FUNCTIONAL SERVICING REPORT
ISSUED FOR DRAFT PLAN OF SUBDIVISION AND ZONING BY-LAW AMENDMENT

HUMBER STATION DISTRIBUTION CENTRE

TOWN OF CALEDON
REGION OF PEEL

PREPARED FOR:

PLD HUMBER STATION INVESTMENT LP

PREPARED BY:

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CROZIER

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1.0 Introduction

C.F. Crozier & Associates Inc. (Crozier) was retained by PLD Humber Station Investment LP to prepare a Functional Servicing Report to support the Zoning by-law application and Draft Plan of Subdivision for a proposed Industrial development located at 12519-12712 Humber Station Road within the Humber Station Employment Area in the Town of Caledon (the Site). This report demonstrates how the proposed development's servicing will conform with the requirements of the Town of Caledon (Town) and Region of Peel (Region).

This report has been prepared to document details associated with the servicing strategy for the proposed development. Contained in this report is a description of the Subject Property (Section 2.0); the proposed water servicing strategy (Section 3.0); proposed sanitary servicing strategy (Section 4.0); the proposed stormwater servicing strategy (Section 5.0); proposed grading and road access (Section 6.0); a summary of erosion and sediment control (ESC) measures during construction (Section 7.0); and conclusions and recommendations (Section 8.0). Details regarding the stormwater management design are captured under the "Stormwater Management Implementation Report" prepared by Crozier dated April 2026 under a separate cover.

2.0 Background

2.1 Existing Conditions

The Site encompasses an area of approximately 78.5 ha and currently consists of agricultural lands. The Site lies within the approved Regional Official Plan Amendment (ROPA) 30 Bolton Expansion Area, referred to as "Option 6", which formally designates the lands within the Bolton Rural Service Centre area. The Site is bound by Humber Station Road to the west, agricultural land to the north and south, and existing industrial facilities to the east. A proposed road running east-west, known as Street A (designed by others) will extend from Humber Station Road to the Site area and will terminate at the east limit of the Site with a cul-de-sac. This road will ultimately connect to the existing George Bolton Parkway, which currently terminates just east of the Site. Street A will include storm, sanitary, and watermain infrastructure, which will be designed to service the proposed development. Please refer to the Stormwater Management Report Humber Station Villages Phase 2 completed by Schaeffers Consulting Engineers dated March 2026 for the engineering drawings for this infrastructure. Further, the Region has plans to construct new watermain and sanitary sewer infrastructure on Humber Station Road per the Region of Peel Project 23-2272, which is underway and anticipated to be completed by the end of 2026.

An existing drainage tributary known as the Clarkway Drive Tributary runs north-south along the east property line. A second drainage tributary known as the Goreway Road Tributary Reach 1 runs north-south, west of Humber Station Road. An existing headwater drainage feature (HDF-3) extends through the site from the north to the southwest area of the Site, connecting to an existing wetland, with an existing natural pond area. This HDF will be re-aligned through a proposed channel, which has been designed by Crozier and is provided in a report under separate cover.

The proposed Plan of Subdivision is part of the Humber Station Employment Secondary Plan. To support the Secondary Plan, a Comprehensive Environmental Impact Study and Management Plan ('CEISMP') report was prepared, and the Third Submission is dated March 2026. Recommendations within the CEISMP and Secondary Plan are implemented through this Plan of Subdivision. Refer to the Humber Station CEISMP prepared by GEI dated March 2026 for more information about the surrounding tributaries and headwater drainage features.

2.2 Proposed Conditions

The proposed development will include several blocks, including blocks for development as general employment areas, an interim SWM pond block, a block for a Natural Heritage Features, an east-west right-of-way with adjacent SWM block, a north-south right-of-way, as well as road widenings and reserve blocks. See below for a summary of each block in the draft plan. It should be noted that the block areas used for sanitary and water calculations were measured directly in our drawings, and do not include the 0.3m reserve blocks included within the Draft Plan, and as such, there are minor discrepancies between our block areas and the areas noted in the Draft Plan.

- **Block 1** covers 29.06 ha and will be developed for General Employment. Block 1 is currently proposed to be developed with one large industrial building, as well as associated drive aisles and parking areas.
- **Block 2** covers 12.07 ha and will be retained by the owner for future general employment development. Block 2 is currently proposed to be developed with two industrial buildings, as well as associated drive aisles and parking areas.
- **Block 3** covers an area of 0.13 ha and will be retained by the owner for future general employment development. At this time, however, there is no plan for development of Block 3.
- **Block 4** is 10.63 ha and will be retained by the owner for future general employment development. Block 4 is currently proposed to be developed with one industrial building, as well as associated drive aisles and parking areas.
- **Block 5** covers 7.78 ha and will be retained by the owner for future general employment development. Block 5 is ultimately proposed to be combined with Block 6, for a total area of 12.31 ha. This total area will be developed with two industrial buildings, as well as associated drive aisles and parking areas.
- **Block 6** covers 4.51 ha and is proposed to be an interim stormwater management facility to support the development of Block 1, until SWM Pond 3 at the south end of the Secondary Plan area is constructed. Once the ultimate stormwater management facility is constructed, Block 6 will be developed as one industrial parcel with Block 5.
- **Block 7** covers 2.02 ha and will contain an east-west right-of-way currently described as Street A. This right-of-way will extend George Bolton Parkway to the west, ultimately connecting to Humber Station Road and acting as the access point for Blocks 1, 4, 5, and 6. The servicing, grading, and stormwater management design for Block 7 is not included in this report. Please refer to the Stormwater Management Report Humber Station Villages Phase 2 completed by Schaeffers Consulting Engineers dated March 2026 for Block 7.
- **Block 8** covers 10.52 ha and will contain Natural Heritage Features. The Site currently contains a headwater drainage feature of the Gore Road Tributary, known as HDF-3, that flows southwest through the Site, towards Humber Station Road. The portion of HDF-3 that flows through the subdivision is proposed to be realigned as part of redevelopment. A channel is proposed for this HDF realignment, that will make up the majority of Block 8, with existing wetlands and wetland compensation at the north and southwest extents of Block 8. Please refer to the Hydraulic Analysis Report and Channel Realignment drawings prepared by Crozier submitted under a separate cover for more information on the design of Block 8.
- **Blocks 9-10** cover a total area of 0.73 ha and will be conveyed to the Region for a road widening on Humber Station Road.

- **Blocks 11-13** cover a total area of 0.019 ha and are 0.3m reserve blocks along Humber Station Road.
- **Block 14** covers 0.74 ha and will contain a north-south right-of-way that will run south from the eastern extent of Block 7, ultimately connecting the development to the lands to the south of the Secondary Plan area. The servicing, grading, and stormwater management design for Block 14 is not included in this report. Please refer to Stormwater Management Report Humber Station Villages Phase 2 completed by Schaeffers Consulting Engineers dated March 2026 for Block 14.
- **Block 15** covers an area of 0.15 ha and will serve as a stormwater management facility for the west portion of Block 7. The servicing, grading, and stormwater management design for Block 15 is not included in this report. Please refer to Stormwater Management Report Humber Station Villages Phase 2 completed by Schaeffers Consulting Engineers dated March 2026 for Block 15.

The proposed development will ultimately include six slab-on grade buildings (Buildings 1 to 6), at-grade asphalt parking and loading areas, access driveways, and landscaped areas. The development will be constructed in phases, including Phase 1A, Phase 1B, and Phase 2. Refer to Figures 1 to 4 for the delineation of these areas.

Phase 1A of the development includes the construction of a 1-storey industrial Building (Building 1) located on the northeast side of the Site within Block 1, and an interim stormwater management pond on the southeast side of the Site within Block 6. The Block 1 area will also include loading docks on the east and west sides of the building, trailer parking on the east and west Site limits, an internal drive aisle that wraps around the extents of the building, and passenger vehicle parking lots north and south of the building. Access for passenger vehicles and trucks is proposed via two driveway accesses to Street A.

Phase 1B of the development includes the construction of three 1-storey industrial buildings (Buildings 2, 3 and 4), located on the west side of the Site within Blocks 2 and 4. The Phase 1B area will also include loading docks, trailer parking, internal drive aisles, and passenger vehicle parking lots. Access for passenger vehicles and trucks is proposed via driveway accesses to Humber Station Road for Block 2 and to Street A for Block 4.

Phase 2 of the development includes the removal of the interim SWM pond, and construction of two 1-storey industrial buildings (Buildings 5 and 6), located on the south side of the Site, within Blocks 5 and 6. Stormwater flows from Block 1 that were previously directed to the interim SWM pond in Block 6, and the post-development stormwater flows from Blocks 5 and 6 will be directed to the ultimate SWM Pond 3, which is located south of the Site, within the overall Secondary Plan area, but is not included in this application. For more information regarding SWM Pond 3, please refer to the "Stormwater Management Implementation Report" prepared by Crozier dated March 2026. The Phase 2 area will also include loading docks, trailer parking, internal drive aisles, and passenger vehicle parking lots. Access for passenger vehicles and trucks is proposed via driveway accesses to Humber Station Road and to Street A.

2.3 Related Studies & Reports

This report has been completed in accordance with the guidelines, standards, and policies of the Town of Caledon, Peel Region, and TRCA. The relevant background studies and reports include:

- Ministry of Environment (MOE) Stormwater Management Planning and Design Manual, dated March 2003
- Town of Caledon Development Standards Manual (2019)
- Region of Peel Public Works Watermain Design Criteria Manual (June 2010)
- Region of Peel Linear Wastewater Standards (March 2023)
- Region of Peel Public Works Stormwater Design Criteria Manual (June 2019)
- Master Site Plan (Petroff Partnership Architects, March 2026)
- Draft Plan of Subdivision (Mainline Planning Services Inc., February 2026)
- Topographic Survey (David B. Searles Surveying Ltd., April 2022)
- Humber Station – Comprehensive Environmental Impact Study and Management Plan Phase 2: Analysis, Impact Assessment, and Mitigation (CEISMP) (July 2024, revised March 2026)
- Stormwater Management Report Humber Station Villages Phase 2 (Schaeffers Consulting Engineers, March 2026)

It should be noted that the entire Site area is included in the lands covered by the CEISMP. Block 2 is included in the "Humber Station North" area of the CEISMP, and Blocks 1, 4, 5, and 6 are included in the "Humber Station South" area of the CEISMP.

3.0 Water Services

The Region of Peel is responsible for the operation and maintenance of the public water system in the Town of Caledon, and any local system connecting to this public system. The following sections outline the existing and proposed design of the water services.

3.1 Existing and Future Watermain System

The existing and future municipal domestic and fire-fighting water supply infrastructure surrounding the Site includes:

- An existing 200 mm diameter watermain within Humber Station Road (PP04-D, Region of Peel, December 2022)
- A future 400 mm diameter watermain within Humber Station Road designed by the Region of Peel (Project Number 23-2272), which is underway and anticipated to be completed by the end of 2026.
- A future 400 mm diameter watermain within Street A (refer to the Stormwater Management Report Humber Station Villages Phase 2 completed by Schaeffers)

3.2 CEISMP Design Criteria

According to Section 3.4.3 of the CEISMP, domestic water demands for the Site have been accounted for, using the following design criteria:

- Average consumption rate for industrial, commercial, or institutional land uses of 300 L/cap/day;
- Maximum Day Demand peaking factor or 1.4 for ICI land uses;
- Peak Hour Demand peaking factor of 3.0 for ICI land uses;
- Equivalent population of 70 persons/hectare of industrial area;
- Fire demand of 417 L/s

3.3 Proposed Water Demands

Region of Peel Watermain Design Criteria was referenced to calculate water demands for the Site. An average water demand of 300 L/capita/day was used in conjunction with a population density of 70 persons/ha for industrial sites. The table below summarizes the water demands.

Table 1: Domestic Water Demands

Block	Area (ha)	Equivalent Population	Average Daily Demand (L/s)	Maximum Daily Demand (L/s)	Peak Hourly Demand (L/s)
1	29.06	2034	7.06	9.89	21.19
2	12.07	845	2.93	4.11	8.80
4	10.63	744	2.58	3.62	7.75
5&6	12.29	860	2.99	4.18	8.96
Total Developable Block Area	**64.05**	**4483**	**15.57**	**21.83**	**46.70**

As shown in the table above, the total peak hourly demand for the total developable area is 46.70 L/s.

As the flows for each block were calculated using the same design criteria as what was accounted for the Site in the CEISMP, it is confirmed that the Site falls within the conclusions of the CEISMP and can be serviced by the future watermain infrastructure surrounding the Site on Humber Station Road and Street A.

Refer to Appendix B for the excerpt from the CEISMP report and detailed domestic water demand calculations.

3.4 Fire Flow Demand

Fire Underwriters Survey (FUS, 2020) criteria and the latest Master Site Plan by Petroff was used to estimate fire flow demands for the proposed buildings on Site. Estimated flows are based on the total building floor areas, high one-storey building equivalents, distances to adjacent buildings and building construction details as designated by Petroff in the email attached to Appendix B, including ordinary construction type, rapid burning content, automated sprinkler system. The required fire flows per FUS 2020 guidelines are presented in Table 2.

Table 2: Fire Water Demands

Block	Building	Building Gross Floor Area (ha)	Required Fire Flow (L/s)	Duration (hr)
1	1	12.03	316.67	4.5
2	2	3.15	316.67	4.5
	3	3.15	316.67	4.5
4	4	4.92	316.67	4.5
5&6	5	2.25	333.33	4.5
	6	3.17	333.33	4.5

The highest required fire flow for the proposed buildings is 333.33 L/s for Buildings 5 and 6. The maximum day demand plus fire protection for Buildings 5 and 6 is 337.52 L/s. Refer to Appendix B for FUS fire flow calculations.

As the maximum required fire flow for the Site is 333.33 L/s, and the CEISMP used a fire demand of 417 L/s, it can be concluded that the proposed watermain infrastructure on Humber Station Road and Street A has capacity to service the Site for fire protection.

Refer to Appendix B for the excerpt from the CEISMP report, and detailed FUS calculations.

3.5 Proposed Water Servicing

Block 1 is proposed to be serviced by a 300 mm diameter PVC fire water line and a 150 mm domestic water line. The proposed 300 mm diameter fire water line will connect to the future 400 mm watermain in Street A and will tee off internal to the block area for the 150 mm diameter domestic water line per Region of Peel standard 1-8-6. The 150 mm diameter domestic water line will tie directly into Building 1, and the 300 mm diameter fire water line will be looped around the block to service the building and the fire hydrants. Note that a detector check valve in chamber will be placed on the 300 mm fire line within the property near Street A and a water meter will be placed in the water meter room located at the south end of the building.

Block 2 will be serviced by a 300 mm diameter PVC fire water line and a 150mm diameter domestic water line. The proposed 300 mm diameter fire water line will connect to the future 400 mm diameter watermain within Humber Station Road and will tee off internal to the block area for the 150 mm diameter domestic water line per Region of Peel standard 1-8-6. The 150 mm diameter domestic water line will tie directly into Buildings 2 and 3, and the 300 mm diameter fire water line will be looped around the block to service the buildings and the fire hydrants. Note that a detector check valve in chamber will be placed on the 300 mm fire line within the property near Humber Station Road and a water meter will be placed in the water meter room.

Block 4 will be serviced by a 300 mm diameter PVC fire water line and a 150 mm diameter domestic water line. The proposed 300 mm diameter fire water line will connect to the future 400 mm diameter watermain within Street A and will tee off internal to the block area for the 150 mm diameter domestic water line per Region of Peel standard 1-8-6. The 150 mm diameter domestic water line will tie directly into Building 4, and the 300 mm diameter fire water line will be looped around the Block to service the building and the fire hydrants. Note that a detector check valve in chamber will be placed on the 300 mm fire line within the property near Street A and a water meter will be placed in the water meter room.

Blocks 5 and 6 will be developed together once the interim SWM pond has been decommissioned and removed, and will share a service connection. Blocks 5 and 6 will be serviced by a 300 mm diameter PVC fire water line and a 150 mm diameter domestic water line. The proposed 300 mm diameter fire water line will connect to the future 400 mm diameter watermain within Street A and will tee off internal to the block area for the 150 mm diameter domestic water line per Region of Peel standard 1-8-6. The 150 mm diameter domestic water line will tie directly into Buildings 5 and Building 6, and the 300 mm diameter fire water line will be looped around the Block to service the buildings and the fire hydrants. Note that a detector check valve in chamber will be placed on the 300 mm fire line within the property near Street A and a water meter will be placed in the water meter room.

Refer to Figures 1 and 2 in this report for the interim and ultimate overall water servicing strategy for the Site, and Figure 5 for the watermain drainage area plan.

4.0 Sanitary Servicing

The Region of Peel is responsible for the operation and maintenance of the public sewage collection and treatment systems in the Town of Caledon, and any local sewage system that connects to this public system.

4.1 Existing and Future Sanitary System

The municipal sanitary infrastructure surrounding the Site includes:

- A future 1200 mm diameter sanitary trunk sewer on Humber Station Road designed by the Region of Peel (Project Number 23-2272), which is underway and anticipated to be completed by the end of 2026. This sewer will be constructed deep so as to convey flows from a large upstream catchment area.

- A future 750 mm diameter sanitary sewer on Humber Station Road designed by the Region of Peel (Project Number 23-2272), which is underway and anticipated to be completed by the end of 2026. This sewer will be constructed shallower than the 1200 mm diameter trunk sewer for ease of local service connections, and will discharge into the 1200 mm diameter trunk sewer through one point connection.

- A future 900 mm diameter sanitary sewer within Street A (refer to the Stormwater Management Report Humber Station Villages Phase 2 completed by Schaeffers)

4.2 CEISMP Design Criteria

According to Section 3.3 of the CEISMP, sanitary flows for the Site have been accounted for, using the Region of Peel Linear Wastewater Standards (2023). As noted in the email from Schaeffers Consulting Engineers dated March 25, 2026 included in Appendix C, the CEISMP uses the Region's standard for industrial areas per the following design criteria:

- Average sanitary generation rate for industrial, commercial, or institutional land uses of 270 L/cap/day;

- Infiltration rate of 0.26 L/s/ha;

- Equivalent population of 70 persons/hectare of industrial area;

4.3 Design Sanitary Demand

To estimate the sanitary design flows from the proposed development, the Region of Peel Design Standards were referenced. The calculated design flows are based on the building areas provided on the Site Plan by Petroff. A summary of the calculated design flows is shown in the following table and detailed calculations are provided in Appendix C.

Table 3: Proposed Sanitary Flows

Block	Equivalent population	Average Daily Flow (L/s)	Peak Factor	Peak Daily Flow (L/s)	Infiltration Flow (L/s)	Total Flow (L/s)
1	2034	6.36	3.58	22.76	7.56	30.31
2	845	2.64	3.85	10.15	3.14	13.29
4	744	2.33	3.88	9.02	2.76	11.78
5&6	860	2.69	3.84	10.33	3.20	13.52
Total	**4483**	**14.01**	**-**	**52.26**	**16.65**	**68.91**

The total sanitary design flow for the developable area is 68.91 L/s.

As the flows for each block were calculated using the same design criteria as what was accounted for the Site in the CEISMP, it is confirmed that the Site falls within the conclusions of the CEISMP and can be serviced by the future sanitary sewer infrastructure surrounding the Site on Humber Station Road and Street A.

Refer to Appendix C for the overall sanitary drainage plan from the CEISMP, an excerpt from the CEISMP that summarizes the sanitary flows, and the detailed sanitary demand calculations for the Site. Refer to Figure 6 for the sanitary drainage area plan for the Site.

4.4 Proposed Sanitary Servicing

Sanitary servicing for Block 1 will be achieved via a 250 mm diameter gravity sanitary sewer system that collects sanitary flows from various points along Building 1. The 250 mm diameter sanitary sewer system internal to Block 1 will drain to the future 250 mm diameter sanitary sewer within Street A.

Sanitary servicing for Block 2 will be achieved via a 250 mm diameter gravity sanitary sewer system that collects sanitary flows from various points along Buildings 2 and 3. The 250 mm diameter sanitary sewer system internal to Block 2 will drain to the future 1200 mm diameter sanitary trunk sewer within Humber Station Road via the proposed 750 mm diameter sanitary sewer within Humber Station Road.

Sanitary servicing for Block 4 will be achieved via a 250 mm diameter gravity sanitary sewer system that collects sanitary flows from various points along Building 4. The 250 mm diameter sanitary sewer system internal to Block 4 will drain to the future 250 mm diameter sanitary sewer within Street A.

Blocks 5 and 6 will be developed together and will share a service connection. Sanitary servicing for Blocks 5 and 6 will be achieved via a 250 mm diameter gravity sanitary sewer system that collects sanitary flows from various points along Buildings 5 and 6. The 250 mm diameter sanitary sewer system internal to Blocks 5 and 6 will drain to the future 250 mm diameter sanitary sewer within Street A.

Refer to Figures 1 and 2 in this report for the interim and ultimate overall sanitary servicing strategy for the Site.

5.0 Stormwater Servicing

The proposed storm drainage design for the Site is detailed in the Stormwater Management Implementation Report, prepared by Crozier in April 2026. The proposed stormwater management strategy has been prepared in accordance with the quantity, quality, and water balance requirements of the Town, Region, and TRCA. Refer to the Stormwater Management Implementation Report (under separate cover) for details.

5.1 Existing Drainage Conditions

The Site is located in a rural area of the West Humber Watershed and is bordered to the east by industrial lands, agricultural lands planned for industrial development to the north and south, and Humber Station Road to the west. Under existing conditions, the property consists primarily of agricultural fields with residential dwellings fronting Humber Station Road.

Based on the topographic survey, the Site drainage is delineated into three separate drainage patterns. The center area of the Site drains south to the existing HDF-8. The east area of the Site drains east through the existing east wetland, and outlets to the Clarkway Drive Tributary. The northwest area of the Site drains west through the existing culvert under Humber Station Road, and outlets to the Goreway Road Tributary reach 1. The southwest area of the Site drains south to the existing HDF-3, the west wetland, and the roadside ditch along Humber Station Road.

5.2 Proposed Storm Sewer System

The proposed stormwater management strategy for the Site is split into an interim condition and an ultimate condition based on the phasing of the development. The interim condition includes the construction of Blocks 1, 2, and 4, with an interim stormwater management pond located within Block 6. The ultimate condition includes the removal of the interim stormwater management pond located within Block 6, and construction of Blocks 5 and 6. Ultimately, stormwater flows from Blocks 1, 5, and 6 will be directed to an ultimate SWM Pond 3 located south of the Site.

For details regarding the stormwater quantity, quality, and water balance for the Site, please refer to the Stormwater Management Implementation Report prepared by Crozier in April 2026. The following sections summarize the stormwater servicing for each block.

The proposed stormwater management strategy for Block 1 includes the use of underground detention tanks, the interim SWM pond located on within Block 6, and the ultimate SWM Pond 3. Storm sewers internal to the Block 1 area will have minimum cover, length, and slope per the Town of Caledon standards. Storm sewers will be sized to capture flows from the drive aisles, loading docks, private roadway, and parking areas, such that the regional storm event can be controlled and stored within the underground detention tanks. For more information regarding the stormwater management design of Block 1, refer to the Stormwater Management Implementation Report prepared by Crozier in April 2026.

The proposed stormwater management strategy for Blocks 2 and 4 include the use of underground stormwater detention tanks. Storm sewers internal to the Block 2 and 4 areas will have minimum cover, length, and slope per the Town of Caledon standards. Storm sewers will be sized to capture flows from the drive aisles, loading docks, and parking areas, such that the 100-year storm event can be controlled and stored within the underground detention tanks. For more information regarding the stormwater management design of Blocks 2 and 4, refer to the Stormwater Management Implementation Report prepared by Crozier in April 2026.

The proposed stormwater management strategy for Blocks 5 and 6 include the use of underground detention tanks and the ultimate SWM Pond 3 located south of the Site within the Secondary Plan Area. Storm sewers internal to the Block 5 and 6 areas will have minimum cover, length, and slope per the Town of Caledon standards. Storm sewers will be sized to capture flows from the drive aisles, loading docks, and parking areas, such that the regional storm event can be controlled and stored within the underground detention tanks. For more information regarding the stormwater management design of Blocks 5 and 6, refer to the Stormwater Management Implementation Report prepared by Crozier in April 2026.

Figures 1 and 2 illustrate the interim and ultimate general stormwater sewer design for the Site.

6.0 Grading

The grading of the Site will be governed by the overall surface and storm drainage system for the proposed development, with consideration of the following:

- Provide safe overland conveyance of emergency flows exceeding the capacity of the storm sewer system to the proposed Street A right-of-way, the north-south right-of-way in Block 14 in the southeast corner of the Site, the proposed realigned channel or the existing wetland (HDF-3).

- Match existing elevations along property lines based on the topographic survey, and natural heritage feature buffers for the Clarkway Tributary east of the Site and wetland buffers of HDF-3 at the north and centre of the Site as designated in Figure 8.3 of the CEISMP "Preliminary Natural Heritage System" prepared by GEI Consultants provided in Appendix A.

- Match proposed future elevations along the limit of Street A as designated by the Stormwater Management Report Humber Station Villages Phase 2 completed by Schaeffers and channel limits as designated in the Channel Realignment drawings prepared by Crozier for the realigned channel section of HDF-3 in the centre of the site.

- Maintain minimum cover requirements over storm sewers, sanitary sewers, and watermains, while considering the ground water elevations of the Site.

- Satisfy the Town's requirement for containing stormwater flows within the Site, while ensuring a maximum of 0.3 m of emergency stormwater ponding at low points.

The proposed grading strategy for Block 1 will match the existing drainage condition, with the north end of the Block draining towards the south, and an emergency overland flow route directing drainage to the Street A right-of-way. Existing and proposed future elevations will be matched around the block limits. Emergency ponding depths over low points will not exceed 0.3 m.

The proposed grading strategy for Block 2 will match the existing drainage condition, with the north end of the Block draining towards the south, and an emergency overland flow route directing drainage to the proposed realigned channel. Existing and proposed future elevations will be matched around the block limits. Emergency ponding depths over low points will not exceed 0.3 m.

The proposed grading strategy for Block 4 will match the existing drainage condition, with the north end of the Block draining towards the south, and an emergency overland flow route directing drainage to the existing wetland (HDF-3). Existing and proposed future elevations will be matched around the block limits. Emergency ponding depth over low points will not exceed 0.3 m.

The proposed grading strategy for Blocks 5 and 6 will match the existing drainage condition, which is relatively flat. The emergency overland flow route will direct drainage towards the southeast corner of this Block, ultimately directing flows to the ultimate SWM Pond 3 south of the Site in the Secondary Plan area. Existing and proposed future elevations will be matched around the block limits. Emergency ponding over low points will not exceed 0.3 m.

Refer to Figures 3 and 4 for the interim and ultimate overall grading design for the Site.

7.0 Erosion & Sediment Control During Construction

Erosion and sediment controls will be installed prior to the commencement of any construction activities and will be maintained until the Site is stabilized or as directed by the Site Engineer and/or the City, Region, and the TRCA. Controls will be inspected each week and after each significant rainfall events and maintained in proper working condition.

The following sediment and erosion controls will be included during construction on the Site:

Heavy Duty Silt Fencing

Heavy duty silt fence will be installed surrounding the perimeter of the area where pre-grading will occur to intercept sheet flow. Additional silt fence may be added based on field decisions by the Site Engineer and Owner, prior to, during and following construction.

Mud Mat

Mud mats will be installed at the construction entrances to prevent mud tracking from the Site onto the surrounding lands and perimeter roadway network. All construction traffic will be restricted to this access only.

Interceptor Swale with Rock Check Dam

Interceptor swales utilize the existing drainage features on the Site. These conveyance systems collect and convey runoff to the downstream sediment control pond. The rock check dams are designed to reduce velocities within the swales to prevent channel erosion.

Temporary Sediment Control Ponds

Temporary sediment control ponds will be implemented during construction to promote settling of suspended sediment particles and to prevent erosion. ESC measures will follow TRCA's Erosion & Sediment Control Guidelines and the temporary ponds will be sized in accordance with MECP/MECP-TRCA construction pond criteria.

8.0 Conclusions and Recommendations

We conclude that the proposed development of the subject Site can be readily serviced. The proposed civil engineering servicing design outlined in this report can meet the objectives of the regulatory agencies and will be subject to further detailed design.

Based on the information contained in this report, we offer the following conclusions:

1. Domestic water and fire flows will be provided for the Site by proposed 150 mm diameter domestic lines and 300 mm diameter fire lines to each block. Existing and future watermain infrastructure has the capacity to provide the required Site flows.

2. Sanitary servicing for the Site will discharge to proposed 250 mm diameter sanitary sewer connections for each block. Existing and future sanitary sewer infrastructure has the capacity to accept the Site flows.

3. The proposed stormwater management strategy for the Site includes the use of underground stormwater detention tanks, an interim stormwater management pond, and an ultimate stormwater management pond. Refer to the Stormwater Management Implementation Report prepared by Crozier dated April 2026 under a separate cover for details.

4. Grading will be governed by the overall drainage system for the proposed development, while matching into existing and future elevations at the development limits.

Based on the conclusions provided, the Site can be serviced according to Town of Caledon and Region of Peel requirements. We recommend approval of the Draft Plan of Subdivision and Zoning Bylaw Amendment Applications for the proposed development from the perspective of servicing requirements.

Respectfully submitted,

C.F. CROZIER & ASSOCIATES INC.

Katrina Weel, P.Eng.
Project Engineer, Land Development

C.F. CROZIER & ASSOCIATES INC.

Mena Iskander, P.Eng.
Project Manager, Land Development

LE:KW/stm:tc
J:\600\624 - Prologis\6777 - Prologis Humber Station - Phase 1 & 2\Reports\2025.07.XX_FSR Report\6777_FSR.docx

APPENDIX A

Background Information

LEGEND

EP	DENOTES	EDGE OF PAVEMENT
FF	DENOTES	FINISHED FLOOR
FH	DENOTES	FIRE HYDRANT
INV	DENOTES	INVERT
LP	DENOTES	LIGHT POLE
MBOX	DENOTES	MAILBOX
MW	DENOTES	MONITORING WELL
PWF	DENOTES	POST AND WIRE FENCE
RF	DENOTES	RAIL FENCE
RM	DENOTES	ROAD MARKING
SP	DENOTES	SIGN POST
WIF	DENOTES	WROUGHT IRON FENCE
WV	DENOTES	WATER VALVE
ø	DENOTES	DIAMETER
BOS	DENOTES	BOTTOM OF SLOPE
DL	DENOTES	DITCH LINE
OHW	DENOTES	OVERHEAD WIRES
SW	DENOTES	SWALE
TOS	DENOTES	TOP OF SLOPE
	DENOTES	ARCHEOLOGY AREA
	DENOTES	CONIFEROUS TREE
	DENOTES	DECIDUOUS TREE
	DENOTES	TREE LINE

ADDITIONAL INFORMATION AS REQUIRED UNDER SECTION 51 OF THE ONTARIO PLANNING ACT, R.S.O. 1990, c.P.13 (AS AMENDED APRIL, 1997).

a) AS SHOWN
b) AS SHOWN
c) SEE LAND USE SCHEDULE
d) AS SHOWN
e) AS SHOWN
f) AS SHOWN
g) AS SHOWN
h) MUNICIPAL WATER SUPPLY AVAILABLE
i) SANDY
j) AS SHOWN
k) MUNICIPAL SANITARY AND STORM SEWERS
l) AS SHOWN

OWNER'S CERTIFICATE

I HEREBY AUTHORIZE MAINLINE PLANNING SERVICES INC. TO PREPARE AND SUBMIT A DRAFT PLAN OF SUBDIVISION.

185 THE WEST MALL
SUITE 700, TORONTO
ONTARIO S9C 5LC

_____ MAY 6, 2024
ROSS CRONKWRIGHT
I HAVE THE AUTHORITY TO BIND THE CORPORATION

SURVEYOR'S CERTIFICATE

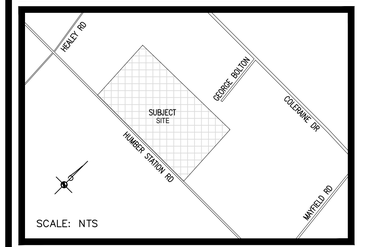
I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LANDS SHOWN ON THIS PLAN OF SUBDIVISION AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE CORRECTLY SHOW.

_____ MAY 6, 2024
BONEY CHERIAN
ONTARIO LAND SURVEYORS

GENERAL NOTE:

LEGAL DESCRIPTION
12519-12712 HUMBER STATION ROAD
PART OF LOTS 3 AND 4 CONCESSION 5,
(FORMERLY TOWNSHIP OF ALBION, COUNTY OF PEEL)
TOWN OF CALEDON REGIONAL
MUNICIPALITY OF PEEL

NOTE:
ALL SURVEY INFORMATION PROVIDED BY DAVID B. SEARLES SURVEYING LTD. ONTARIO LAND SURVEYOR.



LAND USE SCHEDULE

TOTAL SITE AREA:	= 784,639.4 sq.m.	(100.0%)
BLOCK 1	= 290,598.2 sq.m.	(37.0%)
BLOCKS 2-5: LANDS TO BE RETAINED	= 314,675.3 sq.m.	(40.1%)
BLOCK 6: INTERIM S.W.M. POUND	= 37,744.2 sq.m.	(4.8%)
BLOCK 7: STREET A (26.0 m. R.O.W.)	= 20,172.5 sq.m.	(2.6%)
BLOCK 8: NATURAL HERITAGE FEATURES	= 104,989.9 sq.m.	(13.4%)
BLOCKS 9-10: LANDS TO BE CONVEYED	= 7,346.0 sq.m.	(0.9%)
BLOCKS 11-13: 0.3 RESERVE	= 186.7 sq.m.	(0.0%)
BLOCKS 14: PROPOSED NORTH-SOUTH ROAD	= 7,397.6 sq.m.	(1.0%)
BLOCKS 15: S.W.M. TANK FOR STREET A	= 1,529.0 sq.m.	(0.2%)

EXISTING OFFICIAL PLAN	= EMPLOYMENT AREA AND EPA-1 (ENVIRONMENTAL POLICY/AREA 1)
PROPOSED OFFICIAL PLAN	= EMPLOYMENT AREA AND EPA-1 (ENVIRONMENTAL POLICY/AREA 1)
EXISTING ZONING	= A1 (AGRICULTURAL) AND EPA-1 (ENVIRONMENTAL POLICY/AREA 1) EPA-2 (ENVIRONMENTAL POLICY/AREA 2)
PROPOSED ZONING	= MS (SERVICED INDUSTRIAL)
EXISTING USE OF LAND	= VACANT
ADJACENT USE OF LAND	= SEE PLAN

NO.	DATE	DESCRIPTION	BY
5	FEB-26	NATURAL HERITAGE REVISION	J.P.P.
4	AUG-25	REVISED ROAD WINDENING	J.P.P.
3	MAY-25	REVISED S.W.M. POUND	J..P.P.
2	FEB-25	REVISED BLOCKS PER STAFF COMMENTS	J.P.P.
1	APR-24	ISSUED FOR MUNICIPAL APPROVAL	J.P.P.

REVISIONS

mainline
planning services inc.
PH (905) 893-0046 FAX (888) 370-9474
P.O. BOX 319, KLEINBURG, ONTARIO, L0J 1C0

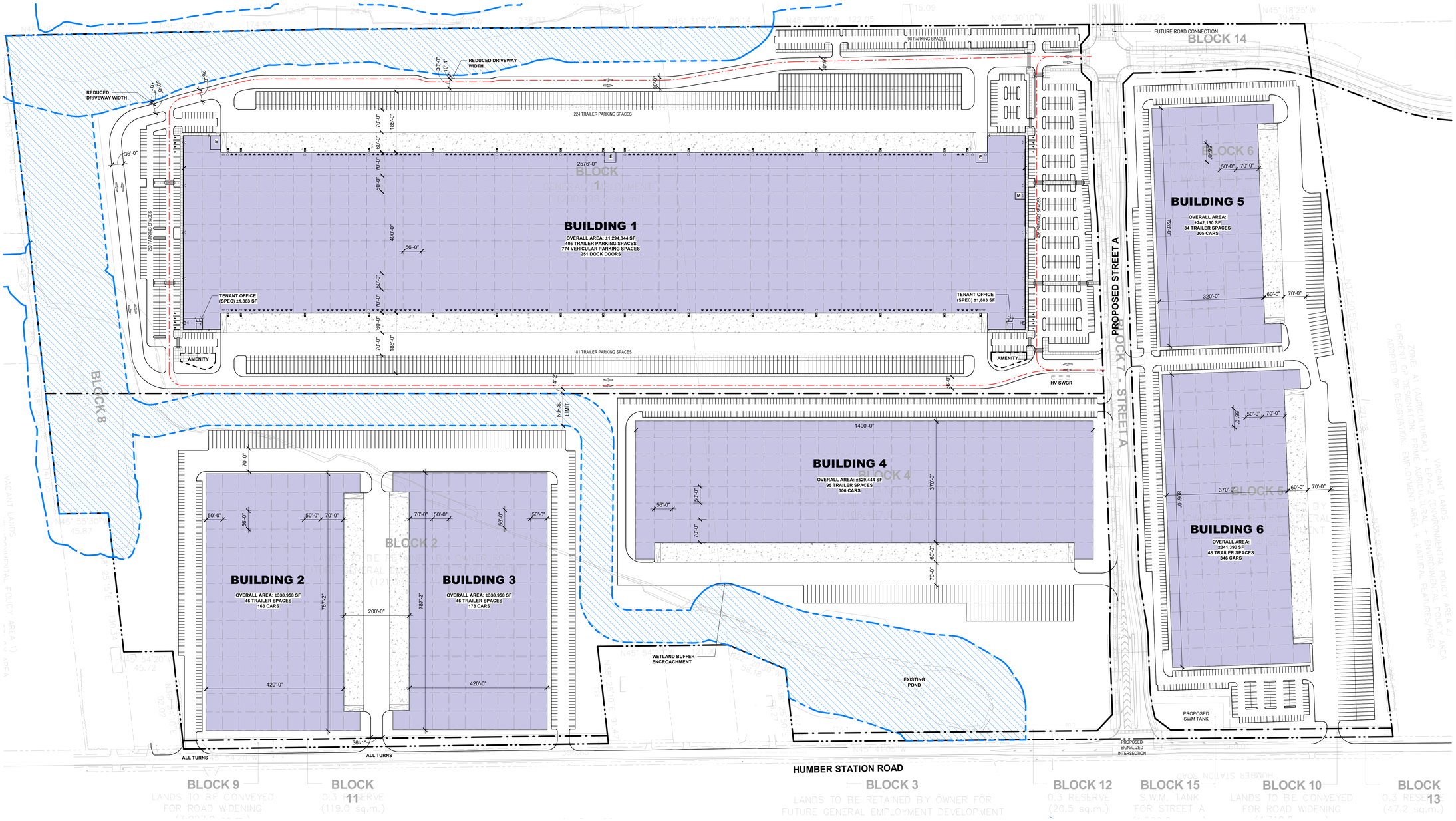
DRAWING TITLE
DRAFT PLAN OF SUBDIVISION

PROJECT
HUMBER STATION DISTRIBUTION CENTER

DEVELOPER/OWNER
PLD HUMBER STATION INVESTMENT LP.

DRAWN	CHECKED	SCALE	DWG. NO.
K.A.R.	J.P.P.	1 = 2000	DPS1
DATE	ISSUED	JOB NO.	
APR-2024	J.P.P.	-	

PETROFF
PETROFF PARTNERSHIP ARCHITECTS
10 AVIVA WAY
SUITE 400
MARKHAM, ONTARIO
L6G 0G1
T 905.470.7000
F 905.470.2500
www.petroff.com



1 / A025 MASTER SITE PLAN OPTION 20
Scale.1 : 1500

SITE LEGEND

- PROPOSED BUILDING AREA
- CONCRETE PAVEMENT
- UNDEVELOPABLE LAND (INCLUDES NHS)
- CONCRETE ISLAND
- PAINTED ISLAND
- PAINTED PEDESTRIAN CROSSWALK
- ENTRANCE/EXIT DOOR
- LOADING DOCK DOOR
- DRIVE IN DOOR
- PRINCIPAL ENTRANCE
- PROPERTY LINE
- ACCESSIBLE PARKING

PROJECT DATA - MASTER PLAN

SITE AREA:
OVERALL: ±193.97 ACRES (78.5 ha)

BUILDING 1: ±1,294,844 SF
BUILDING 2: ±338,958 SF
BUILDING 3: ±338,958 SF
BUILDING 4: ±529,444 SF
BUILDING 5: ±242,150 SF
BUILDING 6: ±341,390 SF

TOTAL BUILDINGS: ±3,118,744 SF

COVERAGE: PROP. LOT COVERAGE: 36.9%

LEGAL DESCRIPTION

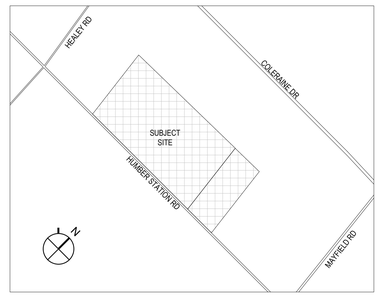
PLAN OF SURVEY OF
12519-12712 HUMBER STATION ROAD

TOWN OF CALEDON
REGIONAL MUNICIPALITY OF PEEL

NOTE: ALL SURVEY INFORMATION FROM DAVID B. SEARLES SURVEYING LTD. ONTARIO LAND SURVEYOR. DATED APRIL 27, 2022.

SITE NOTE

**SITE SPECIFIC ZONING TO BE VERIFIED UPON CONSULTATION WITH TOWN OF CALEDON.
MASTER PLAN LAYOUT IS SUBJECT TO IMPLEMENTATION OF ENVIRONMENTAL, STORM WATER MANAGEMENT, ETC. REQUIREMENTS UPON CONSULTATION WITH AUTHORITIES HAVING JURISDICTION.**



SITE KEY PLAN
Scale.1 : 250

REV #	DATE	REVISION TITLE
1	OCT 15, 2025	ISSUED FOR CLIENT REVIEW
2	JAN 23, 2026	ISSUED FOR CLIENT REVIEW
3	JAN 29, 2026	ISSUED FOR CLIENT REVIEW

PROJECT NO: 22095.00
DRAWN BY: EB
CHECKED BY: RCB

■ NOT RELEASED FOR CONSTRUCTION
□ RELEASED FOR CONSTRUCTION

PROJECT TITLE:
PROLOGIS CALEDON SITE
TOR00000
HUMBER STATION ROAD
CALEDON, ONTARIO

PROLOGIS®
Prologis Inc. (Canada)
185 The West Mall, Suite 700, Toronto
647-258-2600
https://www.prologis.com

SHEET TITLE:
MASTER SITE PLAN OPTION 26

SEAL:
PRELIMINARY NOT FOR CONSTRUCTION PERMIT OR REGISTRATION PURPOSES CURRENT AS OF:

SHEET NO.
A025

Healey Road

Woodland 1
FOD

Drainage Feature
Realignment

Wetland Compensation
Area 1

Wetland A1
MAM2-2

Drainage Feature
Realignment

Wetland B1
MAS2-1

Wetland Relocation Area A

Woodland 2
(FOD8-3*, CUT1-7*,
CUM1-1)

Wetland D1

Drainage Feature
Realignment

Wetland C1
MAM2-2

Humber Station Road

Wetland E1

Wetland F1

Wetland Compensation
Area 2

Wetland G1

Parr Boulevard

Mayfield Road

Orthoimagery: First Base Solutions, 2023. Imagery taken in 2021.

ELC Legend

CUM1-1	Dry Moist Old Field Meadow
CUP	Coniferous Plantation
CUT	Cultural Thicket
CUT1	Mineral Cultural Thicket
CUT1-1	Sumac Cultural Thicket
CUT1-7*	Buckthorn Cultural Thicket
FOD	Deciduous Forest
FOD7-6*	Fresh-Moist Manitoba Maple Lowland Deciduous Forest
FOD8-3*	Fresh-Moist Basswood Deciduous Forest
MAM	Meadow Marsh
MAM2	Mineral Meadow Marsh
MAM2-2	Reed-canary Grass Mineral Meadow Marsh
MAM2-10	Forb Mineral Meadow Marsh
MAS	Shallow Marsh
MAS2	Mineral Shallow Marsh
MAS2-1	Cattail Mineral Shallow Marsh
OA	Open Aquatic
SAS1-1	Pondweed Submerged Shallow Aquatic
SWT2-2	Willow Mineral Thicket Swamp
AG	Agricultural
DIST	Disturbed
H	Hedgerow
IND	Industrial
Lawn	Lawn
Pond	Pond
RES	Residential

**Not included in Southern Ontario ELC Field Guide.*

Study Area
Participating Properties
Non-participating Properties
Drainage (Suitable for Realignment)
Drainage (Suitable for Realignment Non-participating Owner)
Watercourse/Drainage
Creek Bank (Staked on October 19, 2021 by TRCA and GEI)
Dripline (Staked on October 19, 2021 by TRCA and GEI)
Hydrologic Edge of Wetland (Staked on October 19, 2021 by TRCA and GEI)
Wetland (Staked on October 19, 2021 by TRCA and GEI)
Stable Top of Slope (GEI) + 10 m
Unconfined Meanderbelt (GEI) + 10 m
Top of Bank Estimate Based on LiDAR + 10 m
Conceptual Wetland Compensation + 10 m
Wetland + 10 m
Wetland + 30 m
Wetland (off-site) + 30 m
Regional Floodline + 10 m
100 Year Floodline + 10 m
Top of Bank + 10 m (Staked on October 19, 2021 by TRCA and GEI)
Significant Woodland + 10 m
Warm Water Fish Habitat + 15 m
Preliminary Natural Heritage System Limit
Preliminary Natural Heritage System Limit (Potential for Realignment)
Drainage Realignment Wetland Enhancement Area (0.58 ha)
Proposed Woodland Removal (0.41 ha)
Proposed Woodland Compensation (0.42 ha)
Proposed Wetland Removal (0.34 ha)
Wetland Relocation Area A (0.50 ha)
Wetland Compensation 1 (0.08 ha)
Wetland Compensation Area 2 (0.36 ha)
Approximate Highway 413 Alignment
Conceptual Drainage Feature Realignment
Site Plan
Grading
Proposed SWM Facility
Proposed Storm Tank
Proposed Storm Sewers

Humber Station, Town of Caledon, ON

Figure 8.3
Preliminary Natural Heritage System

0 100 Meters

GEI Consultants

APPENDIX B

Water Demand Calculations

3.4.3 Water Supply Design Criteria

As per the Peel Region Master Plan (2020) – Volume 3 Water Master Plan, Peel Region Watermain Design Criteria (2010) and the Ministry of Environment, Conservation, and Parks (MECP) Design Guidelines for Drinking-Water System (2008), the following criteria are used in the design calculations for the water supply:

- Average consumption rate for Industrial, Commercial or Institutional (ICI) land uses is 300 L/cap/day;
- Maximum Day Demand (MDD) peaking factor of 1.4 for ICI land uses;
- Peak Hour Demand (PHD) peaking factor of 3.0 for ICI land uses;
- Equivalent population of 70 persons/ha of industrial area;
- Minimum pressure for Maximum Day and Fire Flow demand is 140 kPa (20 psi);
- Minimum pressure for Peak Hour demand is 275 kPa (40 psi);
- Maximum pressure for Maximum Day and Fire Flow demand is 690 kPa (100 psi); and
- Fire demand shall be calculated in accordance with the latest Fire Underwriters Survey (FUS) Water Supply for Public Fire Protection guidelines. In the absence of architectural information, a fire demand of 417 L/s is assumed, referencing the City of Vaughan water design guidelines.

Project: Humber Station | **Design:** L.E. | **Date:** 2024-03-18
Project No.: 0624-6777 | **Check:** K.W./M.I. | **Updated:** 2026-04-01

Water Demand - Block 1

Block Area	29.06	ha
Population Density	70	persons/ha
Population	2,034	persons

Design Criteria:

Average Daily Demand:	300	L/employee.day
Maximum Daily Demand Peaking Factor:	1.40	-
Peak Hourly Demand Peaking Factor:	3.00	-

Region of Peel - Public Works Design, Specifications & Procedures Manual - Linear Infrastructure - Watermain Design Criteria (June 2010)

Domestic Water Demand:

Average Daily Demand:	610256	L/day
	7.06	L/s
Maximum Daily Demand:	854359	L/day
	9.89	L/s
Peak Hourly Demand:	1830769	L/day
	21.19	L/s

*Population calculation is based on the block area for Block 1 shown on the Draft Plan prepared by Mainline Planning Services Inc.

Water Demand - Block 2

Block Area	12.07	ha
Population Density	70	persons/ha
Population	845	persons

Design Criteria:

Average Daily Demand:	300	L/employee.day
Maximum Daily Demand Peaking Factor:	1.40	-
Peak Hourly Demand Peaking Factor:	3.00	-

Region of Peel - Public Works Design, Specifications & Procedures Manual - Linear Infrastructure - Watermain Design Criteria (June 2010)

Domestic Water Demand:

Average Daily Demand:	253470	L/day
	2.93	L/s
Maximum Daily Demand:	354858	L/day
	4.11	L/s
Peak Hourly Demand:	760410	L/day
	8.80	L/s

*Population calculation is based on the block area for Block 2 shown on the Draft Plan prepared by Mainline Planning Services Inc.

Water Demand - Block 4

Block Area	10.63	ha
Population Density	70	persons/ha
Population	744	persons

Design Criteria:

Average Daily Demand:	300	L/employee.day
Maximum Daily Demand Peaking Factor:	1.40	-
Peak Hourly Demand Peaking Factor:	3.00	-

Region of Peel - Public Works Design, Specifications & Procedures Manual - Linear Infrastructure - Watermain Design Criteria (June 2010)

Domestic Water Demand:

Average Daily Demand:	223230	L/day
	2.58	L/s
Maximum Daily Demand:	312522	L/day
	3.62	L/s
Peak Hourly Demand:	669690	L/day
	7.75	L/s

*Population calculation is based on the block area for Block 4 shown on the Draft Plan prepared by Mainline Planning Services Inc.

Water Demand - Block 5 & 6

Block Area	12.29	ha
Population Density	70	persons/ha
Population	860	persons

Design Criteria:

Average Daily Demand:	300	L/employee.day
Maximum Daily Demand Peaking Factor:	1.40	-
Peak Hourly Demand Peaking Factor:	3.00	-

Region of Peel - Public Works Design, Specifications & Procedures Manual - Linear Infrastructure - Watermain Design Criteria (June 2010)

Domestic Water Demand:

Average Daily Demand:	258090	L/day
	2.99	L/s
Maximum Daily Demand:	361326	L/day
	4.18	L/s
Peak Hourly Demand:	774270	L/day
	8.96	L/s

*Population calculation is based on the block area for Block 5 shown on the Draft Plan prepared by Mainline Planning Services Inc.

CROZIER & ASSOCIATES
Consulting Engineers

0624-6777 Humber Station
Water Demand Summary

Date: 2024-03-18
Designed By: L.E.
Checked By: K.W./M.I.
Updated: 2026-04-01

Block	Equivalent Population	Average Day Demand (L/s)	Maximum Day Demand (L/s)	Peak Hour Demand (L/s)
1	2034	7.06	9.89	21.19
2	845	2.93	4.11	8.80
4	744	2.58	3.62	7.75
5&6	860	2.99	4.18	8.96
Total	4483	15.57	21.79	46.70

Katrina Weel

From: Rizalyn Corciega Bismonte <rcorciega@petroff.com>
Sent: December 3, 2025 11:49 AM
To: Katrina Weel
Cc: Mena Iskander; Jayesh Boily
Subject: RE: Humber Station Fire Flow Design

Hi Katrina,

See response below in RED.

Regards,

Rizalyn Corciega Bismonte
Senior Project Manager

P E T R O F F

Petroff Partnership Architects
10 Aviva Way, Suite 400
Markham, Ontario
Canada L6G 0G1

m: 416.795.0317
rcorciega@petroff.com
www.petroff.com

From: Katrina Weel <kweel@cfcrozier.ca>
Sent: December 2, 2025 2:21 PM
To: Rizalyn Corciega Bismonte <rcorciega@petroff.com>
Cc: Mena Iskander <miskander@cfcrozier.ca>; Jayesh Boily <jboily@cfcrozier.ca>
Subject: Humber Station Fire Flow Design

Hi Rizalyn,

We are updating our fire flow (FUS) calculations based on the latest building design for Humber Station, and have a couple of questions we would like you to confirm regarding the building design.

Can you please confirm the building construction type, in accordance with the options outlined in the FUS:

The following Construction Types and Coefficients are used in the required fire flow formula:

C	=	1.5 for **Type V** Wood Frame Construction
	=	0.8 for **Type IV-A** Mass Timber Construction
	=	0.9 for **Type IV-B** Mass Timber Construction
	=	1.0 for **Type IV-C** Mass Timber Construction
	=	1.5 for **Type IV-D** Mass Timber Construction
	=	1.0 for **Type III** Ordinary Construction
	=	0.8 for **Type II** Noncombustible Construction
	=	0.6 for **Type I** Fire Resistive Construction

Ordinary Construction (Type III also known as joisted masonry)
A building is considered to be of Ordinary construction (Type III) when exterior walls are of masonry construction (or other approved material) with a minimum 1-hour fire resistance rating, but where other elements such as interior walls, arches, floors and/or roof do not have a minimum 1 hour fire resistance rating.

Noncombustible Construction (Type II)
A building is considered to be of Noncombustible construction (Type II) when all structural elements, walls, arches, floors, and roofs are constructed with a minimum 1-hour fire resistance rating and are constructed with noncombustible materials.

Fire-Resistive Construction (Type I)
A building is considered to be of Fire-resistive construction (Type I) when all structural elements, walls, arches, floors, and roofs are constructed with a minimum 2-hour fire resistance rating, and all materials used in the construction of the structural elements, walls, arches, floors, and roofs are constructed with noncombustible materials.

→ TYPE III ORDINARY CONSTRUCTION

Further, could you please confirm if all vertical openings and exterior vertical communications will be properly protected in accordance with the National Building Code, such that the following is met:

Protected openings:

i. Enclosures shall have walls of masonry or other limited or noncombustible construction with a fire resistance rating of not less than one hour.
ii. Openings including doors shall be provided with automatic closing devices
iii. Elevator doors shall be of metal or metal-covered construction, so arranged that the doors must normally be closed for operation of the elevator.

→ I. EXTERIOR WALL ENCLOSURE = CONCRETE PRECAST = FRR 1 HR MIN.
II. ALL EXIT / ENTRY DOOR HARDWARE TO INCLUDE DOOR CLOSERS.
III. N/A

Lastly, can you please confirm what the occupancy of the building should be designed to be, per the below options:

- *Noncombustible Contents* *-25%*
  - Includes merchandise or materials, including stock, or equipment, which in permissible quantities does not in themselves constitute an active fuel for the spread of fire.
  - May include limited or controlled amounts of combustible material, not exceeding 5% of the Total Effective Area of the occupancy. Combustible components of construction (ex. interior walls, finishes, etc.) should be included in the limit on combustible materials.
- *Limited Combustible Contents* *-15%*
  - Includes merchandise or materials, including furniture, stock, or equipment, of low combustibility, with limited concentrations of combustible materials.
- Combustible Contents 0% no adjustment
  - Includes merchandise or materials, including furniture, stock, or equipment, of moderate combustibility.
- *Free Burning Contents* *+15%*
  - Includes merchandise or materials, including furniture, stock, or equipment, which burn freely, constituting an active fuel.
- *Rapid Burning Contents* *+25%*
  - Includes merchandise or materials, including furniture, stock, or equipment, which either
    - Burn with great intensity
    - spontaneously ignite and are difficult to extinguish
    - give off flammable or explosive vapors at ordinary temperatures
    - as a result of an industrial processing, produce large quantities of dust or other finely divided debris subject to flash fire or explosion

→ GROUP F2 WAREHOUSES (MEDIUM HAZARD) FREE TO RAPID 15% TO 25%

I have attached the FUS document, which shows a more detailed breakdown of these options on pages 26 and 27 (of the document).

Thank you,

Katrina Weel, P.Eng.
Project Engineer, Land Development
Office: 416.842.0026
Collingwood | Milton | Toronto | Bradford | Guelph

Proudly supporting our communities.
Click to learn more.

CROZIER

Humber Station Building 1
Fire Protection Volume Calculation
CFCA File: 624-6777

Date: 2026-04-01
Design: L.E.
Check: K.W./M.I.

Water Supply for Public Fire Protection - 2020
Fire Underwriters Survey

Part II - Guide for Determination of Required Fire Flow

1. An estimate of fire flow required for a given area may be determined by the formula:

$$F = 220 * C * \sqrt{A}$$

where

F = the required fire flow in litres per minute

C = coefficient related to the type of construction:

=	1.5	for Type V Wood Frame Construction
=	0.8	for Type IV-A Mass Timber Construction
=	0.9	for Type IV-B Mass Timer Construction
=	1.0	for Type IV-C Mass Timber Construction
=	1.5	for Type IV-D Mass Timber Construction
=	1.0	for Type III Ordinary Construction
=	0.8	for Type II Non-combustible Construction
=	0.6	for Type I Fire-Resistive Construction

A = The total floor area in square metres

Proposed Buildings

GFA	120295 sq.m	100%
High Storey Building GFA equivalent	120295 sq.m	100% (refer to High One Storey Building in FUS 2020)
High Storey Building GFA equivalent	120295 sq.m	100% (refer to High One Storey Building in FUS 2020)
High Storey Building GFA equivalent	120295 sq.m	100% (refer to High One Storey Building in FUS 2020)
High Storey Building GFA equivalent	120295 sq.m	100% (refer to High One Storey Building in FUS 2020)
Total Area =	601475.0 sq.m	

C = 1.0 Type III Ordinary Construction

Therefore F = 30,000 L/min

Fire flow determined above shall not exceed:
30,000 L/min for wood frame construction
30,000 L/min for ordinary construction
25,000 L/min for non-combustible construction
25,000 L/min for fire-resistive construction

2. Values obtained in No. 1 may be reduced by as much as 25% for occupancies having low contents fire hazard or may be increased by up to 25% surcharge for occupancies having a high fire hazard.

Non-Combustible	-25%	Free Burning	15%
Limited Combustible	-15%	Rapid Burning	25%
Combustible	0% (No Change)		

Rapid Burning	25% addition

7,500 L/min occupancy
37,500 L/min

Note: Flow determined shall not be less than 2,000 L/min

3. Sprinklers - The value obtained in No. 2 above maybe reduced by up to 50% for complete automatic sprinkler protection. The credit for the system will be a maximum of 30% for an adequately designed system conforming to NFPA 13 and other NFPA sprinkler standards.

As part of this analysis, building is assumed to have sprinkler protection (50% reduction),

-18,750 L/min reduction

Water Supply for Public Fire Protection - 2020
Fire Underwriters Survey

Part II - Guide for Determination of Required Fire Flow

4. Exposure - To the value obtained in No. 2, a percentage should be added for structures exposed within 30 metres by the fire area under consideration. The percentage shall depend upon the height, area, and construction of the building(s) being exposed, the separation, openings in the exposed building(s), the length and height of exposure, the provision of automatic sprinklers and/or outside sprinklers in the building(s) exposed, the occupancy of the exposed building(s) and the effect of hillside locations on the possible spread of fire.

Separation		Charge	Separation	Charge
0 to 3 m	Max.	25%	20.1 to 30 m Max.	10%
3.1 to 10 m	Max.	20%	> 30m	0%
10.1 to 20 m	Max.	15%		

Per Table 6 "Exposure Adjustment Factors for Subject Building considering Construction Type of Exposed Building Face", the above table of exposure factors is the maximum to be used. The length to height ratio for the exposed wall on each side of the building, including the construction type of the exposed building, and whether or not the exposed building has protected openings, was taken into account for each wall of the proposed buildings, in addition to the distance between the subject building and the exposed building.

	Distance (m)	Length of Exposed Building Face	Height of exposed building in stories	Length-Height Ratio	Building Type	Protected Openings?	Exposure Charge	Surcharge
North	>30	-	-	-	-	-	0%	0.0
South	>30	-	-	-	-	-	0%	0.0
East	>30	-	-	-	-	-	0%	0.0
West	>30	-	-	-	-	-	0%	0.0
								0.0 L/min Surcharge

Determine Required Fire Flow

No.1	30,000			
No. 2	7,500	addition		
No. 3	-18,750	reduction		
No. 4	0	surcharge		
Required Flow:	**18,750**	**L/min**		
Rounded to nearest 1000 L/min:	**19,000**	**L/min**	or	316.67 L/s
				5,019 USGPM

Required Duration of Fire Flow	
Flow Required L/min	Duration (hours)
2,000 or less	1.0
3,000	1.25
4,000	1.5
5,000	1.75
6,000	2.0
8,000	2.0
10,000	2.0
12,000	2.5
14,000	3.0
16,000	3.5
18,000	4.0
20,000	4.5
22,000	5.0
24,000	5.5
26,000	6.0
28,000	6.5
30,000	7.0
32,000	7.5
34,000	8.0
36,000	8.5
38,000	9.0
40,000 and over	9.5

CROZIER & ASSOCIATES Consulting Engineers

Humber Station Building 2
Fire Protection Volume Calculation
CFCA File: 624-6777

Date: 2026-04-01
Design: L.E.
Check: K.W./M.I.

Water Supply for Public Fire Protection - 2020
Fire Underwriters Survey

Part II - Guide for Determination of Required Fire Flow

1. An estimate of fire flow required for a given area may be determined by the formula:

$$F = 220 * C * \sqrt{A}$$

where

F = the required fire flow in litres per minute

C = coefficient related to the type of construction:

=	1.5	for Type V Wood Frame Construction
=	0.8	for Type IV-A Mass Timber Construction
=	0.9	for Type IV-B Mass Timer Construction
=	1.0	for Type IV-C Mass Timber Construction
=	1.5	for Type IV-D Mass Timber Construction
=	1.0	for Type III Ordinary Construction
=	0.8	for Type II Non-combustible Construction
=	0.6	for Type I Fire-Resistive constructio

A = The total floor area in square metres

Proposed Buildings

GFA	31490.2 sq.m	100%
High Storey Building GFA equivalent	31490.2 sq.m	100% (refer to High One Storey Building in FUS 2020)
High Storey Building GFA equivalent	31490.2 sq.m	100% (refer to High One Storey Building in FUS 2020)
High Storey Building GFA equivalent	31490.2 sq.m	100% (refer to High One Storey Building in FUS 2020)
High Storey Building GFA equivalent	31490.2 sq.m	100% (refer to High One Storey Building in FUS 2020)
Total Area =	157451.0 sq.m	

C = 1.0 Type III Ordinary Construction

Therefore F = 30,000 L/min

Fire flow determined above shall not exceed:
30,000 L/min for wood frame construction
30,000 L/min for ordinary construction
25,000 L/min for non-combustible construction
25,000 L/min for fire-resistive construction

2. Values obtained in No. 1 may be reduced by as much as 25% for occupancies having low contents fire hazard or may be increased by up to 25% surcharge for occupancies having a high fire hazard.

Non-Combustible	-25%	Free Burning	15%
Limited Combustible	-15%	Rapid Burning	25%
Combustible	0% (No Change)		

Rapid Burning	25% addition

7,500 L/min addition
37,500 L/min

Note: Flow determined shall not be less than 2,000 L/min

3. Sprinklers - The value obtained in No. 2 above maybe reduced by up to 50% for complete automatic sprinkler protection. The credit for the system will be a maximum of 30% for an adequately designed system conforming to NFPA 13 and other NFPA sprinkler standards.

As part of this analysis, building is assumed to have sprinkler protection (50% reduction),

-18,750 L/min reduction

Water Supply for Public Fire Protection - 2020
Fire Underwriters Survey

Part II - Guide for Determination of Required Fire Flow

4. Exposure - To the value obtained in No. 2, a percentage should be added for structures exposed within 30 metres by the fire area under consideration. The percentage shall depend upon the height, area, and construction of the building(s) being exposed, the separation, openings in the exposed building(s), the length and height of exposure, the provision of automatic sprinklers and/or outside sprinklers in the building(s) exposed, the occupancy of the exposed building(s) and the effect of hillside locations on the possible spread of fire.

Separation		Charge	Separation	Charge
0 to 3 m	Max.	25%	20.1 to 30 m Max.	10%
3.1 to 10 m	Max.	20%	> 30m	0%
10.1 to 20 m	Max.	15%		

Per Table 6 "Exposure Adjustment Factors for Subject Building considering Construction Type of Exposed Building Face", the above table of exposure factors is the maximum to be used. The length to height ratio for the exposed wall on each side of the building, including the construction type of the exposed building, and whether or not the exposed building has protected openings, was taken into account for each wall of the proposed buildings, in addition to the distance between the subject building and the exposed building.

	Distance (m)	Length of Exposed Building Face	Height of exposed building in stories	Length-Height Ratio	Building Type	Protected Openings?	Exposure Charge	Surcharge
North	>30	-	-	-	-	-	0%	0.0
South	>30	-	-	-	-	-	0%	0.0
East	>30	-	-	-	-	-	0%	0.0
West	>30	-	-	-	-	-	0%	0.0
								0.0 L/min Surcharge

Determine Required Fire Flow

No.1	30,000			
No. 2	7,500	addition		
No. 3	-18,750	reduction		
No. 4	0	surcharge		
Required Flow:	**18,750**	**L/min**		
Rounded to nearest 1000 L/min:	**19,000**	**L/min**	or	316.67 L/s
				5,019 USGPM

Required Duration of Fire Flow	
Flow Required L/min	Duration (hours)
2,000 or less	1.0
3,000	1.25
4,000	1.5
5,000	1.75
6,000	2.0
8,000	2.0
10,000	2.0
12,000	2.5
14,000	3.0
16,000	3.5
18,000	4.0
20,000	4.5
22,000	5.0
24,000	5.5
26,000	6.0
28,000	6.5
30,000	7.0
32,000	7.5
34,000	8.0
36,000	8.5
38,000	9.0
40,000 and over	9.5

CROZIER & ASSOCIATES Consulting Engineers

Humber Station Building 3
Fire Protection Volume Calculation
CFCA File: 624-6777

Date: 2026-04-01
Design: L.E.
Check: K.W./M.I.

Water Supply for Public Fire Protection - 2020
Fire Underwriters Survey

Part II - Guide for Determination of Required Fire Flow

1. An estimate of fire flow required for a given area may be determined by the formula:

$$F = 220 * C * \sqrt{A}$$

where

F = the required fire flow in litres per minute

C = coefficient related to the type of construction:

=	1.5	for Type V Wood Frame Construction
=	0.8	for Type IV-A Mass Timber Construction
=	0.9	for Type IV-B Mass Timer Construction
=	1.0	for Type IV-C Mass Timber Construction
=	1.5	for Type IV-D Mass Timber Construction
=	1.0	for Type III Ordinary Construction
=	0.8	for Type II Non-combustible Construction
=	0.6	for Type I Fire-Resistive constructio

A = The total floor area in square metres

Proposed Buildings

GFA	31490.2 sq.m	100%
High Storey Building GFA equivalent	31490.2 sq.m	100% (refer to High One Storey Building in FUS 2020)
High Storey Building GFA equivalent	31490.2 sq.m	100% (refer to High One Storey Building in FUS 2020)
High Storey Building GFA equivalent	31490.2 sq.m	100% (refer to High One Storey Building in FUS 2020)
High Storey Building GFA equivalent	31490.2 sq.m	100% (refer to High One Storey Building in FUS 2020)
Total Area =	157451.0 sq.m	

C = 1.0 Type III Ordinary Construction

Therefore F = 30,000 L/min

Fire flow determined above shall not exceed:
30,000 L/min for wood frame construction
30,000 L/min for ordinary construction
25,000 L/min for non-combustible construction
25,000 L/min for fire-resistive construction

2. Values obtained in No. 1 may be reduced by as much as 25% for occupancies having low contents fire hazard or may be increased by up to 25% surcharge for occupancies having a high fire hazard.

Non-Combustible	-25%	Free Burning	15%
Limited Combustible	-15%	Rapid Burning	25%
Combustible	0% (No Change)		

Rapid Burning	25% addition

7,500 L/min addition
37,500 L/min

Note: Flow determined shall not be less than 2,000 L/min

3. Sprinklers - The value obtained in No. 2 above maybe reduced by up to 50% for complete automatic sprinkler protection. The credit for the system will be a maximum of 30% for an adequately designed system conforming to NFPA 13 and other NFPA sprinkler standards.

As part of this analysis, building is assumed to have sprinkler protection (50% reduction),

-18,750 L/min reduction

Water Supply for Public Fire Protection - 2020
Fire Underwriters Survey

Part II - Guide for Determination of Required Fire Flow

4. Exposure - To the value obtained in No. 2, a percentage should be added for structures exposed within 30 metres by the fire area under consideration. The percentage shall depend upon the height, area, and construction of the building(s) being exposed, the separation, openings in the exposed building(s), the length and height of exposure, the provision of automatic sprinklers and/or outside sprinklers in the building(s) exposed, the occupancy of the exposed building(s) and the effect of hillside locations on the possible spread of fire.

Separation		Charge	Separation	Charge
0 to 3 m	Max.	25%	20.1 to 30 m Max.	10%
3.1 to 10 m	Max.	20%	> 30m	0%
10.1 to 20 m	Max.	15%		

Per Table 6 "Exposure Adjustment Factors for Subject Building considering Construction Type of Exposed Building Face", the above table of exposure factors is the maximum to be used. The length to height ratio for the exposed wall on each side of the building, including the construction type of the exposed building, and whether or not the exposed building has protected openings, was taken into account for each wall of the proposed buildings, in addition to the distance between the subject building and the exposed building.

	Distance (m)	Length of Exposed Building Face	Height of exposed building in stories	Length-Height Ratio	Building Type	Protected Openings?	Exposure Charge	Surcharge
North	>30	-	-	-	-	-	0%	0.0
South	>30	-	-	-	-	-	0%	0.0
East	>30	-	-	-	-	-	0%	0.0
West	>30	-	-	-	-	-	0%	0.0
								0.0 L/min Surcharge

Determine Required Fire Flow

No.1	30,000			
No. 2	7,500	addition		
No. 3	-18,750	reduction		
No. 4	0	surcharge		
Required Flow:	**18,750**	**L/min**		
Rounded to nearest 1000 L/min:	**19,000**	**L/min**	or	316.67 L/s
				5,019 USGPM

Required Duration of Fire Flow	
Flow Required L/min	Duration (hours)
2,000 or less	1.0
3,000	1.25
4,000	1.5
5,000	1.75
6,000	2.0
8,000	2.0
10,000	2.0
12,000	2.5
14,000	3.0
16,000	3.5
18,000	4.0
20,000	4.5
22,000	5.0
24,000	5.5
26,000	6.0
28,000	6.5
30,000	7.0
32,000	7.5
34,000	8.0
36,000	8.5
38,000	9.0
40,000 and over	9.5

Humber Station Building 4
Fire Protection Volume Calculation
CFCA File: 624-6777

Date: 2026-04-01
Design: L.E.
Check: K.W./M.I.

Water Supply for Public Fire Protection - 2020
Fire Underwriters Survey

Part II - Guide for Determination of Required Fire Flow

1. An estimate of fire flow required for a given area may be determined by the formula:

$$F = 220 * C * \sqrt{A}$$

where

F = the required fire flow in litres per minute

C = coefficient related to the type of construction:

=	1.5	for Type V Wood Frame Construction
=	0.8	for Type IV-A Mass Timber Construction
=	0.9	for Type IV-B Mass Timer Construction
=	1.0	for Type IV-C Mass Timber Construction
=	1.5	for Type IV-D Mass Timber Construction
=	1.0	for Type III Ordinary Construction
=	0.8	for Type II Non-combustible Construction
=	0.6	for Type I Fire-Resistive constructio

A = The total floor area in square metres

Proposed Buildings

GFA	49187 sq.m	100%
High Storey Building GFA equivalent	49187 sq.m	100% (refer to High One Storey Building in FUS 2020)
High Storey Building GFA equivalent	49187 sq.m	100% (refer to High One Storey Building in FUS 2020)
High Storey Building GFA equivalent	49187 sq.m	100% (refer to High One Storey Building in FUS 2020)
High Storey Building GFA equivalent	49187 sq.m	100% (refer to High One Storey Building in FUS 2020)
Total Area =	245935.0 sq.m	

C = 1.0 Type III Ordinary Construction

Therefore F = 30,000 L/min

Fire flow determined above shall not exceed:
30,000 L/min for wood frame construction
30,000 L/min for ordinary construction
25,000 L/min for non-combustible construction
25,000 L/min for fire-resistive construction

2. Values obtained in No. 1 may be reduced by as much as 25% for occupancies having low contents fire hazard or may be increased by up to 25% surcharge for occupancies having a high fire hazard.

Non-Combustible	-25%	Free Burning	15%
Limited Combustible	-15%	Rapid Burning	25%
Combustible	0% (No Change)		

Rapid Burning	25% addition

7,500 L/min addition
37,500 L/min

Note: Flow determined shall not be less than 2,000 L/min

3. Sprinklers - The value obtained in No. 2 above maybe reduced by up to 50% for complete automatic sprinkler protection. The credit for the system will be a maximum of 30% for an adequately designed system conforming to NFPA 13 and other NFPA sprinkler standards.

As part of this analysis, building is assumed to have sprinkler protection (50% reduction),

-18,750 L/min reduction

Water Supply for Public Fire Protection - 2020
Fire Underwriters Survey

Part II - Guide for Determination of Required Fire Flow

4. Exposure - To the value obtained in No. 2, a percentage should be added for structures exposed within 30 metres by the fire area under consideration. The percentage shall depend upon the height, area, and construction of the building(s) being exposed, the separation, openings in the exposed building(s), the length and height of exposure, the provision of automatic sprinklers and/or outside sprinklers in the building(s) exposed, the occupancy of the exposed building(s) and the effect of hillside locations on the possible spread of fire.

Separation		Charge	Separation	Charge
0 to 3 m	Max.	25%	20.1 to 30 m Max.	10%
3.1 to 10 m	Max.	20%	> 30m	0%
10.1 to 20 m	Max.	15%		

Per Table 6 "Exposure Adjustment Factors for Subject Building considering Construction Type of Exposed Building Face", the above table of exposure factors is the maximum to be used. The length to height ratio for the exposed wall on each side of the building, including the construction type of the exposed building, and whether or not the exposed building has protected openings, was taken into account for each wall of the proposed buildings, in addition to the distance between the subject building and the exposed building.

	Distance (m)	Length of Exposed Building Face	Height of exposed building in stories	Length-Height Ratio	Building Type	Protected Openings?	Exposure Charge	Surcharge
North	>30	-	-	-	-	-	0%	0.0
South	>30	-	-	-	-	-	0%	0.0
East	>30	-	-	-	-	-	0%	0.0
West	>30	-	-	-	-	-	0%	0.0
								0.0 L/min Surcharge

Determine Required Fire Flow

No.1	30,000			
No. 2	7,500	addition		
No. 3	-18,750	reduction		
No. 4	0	surcharge		
Required Flow:	**18,750**	**L/min**		
Rounded to nearest 1000 L/min:	**19,000**	**L/min**	or	316.67 L/s
				5,019 USGPM

Required Duration of Fire Flow	
Flow Required L/min	Duration (hours)
2,000 or less	1.0
3,000	1.25
4,000	1.5
5,000	1.75
6,000	2.0
8,000	2.0
10,000	2.0
12,000	2.5
14,000	3.0
16,000	3.5
18,000	4.0
20,000	4.5
22,000	5.0
24,000	5.5
26,000	6.0
28,000	6.5
30,000	7.0
32,000	7.5
34,000	8.0
36,000	8.5
38,000	9.0
40,000 and over	9.5

Humber Station Building 5
Fire Protection Volume Calculation
CFCA File: 624-6777

Date: 2026-04-01
Design: L.E.
Check: K.W./M.I.

Water Supply for Public Fire Protection - 2020
Fire Underwriters Survey

Part II - Guide for Determination of Required Fire Flow

1. An estimate of fire flow required for a given area may be determined by the formula:

$$F = 220 * C * \sqrt{A}$$

where

F = the required fire flow in litres per minute

C = coefficient related to the type of construction:

=	1.5	for Type V Wood Frame Construction
=	0.8	for Type IV-A Mass Timber Construction
=	0.9	for Type IV-B Mass Timer Construction
=	1.0	for Type IV-C Mass Timber Construction
=	1.5	for Type IV-D Mass Timber Construction
=	1.0	for Type III Ordinary Construction
=	0.8	for Type II Non-combustible Construction
=	0.6	for Type I Fire-Resistive constructio

A = The total floor area in square metres

Proposed Buildings

	GFA	22496.5 sq.m	100%
High Storey Building GFA equivalent		22496.5 sq.m	100% (refer to High One Storey Building in FUS 2020)
High Storey Building GFA equivalent		22496.5 sq.m	100% (refer to High One Storey Building in FUS 2020)
High Storey Building GFA equivalent		22496.5 sq.m	100% (refer to High One Storey Building in FUS 2020)
High Storey Building GFA equivalent		22496.5 sq.m	100% (refer to High One Storey Building in FUS 2020)
	Total Area =	112482.5 sq.m	

C = 1.0 Type III Ordinary Construction

Therefore F = 30,000 L/min

Fire flow determined above shall not exceed:
30,000 L/min for wood frame construction
30,000 L/min for ordinary construction
25,000 L/min for non-combustible construction
25,000 L/min for fire-resistive construction

2. Values obtained in No. 1 may be reduced by as much as 25% for occupancies having low contents fire hazard or may be increased by up to 25% surcharge for occupancies having a high fire hazard.

Non-Combustible	-25%	Free Burning	15%
Limited Combustible	-15%	Rapid Burning	25%
Combustible	0% (No Change)		

Rapid Burning	25% addition

7,500 L/min addition
37,500 L/min

Note: Flow determined shall not be less than 2,000 L/min

3. Sprinklers - The value obtained in No. 2 above maybe reduced by up to 50% for complete automatic sprinkler protection. The credit for the system will be a maximum of 30% for an adequately designed system conforming to NFPA 13 and other NFPA sprinkler standards.

As part of this analysis, building is assumed to have sprinkler protection (50% reduction),

-18,750 L/min reduction

Water Supply for Public Fire Protection - 2020
Fire Underwriters Survey

Part II - Guide for Determination of Required Fire Flow

4. Exposure - To the value obtained in No. 2, a percentage should be added for structures exposed within 30 metres by the fire area under consideration. The percentage shall depend upon the height, area, and construction of the building(s) being exposed, the separation, openings in the exposed building(s), the length and height of exposure, the provision of automatic sprinklers and/or outside sprinklers in the building(s) exposed, the occupancy of the exposed building(s) and the effect of hillside locations on the possible spread of fire.

Separation		Charge	Separation	Charge
0 to 3 m	Max.	25%	20.1 to 30 m Max.	10%
3.1 to 10 m	Max.	20%	> 30m	0%
10.1 to 20 m	Max.	15%		

Per Table 6 "Exposure Adjustment Factors for Subject Building considering Construction Type of Exposed Building Face", the above table of exposure factors is the maximum to be used. The length to height ratio for the exposed wall on each side of the building, including the construction type of the exposed building, and whether or not the exposed building has protected openings, was taken into account for each wall of the proposed buildings, in addition to the distance between the subject building and the exposed building.

	Distance (m)	Length of Exposed Building Face	Height of exposed building in stories	Length-Height Ratio	Building Type	Protected Openings?	Exposure Charge	Surcharge
North	>30	-	-	-	-	-	0%	0.0
South	25	129	3	>100	III	Yes	3%	1125.0
East	>30	-	-	-	-	-	0%	0.0
West	>30	-	-	-	-	-	0%	0.0
								1125.0 **L/min Surcharge**

Determine Required Fire Flow

No.1	30,000			
No. 2	7,500	addition		
No. 3	-18,750	reduction		
No. 4	1,125	surcharge		
Required Flow:	**19,875**	**L/min**		
Rounded to nearest 1000 L/min:	**20,000**	**L/min**	or	333.33 L/s
				5,283 USGPM

Required Duration of Fire Flow	
Flow Required L/min	Duration (hours)
2,000 or less	1.0
3,000	1.25
4,000	1.5
5,000	1.75
6,000	2.0
8,000	2.0
10,000	2.0
12,000	2.5
14,000	3.0
16,000	3.5
18,000	4.0
20,000	4.5
22,000	5.0
24,000	5.5
26,000	6.0
28,000	6.5
30,000	7.0
32,000	7.5
34,000	8.0
36,000	8.5
38,000	9.0
40,000 and over	9.5

Humber Station Building 6
Fire Protection Volume Calculation
CFCA File: 624-6777

Date: 2026-04-01
Design: L.E.
Check: K.W./M.I.

Water Supply for Public Fire Protection - 2020
Fire Underwriters Survey

Part II - Guide for Determination of Required Fire Flow

1. An estimate of fire flow required for a given area may be determined by the formula:

$$F = 220 * C * \sqrt{A}$$

where

F = the required fire flow in litres per minute

C = coefficient related to the type of construction:

=	1.5	for Type V Wood Frame Construction
=	0.8	for Type IV-A Mass Timber Construction
=	0.9	for Type IV-B Mass Timer Construction
=	1.0	for Type IV-C Mass Timber Construction
=	1.5	for Type IV-D Mass Timber Construction
=	1.0	for Type III Ordinary Construction
=	0.8	for Type II Non-combustible Construction
=	0.6	for Type I Fire-Resistive constructio

A = The total floor area in square metres

Proposed Buildings

	GFA	31716.2 sq.m	100%
High Storey Building GFA equivalent		31716.2 sq.m	100% (refer to High One Storey Building in FUS 2020)
High Storey Building GFA equivalent		31716.2 sq.m	100% (refer to High One Storey Building in FUS 2020)
High Storey Building GFA equivalent		31716.2 sq.m	100% (refer to High One Storey Building in FUS 2020)
High Storey Building GFA equivalent		31716.2 sq.m	100% (refer to High One Storey Building in FUS 2020)
	Total Area =	158581.0 sq.m	

C = 1.0 Type III Ordinary Construction

Therefore F = 30,000 L/min

Fire flow determined above shall not exceed:
30,000 L/min for wood frame construction
30,000 L/min for ordinary construction
25,000 L/min for non-combustible construction
25,000 L/min for fire-resistive construction

2. Values obtained in No. 1 may be reduced by as much as 25% for occupancies having low contents fire hazard or may be increased by up to 25% surcharge for occupancies having a high fire hazard.

Non-Combustible	-25%	Free Burning	15%
Limited Combustible	-15%	Rapid Burning	25%
Combustible	0% (No Change)		

Rapid Burning	25% addition

7,500 L/min addition
37,500 L/min

Note: Flow determined shall not be less than 2,000 L/min

3. Sprinklers - The value obtained in No. 2 above maybe reduced by up to 50% for complete automatic sprinkler protection. The credit for the system will be a maximum of 30% for an adequately designed system conforming to NFPA 13 and other NFPA sprinkler standards.

As part of this analysis, building is assumed to have sprinkler protection (50% reduction),

-18,750 L/min reduction

Water Supply for Public Fire Protection - 2020
Fire Underwriters Survey

Part II - Guide for Determination of Required Fire Flow

4. Exposure - To the value obtained in No. 2, a percentage should be added for structures exposed within 30 metres by the fire area under consideration. The percentage shall depend upon the height, area, and construction of the building(s) being exposed, the separation, openings in the exposed building(s), the length and height of exposure, the provision of automatic sprinklers and/or outside sprinklers in the building(s) exposed, the occupancy of the exposed building(s) and the effect of hillside locations on the possible spread of fire.

Separation		Charge	Separation	Charge
0 to 3 m	Max.	25%	20.1 to 30 m Max.	10%
3.1 to 10 m	Max.	20%	> 30m	0%
10.1 to 20 m	Max.	15%		

Per Table 6 "Exposure Adjustment Factors for Subject Building considering Construction Type of Exposed Building Face", the above table of exposure factors is the maximum to be used. The length to height ratio for the exposed wall on each side of the building, including the construction type of the exposed building, and whether or not the exposed building has protected openings, was taken into account for each wall of the proposed buildings, in addition to the distance between the subject building and the exposed building.

	Distance (m)	Length of Exposed Building Face	Height of exposed building in stories	Length-Height Ratio	Building Type	Protected Openings?	Exposure Charge	Surcharge
North	25	113	3	>100	III	Yes	3%	1125.0
South	>30	-	-	-	-	-	0%	0.0
East	>30	-	-	-	-	-	0%	0.0
West	>30	-	-	-	-	-	0%	0.0
								1125.0 L/min Surcharge

Determine Required Fire Flow

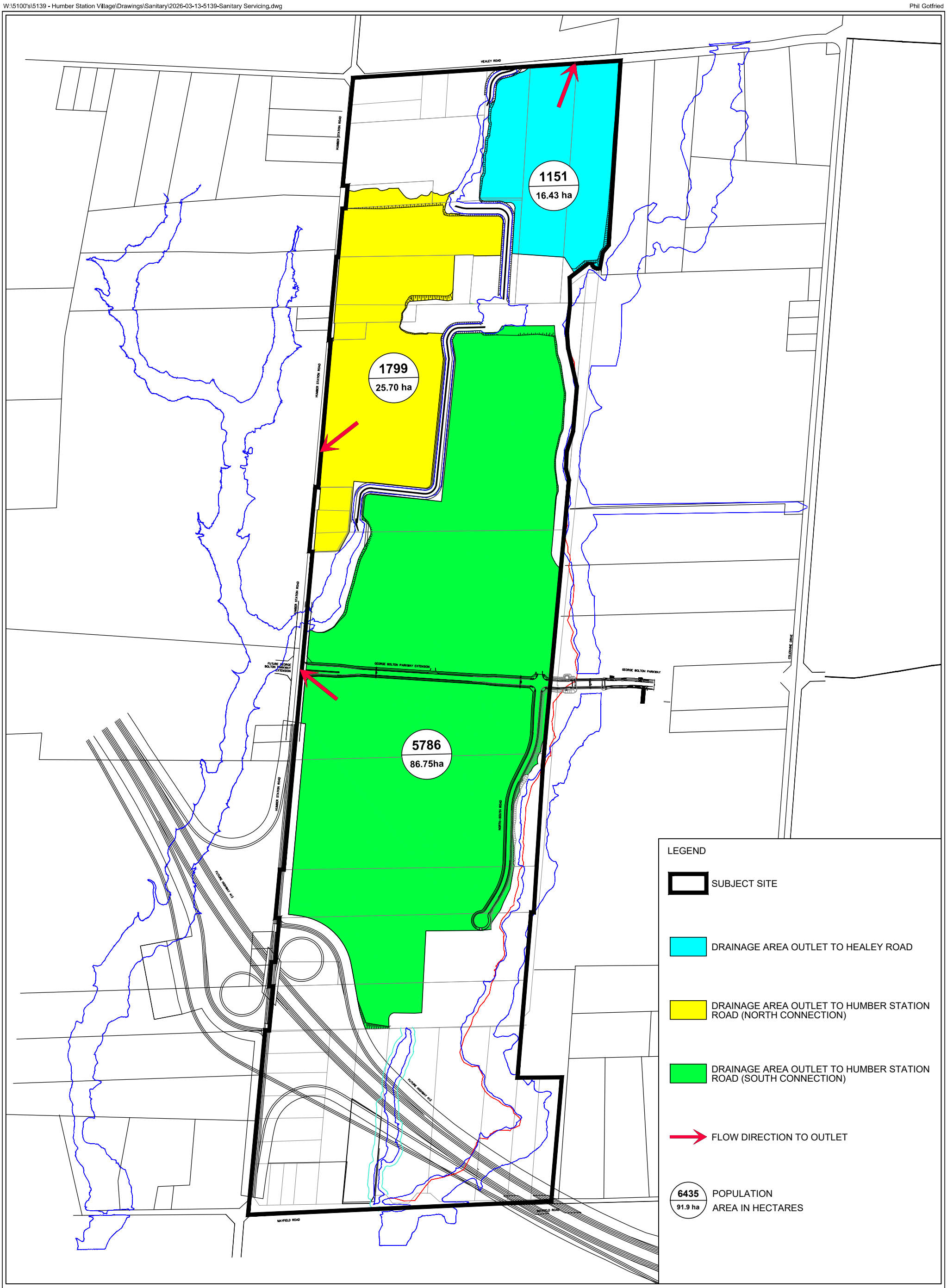
No.1	30,000			
No. 2	7,500	addition		
No. 3	-18,750	reduction		
No. 4	1,125	surcharge		
Required Flow:	**19,875**	**L/min**		
Rounded to nearest 1000 L/min:	**20,000**	**L/min**	or	333.33 L/s
				5,283 USGPM

Required Duration of Fire Flow

Flow Required L/min	Duration (hours)
2,000 or less	1.0
3,000	1.25
4,000	1.5
5,000	1.75
6,000	2.0
8,000	2.0
10,000	2.0
12,000	2.5
14,000	3.0
16,000	3.5
18,000	4.0
20,000	4.5
22,000	5.0
24,000	5.5
26,000	6.0
28,000	6.5
30,000	7.0
32,000	7.5
34,000	8.0
36,000	8.5
38,000	9.0
40,000 and over	9.5

APPENDIX C

Sanitary Flow Calculations



HUMBER STATION VILLAGES
TOWN OF CALEDON

SCHAEFFERS
CONSULTING ENGINEERS
6 Ronrose Drive, Concord, Ontario L4K 4R3
Tel: (905) 738-6100 Email: general@schaeffers.com
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LEGEND
(AS SHOWN ABOVE)

FIGURE 3.5
PROPOSED
SANITARY DRAINAGE AREA PLAN

2022-5139	MARCH 2026	SCALE: N.T.S.

Table 3.1: Proposed Sanitary Demand

Discharge Location	Population	Average Demand [L/s]	Peaking Factor	Peak Flow [L/s]	Total Developable Area (ha)	Infiltration [L/s]	Total Peak Flow [L/s]
Healey Road	1,151	3.597	3.76	13.52	16.43	4.27	17.80
Humber Station Road (North)	1,799	5.622	3.62	20.36	25.70	6.68	27.04
Humber Station Road (South)	5,786	18.081	3.19	57.60	86.75	22.56	80.16

Katrina Weel

From: Katrina Weel
Sent: March 25, 2026 3:45 PM
To: Katrina Weel
Subject: FW: Humber Station CEISMP

Katrina Weel, P.Eng.
Project Engineer, Land Development
DID: 416.842.0026 | Cell: 416.420.9768

From: Maxim Zemlyanoy <mzemlyanoy@schaeffers.com>
Sent: March 25, 2026 1:59 PM
To: Katrina Weel <kweel@cfcrozier.ca>; Mena Iskander <miskander@cfcrozier.ca>
Subject: RE: Humber Station CEISMP

Hi Katrina,

The Region's standard criteria for industrial areas were used:

- Density = 70ppl/ha
- Generation rate = 270L/p/day
- Infiltration rate = 0.26 L/s/ha

Figure 3.5 shows the total area and population for the secondary plan outlets, and these parameters include your site. We did not calculate flows to individual outlets for each site plan, only the developable areas of each of the parcels.

Regards,
Maxim Zemlyanoy, M.EngCEM, P.Eng.
Junior Associate

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6 Ronrose Drive, Concord, Ontario, L4K4R3
(905) 738-6100 – Ext. 207
www.schaeffers.com

Proposed Sanitary Design Flow - Block 1

Block Area:	29.06	ha
Population Density:	70	persons/ha
Population*	2,034	persons

Design Criteria

Total Peak Flow = Average Daily Flow + Infiltration Allowance

Peak Factor =	3.58	Harmon Peaking Factor
Average Industrial Flow =	270.0	L/cap/d
Infiltration =	0.26	L/s/ha

Region of Peel - Linear Wastewater Standards (March 2023)

Sanitary Design Flow - Unit Sewage Flow Rate:

Average Daily Flow =	**6.36**	L/s
Peak Factor =	**3.58**	
Peak Daily Flow =	**22.76**	L/s
Infiltration Flow =	**7.56**	L/s
Total Peak Flow =	**30.31**	L/s

*Population calculation is based on the block area for Block 1.

Proposed Sanitary Design Flow - Block 2

Block Area:	12.07	ha
Population Density:	70	persons/ha
Population*	845	persons

Design Criteria

Total Peak Flow = Average Daily Flow + Infiltration Allowance

Peak Factor =	3.85	Harmon Peaking Factor
Average Industrial Flow =	270.0	L/cap/d
Infiltration =	0.26	L/s/ha

Region of Peel - Linear Wastewater Standards (March 2023)

Sanitary Design Flow - Unit Sewage Flow Rate:

Average Daily Flow =	**2.64**	L/s
Peak Factor =	**3.85**	
Peak Daily Flow =	**10.15**	L/s
Infiltration Flow =	**3.14**	L/s
Total Peak Flow =	**13.29**	L/s

*Population calculation is based on the block area for Block 2.

Proposed Sanitary Design Flow - Block 4

Block Area:	10.63	ha
Population Density:	70	persons/ha
Population*	744	persons

Design Criteria

Total Peak Flow = Average Daily Flow + Infiltration Allowance

Peak Factor =	3.88	Harmon Peaking Factor
Average Industrial Flow =	270.0	L/cap/d
Infiltration =	0.26	L/s/ha

Region of Peel - Linear Wastewater Standards (March 2023)

Sanitary Design Flow - Unit Sewage Flow Rate:

Average Daily Flow =	**2.33**	L/s
Peak Factor =	**3.88**	
Peak Daily Flow =	**9.02**	L/s
Infiltration Flow =	**2.76**	L/s
Total Peak Flow =	**11.78**	L/s

*Population calculation is based on the block area for Block 4.

Proposed Sanitary Design Flow - Block 5 & 6

Block Area:	12.29	ha
Population Density:	70	persons/ha
Population*	860	persons

Design Criteria

Total Peak Flow = Average Daily Flow + Infiltration Allowance

Peak Factor =	3.84	Harmon Peaking Factor
Average Industrial Flow =	270.0	L/cap/d
Infiltration =	0.26	L/s/ha

Region of Peel - Linear Wastewater Standards (March 2023)

Sanitary Design Flow - Unit Sewage Flow Rate:

Average Daily Flow =	**2.69**	L/s
Peak Factor =	**3.84**	
Peak Daily Flow =	**10.33**	L/s
Infiltration Flow =	**3.20**	L/s
Total Peak Flow =	**13.52**	L/s

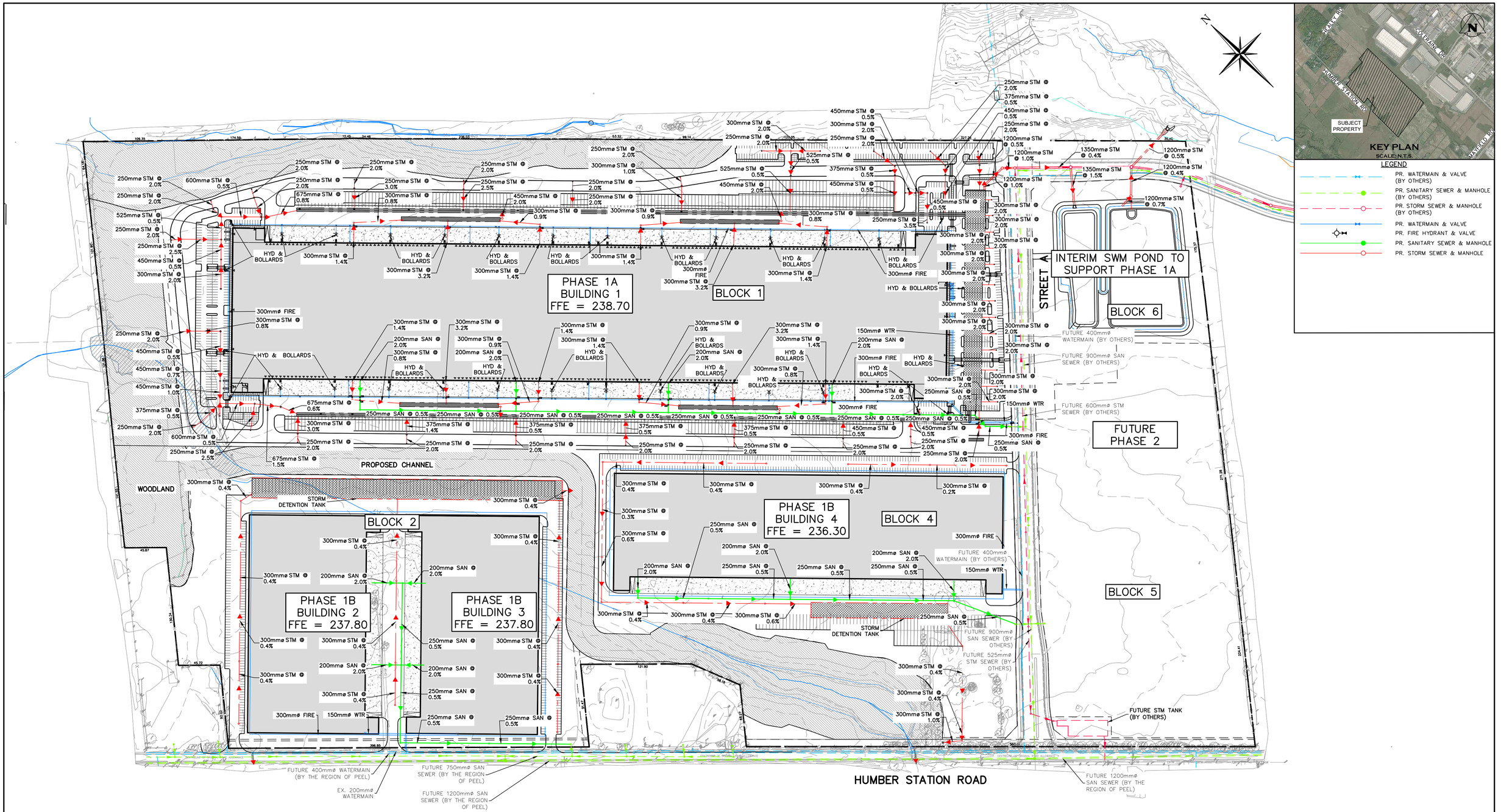
*Population calculation is based on the block area for Block 5&6..

0624-6777 Humber Station
Proposed Sanitary Design Flow

Date: 2024-03-18
Designed By: L.E.
Checked By: K.W./M.I.
Updated: 2026-04-01

Block	Block Area	Equivalent Population	Peak Flow	Infiltration Flow	Total Flow	Outlet
	ha		(L/s)	(L/s)	(L/s)	
1	29.06	2034	22.76	7.56	30.31	Humber Station Road
2	12.07	845	10.15	3.14	13.29	Humber Station Road
4	10.63	744	9.02	2.76	11.78	Humber Station Road
5&6	12.29	860	10.33	3.20	13.52	Humber Station Road
Total	**64.05**	**4483**	**52.26**	**16.65**	**68.91**	

FIGURES



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SCALE: 1:2000

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Engineer

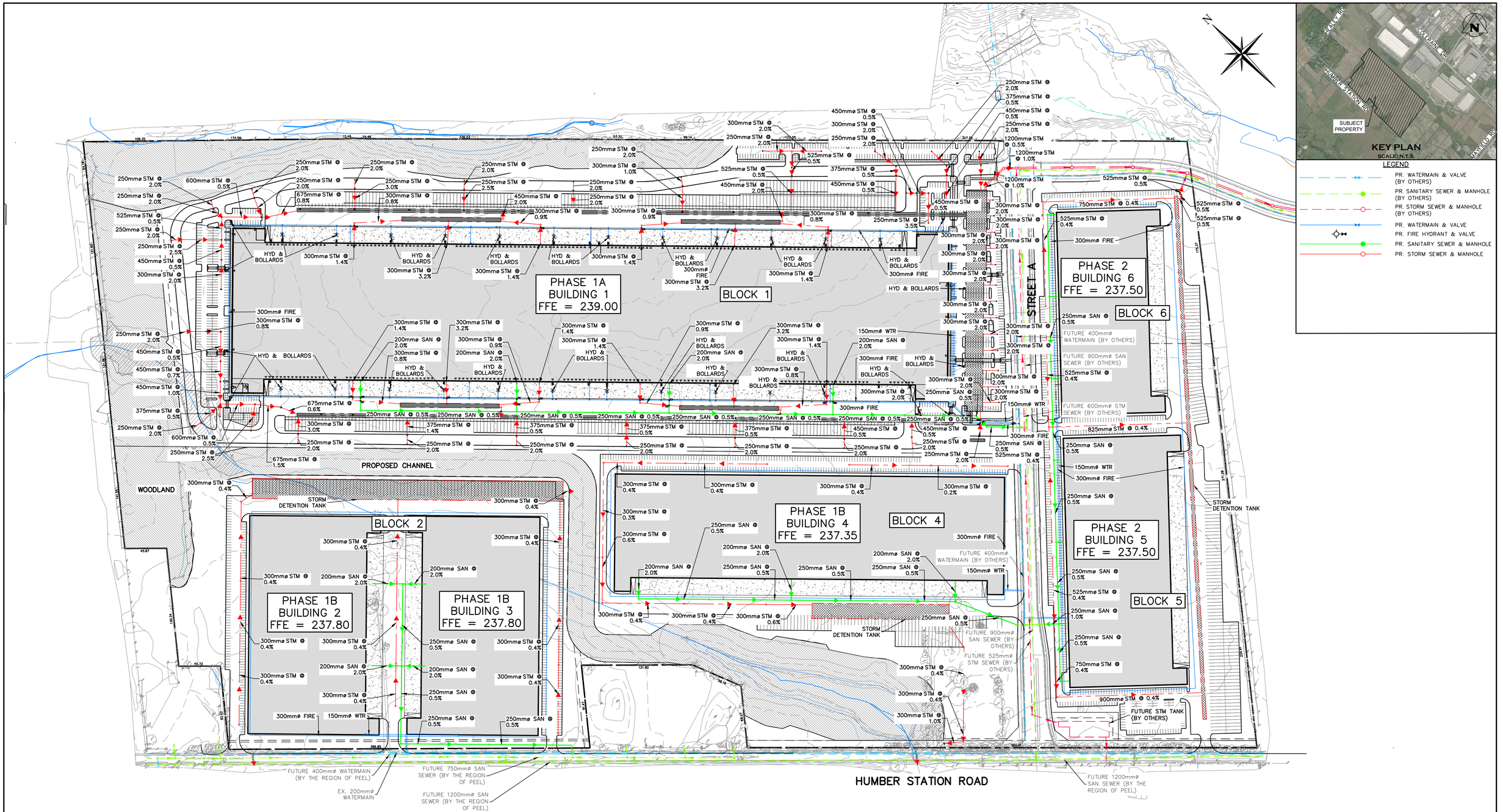
Engineer

Project
HUMBER STATION DISTRIBUTION CENTRE
TOWN OF CALEDON

Drawing
FUNCTIONAL SERVICING PLAN – INTERIM

CROZIER
CONSULTING ENGINEERS

Drawn By	Design By	Project
S.C./D.G./M.P.H.	J.B./D.G./K.D./V.M.	624-6777
Check By M.I./J.F.	Check By M.I./J.F.	Drawing FIG 1



KEY PLAN
SCALE: N.T.S.

LEGEND

- PR. WATERMAIN & VALVE (BY OTHERS)
- PR. SANITARY SEWER & MANHOLE (BY OTHERS)
- PR. STORM SEWER & MANHOLE (BY OTHERS)
- PR. WATERMAIN & VALVE
- PR. FIRE HYDRANT & VALVE
- PR. SANITARY SEWER & MANHOLE
- PR. STORM SEWER & MANHOLE

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Engineer

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TOWN OF CALEDON

Drawing
FUNCTIONAL SERVICING PLAN – ULTIMATE

CROZIER CONSULTING ENGINEERS

Drawn By	Design By	Project
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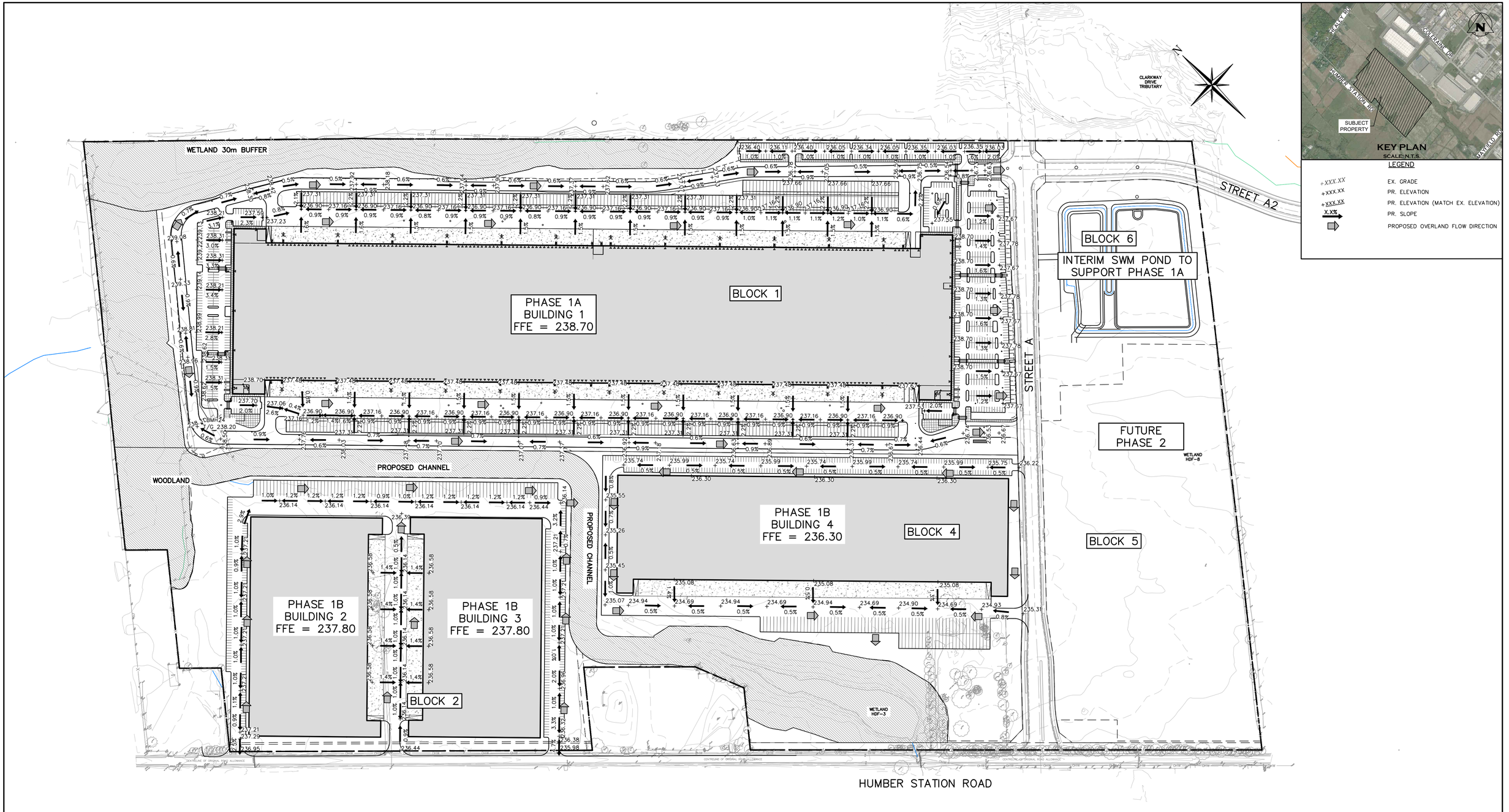
Check By M.I./J.F.	Check By M.I./J.F.	Drawing FIG 2



LEGEND

+XXX.XX	EX. GRADE
+XXX.XX	PR. ELEVATION
+XXX.XX	PR. ELEVATION (MATCH EX. ELEVATION)
X.X%	PR. SLOPE
	PROPOSED OVERLAND FLOW DIRECTION

50 0m 50 100 150

SCALE: 1:2000

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TOWN OF CALEDON

Drowing
FUNCTIONAL GRADING PLAN – INTERIM

CROZIER CONSULTING ENGINEERS

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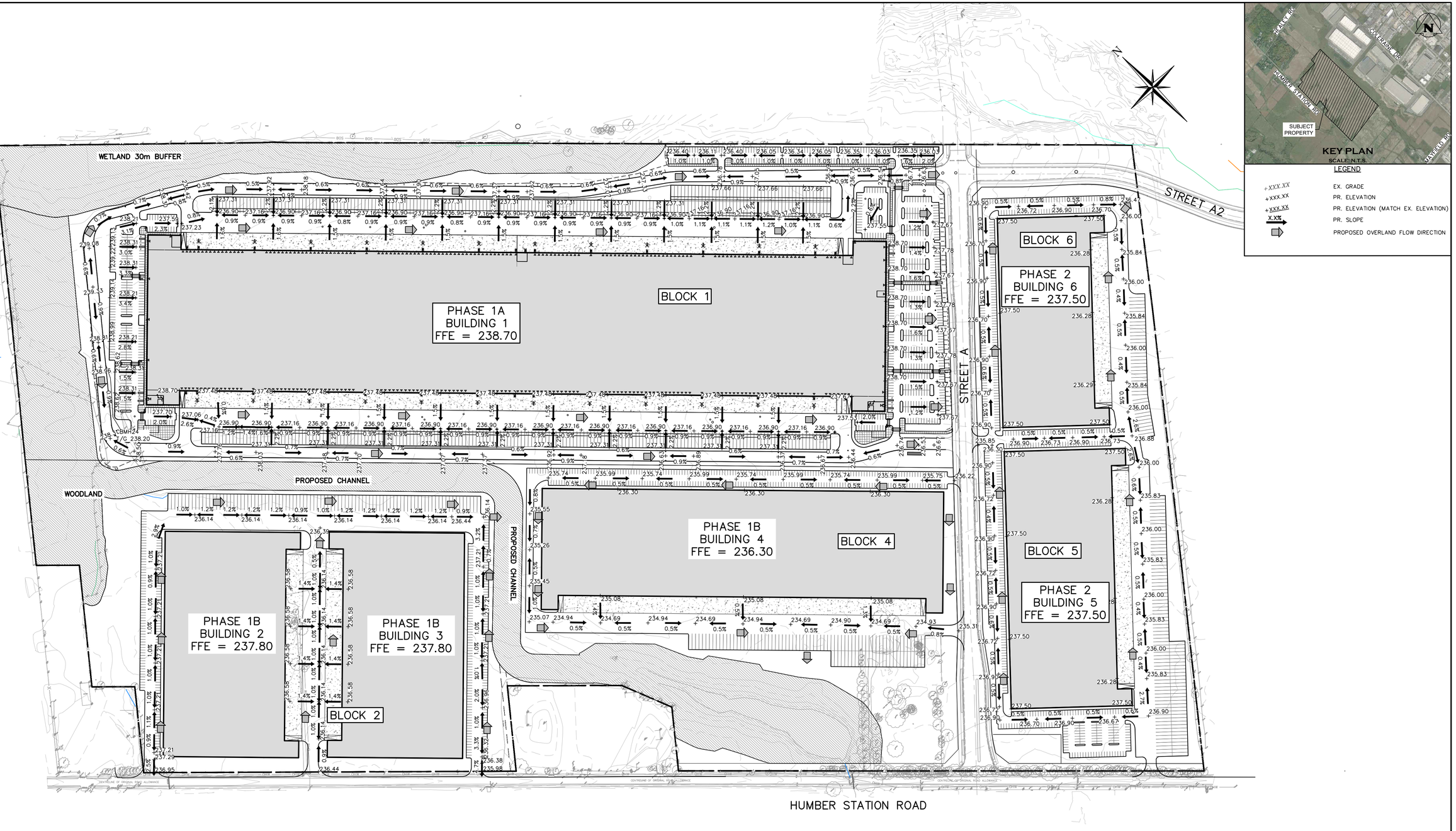
Check By M.I./J.F.	Check By M.I./J.F.	Drowing FIG 3



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Drawing
FUNCTIONAL GRADING PLAN – ULTIMATE

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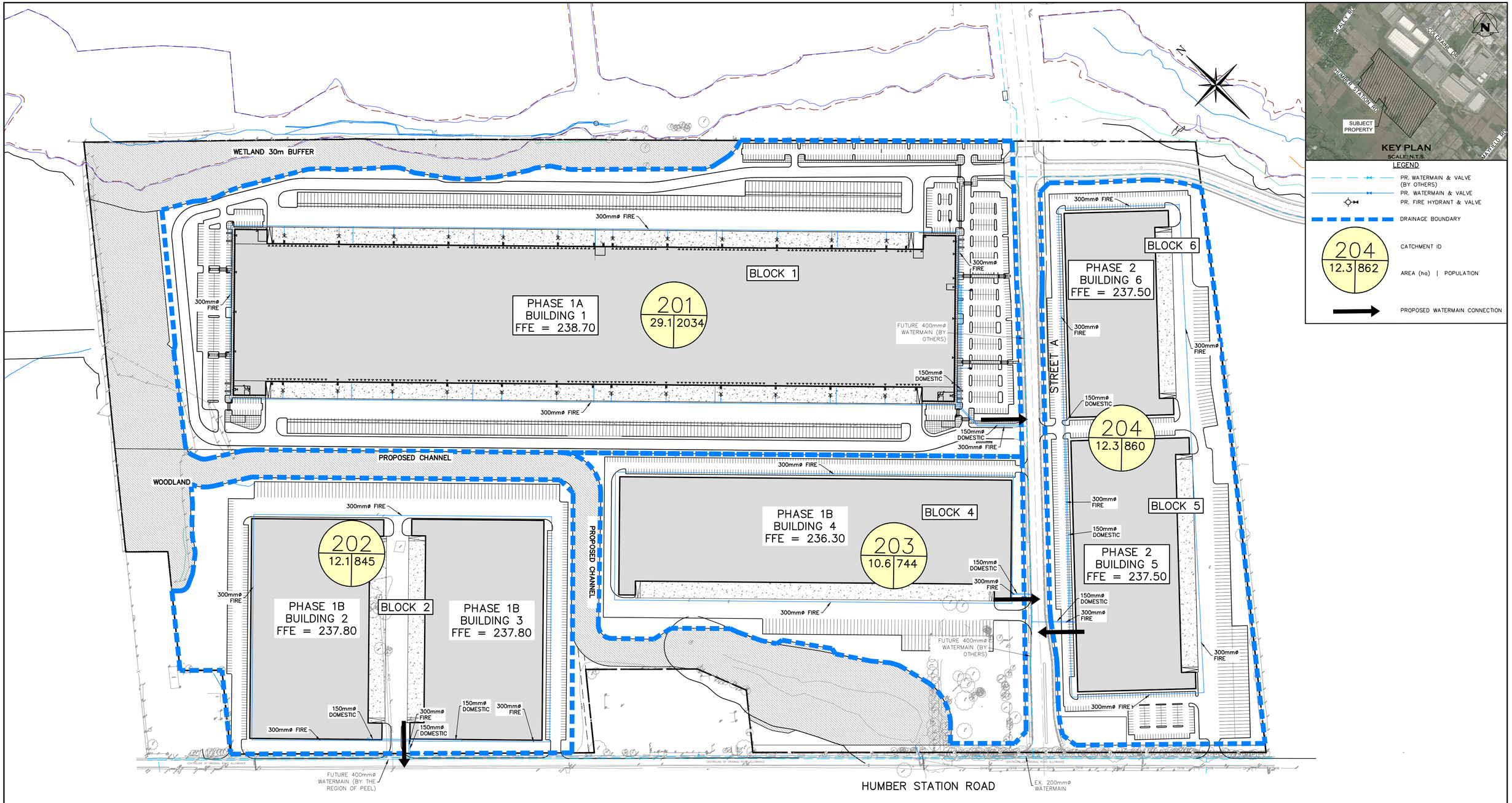
M.I./J.F.	M.I./J.F.	FIG 4



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Drawing
WATER DRAINAGE AREA PLAN

CROZIER CONSULTING ENGINEERS

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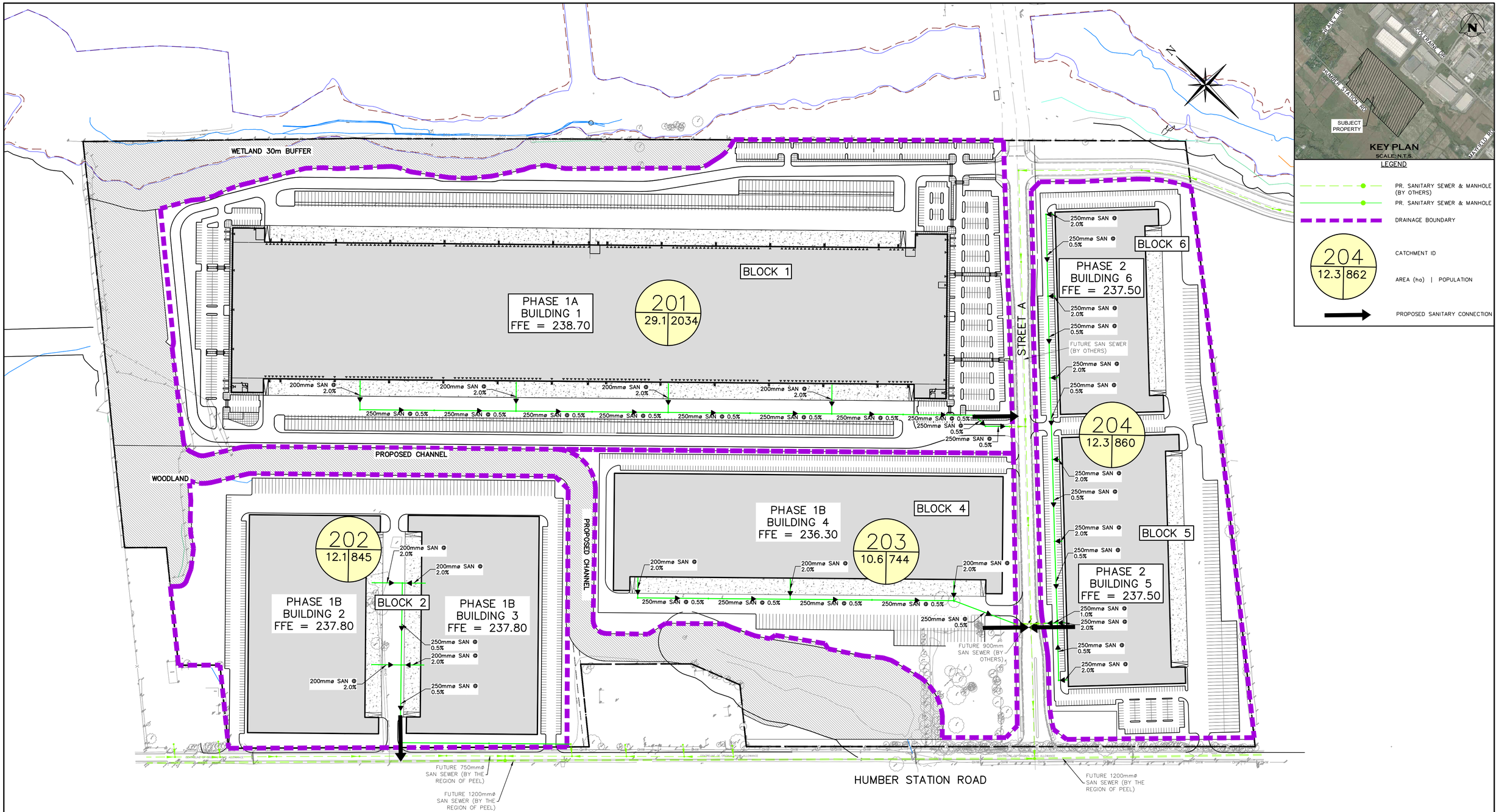
Check By M.I./J.F. | Check By M.I./J.F. | Drawing FIG 5



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SITE PLAN NOTES:

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Engineer

Engineer

Project
HUMBER STATION DISTRIBUTION CENTRE
TOWN OF CALEDON

Drawing
SANITARY DRAINAGE AREA PLAN

CROZIER CONSULTING ENGINEERS

Drawn By	Design By	Project
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Check By M.I./J.F.	Check By M.I./J.F.	Drawing FIG 6