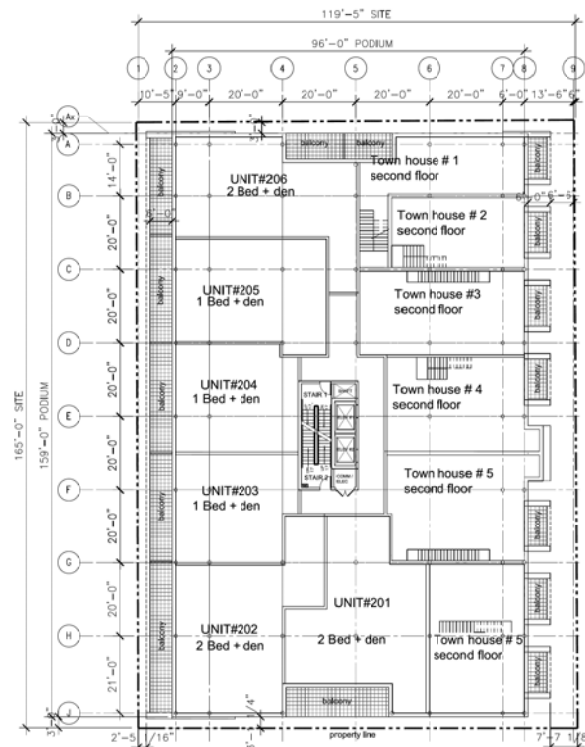
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SITE PLAN & MAIN FLOOR PLAN

Drawing Scale: 1/16" = 1'-0"
Project No.: 16008
Drawn By: LLA
Checked By: LLA



1 LEVEL 3 PLAN
 1/16" = 1'-0"



2 LEVEL 2 PLAN
 1/16" = 1'-0"



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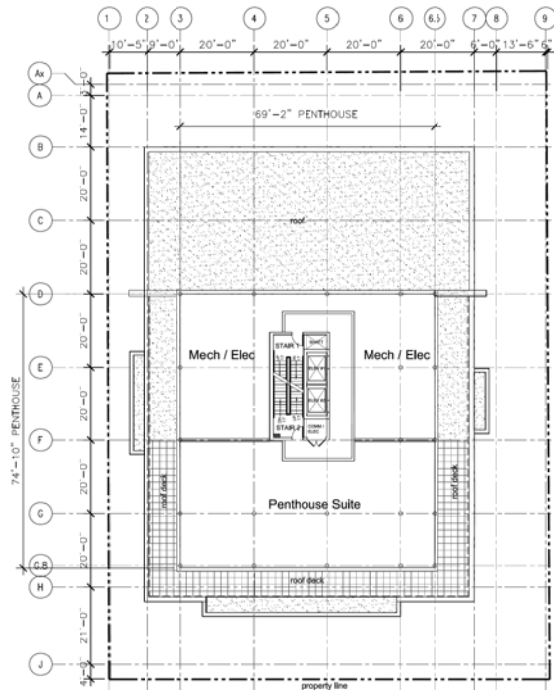
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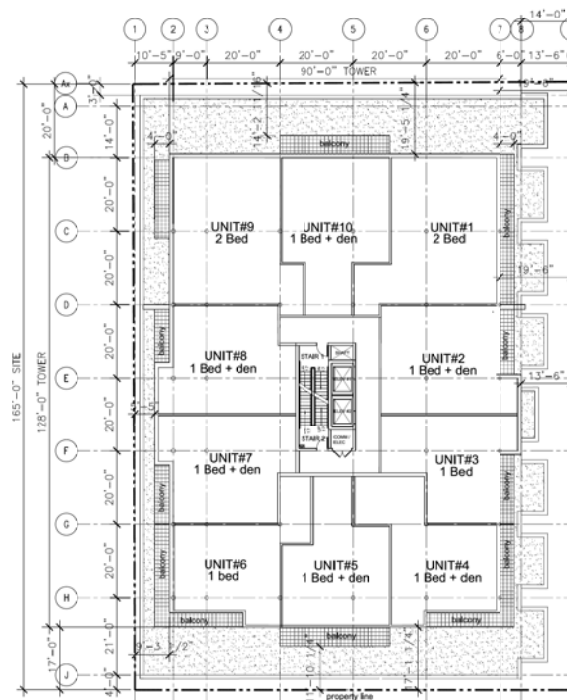
LEVEL 2 & LEVEL 3 PLANS

Drawing Scale: 1/16" = 1'-0"
 Project No.: 16008
 Drawn By: LLA
 Checked By: LLA

A-103



1 LEVEL 11 PENTHOUSE PLAN
1/16" = 1'-0"



2 TYPICAL FLOOR PLAN (LEVELS 4 TO 10)
1/16" = 1'-0"



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TYPICAL FLOOR PLAN & PENTHOUSE PLAN

Drawing Scale: 1/16" = 1'-0"
Project No.: 16008
Drawn By: LLA
Checked By: LLA

A-104



LEGEND:

9	PL	PLACED SURVEY MARKER
9	PD	FOUND SURVEY MARKER
9	RI	IRON BAR
9	RF	ROCK POINT
9	N.B.M	NOVA SCOTIA COORDINATE MONUMENT
9	MA	MANHOLE
9	EV	ELEVATION
9	RA	RADIUS, ARC, CHORD
9	PC	POINT OF CURVATURE
9	PO	POINT OF COMPOUND CURVATURE
9	CL	CALCULATED, MEASURED, IET
9	PL	PLAN OF PREVIOUS SURVEY, DEED, TOTAL, LOTS, DEED, WITH BY THIS PLAN
9	REG	REGISTRY OFFICE
9	LRO	LAND REGISTRATION OFFICE
9	PD	PROPERTY IDENTIFICATION NUMBER
9	N.B.	SQUARE METERS
9	U.M	UNMOUNTAINED POINT
9	N.B.L	NOVA SCOTIA LAND SURVEYOR
9	W.R.	W. R. ROSS
9	TL	THOMPSON COAN LIMITED
9	GEN	GENIVAR
9	TD	TERMIN GROUP
9	UN	UNIDENTIFIED

NOTES:

BEARINGS ARE GRID DERIVED FROM GPS OBSERVATION REFERENCED TO THE NOVA SCOTIA COORDINATE SURVEY SYSTEM (N.S.C.M. 204932) AND ARE REFERRED TO MERIDIAN 84° 34' W.

FIELD SURVEYS WERE CARRIED OUT DURING THE PERIOD OF DECEMBER 18, 2015 TO JANUARY 12, 2011

FIELD MEASUREMENTS HAVE NOT BEEN ADJUSTED AND SCALE FACTOR HAS NOT BEEN APPLIED.

PC'S 53629, 53611, 53603, 53595, 53587, & 53579 CONSOLIDATED
FORM LOT X-B

ELEVATIONS ARE GEODETTIC (CGVD28) AND REFERENCED TO N.S.C.M.
204932, HAVING AN ELEVATION OF 35.106m.

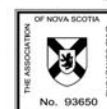
SURVEYOR'S CERTIFICATE

I, KEVIN C. BROWN, NOVA SCOTIA LAND SURVEYOR, HEREBY CERTIFY THAT THE SURVEY REPRESENTED BY THIS PLAN WAS CONDUCTED UNDER MY SUPERVISION AND THAT THE SURVEY AND PLAN WERE MADE IN ACCORDANCE WITH THE LAND SURVEYORS ACT, REGULATIONS AND STANDARDS MADE THEREUNDER.

DATED THIS 18 DAY OF AUGUST, 2018

DATED THIS 18 DAY OF AUGUST, 2018

KEVIN C. BROWN, N.S.L.D.



**DESIGN
POINT**
ENGINEERING & SURVEYING
Wellington Street

Plan of Survey of
LOT X-B,
 being a Consolidation of
PIDs 53629, 53611, 53603, 53595, 53587 and
53579
 Lands of
BANC Investments Ltd.
 WELLINGTON STREET,
 HALIFAX
 COUNTY OF HALIFAX
 PROVINCE OF NOVA SCOTIA

SCALE: 1:250 (METRIC)





COMPOSITE ALUM PANEL - CHARCOAL GREY



COMPOSITE ALUMINUM PANEL -
WOOD PATTERN



PRECAST CONCRETE



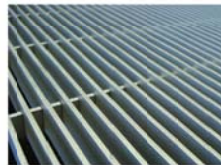
COMPOSITE ALUM PANEL - SILVER METALLIC



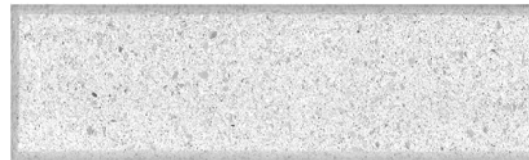
COMPOSITE ALUM PANEL - WHITE



NONCOMBUSTIBLE, SIMULATED WOOD



DECORATIVE METAL GRATING HANDRAIL



SHOULDICE MASONRY - PEARL WHITE

LYDON LYNCH

WELLINGTON APARTMENTS

SAMPLE FINISHES

Issued for Plan Ammendment Application
Aug 18, 2016

WELLINGTON APARTMENTS



SHADOW STUDY

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ARCHITECTURE

WELLINGTON APARTMENTS

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ARCHITECTURE



SHADOW STUDY - 9AM MARCH/SEPTEMBER 21



AUGUST 15, 2016

WELLINGTON APARTMENTS

LYDON LYNCH
ARCHITECTURE



SHADOW STUDY - 12PM MARCH/SEPTEMBER 21



AUGUST 15, 2016

WELLINGTON APARTMENTS

LYDON LYNCH
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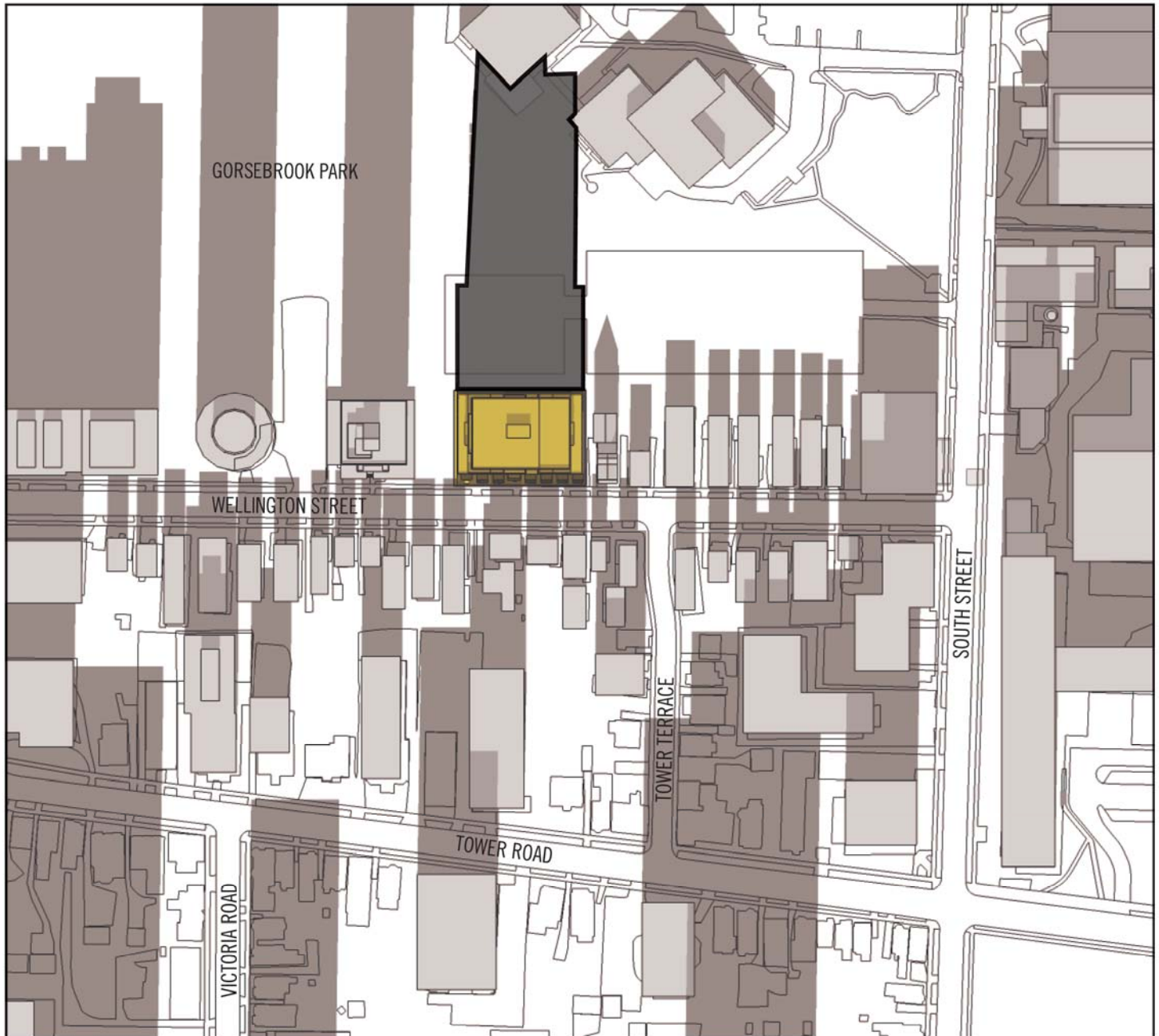
SHADOW STUDY - 3PM MARCH/SEPTEMBER 21



AUGUST 15, 2016

WELLINGTON APARTMENTS

LYDON LYNCH
ARCHITECTURE



SHADOW STUDY - 6AM JUNE 21



AUGUST 15, 2016

WELLINGTON APARTMENTS

LYDON LYNCH
ARCHITECTURE



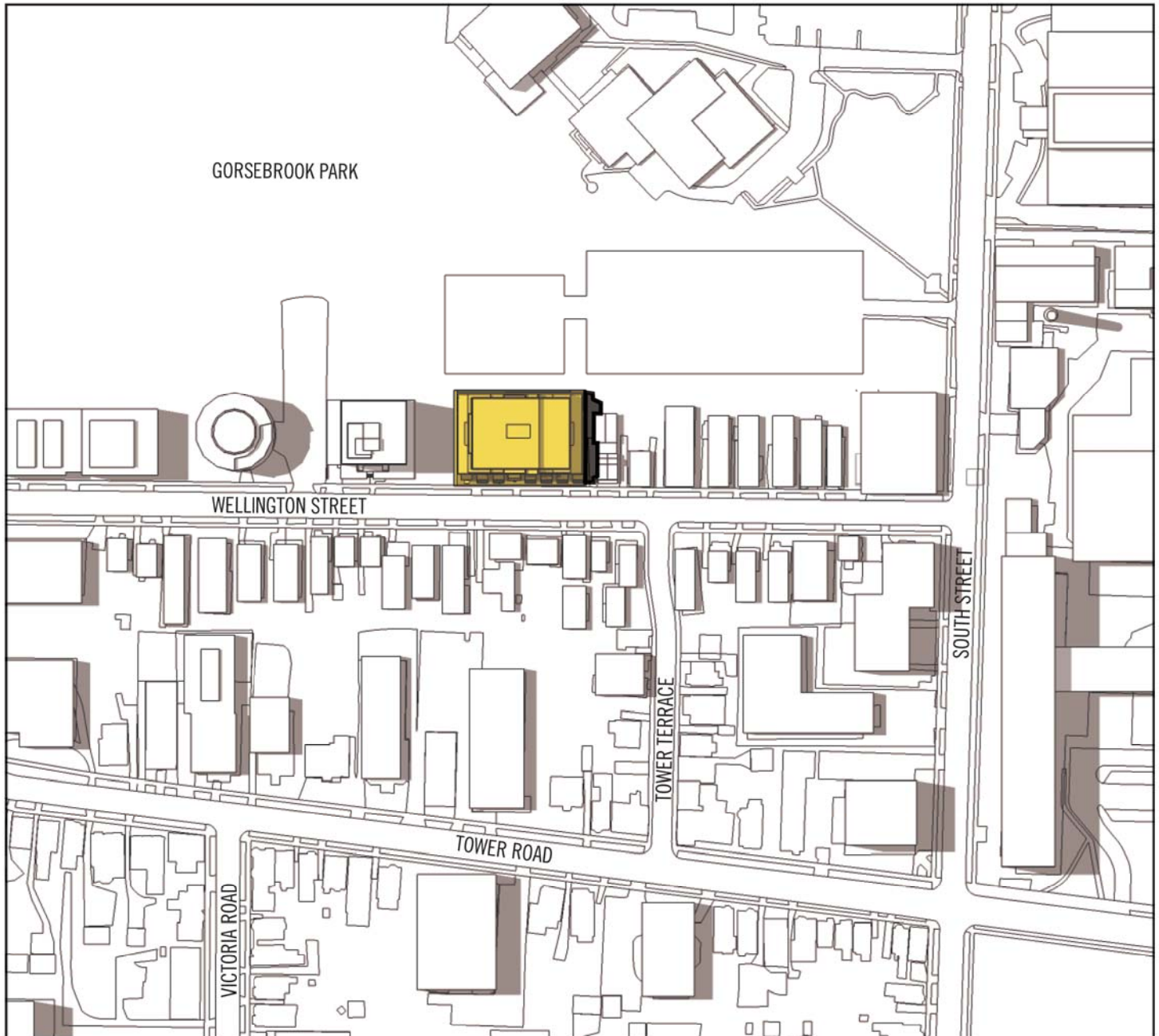
SHADOW STUDY - 9AM JUNE 21



AUGUST 15, 2016

WELLINGTON APARTMENTS

LYDON LYNCH
ARCHITECTURE



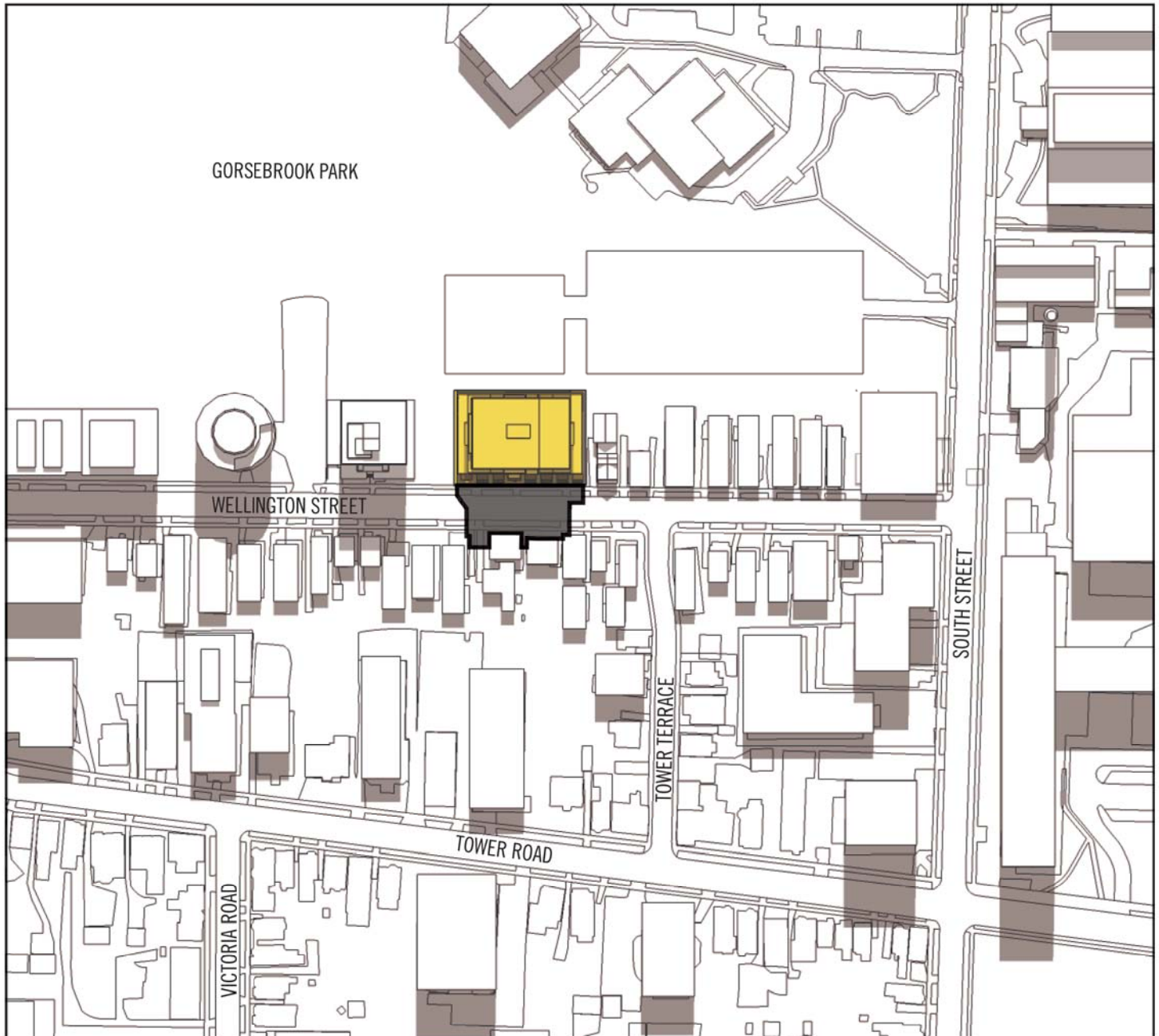
SHADOW STUDY - 12PM JUNE 21



AUGUST 15, 2016

WELLINGTON APARTMENTS

LYDON LYNCH
ARCHITECTURE



SHADOW STUDY - 3PM JUNE 21



AUGUST 15, 2016

WELLINGTON APARTMENTS

LYDON LYNCH
ARCHITECTURE



SHADOW STUDY - 6PM JUNE 21



AUGUST 15, 2016

WELLINGTON APARTMENTS

LYDON LYNCH
ARCHITECTURE



SHADOW STUDY - 9AM DECEMBER 21



AUGUST 15, 2016

WELLINGTON APARTMENTS

LYDON LYNCH
ARCHITECTURE



SHADOW STUDY - 12PM DECEMBER 21



AUGUST 15, 2016

WELLINGTON APARTMENTS

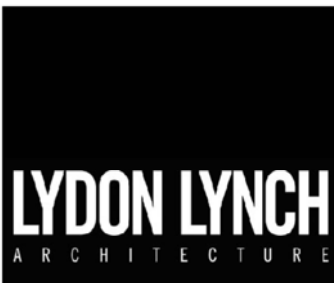
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SHADOW STUDY - 3PM DECEMBER 21



AUGUST 15, 2016



1668 Barrington Street, Suite 401, Halifax, Nova Scotia B3J 2A2
Phone: 902.422.1446 Fax: 902.422.1449 www.lydonlynch.ca

August 19, 2016

Halifax Regional Municipality
PO Box 1749
Halifax, NS B3J 3A5

Re: 1110-1132 Wellington Street Design Description

The design intent for this new 10 storey + penthouse apartment building is to provide a high quality, environmentally friendly rental environment, fronted by an engaging, pedestrian friendly streetscape experience along Wellington Street. From a massing point of view, the design acts as a transitional element between the 15 storey adjacent building to the south, and the 3 storey houses to the north. The massing of the building is organized into three separate elements, consisting of a 'base', 'middle' and 'top'.

The base consists of a three storey high masonry podium, fronted by six townhouses, which match the lines of the existing residential context. The walk up townhouses front on to Wellington Street, with each one defined by a prominent metal panel frame, breaking down the length of the building into six individual units that reflect the existing grain, pattern and rhythm of the residential neighbourhood.

Each townhouse has a separate street entrance with a covered patio area on Wellington Street, edged with planters, landscaping, wood slat fence, creating a sense of front porch and strong identity. These town houses engage and interact with the street, creating a strong community presence and opportunities for more eyes on the street. The main entry to the building provides a strong sense of arrival and focus by changing materials from masonry to predominantly curtain wall, further highlighted with a canopy, signage and walkway.

Above the street wall podium various combinations of metal panel and glazing break the facade into three distinctive forms, provided more interesting, engaging elevations and aiding in the transition between the 15 storey adjacent building to the south, and the 3 storey houses to the north.

The top of the building is crowned with a glass and spandrel glass penthouse with a projecting roof to create a dramatic crown. The soffit can be up-lit at night to add a sense of drama, especially when viewed from a distance such as the far side of Gorsebrook Park.

The design provides for 96 rental units, comprised of 24 two bedroom units, 65 one bedroom units, 6 townhouses and 1 penthouse unit. 93 underground parking spaces are provided for tenant use, virtually eliminating the need for on street parking.

Other note worthy elements:

- Common Room
- Fitness Room
- Large Unit Sizes, aimed at higher end market

Sincerely,
Original Signed

Keith Tufts
Principal
Lydon Lynch Architects

James J. Copeland, P.Eng.
GRIFFIN transportation group inc.
30 Bonny View Drive
Fall River, NS B2T 1R2

July 27, 2016

Glenn Woodford, P.Eng.
Senior Civil Engineer, Principal
DesignPoint Engineering & Surveying Ltd.
200 Waterfront Drive, Suite 100
Bedford, NS B4A 4J4

RE: A Traffic Impact Statement for a Proposed Development on Wellington Street

Dear Mr. Woodford:

INTRODUCTION

At the request of *DesignPoint Engineering & Surveying Ltd.*, the GRIFFIN transportation group inc. has carried out a qualitative Stage 1 - Traffic Impact Assessment in support of the planning application process for a proposed high-density, multi-story residential building to be located at civic #1110-1132 Wellington Street in the south end of Halifax, Halifax Regional Municipality (HRM). The proposed development will be comprised of a single 10-story building that will contain a mix of 1 and 2-bedroom units with a total unit count of 95.

There are six individual properties that will be consolidated into the proposed development and all are located on the west side of Wellington Street. They include six existing detached homes that are comprised of civics #1110, #1116, #1120, #1122, #1126, #1130 and #1132. The subject properties all have an R-2A (General Residential Conversion Zone) Zoning designation and they are located in the HRM Urban Service Area, within the Halifax Peninsula Land Use By-law area.

The traffic impact assessment associated with the proposed residential development is discussed in the following Sections. The site context is generally illustrated in *Figure 1* and a site concept plan is contained in *Figure 2*.

STUDY AREA AND SITE CONEXT

Wellington Street is generally aligned in a north-south direction with a two lane urban cross-section measuring 8.3 m wide (one travel lane in each direction plus on-street parking). It is under the jurisdiction of the HRM and appears to function as a local residential street. The total length of this street measures about 400 m.



Source: Bing Maps



www.griffininc.ca

**Study Area and
Site Context**

**Figure
1**

There are three existing accesses serving vehicular traffic entering/exiting the existing detached homes. It is understood that the existing accesses will be replaced with a single driveway serving the proposed building.

EXISTING TRAFFIC CONDITIONS

Since the proposed development will have a residential land use and is predominantly surrounded by other residential housing, a university as well as supporting neighbourhood commercial land use types it seemed reasonable to assume the highest overall study area volumes would occur during the weekday morning and afternoon peak periods. Therefore, these two peak times were selected and used in this assessment.

A site visit and data collection effort was carried out on Thursday July 21st, 2016 to review sight lines, observe traffic volumes, driver behavior and so forth. In addition, a traffic impact statement letter prepared in July 2014 for an adjacent proposed development was obtained through HRM's website¹. The traffic counts and intersection analyses contained in this letter were reviewed in combination with the GRIFFIN transportation group's July 2016 supplementary short counts at the intersections of South / Wellington and Inglis / Wellington. The July 2014 peak hour traffic data are contained in *Table 1*.

Table 1: Peak Hour Traffic Volumes on South and Inglis Streets (July 2014)

	AM Peak (vph)			PM Peak (vph)		
	Eastbound	Westbound	Two-way	Eastbound	Westbound	Two-way
South St.	407	271	678	375	485	860
Inglis St.	333	343	676	358	443	801
Wellington St ^A	-	-	136	-	-	141

vph – vehicles per hour

A – Wellington St. volumes recorded at north end of street where volumes are highest.

The July 2014 peak hour volumes shown in *Table 1* were compared to the results of the peak hour short counts gathered in July 2016 and there appeared to be very little change in the two-way traffic volumes between the 2014 and 2016 data sets. It was therefore assumed there has only been limited traffic growth in this area of Halifax in the recent past and this is characteristic of older established neighbourhoods in urban areas.

¹ Traffic Impact Analysis Letter for 1034-1056 Wellington Street.
Prepared for Dino Capital Limited by WSP. July 18, 2014.

Based on the observed peak hour volume using Wellington Street there appears to be residual capacity provided by the two-lane, two-way cross-section. The two-way vehicle demand equates to an average volume of 1 car every 30-seconds along this street. It should also be noted that there was little to no through trips observed during the weekday PM peak and a large portion of the traffic on the street is generated by its residents.

ON-STREET PARKING

There are regulatory parking signs installed along both sides of Wellington Street in the vicinity of the proposed development. Along the west side of the street 1-hour parking is permitted between 8:00 and 18:00, Monday to Friday combined with a parking restriction early Tuesday mornings to accommodate street cleaning activities. Along the east side of the street parking is prohibited between 8:00 and 18:00 (daily) combined with restrictions early Wednesday mornings to accommodate street cleaning activities. The posted signs observed during the field review are shown in *Figure 3*.

Figure 3: Regulatory Parking Signs on Wellington Street



Parking Signs – East Side



Parking Signs – West Side

The on-street parking demand was observed during the weekday PM peak and at about 16:30 there were numerous spaces available on the west side of the street within the 1-hour parking zone. At around 17:00 the available spaces began to fill and by 17:10 the majority of the spaces were occupied. This is likely due in part to the lack of available off-street parking at the area residences combined with the 1-hour parking restriction that ends at 18:00.

Therefore, due to the high existing parking demands during weekday afternoons the proposed development should not rely on utilizing any portion of the existing on-street parking supply along Wellington Street in order to meet the HRM By-law parking requirements.

SIGHTLINE REVIEW

Typically, a driver sight line review is carried out as part of the traffic impact assessment process to ensure drivers have sufficient distance to perform avoidance movements or bring their vehicle to a stop. The concept site plan shown in *Figure 2* locates the vehicle access point at the south boundary of the subject lands, generally where the existing civic #1110 building is located. However, to allow for flexibility in the design process, a general sight line review was carried out along the frontage of the proposed development. Guidelines contained in the Transportation Association of Canada's (TAC) Geometric Design Guide for Canadian Roads were followed.

The posted speed limit along Wellington Street is 50 km/h and it was observed during the field review that drivers were generally adhering to this speed. This is likely due to the fact that Wellington Street is relatively short in length, has an enclosed cross-section with mature trees and on-street parking. Therefore, a 50 km/h operating speed was used in this review and the minimum stopping sight distance (SSD) requirement associated with this speed is 65 m.

The available sightlines were reviewed along the frontage of the proposed development. Given the straight alignment of Wellington Street there appeared to be sufficient sight lines that exceeded the minimum requirement. However, the provision of adequate driver sight lines to/from the driveway location will likely require the elimination of some on-street parking spaces adjacent to the proposed access location (at the access, as well as spaces immediately to the north and south). In addition, the By-Law corner clearance and sight triangle requirements will also need to be verified at the design stage of the project. The observed sight lines along Wellington Street are provided in *Figure 4*.

Figure 4: View along Wellington Street in Vicinity of Development



Looking south along Wellington Street



Looking north along Wellington Street

SITE TRIP GENERATION

In order to assess the change in traffic volumes on the study area streets under future conditions, there was a need to determine the number of new vehicles that would be entering and exiting the proposed development. This is referred to as the trip generation calculation process. Typically, traffic engineers use trip generation rates published by the Institute of Transportation Engineers (ITE) to forecast site-generated volumes for specific land use types, if deemed appropriate. Based on our review of the residential land use type being proposed it was determined that the ITE trip generation rate for high-density residential units is appropriate. As such, ITE's *Trip Generation, 9th Edition* document was used and the forecast site-generated trips are summarized in *Table 2*.

Table 2: Site Trip Generation for the Proposed Residential Development

	Size	ITE Trip Rate	Vehicle Trips / Hour		
			In	Out	Total
AM Peak Hour					
High-rise Condo / Townhomes (232)	95 units	0.34/unit	6	26	32
PM Peak Hour					
High-rise Condo / Townhomes (232)	95 units	0.38/unit	22	14	36

It should be noted that there has been no vehicle trip reduction factor applied to the ITE trip rates. The GRIFFIN transportation group believes that the impact of alternative modes such as walking, cycling and public transit are inherent in the ITE trip rate for this land use type as the supporting research would have been carried out for similar multi-story residential buildings in similar high-density urban areas. In addition, this assessment has not explicitly considered the elimination of trips associated with the existing seven residences that will be removed. The elimination of these vehicle trips would further reduce the impact of the proposed development.

In summary, the proposed multi-story residential building is expected to generate 32 trips/hour (6 inbound and 26 outbound) during the weekday morning peak period and 36 trips/hour (22 inbound and 14 outbound) during the weekday afternoon peak period. This generally equates to about one vehicle trip every two minutes during peak times of the day. These trips will be further split in the north and south travel directions along Wellington Street and then further dissipated along the South Street and Inglis Street corridors.

TRAFFIC IMPACTS ON SURROUNDING STREETS

The qualitative assessment of the current traffic operational conditions on Wellington Street and the study area intersections used observations gleaned from the field review as well as the intersection capacity results provided in the July 2014 letter from WSP regarding the proposed development at civic #1034-1056. As discussed earlier in this letter the peak period traffic volumes observed traveling along the Wellington Street corridor appear to be below the capacity for this type of street and there were minimal delay times observed for drivers entering the Wellington Street intersections with South Street and Inglis Street. In addition, the forecast site-generated traffic for a proposed 95-unit high-density residential development will generate an additional vehicle trip every two minutes during peak times of a typical weekday. Therefore, it is expected these new vehicle trips can be accommodated in the Wellington Street corridor and its unsignalized intersections with only a marginal impact on traffic operations.

FINDINGS & CONCLUSIONS

The following conclusions were gleaned from the qualitative traffic impact assessment of the proposed multi-story residential development located on Wellington Street:

- The two-way peak hour traffic demand using Wellington Street that was recorded in July 2014 indicates the highest hourly volume occurs during the afternoon peak. Near the South Street intersection the hourly volume is about 140 vph (an approximate estimate of 1,400 vehicles/day) while near the Inglis Street intersection the hourly volume is about 70 vph (an approximate estimate of 700 vehicles/day). These volumes were observed to be below the capacity for this residential street as no operational issues were observed and vehicle queues at the stop-controlled intersections were minimal.
- The proposed residential development will be comprised of 95 units within the 10-story building. This is estimated to generate 32 trips/hour (6 inbound and 26 outbound) during the weekday morning peak period and 36 trips/hour (22 inbound and 14 outbound) during the weekday afternoon peak period.
- The qualitative traffic operational assessment suggests there is residual capacity on the study area street system. It appears the new traffic volumes generated by the proposed development are expected to have a negligible impact on traffic operations along the Wellington, South and Inglis Street corridors.

Based on the findings of this qualitative review the following steps are recommended:

- That the design of the proposed vehicle access follow Transportation Association of Canada (TAC) and HRM design guidelines contained in the most recent edition of their Municipal Design Guidelines document.
- That HRM By-law requirements for corner clearance and sight triangles are met to ensure both approaching and departing driver sightlines are maintained throughout the planning, design and construction phases of this project. This will likely require the removal of on-street parking spaces adjacent to the proposed access connecting to Wellington Street.

CLOSING

The findings flowing from this qualitative traffic impact statement indicate the new trips generated by the proposed multi-story residential development are expected to have an acceptable level of impact on the study area streets and intersections. I would be happy to provide you with additional information or clarification regarding these matters and can be reached anytime by phone at (902) 266-9436 or by email at jcopeland@griffininc.ca.

Sincerely,

Original Signed

James J. Copeland, P.Eng.

*Managing Principal – Traffic & Road Safety Engineer
GRIFFIN transportation group inc.*



August 15, 2016

Project #: 15-101

BANC Investments Ltd.

1 Craigmore Drive, Suite 201

Halifax, Nova Scotia

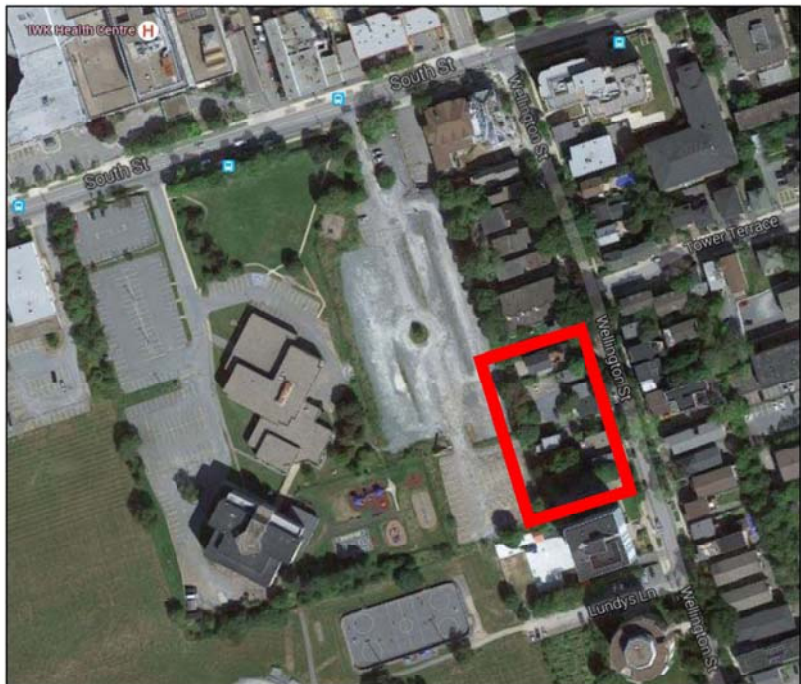
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Attention: Alex Halef

RE: WELLINGTON TOWER – DOWNSTREAM SEWER

Wellington Tower is a proposed residential building for Wellington Street in Halifax, Nova Scotia. Currently, the area is comprised of six (6) residential lots with existing homes. These structures are scheduled for removal as part of the construction of Wellington Tower, with 95 residential units. This part of Halifax is currently serviced with municipal water and a combined sewer flowing southeast along Wellington Street.

DesignPoint has been hired to design the servicing for the tower as part of the development agreement process. As part of this design, the capacity of the existing combined sewer was considered. The proposed storm and sanitary servicing for the building is separated on site and then combines at the right of way before connecting to the combined sewer in the street.



Sanitary sewer loading has been determined by the following Halifax Water guidelines:

- Multi-unit density = 2.25 persons/unit;
- Sanitary loading = 300 L/person/day;
- Harmon peaking factor;
- Safety factor = 1.25; and
- I&I allowance = 0.28 L/ha/s.

Based on the criteria, the following flows were determined:

	Harmon Peaking Factor	Peak Dry Weather Flow (L/s)	Peak Dry Weather Flow with SF (L/s)	I&I Loading (L/s)	Peak Wet Weather Flow (L/s)
Wellington Tower	4.1	3.0	3.8	0.1	3.9

Stormwater runoff management was also considered as part of the site servicing design. The SCS method was used to determine runoff on the site pre and post development based on the 5-year return, 24-hour Halifax rainfall of 112 mm. Since the storm and sanitary are being combined, the peak wet weather sanitary flow was added to the peak post development stormwater flow to ensure no increase in flow will be experienced at the combined sewer. If separation of the storm and sanitary sewers occurs at a later date, the stormwater discharge will still be controlled on site before entering the storm sewer. Calculated flows are shown below.

	Pre Development Storm (L/s) ¹	Post Development Storm (L/s) ¹	Post Development Combined (L/s) ¹	Combined Sewer Capacity (L/s) ²
Wellington Tower	24.8	21.0	24.9	304.4
¹ Based on Halifax 24 hour, 5 year return rainfall (112 mm)				
² 525mm concrete sewer assumed at 0.5%				

Reduction in the peak post development storm water flow is achieved using a 2400mmØ storm manhole for storage (peak storage is 9900 litres)

Based on the calculations above, we conclude the following:

- The existing combined system will not experience an increase in peak flows from Wellington Tower.
- Should storm and sanitary sewers be separated, the stormwater discharge from Wellington Tower will be slightly lower than the existing pre construction flows.

Please feel free to contact us with any questions.

Thank you,

DesignPoint Engineering & Surveying Ltd.

Original Signed

Glenn Woodford, P.Eng.
Senior Engineer & Principal