



July 17, 2024

File No: 51-211-020-275

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Eigenspace Consulting Ltd.

RE: **King Edward Park - 7814-83 Street NW Drainage Servicing Report – July
2024 - 2nd Submission**

Further to your July 16, 2024 submission of the report, Planning Coordination (Drainage) has reviewed the report and has no further requirements regarding the report setting out the sanitary and storm servicing requirements for the 7814-83 Street NW development in the King Edward Park neighbourhood.

Therefore, this is to advise you that this report is accepted by Planning Coordination (Drainage) as the basis for sanitary and storm servicing requirements for the 7814-83 Street NW development in the King Edward Park neighbourhood.

Please note, the final report forms part of the City's file with respect to this neighbourhood and may be shared with the public, if requested.

If you have any questions or comments, please contact the undersigned at 780-423-5174.

A handwritten signature in cursive script, reading "Tyler Shukaliak".

Tyler Shukaliak, P.Eng.
Development Engineer
Planning Coordination
Development Services
Urban Planning And Economy

TS/ts

DRAINAGE SERVICING REPORT

7814 – 83 Street NW

Lot B, Block 11, Plan 1738HW

Prepared by: Eigenspace Consulting Limited
Prepared for: Hasco Development Corporation

In support of Rezoning Application #APP23-0456

CITY OF EDMONTON

July 2024 – Final Submission

Sign-off & Authentication

This report has been prepared by Eigenspace Consulting Limited on behalf of Hasco Development Corporation. The material contained within the report reflects Eigenspace's professional judgment based on information available at the time of the preparation of this report.

Eigenspace Consulting Limited accepts no responsibility for damages suffered by any third party resulting from the usage, decisions, or other actions taken based on this report.

Servicing Report Team:

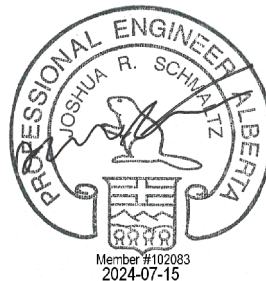


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1.0 Background Information and Outline of Proposed Development

1.1 Site Location

This report has been prepared to define the drainage servicing requirements to support the rezoning application for the following site, located in the King Edward Park neighbourhood in Edmonton. The site is at:

- Municipal Address: 7814-83 Street NW
- Legal Description: Lot B, Block 11, Plan 1738H



FIGURE 1 KEY PLAN

Figure 1 above shows the subject site in the broader neighbourhood. Figure 2 provides more context including information regarding the development area, an aerial photo depicting adjacent land uses, the existing drainage infrastructure, and overland flow patterns.

This report is restricted to storm and sanitary servicing analysis for the project site outlined above. Other utilities and improvements are not considered within the scope of this report.

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← Overland Flow



eigenspace <i>(solutions found here)</i>		
PROJECT Hasco Development 7814-83 Street NW Rezoning King Edward Park Neighbourhood		
FIGURE TITLE Site Servicing Report Site Location Plan		
FILE No. Figure Layouts.dwg	SCALE 1:750 20 mm	FIGURE No. 2

ISC: N/A SHEET SIZE ANSI B 20 mm

1.2 Land Use- Current and Proposed

The current zoning of this parcel is Parks and Services (PS) and the existing facility is used as a daycare and a school. The school provides instruction from kindergarten through to grade 12. The school grounds also contain a playground, an asphalt basketball court, some parking areas and a large, grassed field. While the re-zoning applies to the entire lot, the development will apply only to the western 0.69ha consisting currently of a grassed field and several parking spaces at the western half of the lot. The lot is situated in a residential neighbourhood surrounded mostly by parcels zoned Small Scale Residential (RS), with two churches and several businesses in close proximity. On the west side, across the lane to the field is a commercial area with small scale businesses such as salons, small grocery stores and pharmacies all zoned Neighbourhood Commercial (CN). Above-ground Light Rail Transit (LRT) tracks immediately in front of the school, in 83rd Street.

The proposed zoning for this lot is Mixed Use Zone (MU). Although the entire lot will be re-zoned, only the western half will be re-developed. The existing facility on east side of site will remain in operation for the foreseeable future. Upon re-development, the western side will accommodate two 6-storey apartment buildings comprising 89 suites each, parking (surface and underground) and amenities (indoor and outdoor). See Figure 3 for proposed redevelopment plans.

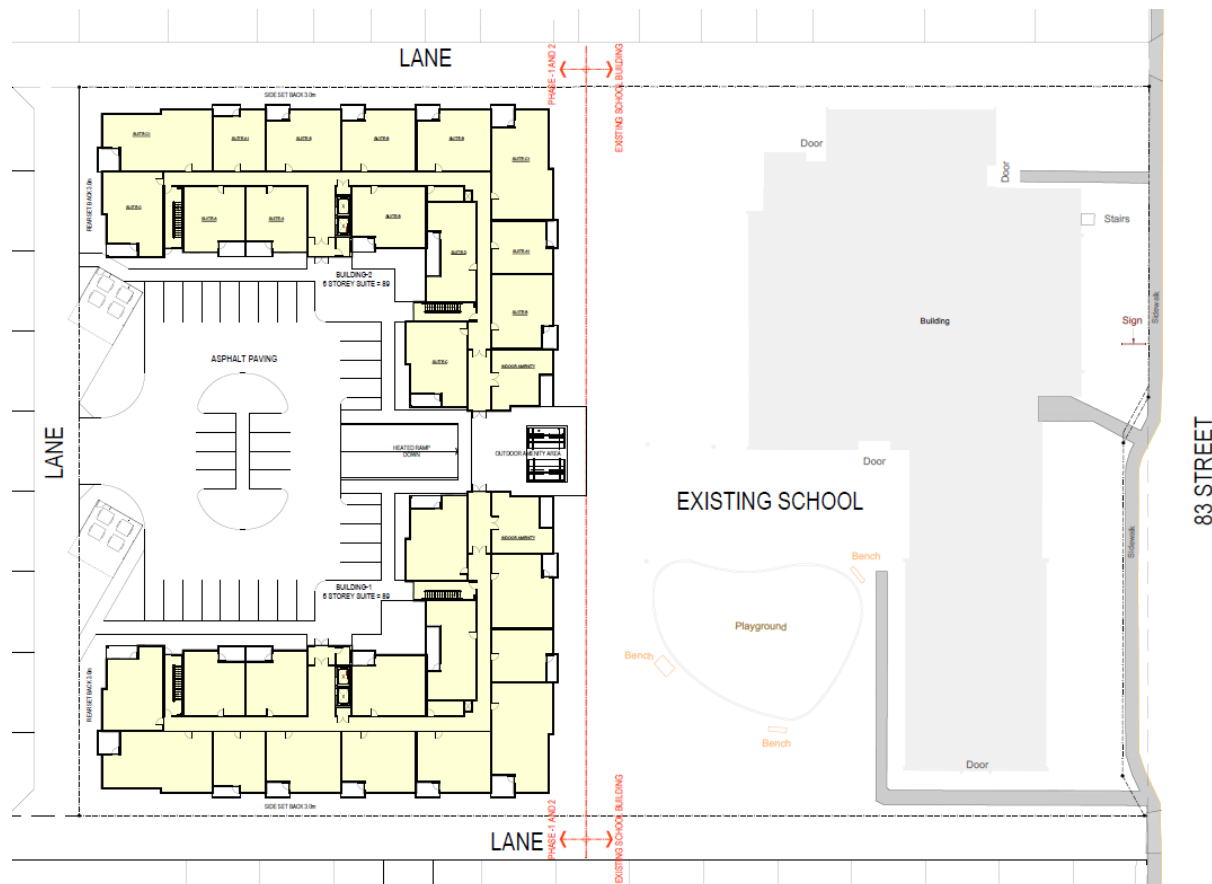


FIGURE 3 PROPOSED RE-DEVELOPMENT PLANS SHOWING THE ENTIRE LOT INCLUDING THE EXISTING SCHOOL AND PLAYGROUND

1.3 Drainage, Project and Report Overview

The subject property is adjacent to 83rd Street, which includes Light Rail Transit (LRT) tracks along the centre of the road. There are paved lanes surrounding the property on the other three sides. The existing school building and its lot are currently serviced by a combined sewer system, with existing combined sewer pipes located within the north lane and the south lane. Currently, one sanitary service is provided for the school connected to the combined sewer in the north lane. There is no existing storm service. The portion of the lot planned for re-development has no existing sanitary or storm services. The storm run-off from the west side of the lot is intercepted by one of two catch basins in the north and west lanes. These two catch basins are eventually connected to a 600mm storm pipe in 85th Street.

The stormwater run-off from the eastern side of the lot, including the school and the land between the school and 83rd Street are intercepted by catch basins and newly-installed storm infrastructure in 83rd Street.

Care must be taken to ensure that the proposed redevelopment of this site does not negatively impact the operational performance of the receiving public sewer system, and the preferred approach is to implement solutions that reduce peak flows (particularly peak stormwater flows) originating from the project site. This will be accomplished by implementing on-site retention of stormwater runoff to ensure stormwater release is below 35L/s/ha. The release rate will be further decreased (and on-site retention increased) to ensure that the utilization of the pipes does not increase more than 10%.

As-built information has proven difficult to obtain for both the east and west side of the project. On the east side, the recently constructed storm system as-built information is not yet available. However, there are no planned changes to the existing system in this area, and the proposed redevelopment does not impact this part of the drainage system

In the western lane, as-built information is not available for the portion of the storm sewer upstream of MH251804 in the west lane. Upgrades may be required to the existing storm system within the west lane at the time of redevelopment. We have analysed the storm system downstream of MH251804 for the purpose of this drainage servicing report.

2.0 Sanitary and Storm Design

2.1 Sanitary Sewer System Design

Sanitary design factors for the existing and proposed configurations of the project site have been set based on the City of Edmonton Design and Construction Standards Volume 3: Drainage, Volume 3-03 Design Guidelines February 2022 and the associated Addendum to City of Edmonton Design and Construction Standards Volume 3-03 Design Guidelines – January 2024. An excerpt of the sanitary design factor tables is enclosed for reference:

Table 1.4: Sanitary Flow Generation Design Rates by Business Type

Business Type		Flow Generation Per Business (m ³ /day) ¹
Commercial Services		
Automotive Servicing Oil changes, lubrication, and general repair		2
Family Services and Places of Assembly Child care services, funeral homes, places of assembly and temporary shelters		3
Medical Services Clinics, dentists and rehabilitation services		3
Offices Administrative activities such financial services, insurance, general consulting, contracting offices, government offices and research and development offices		4
Other Services		
Public Safety Services Police, fire services and ambulance dispatches		7
Accommodations		
Hotels		50
Motels		30
Nursing Care Facilities		50
Continuing Care and Homes for the Elderly		20
Education		
Elementary and Junior Grade Schools		5
Senior Grade Schools		20
Industrial Services		
Small Manufacturing and Machining Businesses related to the manufacturing of physical materials such as machine shops, structure fabrication and metal works		3
Warehousing, Storage, Commercial Sales and Logistics Dedicated towards the storage of bulk goods such as refrigerated and general warehousing, freighting services, courier and shipping services, and industrial sales		4
Retail Services (Shopping Centers/Districts)		
Car Washes, Food Services, Gas Bars, Personal Care Services and Retail Shopping Outlets		See Table 1.4.1
High Water Use Facilities		
Events and Attractions		Contact EPCOR
High-rise Towers		
Hospitals		
Secondary Education Institutions and Buildings		
Sports and Recreation Facilities		
Other High Water Users (heavy industry, meat packing plants and breweries)		

On the eastern side of the lot the school exists currently and will continue to exist for the foreseeable future. The school is a Kindergarten to Grade 12 school, therefore, the conservative generation of 20m³/day was selected for the existing school, and will still be accurate even if student demographics were to change in the future.

On the west side of the lot there are two proposed buildings, one on the north side and one on the south side. Each building will be 6 stories tall and is designed to have 89 residential units. This Drainage Servicing Report assumes that each building will have its own service. The north building's proposed service will connect to the sanitary main in the north lane, and the south building's service will connect to the combined sewer main in the south lane. From the Design Guidelines, the following table was utilized to determine the new development's waste water generation rate.

Table 1.3: Population Generation Factors (Residential Only)

Zoning	Description	(Net) Units/ha ²	People/Unit ³	(Net) People/ha
RF1	Single Detached	27.8	3.46 ⁴	96
RF2	Low Density Infill	30.6	2.81	86
RPL	Planned Lot	42.0	3.46	145
RF3	Low Density Re- development	46.0	2.52	116
RF4	Semi-Detached	30.6	3.32	102
RF5	Row Housing	42.0	3.17	133
RF6	Medium Density Multiple	80.0	3.17	254
RA7	Low Rise Apartment	125.0	2.04	255
RA8	Medium Rise Apartment	225.0	2.17	488
RA9	High Rise Apartment	325.0	1.89	614

2.1.1 Existing Sanitary Flow Generation

The existing sanitary generation was calculated using a flow generation of 20m³/day for a Senior Grade School. Flow is directed to the existing sanitary line in the north lane. There are no existing flows directed to the line in the south lane. A summary of the existing contributions to the sanitary system is as follows:

Street Address	7814 - 83 Street NW
Zoning	Urban Services Zone (US)
Area	1.43
Land Use	School

Sewer Main Location	NORTH LANE	SOUTH LANE
Sewer Main Diameter	300 (mm)	300 (mm)
Dry Weather Flows		
Generation rate	20 (m ³ /day)	0 (m ³ /day)
Generation rate	0.231 (L/s)	0 (L/s)
Peak Factor	19.318	0
Peak Dry Weather Flow Rate	4.472 (L/s)	0 (L/s)

Extraneous Flows		
Inflow & Infiltration Rate (L/s/ha)	0.28 (L/s/ha)	0 (L/s/ha)
Contributing Area	1.43 (ha)	0 (ha)
Inflow & Infiltration	0.401 (L/s)	0 (L/s)

Peak Existing Flow Rate for Sanitary Sewer	4.872 (L/s)	0.000 (L/s)
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2.1.2 Proposed Sanitary Flow Generation

As seen in Figure 2, combined sewer mains are available in both the north and the south lanes. The proposed sanitary generation was calculated using the existing flow for the school remaining unchanged, discharging into the north combined sewer. With the proposed development, the associated flows for each building were added to the associated the north and south sewers. The calculations can be seen in the following table.

Street Address	7814 - 83 Street NW	
Zoning	MU	
Dry Weather Flows - Residential		
	NORTH LANE	SOUTH LANE
Area	0.345 (ha)	0.3452 (ha)
Units	89 (unit)	89 (unit)
Population per Unit	2.17 (person/unit)	2.17 (person/unit)
Population	193 (person)	193 (person)
Per Capita Daily Sewage Flow Generation	220 (L/person/day)	220 (L/person/day)
Peak Factor	3.063	3.063
Peak Dry Weather Flow Rate	1.513 (L/s)	1.513 (L/s)
Dry Weather Flows - School		
Generation rate	20 (m ³ /day)	0 (m ³ /day)
Generation rate	0.231 (L/s)	0 (L/s)
Peak Factor	19.318	0
Peak Dry Weather Flow Rate	4.472 (L/s)	0 (L/s)
Extraneous Flows		
Inflow & Infiltration Rate (L/s/ha)	0.28 (L/s/ha)	0.28 (L/s/ha)
Contributing Area	1.094 (ha)	0.3452 (ha)
Inflow & Infiltration	0.306 (L/s)	0.097 (L/s)
Total Peak Flow Rate for Sanitary Sewer		
	6.291 (L/s)	1.610 (L/s)

Based on these calculations, an additional peak sanitary flow of approximately **1.4 L/s** will be added to the north sewer main and **1.6 L/s** will be added to the south sewer main. Together with the school sanitary flow as well as the inflow and infiltration, on the north side, peak sanitary flow rate will total 6.3 L/s. Since there is currently no existing flow into the system from this part of the lot, with a fully re-developed site, the peak sanitary flow from the site will increase by 1.6 L/s into the south sanitary main. Further discussion of this additional flow's impact on the existing drainage network will follow in Section 3.0 of this report.

2.2 Storm Sewer System Design

Stormwater runoff drainage calculations have been completed based on the Rational Method procedures outlined in Section 1.4 of Volume 3-02 of the Stormwater Design Manual, as issued by EPCOR Drainage. IDF curve parameters for the 1:5 and 1:100 year events have been taken from the February 2022 revision of the aforementioned document.

2.2.1 Existing Storm Flow Generation

Figure 4 summarizes the existing servicing configuration for the site, including the overall drainage pattern to the nearest downstream catch basin.

Overland stormwater flow from the grassed area on the west side of the building (Catchment 1) flows to the storm system at catch basins in either the north or west lane. The west lane catch basin is the most upstream entrance into the system. Any uncaptured runoff from this lane as well as the runoff surface flowing down the north lane is captured either by the next catch basin downstream at the north-west corner of the property, or it continues with the major flow further west down the north lane to 85 Street, where the major drainage flows to the north.

The front of the building together with the school roof make up Catchment 2. The existing overland drainage patterns drain the area at the front of the building east onto 83 Street.

The existing property does not have any measures in place to control or retain storm runoff, and storm flows are therefore assumed to enter public rights-of-way in an uncontrolled manner. A C-value of 0.1 was used for the grassed field, and 0.95 was used for the parking area and the roof, and 0.6 was assumed for the area in front of the school as it is a mixture of grassed and concrete surfaces. Uncontrolled storm runoff rate calculations for the 1:5 and 1:100 year events are as follows:

Existing Condition - Uncontrolled 1:5 Year Release

1:5 yr IDF Parameters	
a	587.05
b	-0.76
c	6.56

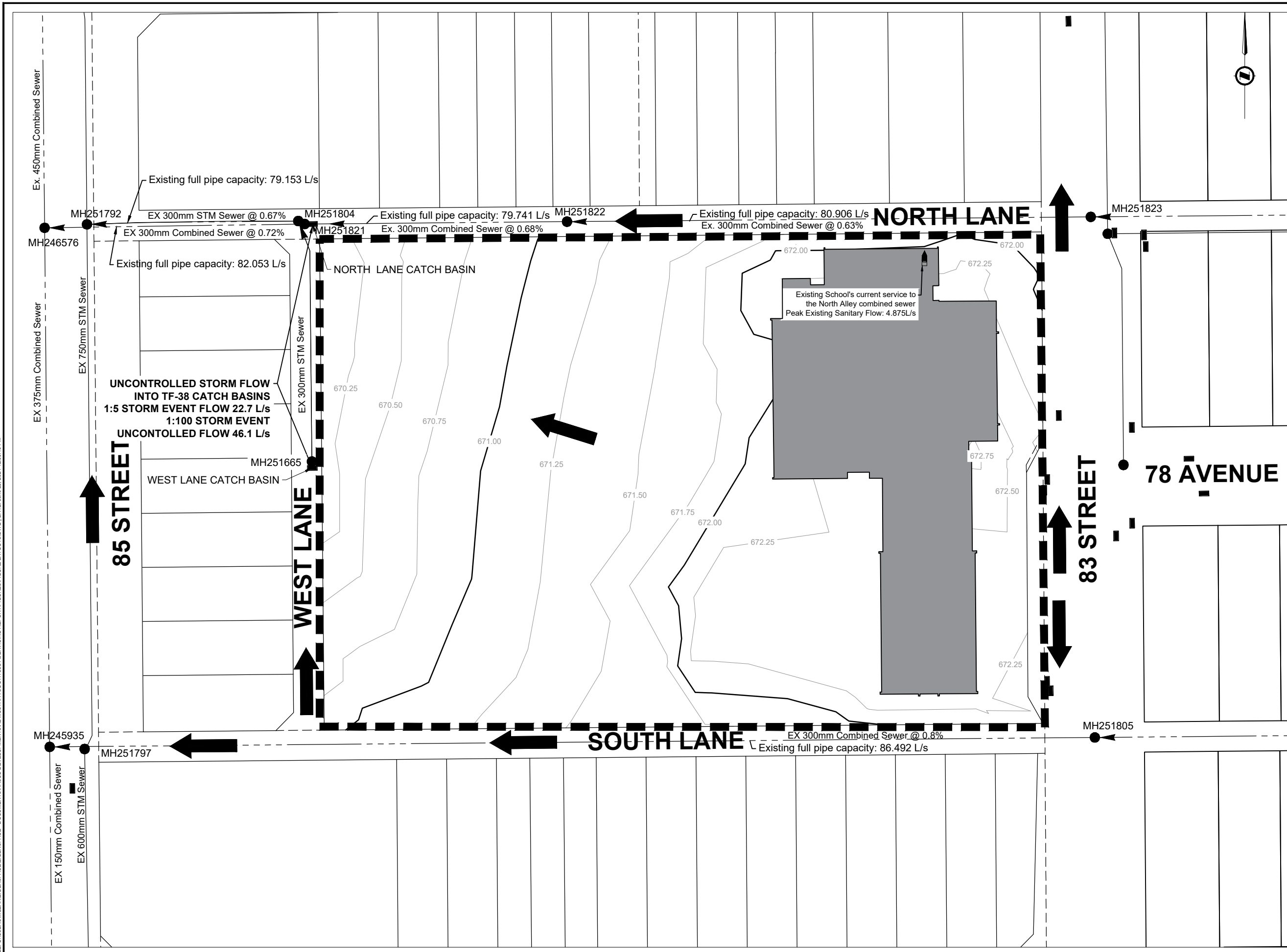
Catchment 1		Catchment 2	
Type	Field	Type	Front of School+ School Roof
Zoning	US	Zoning	US
Runoff "C"	0.1	Runoff "C"	0.6 for front of school, 0.9 for roof
Catchment Area (ha)	1.0660	Catchment Area (ha)	0.3684
Time of Concentration (mins)	8	Time of Concentration (mins)	5
IDF Intensity (mm/hr)	76.678	IDF Intensity (mm/hr)	91.375
Storm Runoff (L/s)	22.705	Storm Runoff (L/s)	76.511

Existing Condition - Uncontrolled 1:100 Year Release

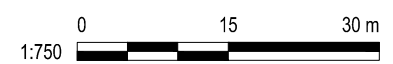
1:100 yr IDF Parameters	
a	1290.08
b	-0.75
c	8.76

Catchment 1		Catchment 2	
Type	Field	Type	Front of School+ School Roof
Zoning	US	Zoning	US
Runoff "C"	0.1	Runoff "C"	0.6 for front of school, 0.9 for roof
Catchment Area (ha)	1.0651	Catchment Area (ha)	0.3684
Time of Concentration (mins)	8	Time of Concentration (mins)	5
IDF Intensity (mm/hr)	155.744	IDF Intensity (mm/hr)	180.573
Storm Runoff (L/s)	46.079	Storm Runoff (L/s)	151.200

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Ex. San Service
Overland Flow Direction



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PROJECT		
Hasco Development 7814-83 Street NW Rezoning King Edward Park Neighbourhood		
FIGURE TITLE		
Drainage Servicing Report Existing Site Drainage Plan		
FILE No.	SCALE	FIGURE No.
Figure Layouts.dwg	1:750	4

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Uncontrolled storm runoff rates range from 23 L/s in catchment 1 and 77 L/s in catchment 2 for 1:5 year events. The runoff rates approximately double for 1:100 year events to 46 L/s and 151 L/s, respectively.

2.2.2 Catch Basin Inlet Analysis

Most of the storm discharge from the existing property is currently intercepted by the catch basin located in the west lane about halfway down the width of the lot. The next catch basin is in the north lane, approximately where the north lane intersects the west lane, at the north-west corner of the property. Both of these catch basins are Type 8 (F-38) and are just a few meters from the property. Each captures a portion of the run-off from the site, although the spillover from the west alley catch basin continues on to the north lane and the north alley catch basin. The catch basins are shown in Figure 5 below.



FIGURE 5. ON THE LEFT SIDE IS A VIEW FROM THE SOUTH OF THE WEST LANE, SHOWING THE TYPE 8 (F-38) CATCH BASIN, THE WEST LANE CATCH BASIN. ON THE RIGHT SIDE OF THE FIGURE IS THE VIEW FROM THE EAST SHOWING THE NORTH LANE. THIS LANE ALSO HAS A TYPE 8 (F-38) CATCH BASIN IN THE MIDDLE, THE NORTH LANE CATCH BASIN.

In the west lane, the catch basin is located in a shallow sag, and survey information indicates that there is approximately 120mm of ponding depth in the vicinity of this catch basin before overland flows spill into the next catchment area to the north, containing the north lane catch basin. The north lane catch basin is a flow-by catchbasin with no ponding.

Trojan Industries, a local manufacturer of cast iron frames and catch basin covers, has published flow rate calculations for the most commonly utilized covers in the Edmonton area. As the EPCOR Drainage Catch Basin Inlet Capacity Curves do not include the Type 8 (F-38) cover, we will rely on Trojan's documentation for the catch basin analysis within this report.

The provided catch basin inlet flow rates have been calculated based on the methodology outlined in HEC 22, the Urban Drainage Design Manual (3rd Edition) as published by the U.S. Federal Highway Administration. These calculations are based on Trojan's version of the Type 8 cover, which is referred to as the TF-38 cover in Trojan's documentation. The flow rate calculations for a Type 8 (F-38) cover are as follows:

TF-38 sump condition

Ponding Depth (m)	Flow, no obstruction (L/s)	Flow, 50% obstruction (L/s)
0	0	0
0.025	10	5
0.05	28	14
0.075	51	25
0.1	78	39
0.125	85	42
0.15	93	47
0.175	101	50
0.2	108	54
0.225	114	57
0.25	121	60
0.3	132	66
0.35	143	72
0.4	153	76
0.45	162	81
0.5	171	86

The "50% obstructed" flow rates provide an allowance for real-world conditions where catch basin covers are often partially blocked with debris during normal operation. These reduced inlet flow rates may then be compared against the uncontrolled storm flows originating from the project site to gauge the depth of ponding induced at the catch basin location as a result of these uncontrolled flows. In this case, the 1:5 year flow from the project site (22.7 L/s) adds approximately 0.075m of ponding at the west alley catch basin, while the 1:100 year event (46.1L/s) introduces 0.15m of ponding depth. This depth of ponding is not possible at this catch basin, as when the ponding depth reaches 0.12m, it overflows its ponding area and flows further north to the north lane. Some of the flow will be intercepted by the north alley catch basin. This catch basin does not have any ponding capability and only captures flow by runoff. Any major flow not caught by these two catch basins will proceed with major drainage to the west down the north lane, and finally north on 85th Street.

2.2.3 Proposed Storm Flow Generation & Storage Requirements

Due to the site being greater than 0.16ha but smaller than 10ha, on-site storm water management is required. The on-site storage requirement for this project was determined to be the 1:100 year design storm event (i.e. either the 1:100 4-hour Chicago Distribution or the 1:100 24-hour Huff Distribution). The allowable stormwater release rate is **35L/s/ha** or less. Since the school is not undergoing re-development, the roof area and the front of the school (Catchment 2) will remain in the same catchment, causing no utilization change to the storm system in 83rd Street.

Proposed Configuration - Controlled Release Rate

Storm Release Rate	=	28.7L/s/ha
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Type	Residential
Zoning	MU
Catchment Area (ha)	1.0651
Storm Runoff (L/s)	30.568

Catchment 1 is the entire area on the west side of the school building. It is 1.07 ha and consists of the portion of the school grounds that are not being re-developed, along with the 0.69 ha of the land that will be re-developed. The allowable discharge rate will be lowered to 28.7L/s/ha, resulting in a site discharge rate of 30.6 L/s, as to keep the pipe utilization below an approximate 10% utilization increase.

A more accurate C-value can be calculated because the development plans are known. A weighted average was calculated for the area west of the school (1.06 ha of both re-developed land and remaining school field). Grassed and planted areas (with a C-value of 0.1) will cover 0.31 ha. Roof, concrete and asphalt (with a C-value of 0.95) will comprise the remaining 0.75ha. This results in a weighted average C-value of 0.70. This C-value was multiplied by 1.25 as required for evaluating 1:100 year storm events. This resulted in a modified C-value of 0.875 used in the modeling to determine the storage capacity required.

The stormwater flow from the school field will be collected via swales and will be channeled through the newly developed area into a catch basin connected to the storm service installed for this development.

A summary of the storm design parameters and the results of the storage analysis for the 1:100 4-hour Chicago Distribution event (which is the governing event, in this case) are presented below:

Storm Storage

Catchment Area	1.0651 ha
Release rate	28.7 L/s/ha
Storm Flow Rate	30.57 L/s
Runoff "C"	0.7
1:100+ Modified "C"	0.875

Storage Analysis (Based on 1:100 Year 4 Hour Chicago Distribution)

Time (min)	Intensity (mm/hr)	Rainfall Volume (m3)	Cumulative Volume (m3)	Allowed Discharge (m3)	On-site Storage Utilization (m3)
85	137.78	107.0048	371.9074	9.1705	246.02
90	79.03	61.3775	433.2849	9.1705	298.22
95	51.9	40.3074	473.5923	9.1705	329.36
100	38.53	29.9238	503.5160	9.1705	350.12
105	30.66	23.8116	527.3277	9.1705	364.76
110	25.52	19.8197	547.1474	9.1705	375.41
115	21.9	17.0083	564.1557	9.1705	383.24
120	19.23	14.9347	579.0904	9.1705	389.01
125	17.17	13.3348	592.4253	9.1705	393.17
130	15.53	12.0611	604.4864	9.1705	396.06
135	14.2	11.0282	615.5146	9.1705	397.92
140	13.1	10.1739	625.6886	9.1705	398.92
145	12.17	9.4517	635.1402	9.1705	399.20
150	11.37	8.8303	643.9706	9.1705	398.86
155	10.68	8.2945	652.2650	9.1705	397.99
160	10.08	7.8285	660.0935	9.1705	396.65
165	9.55	7.4169	667.5104	9.1705	394.89
170	9.08	7.0518	674.5622	9.1705	392.77
175	8.66	6.7257	681.2879	9.1705	390.33
180	8.28	6.4305	687.7184	9.1705	387.59
185	7.93	6.1587	693.8771	9.1705	384.58
190	7.62	5.9180	699.7951	9.1705	381.32
195	7.33	5.6927	705.4878	9.1705	377.85
200	7.07	5.4908	710.9787	9.1705	374.17
205	6.82	5.2967	716.2753	9.1705	370.29
Required Storm Water Storage					400 m³

The total required on-site storage volume is **400 m³**. For comparison, the resulting storage volume based on the Huff distribution analysis was 149 m³. Rooftop storage, on-site ponding areas, and/or LID measures will be utilized (and documented through the design/development permit process) to provide the required storage and controlled release of site stormwater flows. The new development's roof area is approximately 3000m², and if the predominant form of on-site storage was rooftop storage, the required rooftop depth would be 13.3cm. The nature of the planned land uses for this site is not expected to warrant the installation of an onsite oil and grit separator or other stormwater treatment measures.

3.0 Impact to Existing Drainage Network

Figure 6 outlines the proposed servicing configuration for the project site, including the existing and proposed lot service locations, existing pipe capacities, and capacity utilization by the future redeveloped site. The exact configuration of the internal lot grading and the on-site stormwater measures will be determined at the time of site development.

3.1 Sanitary Impact

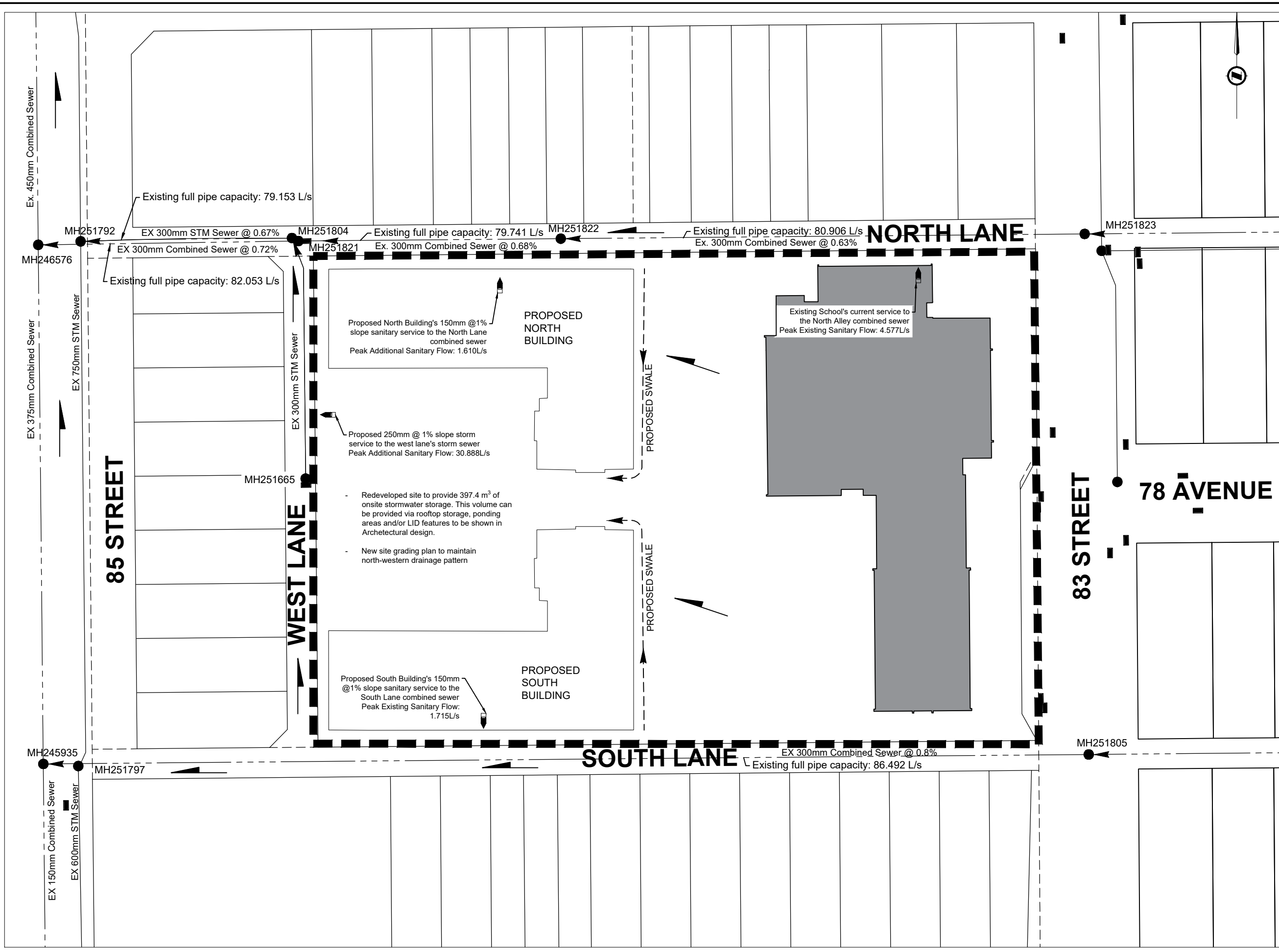
Upon re-development of the site, the school will continue to be serviced in the same location, from the 300mm combined sewer main in the north lane. The newly developed north apartment building's sanitary service will also be connected to the north lane combined sewer. The new south apartment building will be serviced by the south lane combined sewer.

The impact to the pipe capacity from a sanitary flow perspective is illustrated in the table below:

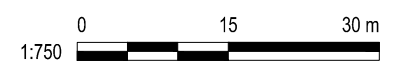
Pipe Run	Start MH	End MH	Length (m)	Slope	Diameter (mm)	Q _{full pipe} (L/s)	Existing Peak Sanitary Flow Rate (L/s)	Existing Pipe Utilization	Proposed Peak Sanitary Flow Rate (L/s)	Proposed Pipe Utilization	Utilization Change
NORTH	1	MH 251823 MH251822	106.16	0.70%	300	80.9	4.875	6.03%	4.681	5.79%	-0.24%
	2	MH251822 MH251821	53.16	0.68%	300	79.7	4.875	6.11%	6.291	7.89%	1.78%
	3	MH251821 MH246576	52.73	0.72%	300	82.1	4.875	5.94%	6.291	7.67%	1.73%
SOUTH	4	MH 251805 MH245935	211.83	0.80%	300	86.5	0	0	1.610	1.86%	1.86%

The increase in development density via the addition of the two 6 story apartment style buildings results in a **2%** utilization increase in the 300mm main's capacity. The slight decrease in the flow in the first section of the pipe run is due to the accounting for infiltration and inflow. In the existing state, the infiltration and inflow for the entire area (1.43 ha) is associated with the service connection to the first run. In the proposed model, because there are now 3 service connections, the infiltration and inflow are divided between the three connections, and therefore it is reduced at the school's service connection.

FILE: C:\USERS\MCZANEIGENSPACE - DOCUMENTS\HASCO DEVELOPMENTS\AL MUSTAFA SOUTH 83ST\SERVICING REPORT\FIGURES\FIGURE LAYOUTS.DWG [DATE: July 15, 2024 3:32:14 PM]



Overland Flow Direction



eigenspace
(solutions found here)

PROJECT

Hasco Development
7814 83 Street NW Rezoning
King Edward Park Neighbourhood

FIGURE TITLE

Drainage Servicing Report
Proposed Site Servicing Plan

FILE No.

Figure Layouts.dwg

SCALE

1:750

FIGURE No.

6

ISC: N/A SHEET SIZE ANSI B 20 mm

3.2 Storm Impact

The storm drainage on the subject site consists of two catchments. Future development within Catchment 1 will be required to provide storm servicing for the lot which will tie into the existing 300mm line in the west lane.

Catchment 1 comprises the area on the west side of the school. In the pre-development scenario catchment 1 is the entire school field along with some parking, the playground and basketball courts. It is everything west of the school building in both the pre-development and post-development scenarios. Post-development catchment 1 will include what remains of the school field along with the newly developed buildings and their parking areas. Catchment 1 run-off is picked up by catch basins that tie into the 300mm storm sewer in the north lane. The impact to the pipe capacity from a storm flow perspective is illustrated in the table below.

Characteristics of Receiving Pipe - 300mm Storm Sewer in North Alley

Receiving Inlet CBs in the West and North Lanes			
Start MH	251804		
End MH	251792		
Length (m)	43.13		
Slope	0.67%		
Diameter (mm)	300		
Manning Roughness (s/m ^{1/3})	0.013		
Q _{full pipe} (L/s)	79.153		
		Existing Conditions (1:5 yr)	Proposed Conditions (1:5 yr)
Release Rate (L/s/ha)		uncontrolled	28.7
Storm Runoff (L/s)		22.71	30.57
Pipe Utilization		28.69%	38.62%
Pipe Utilization Increase			9.93%

As shown above, the proposed configuration with a controlled stormwater release rate of 28.7 L/s/ha from catchment 1 will result in a 9.93% pipe utilization increase in this segment of storm sewer pipe in the north lane.

Catchment 2 contains the school roof and the front of the school. This runs off into the catch basins in 83rd Street. This catchment will remain unaltered since no development is foreseen for the side of the lot containing the school.

This site's contribution to ponding levels at the downstream catch basin in the intersection of the north lane and the west lane will be reduced via on-site storage and controlled stormwater release through the site's new storm service connected to the storm sewer in the west lane. The project site's contribution to the ponding at the downstream catch basin via overland flow will be limited to the 30.57 L/s site release rate, which amounts to approximately 0.085m of ponding at the sag CB location in the west lane. The existing CB in the north lane is not subject to ponding.

4.0 APPENDIX A – City Provided Background Data (DRAINS Figures)

