SERVICING AND STORMWATER MANAGEMENT REPORT
347 FRANKTOWN ROAD

Project No.: CCO-22-0025

Prepared for:

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Prepared by:

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June 03, 2024 Rev 3

McINTOSH PERRY
egis GROUP

TABLE OF CONTENTS

LIST OF TABLES

APPENDICES

1.0 PROJECT DESCRIPTION

1.1 Purpose

McIntosh Perry (MP) has been retained by Dr. Neel Chadha to prepare this Servicing and Stormwater Management Report in support of the Draft Plan of Subdivision for the proposed development at 347 Franktown Road within the Town of Carleton Place.

The main purpose of this report is to demonstrate that the proposed development has access to sufficient public services in accordance with the recommendations and guidelines provided by the Town of Carleton Place (Town), the Mississippi Valley Conservation Authority (MVCA) and the Ministry of the Environment, Conservation and Parks (MECP). This report will address access to water, sanitary and storm servicing for the development, ensuring that existing and proposed services will adequately service the proposed development.

1.2 Site Description

The property is located at 347 Franktown Road in the Town of Carleton Place. The subject land covers approximately 3.0 ha and is located between the proposed second phase of Coleman Street Subdivision and Franktown Road.

The existing site is currently undeveloped, consisting of wooded and grassed areas. Adjacent lots to the north and south are also undeveloped. Coleman Street Subdivision Phase 2 flanks the eastern portion of the property and existing commercial and residential developments along Franktown Road are located to the west.

The Phase 1 development proposes a retirement home on the northwest portion of the property. A senior's apartment building is proposed in Phase 2. A medical clinic is proposed in Phase 3. A row of townhouses is proposed in Phase 4. Phases 1-3 will be separated from the Townhouse blocks (Phase 4) by a public ROW. The future ROW will connect the proposed development to the south and ultimately the Coleman subdivision.

Based on consultation with the Town of Carleton Place, separate Development Permit applications will be submitted for each phase of the proposed development. This report will provide a servicing and stormwater management strategy that supports the ultimate development.

2.0 PRE-CONSULTATION SUMMARY

A pre-consultation meeting was conducted with the Town regarding the proposed site on May 21st, 2021. The notes from this meeting can be found in Appendix 'B'. Background documents available under separate cover include:

- JLR Watermain Capacity – Future Development Final (Dated September 16, 2013, completed by J.L. Richards & Associates Ltd.)

3.0 WATERMAIN

3.1 Existing Watermain

The following subsections outline the existing water infrastructure within Franktown Road and Coleman Street Subdivision Phase 2.

3.1.1 *Franktown Road*

There is an existing 200 mm diameter watermain, that runs north along Franktown Road, ending in a stub located south of the subject site. Just before the stub there is a hydrant that services the existing commercial development adjacent to the subject site.

3.1.2 *Coleman Street Subdivision*

Although not yet constructed, the infrastructure within the proposed Coleman Street Subdivision Phase 2 is anticipated to be constructed prior to the proposed construction of the subject property. There is a proposed 200 mm diameter watermain that services the subdivision. The design of the Coleman Street Subdivision Phase 2 has taken the future development into account with stubs extending westward from the subdivision located both northeast and southeast of the subject site. Servicing for the site is contingent on adjacent developments completion of water construction up to the property line.

3.2 Proposed Watermain

The existing 200 mm watermain within Coleman Street Subdivision Phase 2 will be extended along the future municipal road to service the proposed development. The Phase 1 development will be serviced via a 150 mm water service lateral, as shown by C102. In accordance with the Watermain Capacity – Future Development provided by the Town of Carleton Place, the 200 mm watermain will be connected to the existing 200 mm watermain within Franktown Road. The existing municipal watermain within Franktown Road is proposed to be extended in order to connect with the proposed 200 mm watermain.

The Fire Underwriters Survey 2020 (FUS) method was utilized to estimate the required fire flow for the site. Fire flow requirements were calculated per City of Ottawa Technical Bulletin ISTB-2018-03. Due to the various phases of the development, all phases and buildings were evaluated for the worst-case scenario. It was determined that the proposed Phase 1 building was the worst case. Detailed water and fire calculations can be found in Appendix 'C' of this report.

The 'C' factor (type of construction) for the FUS calculation was determined to be 1 (ordinary construction). The total floor area ('A' value) for the FUS calculation was determined to be 11,691 m^2. The results of the calculations yielded a required fire flow of 13,000 L/min. The detailed calculations for the FUS can be found in Appendix 'C'.

The water demands for the proposed buildings have been calculated to adhere to the *Ottawa Design Guidelines – Water Distribution* manual and can be found in Appendix 'C'. *Table 1* and *Table 2*, below, summarizes the design criteria and calculated demands.

Table 1: Water Supply Design Criteria and Water Demands

Water Demand Rate (Residential)	280 L/c/day
Bachelor/1-Bedroom Apartment	1.4 Persons/unit
2-Bedroom Apartment	2.1 Persons/unit
Residential Peaking Factor (Day)	4.9 x avg. day
Residential Peaking Factor (Hour)	7.4 x max. day
Commercial Rate	28,000 L/ha/day
Commercial Peaking Factor (Day)	1.5 x avg. day
Commercial Peaking Factor (Hour)	1.8 x max. day

Table 2: Summary of Estimated Water Flow – Phase 1-4

	Phase 1	Phase 2	Phase 3	Phase 4
Average Day Demand (L/s)	0.74	0.35	0.04	0.16
Maximum Daily Demand (L/s)	3.50	1.68	0.06	0.78
Peak Hourly Demand (L/s)	5.30	2.54	0.10	1.18
FUS Fire Flow Requirement (L/s)	216.67	166.67	116.67	166.67

With reference to the Watermain Capacity – Future Development Pg. 18, pressures under peak demand were analyzed and a water model was completed using Bentley's WaterCAD based on those conditions. The results determined that the proposed 200 mm watermain can adequately service the proposed development and provide sufficient fire flow since the proposed Hydrant H-1 and H-2 produced available fire flows of 13,174.2 L/min and 14,482.8 L/min. Refer to drawing C101 for Hydrant locations. The results are available in Appendix 'C' of this report.

The normal operating pressure range is anticipated to be 63 psi to 72 psi and will not be less than 275 kPa (40 psi) or exceed 689 kPa (100 psi). The proposed watermain will meet the minimum required 20 psi (140 kPa) at the ground level under maximum day demand and fire flow conditions. *Table 3*, below, summarizes the water pressure at junctions per scenario.

Table 3: Water Pressure at Junctions per Scenario

Junction	Average Day (psi)	Peak Hourly (psi)	Max. Day + Fire Flow (psi)
J-17	66	65	268.42 L/s @ 20 psi
J-21	66	65	241.38 L/s @ 20 psi
J-22	66	65	166.23 L/s @ 20 psi
J-23	66	65	232.34 L/s @ 20 psi
J-24	66	65	218.24 L/s @ 20 psi
J-25	64	63	235.37 L/s @ 20 psi
J-26	66	65	219.57 L/s @ 20 psi
J-27	66	65	218.61 L/s @ 20 psi

In order to provide the required fire flow for the worst case but also for all other cases, two private hydrants have been proposed within the site. The proposed hydrants have been placed to ensure a maximum distance of 45 m to the proposed development. Location details are shown on the Site Servicing Plan included with the report. A hydrant summary can be seen in *Table 4*, below.

Table 4: Fire Protection Confirmation

Building	Fire Flow Demand (L/min.)	Fire Hydrant(s) within 75m	Fire Hydrant(s) within 150m	Combined Fire Flow (L/min.)
347 Franktown Road	13,000	2	2	>18,000

4.0 SANITARY DESIGN

4.1 Existing Sanitary Sewer

Although not yet constructed, Coleman Street Subdivision Phase 2 has a proposed 200 mm diameter sanitary sewer with stubs located to the northeast and southeast of the subject site. Based on coordination with Town staff, this infrastructure needs to be installed to be available for connection.

4.2 Proposed Sanitary Sewer – Ultimate

The proposed 200 mm sanitary sewer stub within the Coleman Street Subdivision is proposed to be extended along the future municipal road, through 355 Franktown Road, to service all four future phases within the subject site. Town staff have noted that updates to the Town infrastructure may be required to support the developments. Based on coordination, an updated analysis is being conducted by the Town.

The peak design flow was calculated for the proposed site using the Ottawa Sewer Design Guidelines (SDG). Design criteria used in the sanitary demand calculation can be seen in *Table 5*, below.

Table 5: Sanitary Design Criteria

Bachelor/1-Bedroom	1.4 persons/unit
2-Bedroom	2.1 persons/unit
Average Daily Demand	280 L/day/person
Residential Peaking Factor	3.51 – 3.65
Commercial Peaking Factor	1.5
Extraneous Flow Allowance	0.33 L/s/ha

Table 6, below, summarizes the estimated wastewater flow from the proposed development. Refer to Appendix 'D' for detailed calculations.

Table 6: Summary of Estimated Sanitary Flow – Phase 1-4

	Phase 1	Phase 2	Phase 3	Phase 4	Total
Average Dry Weather Flow	0.76 L/s	0.40 L/s	0.06 L/s	0.18 L/s	1.40 L/s
Peak Dry Weather Flow	2.53 L/s	1.28 L/s	0.08 L/s	0.60 L/s	4.49 L/s
Peak Wet Weather Flow	2.86 L/s	1.60 L/s	0.19 L/s	0.71 L/s	5.36 L/s

Sanitary sewers have been sized to accommodate the full-build out. Refer to sizing sheet and Sanitary Drainage Plan located in Appendix 'D'.

Further downstream of Coleman Street Subdivision Phase 2 a sanitary sewer upgrade is to take place as per *Section 4.3.2* of the *Servicing & Stormwater Management Report – Coleman Central Submission – Phase 2* included in Appendix 'D' for reference. Flows from the subject site were taken into consideration in the report for the full build-out of the development area.

4.3 Proposed Sanitary Sewer – Phase 1

A 200 mm diameter service lateral will be connected from the Phase 1 building to the proposed 200 mm diameter sanitary sewer extension from the Coleman Street subdivision up to the site.

Table 7, below, summarizes the estimated wastewater flow from the proposed Phase 1 development. Refer to Appendix 'D' for detailed calculations.

Table 7: Summary of Estimated Sanitary Flow

Average Dry Weather Flow	0.76 L/s
Peak Dry Weather Flow	2.53 L/s
Peak Wet Weather Flow	2.86 L/s

Based on the calculation provided in the Coleman Street Subdivision Phase 2 Servicing Report and the results shown in *Table 7*, above, it is anticipated that there will be no downstream capacity concerns within the Coleman subdivision.

Flow from the subject site has been accounted for in the Coleman Street Subdivision design, as demonstrated by the calculation sheet included in Appendix 'D'.

5.0 STORM DESIGN

5.1 Existing Storm Sewer

There is an existing storm sewer located within Franktown Road.

There is no existing storm infrastructure within the subject property. Stormwater runoff currently sheet drains to the southeast where it is collected by the existing channel, tributary to the Mississippi River.

5.2 Proposed Storm Sewer

The proposed development will be serviced by a new storm network that will outlet to the existing creek located to the southeast. This creek is being regraded in order to accommodate storm flows from Coleman Street Subdivision Phase 2. Flows from the subject site will also be considered. Unrestricted runoff will be directed off site and restricted flow within Phases 1-3 will be stored as required and released to the proposed storm sewer network at the allowable release rate. It is expected that a combination of roof storage, surface storage, and subsurface storage will be required to meet the SWM criteria provided by the Town of Carleton Place. Based on the findings of the hydraulic grade line analysis completed for the downstream storm sewer system, it is expected that sump pumps will be required to service the townhouse blocks. The need for sump pumps will be confirmed through modeling during the detailed design phase.

6.0 STORMWATER MANAGEMENT

6.1 Design Criteria and Methodology

Stormwater management for the proposed site will be maintained through positive drainage away from the buildings and towards the adjacent ROW's. The post-development 5 and 100-year flows will be restricted to the pre-development 5 and 100-year flows. External drainage will be collected and conveyed through the sites without flow attenuation. The quantitative and qualitative properties of the storm runoff for both the pre & post development flows are further detailed below.

6.2 Runoff Calculations

Runoff calculations presented in this report are derived using the Rational Method, given as:

$$Q = 2.78CIA \text{ (L/s)}$$

Where C = Runoff coefficient

I = Rainfall intensity in mm/hr (City of Ottawa IDF curves)

A = Drainage area in hectares

It is recognized that the Rational Method tends to overestimate runoff rates. As a result, the conservative calculation of runoff ensures that any stormwater management facility sized using this method is anticipated to function as intended.

The following coefficients were used to develop an average C for each area:

Roofs/Concrete/Asphalt	0.90
Gravel	0.60
Undeveloped and Grass	0.20

As per the *City of Ottawa - Sewer Design Guidelines*, the 5-year balanced 'C' value must be increased by 25% for a 100-year storm event to a maximum of 1.0.

The time of concentration (Tc) used for pre-development and post-development shall be calculated using a Tc of 10 minutes.

6.3 Pre-Development Drainage

The existing site drainage limits are demonstrated on the Pre-Development Drainage Area Plan. A summary of the Pre-Development Runoff Calculations can be found in *Table 8, below.*

Table 8: Pre- Development Runoff Summary

Drainage Area	Area (ha)	Runoff Coefficient (5-Year)	Runoff Coefficient (100-Year)	5-year Peak Flow (L/s)	100-year Peak Flow (L/s)
A1	2.73	0.20	0.25	158.19	338.87
A2	0.24	0.20	0.25	14.18	30.38
A3	0.29	0.20	0.25	16.55	35.44
A4	1.33	0.20	0.25	77.30	165.58
A5	0.42	0.20	0.25	24.48	52.43

Area A1 encompasses the site boundary and will be used to determine the allowable release rate for the site. Areas A2 and A3 consist of external drainage collected from the rear yards of 349 and 347 Franktown, respectively. Area A4 represents external drainage collected from northwest of the site, and Area A5 represents external drainage from Franktown Road which currently drains toward the existing outlet.

See CCO-22-0025 – *PRE* in Appendix 'E' and Appendix 'G' for calculations.

6.4 Post-Development Drainage

The proposed site drainage limits are demonstrated on the Post-Development Drainage Area Plan. See CCO-22-0025 – *POST* in Appendix 'F' of this report for more details. A summary of the Post-Development Runoff Calculations can be found in *Table 9*¸ below.

Table 9: Post Development Flow Rate

Drainage Area	Area (ha)	Runoff Coefficient (5-Year)	Runoff Coefficient (100-Year)	5-year Peak Flow (L/s)	100-year Peak Flow (L/s)
B101	0.27	0.90	1.00	69.76	132.84
B102	0.27	0.65	0.73	51.50	99.43
B103	0.32	0.50	0.57	46.76	91.55
B104	0.17	0.68	0.76	33.91	65.32
B105	0.23	0.81	0.91	54.84	104.84
B106	0.03	0.20	0.25	1.72	3.69
B201	0.36	0.78	0.87	80.64	154.39
B202	0.19	0.90	1.00	48.67	92.68
B301	0.37	0.74	0.83	80.02	153.55
B401	0.32	0.54	0.61	49.74	97.02
B402	0.19	0.70	0.78	38.87	74.79
Total (Site)	2.73	-	-	556.44	1070.10
B501	0.24	0.20	0.25	14.18	30.39
B502	0.29	0.20	0.25	16.54	35.44
B503	1.33	0.20	0.25	77.30	165.58
Total (Site + Collected External Drainage)	4.59	-	-	664.47	1301.51
B504	0.42	0.20	0.25	24.45	52.38
Total (Franktown)	0.42	0.20	0.25	24.45	52.38

See Appendix 'G' for calculations.

Runoff for area B101–B105, B201–B202, and B301 will be restricted before discharging to the existing channel located to the southeast. Runoff is anticipated to be controlled by flow restricted roof drains and inlet control devices.

Runoff from areas B401-B402 will be unrestricted and compensated for in areas with flow attenuation.

External drainage from areas B501–503 & drainage from area B106 will be collected and conveyed to the existing channel without restriction. Runoff from area B504 will be directed towards the existing storm sewer within Franktown Road.

Quantity and quality control will be further detailed in Sections 6.5 and 6.6.

6.5 Quantity Control

The total post-development runoff for this site has been restricted to match the 5-year and 100-year pre-development flow rates calculated with a combined C value. (See Appendix 'B' for pre-consultation notes). These values create the following allowable release rate and storage volumes for the development.

Table 10: Allowable Release Rate Summary

Drainage Area	Area (ha)	Runoff Coefficient 5-Year	Runoff Coefficient 100-Year	Required Restricted Flow 5-Year (L/s)	Required Restricted Flow 100-Year (L/s)
A1	2.73	0.20	0.25	158.19	338.87

See Appendix 'G' for calculations.

Reducing site flows will be achieved using a flow restriction and will create the need for onsite storage. Runoff from area B101-B105, B201-B202, and B301 will be restricted as shown in *Table 11*, below.

Table 11: Post-Development Restricted Runoff Summary

Drainage Area	Post Development Unrestricted Flow (L/s)		Post Development Restricted Flow (L/s)		
	5-Year	100-Year	5-Year	100-Year	
B101	69.76	132.84	3.84	3.84	Restricted – Roof Drains
B102	51.50	99.43	12.66	13.85	Restricted – ICD
B103	46.76	91.55			Restricted – ICD
B104	33.91	65.32			Restricted - ICD
B105	54.84	104.84	12.66	13.55	Restricted - ICD
B106	1.72	3.69	1.72	3.69	Unrestricted
B201	80.64	154.39	18.62	19.92	Restricted – Roof Drains
B202	48.67	92.68	1.60	1.60	Restricted - ICD
B301	80.02	153.55	18.47	19.77	Restricted - ICD
B401	49.74	97.02	49.74	97.02	Unrestricted
B402	38.87	74.79	38.87	74.79	Unrestricted
Total	556.44	1070.10	158.19	248.03	

See Appendix 'G' for calculations.

Runoff from area B101 will be controlled using flow restricted roof drains before discharging to the proposed storm sewer, downstream of *MH102*. Emergency roof scuppers will be installed to ensure ponding does not exceed the proposed ponding limit.

Runoff from areas B102-B104 will be restricted by an ICD located within the outlet of *MH4*. The restriction of runoff within *MH4* will cause runoff to backup towards the proposed LID SWM storage area northwest of the Phase 1 Building. The SWM area will pond to elevations of 134.16 and 134.47 for the 5-year and 100-year storms, respectively.

Runoff from areas B105 will be restricted by an ICD located within the outlet of *CB101-6*, resulting in shallow surface ponding within the Phase 1 drive aisle and parking lot during the 5- and 100-year events. Should the available surface storage volume determined during detailed design prove insufficient, subsurface storage will be required to restrict area B105 to the allowable release rate. It is expected that subsurface storage, if required, will be provided with underground storage chambers.

External drainage from area B106 will be collected by *DICB101-4* and directed to *MH102,* downstream of the restriction within *MH4.* Runoff from area B106 will be unrestricted and compensated for in areas for in areas with flow attenuation.

Runoff from areas B201 will be restricted by an ICD located within the outlet of *CBMH101-8*, resulting in shallow surface ponding within the Phase 2 drive aisle and parking lot during the 5- and 100-year events. Should the available surface storage volume determined during detailed design prove insufficient, subsurface storage will be required to restrict area B201 to the allowable release rate. It is expected that subsurface storage, if required, will be provided by underground storage chambers or a cistern incorporated into the design of the Phase 2 building.

Runoff from area B202 will be controlled using flow restricted roof drains before discharging to the proposed storm sewer, downstream of *MH103*. Emergency roof scuppers will be installed to ensure ponding does not exceed the proposed ponding limit.

Runoff from areas B301 will be restricted by an ICD located within the outlet of *CB101-13*, resulting in shallow surface ponding within the Phase 3 parking lot during the 5- and 100-year events. Should the available surface storage volume determined during detailed design prove insufficient, subsurface storage will be required to restrict area B301 to the allowable release rate. It is expected that subsurface storage, if required, will be provided with underground storage chambers.

Runoff from areas B401 & B402 will consist of unrestricted runoff from the townhouse blocks and future public road. Runoff will be collected by a series of catch basins and directed to the proposed 675-825 mm diameter storm sewer within the future public road without restriction.

External drainage from area B501 will be collected by *DICB101-4* and directed to *MH102,* downstream of the restriction within *MH4.* The proposed storm sewer network will be sized to accommodate this external

drainage area, however runoff from area B501 will not be restricted or counted towards the allowable release rate for the site.

External drainage from area B502 will be collected by *DICB101-1* and directed to *MH102,* downstream of the restriction within *MH4.* The proposed storm sewer network will be sized to accommodate this external drainage area, however runoff from area B502 will not be restricted or counted towards the allowable release rate for the site.

External drainage from area B503 will be collected by DICB101-9 and directed to *MH104* within the future public road. Runoff will be conveyed within the storm sewer network to the discharge point within the Coleman Subdivision.

A storage summary can be seen in *Table 12*, below.

Table 12: Storage Summary

Drainage Area	Storage Required (m^3)	Storage Available (m^3)	Storage Required (m^3)	Storage Available (m^3)
	5-Year		100-Year	
B101	67.08	70.25	150.61	160.56
B102	105.31	105.67	243.86	246.02
B103				
B104				
B105	29.18	*TBD*	73.38	*TBD*
B201	42.90	*TBD*	108.13	*TBD*
B202	54.40	59.40	119.67	124.74
B301	42.58	*TBD*	107.65	*TBD*

6.6 Quality Control

The development of this lot will employ Best Management Practices (BMP's) wherever possible. The intent of implementing stormwater BMP's is to ensure that water quality and quantity concerns are addressed at all stages of development. BMP's at this site will be implemented at the lot level. Lot level BMP's typically include temporary retention of the parking lot runoff, minimizing ground slopes and maximizing landscaped areas.

An LID SWM area is proposed within Phase 1, complete with grassed swales along the property boundary. The SWM area and grasses swales will provide an opportunity for infiltration, as well as filtration and sedimentation of suspended solids.

A quality treatment unit has been sized to provide a TSS removal rate of 80% as per the Mississippi Valley Conservation Authority (MVCA) requirements. The Oil and Grit Separator (OGS) will provide a water quality of

at least 80% TSS. The OGS Unit shall be placed downstream of the restriction unit to provide the required water quality treatment for the site runoff before discharging to the existing creek southeast of the site.

7.0 EROSION AND SEDIMENT CONTROL

7.1 Temporary Measures

Before construction begins, temporary silt fence, straw bale or rock flow check dams will be installed at all natural runoff outlets from the property. It is crucial that these controls be maintained throughout construction and inspection of sediment and erosion control will be facilitated by the Contractor or Contract Administration staff throughout the construction period.

Silt fences will be installed where shown on the final engineering plans, specifically along the downstream property limits. The Contractor, at their discretion or at the instruction of the City, Conservation Authority or the Contract Administrator shall increase the quantity of sediment and erosion controls on-site to ensure that the site is operating as intended and no additional sediment finds its way off site. The rock flow, straw bale & silt fence check dams and barriers shall be inspected weekly and after rainfall events. Care shall be taken to properly remove sediment from the fences and check dams as required. Fibre roll barriers are to be installed at all existing curb inlet catchbasins and filter fabric is to be placed under the grates of all existing catchbasins and manholes along the frontage of the site and any new structures immediately upon installation. The measures for the existing/proposed structures are to be removed only after all areas have been paved. Care shall be taken at the removal stage to ensure that any silt that has accumulated is properly handled and disposed of. Removal of silt fences without prior removal of the sediments shall not be permitted.

Although not anticipated, work through winter months shall be closely monitored for erosion along sloped areas. Should erosion be noted, the Contractor shall be alerted and shall take all necessary steps to rectify the situation. Should the Contractor's efforts fail at remediating the eroded areas, the Contractor shall contact the City and/or Conservation Authority to review the site conditions and determine the appropriate course of action. As the ground begins to thaw, the Contractor shall place silt fencing at all required locations as soon as ground conditions warrant. Please see the *Site Grading, Drainage and Sediment & Erosion Control Plan* for additional details regarding the temporary measures to be installed and their appropriate OPSD references.

7.2 Permanent Measures

It is expected that the Contractor will promptly ensure that all disturbed areas receive topsoil and seed/sod and that grass be established as soon as possible. Any areas of excess fill shall be removed or levelled as soon as possible and must be located a sufficient distance from any watercourse to ensure that no sediment is washed out into the watercourse. As the vegetation growth within the site provides a key component to the control of sediment for the site, it must be properly maintained once established. Once the construction is complete, it will be up to the landowner to maintain the vegetation and ensure that the vegetation is not overgrown or impeded by foreign objects.

8.0 SUMMARY

- A new retirement home, apartment building, medical clinic, and townhouse block are proposed to be constructed at 347 Franktown Road within the town of Carleton Place.
- A new 200mm watermain will be extended from the proposed Phase 2 of Coleman Subdivision to Franktown Road.
- The FUS method estimated fire flow indicated 13,000 L/min is required for the proposed development.
- Based on boundary conditions provided by the Town, the proposed 200 mm watermain and two private hydrants are capable of meeting daily and fire flow demands.
- A new 200mm sewer main will be installed and connected to the proposed stub at phase 2 of Coleman Subdivision
- The development is anticipated to have a peak wet weather flow of 5.36 L/s. A proposed 200 mm diameter sanitary main will collect and outlet flow to the proposed 200 mm diameter sanitary stub located within Phase 2 of Coleman Street Subdivision. Based on the sanitary analysis conducted in the Coleman Street Subdivision Phase 2 Servicing Report, the subdivisions sanitary network has sufficient capacity for the subject site's flow.
- A new storm system will be installed on-site to capture storm runoff and restrict flows to pre-development rates. The new storm system will discharge to the existing creek southeast of the site.
- It is expected that storage for the 5 and 100-year storm events will be provided via roof storage and surface storage. Subsurface storage may be required depending on the grading schemes developed during detailed design.

9.0 RECOMMENDATION

Based on the information presented in this report, we recommend that Town of Carleton Place approve this Servicing and Stormwater Management Report in support of the Draft Plan of Subdivision proposal for 347 Franktown Road.

This report is respectfully being submitted for approval.

Regards,

McIntosh Perry Consulting Engineers Ltd. | Egis Canada Ltd.

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10.0 STATEMENT OF LIMITATIONS

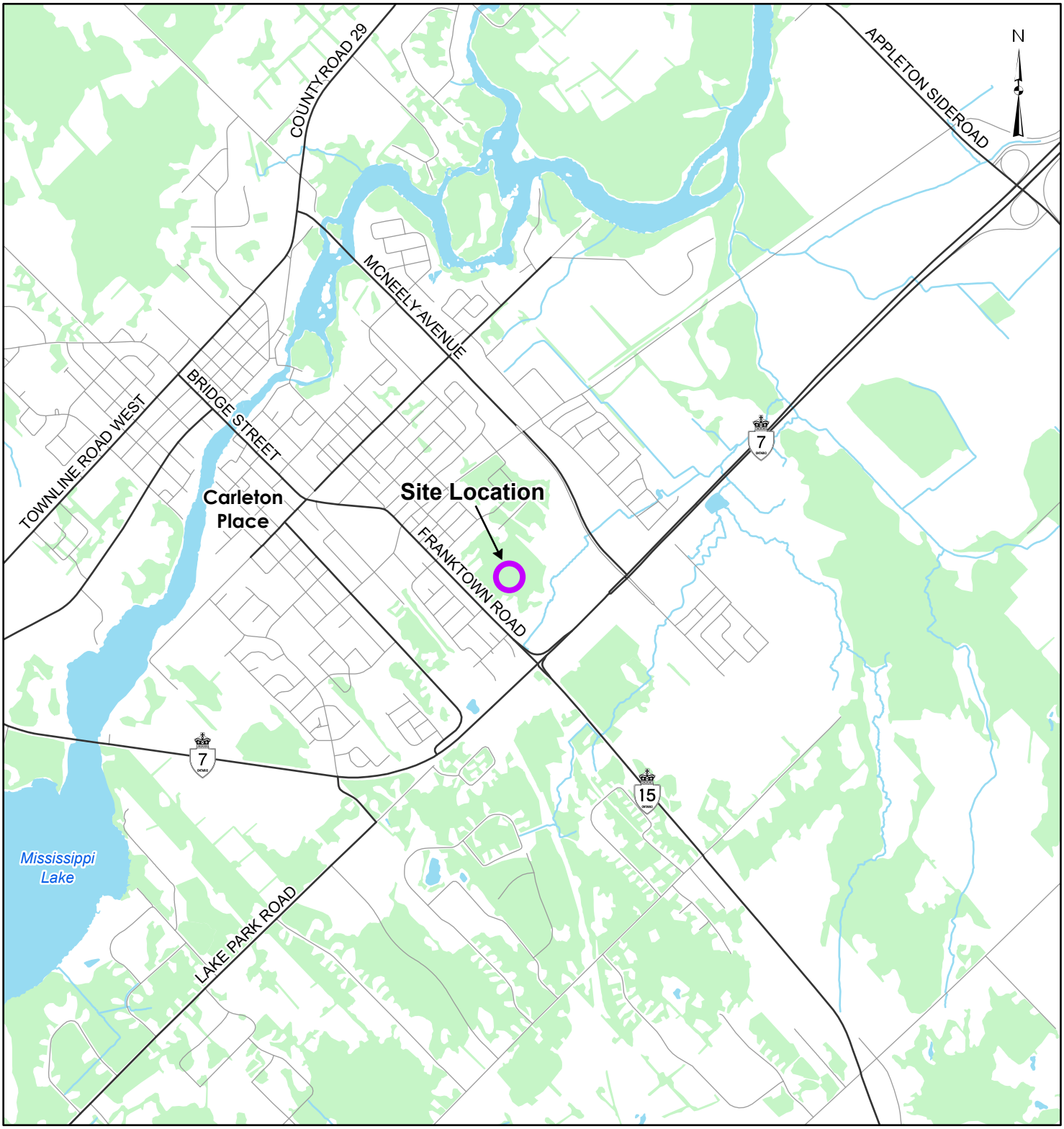
This report was produced for the exclusive use of Dr. Neel Chadha. The purpose of the report is to assess the existing stormwater management system and provide recommendations and designs for the post-construction scenario that are in compliance with the guidelines and standards from the Ministry of the Environment, Parks and Climate Change, Town of Carleton Place and local approval agencies. Egis reviewed the site information and background documents listed in Section 2.0 of this report. While the previous data was reviewed by Egis and site visits were performed, no field verification/measures of any information were conducted.

Any use of this review by a third party, or any reliance on decisions made based on it, without a reliance report is the responsibility of such third parties. Egis accepts no responsibility for damages, if any, suffered by any third party as a result of decisions or actions made based on this review.

The findings, conclusions and/or recommendations of this report are only valid as of the date of this report. No assurance is made regarding any changes in conditions subsequent to this date. If additional information is discovered or becomes available at a future date, Egis should be requested to re-evaluate the conclusions presented in this report, and provide amendments, if required.

APPENDIX A
KEY PLAN

McINTOSH PERRY



LEGEND

- Site Location
- Local Road
- Major Road
- Watercourse
- Waterbody
- Wooded Area

1,000 500 0 1,000

Scale 1:30,000 Metres

REFERENCE

GIS data provided by the Ontario Ministry of Natural Resources and Forestry, 2021.

CLIENT: DR. NEEL CHADHA

PROJECT: 347 FRANKTOWN ROAD

TITLE: SITE LOCATION

McINTOSH PERRY
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www.mcintoshperry.com

PROJECT NO: CCO-22-0025	
Date	Aug., 09, 2021
GIS	EU
Checked By	NV

FIGURE: 1

APPENDIX B
BACKGROUND DOCUMENTS

McINTOSH PERRY

TOWN OF CARLETON PLACE
175 Bridge St. Carleton Place, ON K7C 2V8
planning@carletonplace.ca
Development Permit By-Law

APPLICATION FOR DEVELOPMENT PERMIT APPROVAL

Section 70.2 of the Planning Act, RSO 1990, as amended

This application form must be accompanied by all the submission requirements in order to be considered a complete application. Incomplete applications will not be processed until all information is provided. A meeting with Planning and Development staff is REQUIRED prior to submission of this application. At that time approval stream and submission requirements will be determined.

Date Application Received: _____ **Application #:** _____

Fee Received: _____ **Date Application Deemed Complete:** _____

REQUIRED PLANNING FEE

- ○ Class 1 - $350.00
- ○ Class 1 - Within Plan of Subdivision - $1,000.00
- ○ Class 1A - $2,500.00
- ○ Class 2 - $3,000.00
- ◉ Class 3 - $5,000.00
- ☐ Engineering Fees for Class 2 & 3 - $1,000.00 + $1,500.00 deposit = $2,500.00

NOTE: Plus legal fees if the agreement requires registration. Invoice will follow registration.

CONTACT INFORMATION

Municipal Freedom of Information and Protection of Privacy Act
Personal Information on this form is collected under authority of The Planning Act and will be used to process this application

Name/Title:	Mailing Address and Postal Code:	(P)Phone # (F)Fax # (E)Email Address
Applicant/Agent	115 Walgreen Road, R.R. 3	**(P):** 613.714.4622
McIntosh Perry c/o Benjamin Clare	Carp, ON	**(F):**
	K0A 1L0	**(E):** b.clare@mcintoshperry.com
Property Owner(s)	727 Bunchberry Way	**(P):** 613.979.6335
Neel Chadha (Purchaser)	Ottawa, ON	**(F):**
	K1T 0J8	**(E):** neelchadha@gmail.com
Architect/Designer/Planner	122 Bridge Street	**(P):** 613.256.5213
Peter Mansfield, Architect	Almonte, ON	**(F):**
	K0A 1A0	**(E):** pmansfield@bellnet.ca
Engineer		**(P):**
		(F):
		(E):
Ontario Land Surveyor	14 Concourse Gate Suite 500	**(P):** 613.727.0850
Annis O'Sullivan Vollebekk Ltd.	Nepean, ON	**(F):**
	K2E 7S6	**(E):** nepean@aovltd.com

LEGAL DESCRIPTION

Municipal Address:
347 Franktown Road, Carleton Place, ON

Legal Description:
Concession 11 SW 1/2 PT Lot 15 Beckwith RP;26R3022 PT Part 1&2; Town of Carleton Place

Lot Front (m):	**Lot Area (m²):**	**Lot Depth (m):**
15	29,951	+/- 300

Official Plan Designation:	**Development Permit Designation:**
Residential	Residential

BRIEF DESCRIPTION OF APPLICATION

Development of a four phase retirement villa, which would include a 4-story / 152 unit retirement, a 4-story / 70 unit apartment building with indoor underground parking area, a 1 story / 2 unit plaza and 18 street townhomes. Will also include parking areas and a north-south oriented municipal road on the eastern portion of the site.

SUBMISSION REQUIREMENTS

The applicant/agent is responsible for ensuring that the submission requirements are met, including confirming that all the information listed below is shown on the required plans by checking off each box. Once the application has been deemed complete the Town of Carleton Place has 45 days to review and either approve or deny the application.

Pre-consultation Meeting Record

- ☐ Signed copy of the pre-consultation for Development Permit Approval

Plan of Survey (signed by an Ontario Land Surveyor)

- ☑ Up to date survey plan or reference plan related to geodetic survey control;
- ☐ Registered deed or Offer of Purchase and Sale.

Coloured Elevation Drawings: 8 copies (11x17); Clearly showing elevations in metric:

Site Plan: 8 copies (11x17); 3 copies (24x36); Electronic Copy. Site Plan clearly showing in metric:

- ☑ Title, location and date of project;
- ☑ Name and address of i) developer/owner, ii) designer(s), engineers and surveyor(s);
- ☑ Legend; North arrow (oriented to top of page); and Scale (graphic bar scale as well as written ratio scale);
- ☑ Area of the site; Bearings and lengths of all property lines;
- ☑ Clear delineation of limit of site development and existing features within 5 metres of limit. Features can include all natural and artificial features (for example, buildings, railways,

watercourses, drainage ditches, banks of rivers and streams, wetlands, wooded areas, wells and septic tanks);

- [ ] Proposed surface drainage pattern with either spot elevations or existing and proposed contours at 0.5 metres for slopes of less than 5% off-site grades and major topographic features should be indicated;
- [ ] Existing features to be retained, removed or relocated;
- [x] Areas labeled by function or type e.g. landscape areas, parking areas, access points, etc.;
- [ ] Proposed fire route and fire route sign and fire hydrant locations;
- [x] Dimensions required for development permit compliance;
- [x] Gross floor area of all buildings, including type of dwelling units and breakdown of other uses by floor area.

Landscape Plan: 8 copies (11x17); 3 copies (24x36); Electronic Copy. Landscape Plan clearly showing:

- [ ] Title, location and date of project;
- [ ] Name and address of i) developer/owner, ii) designer(s), engineers and surveyor(s);
- [ ] Legend; North arrow (oriented to top of page), and Scale;
- [ ] Existing landscaping features to be retained, removed or relocated including those on the road allowance;
- [ ] Proposed vegetation - trees, shrubs, ground covers (botanical and common name), size of material, areas to be seeded, sod or required special treatment;
- [ ] Road allowance details including trees, shrubs or any other plant material and their dimensions.

Site Servicing Plan: 3 copies (24x36); Electronic Copy. Site Servicing Plan clearly showing:

- [ ] All servicing for each unit, or a detail showing typical services for the unit;
- [ ] Locations of street furniture, trees and lighting, mail boxes, hydrants, transformers and pedestals;
- [ ] All utility easements; if there is a joint trench, the utilities should be noted;
- [ ] Connection of driveways and lot services to municipal streets and services.

Grade Control and Drainage Plan: 3 copies (24x36); Electronic Copy. Grading and Drainage Plan clearly showing:

- [ ] Existing elevations on subject and adjacent lands and along centreline or adjacent public streets, which are to be geodetic. A geodetic benchmark or temporary benchmark is to be indicated;

- [ ] Location of any creeks, ravines or watercourses with elevations and contours;
- [ ] Finished elevation at the building lines and at all critical points such as catch basins and adjacent lands;
- [ ] Arrows indicating the proposed direction of flow of all surface water;
- [ ] Location and detail of swales;
- [ ] Location and details of all surface water outlets;
- [ ] Location and details of catch basins, rip-rap, rock and retaining walls, size and gauge of metal culverts;
- [ ] Dimensions of box culverts, depth and quality of asphalt, curbing, servicing and connections;
- [ ] Location and width of any existing or proposed right-of-way and easements on or over the subject or abutting lands including any road widening;
- [ ] Location of any hydro poles, fire hydrants or other installations including those on adjacent lands.

Elevation and Cross-Section Plans: 8 copies (11x17); 3 copies (24x36); Electronic Copy. Plans clearly showing:

- [ ] Drawings that show floor plan, elevation and cross section views for each building or structure to be erected;
- [ ] The massing and conceptual design of the proposed building;
- [ ] The relationship of the proposed building to adjacent buildings, streets, and exterior areas to which members of the public have access;
- [ ] The provision of interior walkways, stairs, elevators and escalators to which members of the public have access from streets, open spaces and interior walkways in adjacent buildings;
- [ ] Matters relating to interior design, including, without limitation, the character, scale, appearance and design features of the proposed building;
- [ ] Design elements on any adjoining highway under the Town's jurisdiction, including without limitation, trees, shrubs, hedges, plantings or other groundcover, paving materials, street furniture, curb ramps, waste and recycling containers and bicycle parking facilities and any facilities designated to have regard for accessibility for persons with disabilities;
- [ ] Photographs of the subject land and the abutting streetscape on both sides of the street.

NOTES

_____

_____

_____

_____

_____

_____

SUPPORTING STUDIES AND REPORTS

Technical reports/plans or studies may be required to assist in the review process of a Development Permit Application. Applications for Development Permit may be required to submit the following studies or reports. All applicants are required to pre-consult with municipal staff prior to submission of the proposal. A copy of the pre-consultation form should be included with the application package. Three (3) paper copies and an electronic copy of all required reports must be submitted with the application form.

- [ ] Archaeological Assessment
- [ ] Building Materials Samples
- [x] Building Shadow Impact Assessment Study
- [x] Coloured Perspective Drawings
- [x] Concept Plan
- [ ] Construction Traffic Management Plan
- [x] Cost Estimate for External Works
- [x] Environmental Impact Statement
- [ ] Environmental Site Assessment
- [x] Functional Servicing Report
- [ ] Heritage Impact Assessment Report
- [ ] Illumination and Traffic Signal Plan
- [x] Landscape Plan
- [ ] Natural Heritage Evaluation
- [ ] Noise Attenuation Study
- [ ] Parking and Loading Study
- [ ] Pavement Marking and Signage Plan
- [x] Photographs of Existing Context
- [x] Planning Rationale Report
- [ ] Reference Plan for Land Conveyances
- [ ] Sight-line Study
- [ ] Site Plan
- [ ] Source Water Protection
- [x] Transportation/Traffic Impact Study
- [x] Tree Inventory
- [x] Tree Preservation Plan

- [x] Urban Design Brief
- [x] Utilities Plan
- [ ] Others (as required by the Town)

DESCRIPTION OF PROPOSAL			
Site Information	**Existing**	**Proposed**	**Total**
Lot Area		29,972	
Gross floor area in m² (including basement)		20,262	
Gross leasable floor space in m² (commercial)			
Building height (metres and storeys)			
Dwelling units			
Site coverage as a %			
Parking spaces			

1. Type of development proposed (use, new building or addition, etc.):
   New buildings to be developed to be used as a retirement home, seniors apartments, commercial plaza and townhouse development.

2. Existing use of land:
   Managed Forrest
   Vacant

3. Is the use permitted or permitted subject to criteria as set out in the Development Permit By-Law and how have the applicable criteria been addressed?

4. Is a variation requested? Demonstrate how the proposed variation meets the criteria as set out in the development permit by-law.

5. Date of acquisition of land:

6. Existing use(s) of the surrounding properties:

_____

7. Length of time existing uses of the subject property have been continued:

_____

8. Present Official Plan designation of the subject property:

_____

9. Present Development Permit designation of the subject property:

_____

10. Date of construction of the existing buildings and structures on the subject land:

There are no existing buildings

11. Municipal services available (check appropriate space(s)):

◯ Water-Connected ◯ Sanitary Sewer-Connected ◯ Storm Sewer-Connected

12. Is the property presently under a Site Plan Control Agreement? YES ◯ NO ◯

_____

13. Is the subject property the subject of a current application for: (check appropriate spaces)

☐ Subdivision ☐ Severance (Consent) ☑ Official Plan Amendment

14. Has the property ever been subject of an application under Section 34, 41 or 45 of the Planning Act and if yes, what is the file number and status of the application?

_____

15. Is the development to be phased: Yes ◉ No ◯

16. What is the anticipated date for start of construction?

_____

17. Is the land to be divided in the future? Yes ◯ No ◯

18. How will access be provided to the site (unopened road allowance, public traveled road or private road)?

_____

Name of street providing access?

_____

NOTE: If the application will result in the creation of a new private road an application for street naming will have to be submitted in conjunction with this application.

19. Are there any easements of restrictive covenants affecting the subject land?

_____

DECLARATIONS

Authorization of Owner for Agent to Make the Application

If the application is to be signed by an applicant/agent/solicitor on behalf of the owner, the following authorization must be completed or the owner must submit a letter of authorization.

I/We _____ am/are the owner(s) of the land that is subject of this application and I/we authorize_____ to make this application on my/our behalf.

Signature: _____ Date: _____
(Registered Owner)

Signature: _____ Date: _____
(Registered Owner)

Consent of Owner

I/We _____am/are the registered owner(s) of the land that is the subject of this application for development purposes and for purposes of the Municipal Freedom of Information and Protection of Privacy Act. I/We hereby authorize the use, or disclosure, to any person or any public body, of any personal information collected under the Planning Act for the purpose of processing this application.

Signature: _____ Date: _____
(Registered Owner)

Signature: _____ Date: _____
(Registered Owner)

Affidavit or Sworn Declaration that the Information is Accurate

I,_____, of the _____ of _____, solemnly declare that all of the above statements contained in this application are true and I make this solemn declaration conscientiously believing it to be true and knowing that it is of the same force and effect as if made under oath and by virtue of *The Canada Evidence Act*.

SWORN (or Declared) BEFORE ME:

At the Town of Carleton Place, this _____day of _____ in the year 20_____.

_____ _____
(Commissioner of Oaths) **(Signature of Applicant)**

TOWN OF CARLETON PLACE
URBAN FORREST COMMITTEE
GUIDELINES & STANDARDS FOR TREE PLANTING AND CONSERVATION PLANS

The Town shall require Conservation Plans and Tree Planting plans for all development including residential, commercial, and industrial uses.

Tree Conservation Plan:

The conservation plan will have a preliminary assessment by a qualified professional (certified arborist, registered professional forester or other qualified professional), which will determine stands of trees or individual trees on the property which warrant protection. This plan should consider such matters as:

- The existing health of the tree, grouping of trees or woodlot, hackberry and the quality of such and
- Its degree of sensitivity to grade changes, drainage disruption, changes in water table or any other factors, which may affect the trees.
- Measures that can be taken to protect the trees (tree wells)
- If trees can not be protected, why not
- Opportunities for tree planting to mitigate loss of tree or forest cover.

The conservation plan will identify how these trees will be protected both above and below ground, as it is important to protect the root systems from soil compaction. The following measures will be undertaken to protect these trees:

1. The identified tree or trees to be protected will be fenced off, a minimum, to the drip line (furthest point of extension of branches) to protect the roots from soil compaction.
2. Above ground utilities shall avoid, where possible, the crowns of the trees.
3. Below ground utilities shall avoid where possible damaging the root system of trees. If utilities are to be placed below ground they are to be placed directly under the tree so not to damage the fine root hairs of the extended root system.
4. Tree roots that will be damaged must be cut cleanly to avoid ragged edges so they will heal properly. If exposed they must be moistened immediately and covered with moist material.
5. No equipment, trucks and storage of supplies shall be inside the fenced area.
6. No grading shall take place around the protected tree or trees.

In short the professional should be asking these questions:

1. Are there trees that can be protected due to size, rareness or they are a healthy stand that would add to the community.
2. If trees are going to be protected how will this be done during construction and after the project is complete.
3. If trees cannot be protected why not.
4. If trees cannot be protected what is the mitigating measure going to be for lose of trees. I.e. enhanced tree-planting program.

Tree Planting Plan:

The Planting plan will identify where additional trees are to be planted, which species and size of trees to be planted and how these trees will be planted and maintained.

The planting plan will identify:

1. *Where trees will be planted:*
   - The site plan must identify where trees will be planted.
   - At least one tree shall be planted for each residential lot developed unless a large number of trees have been removed for the development then an enhanced tree planting program will be undertaken.
   - Industrial and commercial development site plans shall incorporate multiple trees.
   - Prior to planting the developer must identify the location of underground utilities; present, planned and potential future locations.

2. *Species and size of trees to be Planted*
   - trees will be from seed from plant hardiness zone 4b, 4a or 5a or seed zones 35 and 36.
   - the developer will plant a 60 mm (2.5 ins) caliper deciduous tree or a conifer tree minimum height 2.0 m.
   - to avoid monocultures at least 4 deciduous and 1 conifer species will be selected from the list (Table 1) and approved by town staff.

A. Table 1

Species of Tree for planting by Developers

	Deciduous	**Conifer**
Larger Trees for Larger Lots	Sugar Maple (Acer *saacharum*) Red Maple (*Acer rubrum*) Silver maple (Acer saccharium) Red Oak (*Quercus rubra*) Bur Oak (*Quercus macrocarpa*) Hackberry (*Celtis occidentalis*) Freeman Maple (Acer *x fremanii)* Basswood *(*Tilia americana) Bitternut Hickory *(Carya cordiformis*	White Pine (*Pinus strobes*) White Spruce (*Picea glaoca*) Norway Spruce (Picea *abies*) Blue Spruce(developers are encouraged to use this species on the harder sites i.e. Hwy 7)
Medium Sized Trees	White Birch (Betula *papyrifera)* Little Leaf Linden (*Tilia cordata)(*developers are encouraged to use this species on the harder site i.e. Hwy 7) Honey Locust (Gleditisia *triacanthos)*	Eastern White Cedar (*Thuja occidentalis*) Tamarack (Larix *laricina*)
Smaller Trees for Smaller Lots	Showy Mountain Ash *(Sorbus decora)* Serviceberry (*Amelanchier*) Crabapple (*Malus*) Nannyberry (Viburnum lentago)	

3. Tree Planting

The International Society of Arborists, the Canadian Nursery Trades Association or Landscape Ontario standards of planting and maintenance are to be followed:

- Excavate to a depth 200mm deeper than the height of the root ball, with a width 750 mm greater than the root ball.

- Loosen the planting hole to a depth of 200mm
- Loosen burlap and cut away minimum at least 50% of the burlap without disturbing the root ball (if in a wire basket cut away as much of the wire basket while the tree is in the hole)
- Place plant material to a depth equal to the depth they were originally growing in the nursery.
- Tamp soil around the root system in layers of 150 mm to eliminate air pockets. When 2/3 of the planting soil has been placed file the hole with water. After the water has penetrated into the soil, complete backfilling.
- Build a 100mm deep saucer around the outer edge of the hole to assist with watering.
- The hardwood trees will be staked following International Society of Arborist standards.
- The trees will be mulched to a depth of 10 mm filling the saucer leaving 50 mm free around the trunk to avoid trunk rot.
- The trees will be watered one week after planting and every 2 weeks thereafter, pending weather conditions, until the area developed is no longer the responsibility of the developer.

Jim McCready R.P.F./ ISACertified Arborist

November 15, 2019

TOWN OF CARLETON PLACE
175 Bridge St. Carleton Place K7C 2V8
jbowes@carletonplace.ca

PRE-CONSULTATION FOR DEVELOPMENT PERMIT APPROVAL

Section 70.2 of the Planning Act, RSO 1990, as amended

A meeting with the Planning and Development staff is required prior to the submission of any development application. At this meeting an approval stream and submission requirements will be determined.

Date: May 21, 2021 **Time:** 10:30am

CONTACT INFORMATION

Name/Title:	Mailing Address and Postal Code:	(P)Phone # / (F)Fax # / (E) Email Address
Applicant/Agent Ben Clare, McIntosh Perry		(P):
		(F):
		(E): b.clare@mcintoshperry.com
Property Owner(s) Neel Chadha (purhcaser)		(P):
		(F):
		(E): neelchadha@gmail.com

LEGAL DESCRIPTION

Municipal Address: lands associated with 347 Franktown Road - subject to severance

Legal Description: CON 11 SW 1/2 PT LOT 15 RP;26R3022 PT PART 1

Lot Front (m):	Lot Depth (m):	Lot Area (m²):
15m	300+/-m	3.1ha

Official Plan Designation:	Development Permit Designation:
Residential	Residential

Previous Applications (if any): Currently subject to consent application B21-043 - lot addition/consolidation

PROPOSED APPLICATION

Applicant proposes the development of a four phase retirement villa over the entirety of the site.

Phase 1 to include a four story / 152 unit retirement home

Phase 2 includes a 4-story / 70 unit apartment building with indoor underground parking

Phase 3 includes a 1 story / 2 unit commercial plaza with complementary uses to the retirement home

Phase 4 includes 18 street townhomes - possibly free hold

Will also include 1 municipal road (north-south orientation) on eastern portion of the site.

CLASS OF DEVELOPMENT PERMIT REQUIRED

Class	Comment
Class 1 ⬠	
Class 1A ⬠	
Class 2 ⬠	
Class 3 ☑	Site plan respecting Phase 1 and if needed variations to standards (ie frontage)
Other ☑	DPA to change use from Residential to Institutional - holding provisions on future phases

POTENTIAL SUPPORTING STUDIES AND REPORTS

Technical reports/plans or studies may be required to assist in the review process of a Development Permit Application. The identified studies or reports are required prior to the submission of an application for Development Permit.

Study requirements for DP3

- ☐ Archaeological Assessment
- ☐ Building Materials Samples
- ☑ Building Shadow Impact Assessment Study
- ☑ Coloured Perspective Drawings
- ☑ Site Plan
- ☐ Construction Traffic Management Plan
- ☑ Cost Estimate for External Works
- ☑ Environmental Impact Statement
  - ☑ Butternut? YES or NO
- ☐ Environmental Site Assessment
- ☑ Servicing Report
- ☐ Heritage Impact Assessment Report
- ☐ Illumination and Traffic Signal Plan
- ☑ Landscape Plan
- ☐ Natural Heritage Evaluation
- ☐ Noise Attenuation Study
- ☐ Parking and Loading Study
- ☐ Pavement Marking and Signage Plan
- ☑ Photographs of Existing Context
- ☑ Planning Rationale Report
- ☐ Reference Plan for Land Conveyances
- ☐ Sight-line Study
- ☐ Source Water Protection
- ☑ Transportation/Traffic Impact Study
- ☑ Tree Inventory
- ☑ Tree Preservation Plan
- ☑ Urban Design Brief
- ☑ Utilities Plan
- ☐ Others (as required by the Town)
- ☑ Grading & Drainage
- ☐ Hydrogeological Study
- ☑ Stormwater Management
- ☐ MDS Calculation

NOTES

Note: The project will also require a subdivision application to divide the site and dedicate the municipal ROW. This may come first, or after the development of Phase 1. Phases 2-4 cannot occur until access is demonstrated on an open and public road.

The proponent is suggesting that the development of the site include the construction of Phase 1 as detailed in the attached plan in the short-term. It is also suggested that the entire vision of the site be circulated at time of application to ensure transparancy of full build out. Holding provisions to be used to further regulate future phases.

Density in excess of 70 units/ha without an OPA will be a challenge. Suggest DPA to identify the proposed use as Intitutional vs conventional residential to demonstrate uniqueness of proposal compared to other sites.

Applicant to evaluate extent of area to include as Institutional vs. Res.

DPA and DP3 applications can be filed concurrently, and can be presented and circulated jointly.

The utility plan and cost estimate of site works are requirements of approval, but will not be required at the time of application submission given that these are typically completed as the detailed civil engineering design is advanced.

That scoped versions of the tree inventory and tree conservation report will be acceptable provided they satisfy the requirements of Section 3.44 of the Development Permit By-law, including compensation requirements for trees with a minimum 200mm caliper, and hackberry trees.

SIGNATURES

This form must be signed by the future applicant and by the Director of Development Services or his/her designate and a copy should accompany the application for a Development Permit.

Signature: _____ **Date:** _____

Owner/Applicant

Signature: _____ **Date:** June 11, 2021

Director of Development Services/Designate

Draft 2 - disucssions purposes May 21, 2021

CARLETON PLACE RETIREMENT HOME, SENIOR'S APARTMENT BUILDING, COMMERCIAL PLAZA & TOWNHOUSE DEVELOPMENT

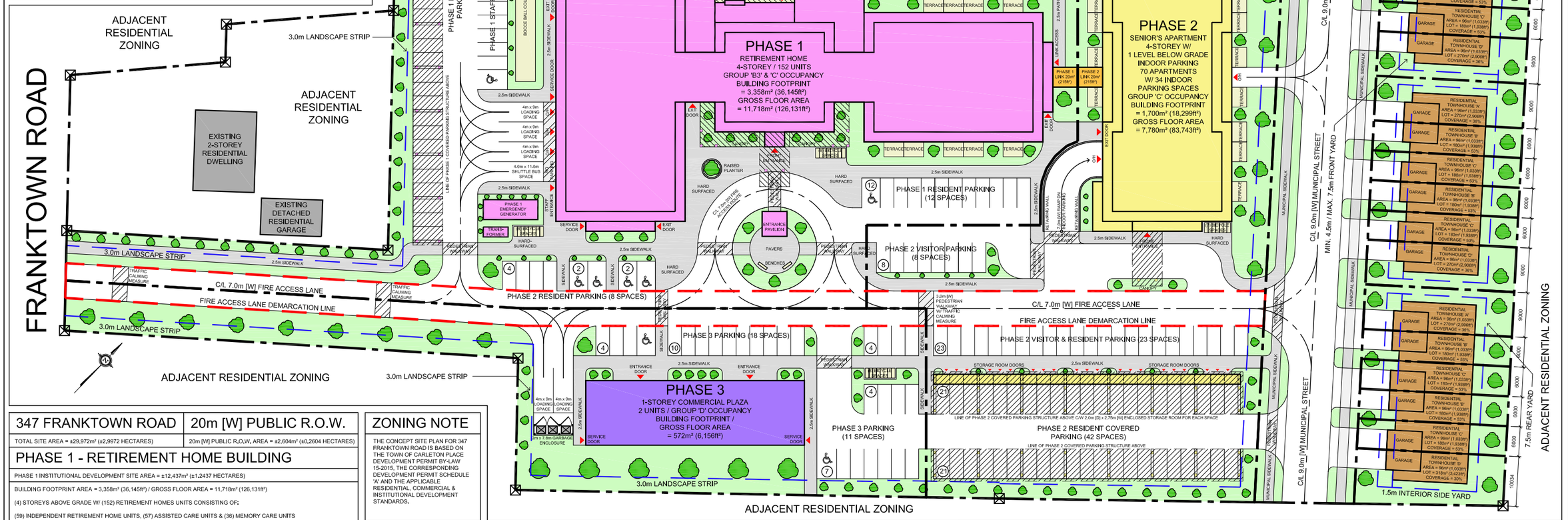
347 FRANKTOWN ROAD, CARLETON PLACE ON

Peter Mansfield, Architect
122 Bridge Street, Almonte, ON
613-256-5213

CONCEPT SITE PLAN

DRAWING A1.0
ISSUE NO. 02
MAY 18th, 2021

SCALE 1:800
0 4m 8m 16m 32m



347 FRANKTOWN ROAD	20m [W] PUBLIC R.O.W.
TOTAL SITE AREA = ±29,972m² (±2,9972 HECTARES)	20m [W] PUBLIC R.O.W. AREA = ±2,604m² (±0,2604 HECTARES)

PHASE 1 - RETIREMENT HOME BUILDING

PHASE 1 INSTITUTIONAL DEVELOPMENT SITE AREA = ±12,437m² (±1,2437 HECTARES)

BUILDING FOOTPRINT AREA = 3,358m² (36,145ft²) / GROSS FLOOR AREA = 11,718m² (126,131ft²)

(4) STOREYS ABOVE GRADE W/ (152) RETIREMENT HOMES UNITS CONSISTING OF:

(59) INDEPENDENT RETIREMENT HOME UNITS, (57) ASSISTED CARE UNITS & (36) MEMORY CARE UNITS

PHASE 2 - SENIOR'S APARTMENT BUILDING

PHASE 2 RESIDENTIAL DEVELOPMENT SITE AREA = ±7,031m² (±0,7031 HECTARES)

BUILDING FOOTPRINT AREA = 1,700m² (18,299ft²) / GROSS FLOOR AREA (INCLUDING BELOW GRADE) = 7,780m² (83,743ft²)

(4) STOREYS ABOVE GRADE + (1) LEVEL INDOOR PARKING BELOW GRADE W/ (70) SENIOR APARTMENTS CONSISTING OF:

(14) GROUND FLOOR UNITS, (19) 2nd FLOOR UNITS, (19) 3rd FLOOR UNITS & (18) 4th FLOOR UNITS

PHASE 3 - COMMERCIAL PLAZA BUILDING

PHASE 3 COMMERCIAL DEVELOPMENT SITE AREA = ±3,984m² (±0,3984 HECTARES)

BUILDING FOOTPRINT / GROSS FLOOR AREA = 572m² (6,156ft²)

(1) STOREY ABOVE GRADE W/ (2) COMMERCIAL UNITS CONSISTING OF:

(2) COMMERCIAL UNITS EACH @ 286m² (3,078ft²)

PHASE 4 - TOWNHOUSE DEVELOPMENT

PHASE 4 TOWNHOUSE DEVELOPMENT SITE AREA = ±3,916m² (±0,3916 HECTARES)

TOWNHOUSE FOOTPRINT = 96m² (1,033ft²) / GROSS FLOOR AREA = 192m² (2,066ft²)

(2) STORIES ABOVE GRADE W/ ATTACHED GARAGE

(3) TOWNHOUSE BLOCKS EACH CONSISTING OF (6) TOWNHOUSES = (18) TOWNHOUSES

ZONING NOTE

THE CONCEPT SITE PLAN FOR 347 FRANKTOWN ROAD IS BASED ON THE TOWN OF CARLETON PLACE DEVELOPMENT PERMIT BY-LAW 15-2015, THE CORRESPONDING DEVELOPMENT PERMIT SCHEDULE 'A' AND THE APPLICABLE RESIDENTIAL, COMMERCIAL & INSTITUTIONAL DEVELOPMENT STANDARDS.

PHASE 1 ZONING INFORMATION

PHASE 1:	SECTION 6,3,14,2 - DISCRETIONARY USE - RETIREMENT HOME (SUBJECT TO THE SECTION 9 - INSTITUTIONAL DEVELOPMENT STANDARDS & SECTIONS 13 & 14 - DESIGN STANDARDS)		
MIN. LOT AREA:	NIL	PROPOSED:	±12,437m² PHASE 1 SITE
MAX. LOT COVERAGE:	35%	PROPOSED	3,358m² (PHASE 1 BUILDING) 20m² (PHASE 1 LINK) 3,378m² (TOTAL PHASE 1) = 27% (3,378m² / 12,437m²)
MIN. LOT FRONTAGE:	15,0m	PROPOSED:	LOT FRONTAGE T.B.D.
FRONT YARD:	MIN. 4.5m MAX. 7.5m	PROPOSED:	FRONT YARD T.B.D.
MAX. EXTERIOR SIDE YARD:	MIN. 4.5m MAX. 7.5m	PROPOSED:	EXTERIOR SIDE YARD T.B.D.
MIN. INTERIOR SIDE YARD:	3.0m	PROPOSED:	INTERIOR SIDE YARD T.B.D.
REAR YARD DEPTH:	9,0m	PROPOSED:	REAR YARD T.B.D.
MIN. LANDSCAPE OPEN SPACE IN REAR YARD:	N/A	PROPOSED:	N/A
MAX. BUILDING HEIGHT:	22,0m	PROPOSED:	18,05m (AVERAGE GRADE TO ½ OF SLOPED ROOF)

PHASE 2 ZONING INFORMATION

PHASE 2:	SECTION 6,3,9 - SENIOR'S APARTMENT BUILDING		
MIN. LOT AREA:	NIL	PROPOSED:	±7,031m² PHASE 2 SITE
MAX. LOT COVERAGE:	60%	PROPOSED	1,700m² (PHASE 2 BUILDING) 20m² (PHASE 2 LINK) 1,720m² (TOTAL PHASE 2) = 24% (1,720m² / 7,031m²)
MIN. LOT FRONTAGE:	15,0m	PROPOSED:	LOT FRONTAGE T.B.D.
FRONT YARD:	MIN. 4.5m MAX. 7.5m	PROPOSED:	FRONT YARD T.B.D.
MAX. EXTERIOR SIDE YARD:	MIN. 4.5m MAX. 7.5m	PROPOSED:	EXTERIOR SIDE YARD T.B.D.
MIN. INTERIOR	3.0m	PROPOSED:	INTERIOR SIDE YARD T.B.D.
REAR YARD DEPTH:	7.5m	PROPOSED:	REAR YARD T.B.D.
MIN. LANDSCAPE OPEN SPACE IN REAR YARD:	20% OF LOT AREA	PROPOSED:	REAR YARD T.B.D.
MAX. BUILDING HEIGHT:	14,0m (OR 4 STORIES)	PROPOSED:	4 STORIES

PHASE 3 ZONING INFORMATION

PHASE 3:	SECTION 7,3 - COMMUNITY COMMERCIAL		
MIN. LOT AREA:	NIL	PROPOSED:	±3,984m² PHASE 3 SITE
MAX. LOT COVERAGE:	60%	PROPOSED	572m² (PHASE 3 BUILDING) = 14% (572m² / 3,984m²)
MIN. LOT FRONTAGE:	15,0m	PROPOSED:	LOT FRONTAGE T.B.D.
FRONT YARD:	MIN. 4.5m MAX. 7.5m	PROPOSED:	FRONT YARD T.B.D.
MAX. EXTERIOR SIDE YARD:	MIN. 4.5m MAX. 7.5m	PROPOSED:	EXTERIOR SIDE YARD T.B.D.
MIN. INTERIOR SIDE YARD:	3.0m	PROPOSED:	INTERIOR SIDE YARD T.B.D.
REAR YARD DEPTH:	7.5m	PROPOSED:	REAR YARD T.B.D.
MIN. LANDSCAPE OPEN SPACE IN REAR YARD:	20% OF LOT AREA	PROPOSED:	REAR YARD T.B.D.
MAX. BUILDING	11,0m	PROPOSED:	<11,0m

PHASE 1 PARKING INFORMATION

(44) PARKING SPACES REQUIRED & CONSISTING OF:

(36) SPACES - 152 UNITS @ 0,25 SPACES / UNIT (RETIREMENT HOME RATE)
(6) SPACES - ±600m² OF MEDICAL, HEALTH & PERSONAL SERVICE @ 1 SPACE / 100m²

(58) PARKING SPACES PROVIDED & CONSISTING OF:

(24) RESIDENT COVERED, (20) RESIDENT UNCOVERED & (14) STAFF PARKING

PHASE 2 PARKING INFORMATION

(106) PARKING SPACES REQUIRED & CONSISTING OF:

(88) SPACES - 70 UNITS @ 1,25 SPACES / UNIT (APARTMENT BUILDING PARKING RATE)
(18) SPACES - 70 UNITS @ 0,25 SPACES / UNIT (VISITOR PARKING RATE)

(107) PARKING SPACES PROVIDED & CONSISTING OF:

(34) INDOOR, (42) RESIDENT COVERED, (13) RESIDENT UNCOVERED & (18) VISITOR

PHASE 3 PARKING INFORMATION

(29) SPACES REQUIRED - 572m² GFA @ 1 SPACE / 20m² GFA

(29) PARKING SPACES PROVIDED

(1) LOADING SPACE REQUIRED - 1 SPACE FOR 250m² TO 1,000m² GFA

(2) LOADING SPACES PROVIDED @ 4,0m [W] x 9,0m [D]

SYMBOL LEGEND

- DENOTES PROPERTY LINE
- DENOTES MUNICIPAL YARD SETBACKS
- DENOTES FIRE ACCESS DEMARCATION LINE
- DENOTES PROPOSED PHASE 1 BUILDING
- DENOTES PROPOSED PHASE 2 BUILDING
- DENOTES PROPOSED PHASE 3 BUILDING
- DENOTES PROPOSED PHASE 4 TOWNHOUSE
- DENOTES PROPOSED PHASE 1 & 2 LINK
- DENOTES PROPOSED AMENITY AREA
- DENOTES ROOF / CANOPY AREA
- DENOTES PEDESTRIAN WALKWAY
- DENOTES BUILDING ENTRANCE

G Planning for Building Code Compliance

(For large projects)

The following are some of the more common items that are typically non-compliant or missing at the plans review stage. This checklist should be used as a guideline only and does not contain all the building code requirements and other applicable laws. Drawings and documentation submitted should contain enough information to verify compliance with all parts of the 2012 Ontario Building Code.

- ✓ OBC Data Matrix
  - ❖ Usually supplied by architect but should be provided for all new construction including additions and renovations (ensure exiting and washroom requirements are also included).

- ✓ Designer Requirements
  - ❖ Ensure the proper designer is taking responsibility for their drawings and any on-site review
  - ❖ Designer requirements can be found in Division C Part 3
  - ❖ Architect and/or Engineer review requirements can be found in Division C Part 1

- ✓ Grading Plan - Must be supplied to show:
  - ❖ Top of slab to verify that floor drain and storm are set to an elevation to ensure gravity drainage to Municipal services at street level
  - ❖ Existing grade and proposed grade to verify drainage away from building will not affect neighbouring properties

- ✓ Site Plan – Must be supplied to show:
  - ❖ Fire routes & fire hydrants
  - ❖ Spatial separations
  - ❖ Number of streets for classification (defined as a percentage)

- ✓ Barrier Free Construction
  - ❖ Required for all new construction except as listed in 3.8.1.1 of the Ontario Building Code
  - ❖ Parking and barrier free path of travel
  - ❖ Barrier free bathroom dimensions
  - ❖ Hardware

- ✓ Building Classification
  - ❖ Ensure enough information is provided to classify the building where it may not be clear (such as providing a list of materials being stored on site)
  - ❖ Identify use of rooms and tenant classification that may occupy portions of the building

- ✓ Architectural/Mechanical/Electrical/Structural Drawings
  - ❖ Provide door schedule, identifying rated doors and exit hardware
  - ❖ Emergency systems (ex: fire alarm, exit signage & emergency lighting)
  - ❖ Identify location of janitorial supplies, service rooms, electrical rooms (regulated under the Electrical Act), fire dampers, etc.
  - ❖ Identify types of materials to be used in above grade mechanical rough-in and plenum spaces in compliance with the type of construction under the building classification in 3.2.2.
  - ❖ Structural loads (based on climate data and Part 4)

- ✓ Fire Separations
  - ❖ Roofs, floors, walls, exits, between tenants, doors, load bearing walls, etc.
  - ❖ Ensure the proper use of the tables in SB2 and SB3 are used

- ✓ Additional Documents – To verify materials or processes not covered under the Ontario Building Code, for example, EIFS, fabric type roofs, composite decking etc.
  - ❖ CCMC report, Minister Rulings and/or BMEC (Building Materials Evaluation Commission)
  - ❖ Manufacturers details and installation guidelines
  - ❖ Other Federal or Provincial approvals

TOWN OF CARLETON PLACE
URBAN FOREST COMMITTEE
GUIDELINES & STANDARDS FOR TREE PLANTING AND CONSERVATION PLANS

The Town shall require Conservation Plans and Tree Planting plans for all development including residential, commercial, and industrial uses.

Tree Conservation Plan:

The conservation plan will have a preliminary assessment by a qualified professional (certified arborist, registered professional forester or other qualified professional), which will determine stands of trees or individual trees on the property which warrant protection. This plan should consider such matters as:

- The existing health of the tree, grouping of trees or woodlot, hackberry and the quality of such and
- Its degree of sensitivity to grade changes, drainage disruption, changes in water table or any other factors, which may affect the trees.
- Measures that can be taken to protect the trees (tree wells)
- If trees can not be protected, why not
- Opportunities for tree planting to mitigate loss of tree or forest cover.

The conservation plan will identify how these trees will be protected both above and below ground, as it is important to protect the root systems from soil compaction. The following measures will be undertaken to protect these trees:

1. The identified tree or trees to be protected will be fenced off, a minimum, to the drip line (furthest point of extension of branches) to protect the roots from soil compaction.
2. Above ground utilities shall avoid, where possible, the crowns of the trees.
3. Below ground utilities shall avoid where possible damaging the root system of trees. If utilities are to be placed below ground they are to be placed directly under the tree so not to damage the fine root hairs of the extended root system.
4. Tree roots that will be damaged must be cut cleanly to avoid ragged edges so they will heal properly. If exposed they must be moistened immediately and covered with moist material.
5. No equipment, trucks and storage of supplies shall be inside the fenced area.
6. No grading shall take place around the protected tree or trees.

In short the professional should be asking these questions:

1. Are there trees that can be protected due to size, rareness or they are a healthy stand that would add to the community.
2. If trees are going to be protected how will this be done during construction and after the project is complete.
3. If trees cannot be protected why not.
4. If trees cannot be protected what is the mitigating measure going to be for lose of trees. I.e. enhanced tree-planting program.

Tree Planting Plan:

The Planting plan will identify where additional trees are to be planted, which species and size of trees to be planted and how these trees will be planted and maintained.

The planting plan will identify:

1. *Where trees will be planted:*
   - The site plan must identify where trees will be planted.
   - At least one tree shall be planted for each residential lot developed unless a large number of trees have been removed for the development then an enhanced tree planting program will be undertaken.
   - Industrial and commercial development site plans shall incorporate multiple trees.
   - Prior to planting the developer must identify the location of underground utilities; present, planned and potential future locations.

2. *Species and size of trees to be Planted*
   - trees will be from seed from plant hardiness zone 4b, 4a or 5a or seed zones 35 and 36.
   - the developer will plant a 60 mm (2.5 ins) caliper deciduous tree or a conifer tree minimum height 2.0 m.
   - to avoid monocultures at least 4 deciduous and 1 conifer species will be selected from the list (Table 1) and approved by town staff.

A. Table 1

Species of Tree for planting by Developers

	Deciduous	**Conifer**
Larger Trees for Larger Lots	Sugar Maple (Acer *saacharum*) Red Maple (*Acer rubrum*) Silver maple (Acer saccharium) Red Oak (*Quercus rubra*) Bur Oak (*Quercus macrocarpa*) Hackberry (*Celtis occidentalis*) Freeman Maple (Acer *x fremanii)* Basswood *(*Tilia americana) Bitternut Hickory *(Carya cordiformis*	White Pine (*Pinus strobes*) White Spruce (*Picea glaoca*) Norway Spruce (Picea *abies*) Blue Spruce(developers are encouraged to use this species on the harder sites i.e. Hwy 7)
Medium Sized Trees	White Birch (Betula *papyrifera)* Little Leaf Linden (*Tilia cordata)(*developers are encouraged to use this species on the harder site i.e. Hwy 7) Honey Locust (Gleditisia *triacanthos)*	Eastern White Cedar (*Thuja occidentalis*) Tamarack (Larix *laricina*)
Smaller Trees for Smaller Lots	Showy Mountain Ash *(Sorbus decora)* Serviceberry (*Amelanchier*) Crabapple (*Malus*) Nannyberry (Viburnum lentago)	

3. ***Tree Planting***

The International Society of Arborists, the Canadian Nursery Trades Association or Landscape Ontario standards of planting and maintenance are to be followed:

- Excavate to a depth 200mm deeper then the height of the root ball, with a width 750 mm greater than the root ball.
- Loosen the planting hole to a depth of 200mm
- Loosen burlap and cut away minimum at least 50% of the burlap without disturbing the root ball (if in a wire basket cut away as much of the wire basket while the tree is in the hole)
- Place plant material to a depth equal to the depth they were originally growing in the nursery.
- Tamp soil around the root system in layers of 150 mm to eliminate air pockets. When 2/3 of the planting soil has been placed file the hole with water. After the water has penetrated into the soil, complete backfilling.
- Build a 100mm deep saucer around the outer edge of the hole to assist with watering.
- The hardwood trees will be staked following International Society of Arborist standards.
- The trees will be mulched to a depth of 10 mm filling the saucer leaving 50 mm free around the trunk to avoid trunk rot.
- The trees will be watered one week after planting and every 2 weeks thereafter, pending weather conditions, until the area developed is no longer the responsibility of the developer.

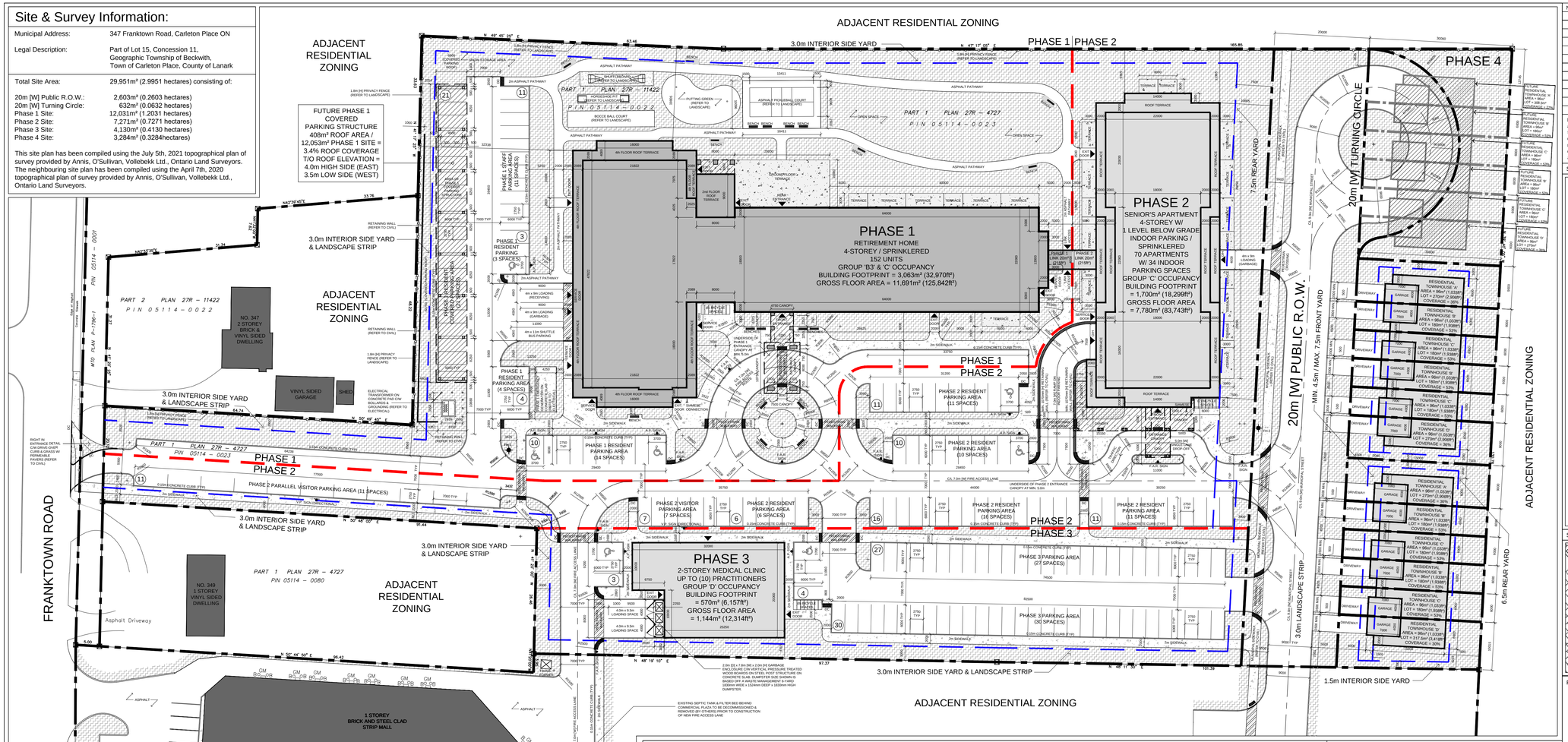
Jim McCready R.P.F./ ISACertified Arborist

November 15, 2019

Site & Survey Information:

Municipal Address:	347 Franktown Road, Carleton Place ON
Legal Description:	Part of Lot 15, Concession 11, Geographic Township of Beckwith, Town of Carleton Place, County of Lanark
Total Site Area:	29,951m² (2.9951 hectares) consisting of:
20m [W] Public R.O.W.:	2,603m² (0.2603 hectares)
20m [W] Turning Circle:	632m² (0.0632 hectares)
Phase 1 Site:	12,031m² (1.2031 hectares)
Phase 2 Site:	7,271m² (0.7271 hectares)
Phase 3 Site:	4,130m² (0.4130 hectares)
Phase 4 Site:	3,284m² (0.3284hectares)

This site plan has been compiled using the July 5th, 2021 topographical plan of survey provided by Annis, O'Sullivan, Vollebekk Ltd., Ontario Land Surveyors. The neighbouring site plan has been compiled using the April 7th, 2020 topographical plan of survey provided by Annis, O'Sullivan, Vollebekk Ltd., Ontario Land Surveyors.



Zoning Information:

The site plan for 347 Franktown Road is based on the Town of Carleton Place Development Permit By-Law 15-2015, the corresponding Development Permit Schedule 'A' and the applicable Residential, Commercial & Institutional Development Standards.

Refer to the accompanying Planning Rationale & Urban Design Brief prepared by McIntosh Perry for the applicable zoning criteria for each development phase.

1 / A1.0 Site Plan 1:450

Phase 1 Retirement Home Building Information:

(152) Retirement Home Dwelling Units consisting of:

(73) Independent, (22) Memory Care, (35) Assisted Care & (22) 'ISL' Retirement Home Units

Ground Floor Level Area:	3,063m² (32,970ft²) w/ (7) Independent Units
Second Floor Level Area:	2,988m² (32,163ft²) w/ (22) Memory Care & (35) Assisted Care Units
Third Floor Level Area:	2,988m² (32,163ft²) w/ (28) Independent & (22) 'ISL' Units
Fourth Floor Level Area:	2,652m² (28,546ft²) w/ (38) Independent Units
Total Gross Floor Area:	11,691m² (125,842ft²) + Phase 1 Portion of Link at 20m² (215ft²)
Building Height:	15.4m (±50'-6")*

* Vertical distance measured from average grade to the top of the parapet wall.

Proposed Height Exception: 1.35m (±4'-5")**

** Rooftop privacy screen enclosing the rooftop mechanical equipment and elevator hoistway.

Number of Storeys: (4) stories above grade

Phase 2 Senior's Apartment Building Information:

(70) Senior Apartment Dwelling Units consisting of:

(14) Ground Floor Units, (19) Second Floor Units, (19) Third Floor Units & (18) Fourth Floor Units

Basement Floor Level Area:	1,700m² (18,296ft²) w/ (34) Indoor Parking Spaces
Ground Floor Level Area:	1,700m² (18,296ft²) w/ (14) Senior Apartment Units
Second Floor Level Area:	1,596m² (17,179ft²) w/ (19) Senior Apartment Units
Third Floor Level Area:	1,596m² (17,179ft²) w/ (19) Senior Apartment Units
Fourth Floor Level Area:	1,188m² (12,787ft²) w/ (18) Senior Apartment Units
Total Gross Floor Area:	7,780m² (83,743ft²) + Phase 2 Portion of Link at 20m² (215ft²)
Building Height:	15.4m (±50'-6")*

* Vertical distance measured from average grade to the top of the parapet wall.

Proposed Height Exception: 1.35m (±4'-5")**

** Rooftop privacy screen enclosing the rooftop mechanical equipment and elevator hoistway.

Number of Storeys: (4) stories above grade + (1) storey below grade

Phase 3 Medical Clinic Building Information:

Ground Floor Level Area:	572m² (6,157ft²)
Second Floor Level Area:	572m² (6,157ft²)
Total Gross Floor Area:	1,144m² (12,314ft²)
Building Height:	9.144m (30'-0")*

* Vertical distance measured from average grade to the top of the parapet wall.

Number of Storeys: (2) stories above grade

Phase 1, 2 & 3 Combined Parking Information:

Phase 1, 2 & 3 Combined Parking Required:	210 parking spaces consisting of: (44) Phase 1 + (106) Phase 2 + (60) Phase 3
Phase 1, 2 & 3 Combined Parking Provided:	219 parking spaces consisting of: (49) Phase 1 + (106) Phase 2 + (64) Phase 3

Phase 1 Parking Information:

Phase 1 Resident Parking Required: (Retirement Home Rate)	0.25 spaces per dwelling unit = 0.25 x 152 dwelling units = 38 spaces
Phase 1 Resident Parking Provided:	38 parking spaces consisting of:
Regular:	14 regular spaces @ 2.75m x 6.0m
Covered Regular:	21 future covered regular spaces @ 2.75m x 6.0m
Accessible:	3 spaces @ 3.7m x 6.0m as per Bylaw No. 137-2021
Phase 1 Staff Parking Required: (Retirement Home Rate)	±600m² of medical, health & personal service @ 1 space / 100m² = 6 spaces
Phase 1 Staff Parking Provided:	11 parking spaces consisting of:
Regular:	11 regular spaces @ 2.75m x 6.0m
Total Phase 1 Parking Required:	44 parking spaces
Total Phase 1 Parking Provided:	49 parking spaces
Phase 1 Bicycle Parking Provided:	8 spaces @ 2.0m x 0.75m / space
Phase 1 Loading Spaces Provided:	2 loading spaces @ 4.0m x 9.0m & 1 space @ 4.0m x 11.0m

Phase 2 Parking Information:

Phase 2 Resident Parking Required: (Apartment Dwelling Rate)	1.25 spaces per dwelling unit = 1.25 x 70 dwelling units = 88 spaces
Phase 2 Resident Parking Provided:	88 parking spaces consisting of:
Regular:	52 regular spaces @ 2.75m x 6.0m
Accessible:	2 spaces @ 3.7m x 6.0m as per Bylaw No. 137-2021
Indoor Regular:	33 indoor regular spaces @ 2.75m x 6.0m
Indoor Accessible:	1 indoor space @ 3.7m x 6.0m as per Bylaw No. 137-2021
Phase 2 Visitor Parking Required: (Visitor Parking Rate)	0.25 spaces per dwelling unit = 0.25 x 70 dwelling units = 18 spaces
Phase 2 Visitor Parking Provided:	18 parking spaces consisting of:
Regular:	7 regular spaces @ 2.75m x 6.0m
Parallel:	11 parallel spaces @ 2.75m x 7.0m
Total Phase 2 Parking Required:	106 parking spaces
Total Phase 2 Parking Provided:	106 parking spaces
Phase 2 Bicycle Parking Provided:	7 outdoor spaces @ 2.0m x 0.75m / space 23 indoor spaces @ 2.0m x 0.75m / space
Phase 2 Loading Spaces Provided:	1 loading space @ 4.0m x 9.0m

Phase 3 Parking Information:

Phase 3 Parking Required: (Medical Clinic Rate)	Up to 10 practitioners @ 6 spaces / practitioner = 60 spaces
Phase 3 Parking Provided:	64 parking spaces consisting of:
Regular:	62 regular spaces @ 2.75m x 6.0m
Accessible:	2 spaces @ 3.7m x 6.0m as per Bylaw No. 137-2021
Phase 3 Bicycle Parking Provided:	8 spaces @ 2.0m x 0.75m / space
Phase 3 Loading Spaces Provided:	2 loading spaces @ 4.0m x 9.5m

Phase 1 Site Statistics:

Phase 1 Building + Partial Link Area / Phase 1 Site:

3,083m² / 12,031m² = 25.6%

Phase 1 Impervious Surfaces* / Phase 1 Site:

5,828m² / 12,031m² = 48.5%

Phase 1 Landscape Open Space** / Phase 1 Site:

6,203m² / 12,031m² = 51.5%

Phase 1 Vegetated / Phase 1 Landscape Open Space**:

4,202m² / 6,203m² = 67.7% of L.O.S.

Phase 1 Hard Surfaced / Phase 1 Landscape Open Space**:

2,001m² / 6,203m² = 32.3% of L.O.S.

Phase 2 Site Statistics:

Phase 2 Building + Partial Link Area / Phase 2 Site:

1,720m² / 7,271m² = 23.7%

Phase 2 Impervious Surfaces* / Phase 2 Site:

4,893m² / 7,271m² = 67.3%

Phase 2 Landscape Open Space** / Phase 2 Site:

2,378m² / 7,271m² = 32.7%

Phase 2 Vegetated / Phase 2 Landscape Open Space**:

1,493m² / 2,378m² = 62.8% of L.O.S.

Phase 2 Hard Surfaced / Phase 2 Landscape Open Space**:

885m² / 2,378m² = 37.2% of L.O.S.

Phase 3 Site Statistics:

Phase 3 Building Area / Phase 3 Site:

572m² / 4,130m² = 13.8%

Phase 3 Impervious Surfaces* / Phase 3 Site:

2,680m² / 4,130m² = 64.9%

Phase 3 Landscape Open Space** / Phase 3 Site:

1,450m² / 4,130m² = 35.1%

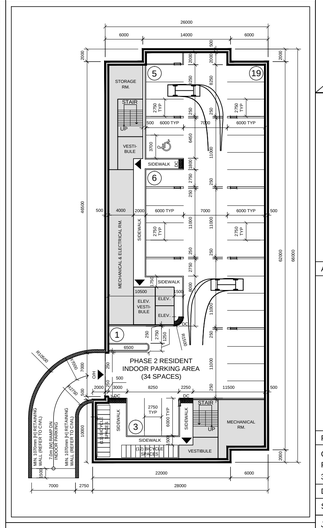
Phase 3 Vegetated / Phase 3 Landscape Open Space**:

906m² / 1,450m² = 62.5% of L.O.S.

Phase 3 Hard Surfaced / Phase 3 Landscape Open Space**:

544m² / 1,450m² = 37.5% of L.O.S.

* Impervious Surfaces = Buildings, Asphalt Parking Areas & Curbs
** Landscape Open Space (L.O.S.) = Vegetated & Hard Surfaced



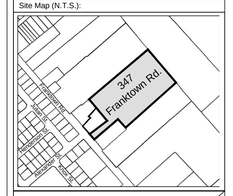
2 / A1.0 Phase 2 Indoor Parking Plan 1:450

No.:	Issued For:	Date:
01	For Site Plan Approval	08-13-2021
02	For Appraisal	01-07-2022
03	For Consultants	04-14-2022
04	For Coordination	06-09-2022
05	For Site Plan Approval	06-24-2022
06	For Pricing	11-25-2022
07	For Tender	12-15-2022
08	For Site Works Tender	02-27-2023
09	For Client Review	09-21-2023
10	For Coordination	02-27-2024

Symbol Legend:

- DENOTES PHASE 1 WORK
- DENOTES PHASE 2, 3 & 4 WORK
- DENOTES EXISTING BUILDING
- DENOTES ROOF/CANOPY AREA
- DENOTES TERRACE AREA
- DENOTES RETAINING WALL
- DENOTES LANDSCAPE AREA
- DENOTES CONCRETE
- DENOTES PAVERS
- DENOTES LINE PAINTING
- DENOTES PROPERTY LINE
- DENOTES SETBACK LINE
- DENOTES PHASING LINE
- DENOTES C/L STREET AND/OR FIRE ACCESS ROUTE
- DENOTES BUILDING ENTRANCE
- DENOTES DEPRESSED CURB
- DENOTES ACCESSIBLE PARKING SPACE
- DENOTES ALUMINUM SIGN
- DENOTES 610mm WIDE TACTILE WALKING SURFACE INDICATOR
- DENOTES FIRE DEPARTMENT SIAMESE CONNECTION
- DENOTES FIRE HYDRANT

Site Map (N.T.S.):



Project North Arrow:

Actual North Arrow:

ONTARIO ASSOCIATION OF ARCHITECTS PETER MANSFIELD LICENCE 5450

Architect:

Peter Mansfield, Architect
B. Tech., M. Arch., O.A.A.
122 Bridge Street, Almonte, ON
613-715-0431

Project Title:

Carleton Lifestyles
Phase 1 Retirement Home
347 Franktown Road, Carleton Place ON

Drawing List:

Site Plan

Job No.:	2108	Drawing No.:
Scale:	As Noted	A1.0
Drawn By:	Reviewed By:	
TB	PM	

APPENDIX C
WATERMAIN CALCULATIONS

McINTOSH PERRY

McINTOSH PERRY

CCO-22-0402 - 347 Franktown Road - Phase 1 Water Demands

Project:	347 Franktown Road
Project No.:	CCO-22-0402
Designed By:	RRR
Checked By:	NBV
Date:	March 21, 2024
Site Area:	1.21 gross ha

Residential	**NUMBER OF UNITS**		**UNIT RATE**	
Single Family		homes	3.4	persons/unit
Semi-detached		homes	2.7	persons/unit
Townhouse		homes	2.7	persons/unit
Bachelor Apartment	**102**	units	1.4	persons/unit
1 Bedroom Apartment	**45**	units	1.4	persons/unit
2 Bedroom Apartment	**5**	units	2.1	persons/unit
3 Bedroom Apartment		units	3.1	persons/unit
Average Apartment		units	1.8	persons/unit
Total Population	**217**	persons		
Commercial	**1121**	m2		
Industrial - Light		m2		
Industrial - Heavy		m2		

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	280	L/c/d
Industrial - Light	35,000	L/gross ha/d
Industrial - Heavy	55,000	L/gross ha/d
Shopping Centres	2,500	L/(1000m² /d
Hospital	900	L/(bed/day)
Schools	70	L/(Student/d)
Trailer Park with no Hook-Ups	340	L/(space/d)
Trailer Park with Hook-Ups	800	L/(space/d)
Campgrounds	225	L/(campsite/d)
Mobile Home Parks	1,000	L/(Space/d)
Motels	150	L/(bed-space/d)
Hotels	225	L/(bed-space/d)
Tourist Commercial	28,000	L/gross ha/d
Other Commercial	28,000	L/gross ha/d

AVERAGE DAILY DEMAND	**Residential**	**0.70**	**L/s**
	Commerical/Industrial/ Institutional	**0.04**	**L/s**

115 Walgreen Road, R.R.3. Carp, ON K0A 1L0 | T. 613-836-2184 | F. 613-836-3742
info@mcintoshperry.com | www.mcintoshperry.com

MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	4.9	x avg. day	L/c/d
Industrial	1.5	x avg. day	L/gross ha/d
Commercial	1.5	x avg. day	L/gross ha/d
Institutional	1.5	x avg. day	L/gross ha/d
MAXIMUM DAILY DEMAND	**Residential**	**3.45**	**L/s**
	Commerical/Industrial/ Institutional	**0.05**	**L/s**

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	7.4	x avg. day	L/c/d
Industrial	1.8	x max. day	L/gross ha/d
Commercial	1.8	x max. day	L/gross ha/d
Institutional	1.8	x max. day	L/gross ha/d
MAXIMUM HOUR DEMAND	**Residential**	**5.20**	**L/s**
	Commerical/Industrial/ Institutional	**0.10**	**L/s**

WATER DEMAND DESIGN FLOWS PER UNIT COUNT
CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010

AVERAGE DAILY DEMAND	0.74	L/s
MAXIMUM DAILY DEMAND	3.50	L/s
MAXIMUM HOUR DEMAND	5.30	L/s

McINTOSH PERRY

CCO-22-0402 - 347 Franktown Road - Fire Underwriters Survey

Project:	347 Franktown Road
Project No.:	CCO-22-0402
Designed By:	RRR
Checked By:	NBV
Date:	March 21, 2024

From the Fire Underwriters Survey (2020)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:
City of Ottawa Technical Bulletin ISTB-2018-02 Applied Where Applicable

A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x √A Where:

F = Required fire flow in liters per minute
C = Coefficient related to the type of construction.
A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type Ordinary Construction

C 1 **A** **11,691.0** m^2

Total Floor Area (per the 2020 FUS Page 20 - Total Effective Area) **11,691.0** m^2

Calculated Fire Flow	**23,787.5 L/min**
	24,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From Page 24 of the Fire Underwriters Survey:

Limited Combustible -15%

Fire Flow	**20,400.0 L/min**

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Standard Water Supply Sprinklered -40%

Reduction	**-8,160.0 L/min**

D. INCREASE FOR EXPOSURE (No Rounding)

	Separation Distance (m)	Cons.of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	Length-Height Factor		
Exposure 1	Over 30 m	Ordinary - Mass Timber (Unprotected)	98	4	392.0	0%	
Exposure 2	10.1 to 20	Ordinary - Mass Timber (Unprotected)	26	4	104.0	0%	*both buildings sprinklered
Exposure 3	20.1 to 30	Ordinary - Mass Timber (Unprotected)	26	2	52.0	2%	
Exposure 4	Over 30 m	Ordinary - Mass Timber (Unprotected)	5	1	5.0	0%	
					% Increase*	**2%**	

Increase*	**408.0 L/min**

E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

Fire Flow	**12,648.0 L/min**
Fire Flow Required**	**13,000.0 L/min**

*In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%
**In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min

McINTOSH PERRY

CCCO-22-0402 - 347 Franktown Road - Phase 2 Water Demands

Project:	347 Franktown Road
Project No.:	CCCO-22-0402
Designed By:	RRR
Checked By:	NBV
Date:	March 21, 2024
Site Area:	1.14 gross ha

Residential	**NUMBER OF UNITS**		**UNIT RATE**	
Single Family		homes	3.4	persons/unit
Semi-detached		homes	2.7	persons/unit
Townhouse		homes	2.7	persons/unit
Bachelor Apartment	**23**	units	1.4	persons/unit
1 Bedroom Apartment	**37**	units	1.4	persons/unit
2 Bedroom Apartment	**10**	units	2.1	persons/unit
3 Bedroom Apartment		units	3.1	persons/unit
Average Apartment		units	1.8	persons/unit
Total Population	**105**	persons		
Amenity	**204**	m2		
Industrial - Light		m2		
Industrial - Heavy		m2		

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	280	L/c/d
Industrial - Light	35,000	L/gross ha/d
Industrial - Heavy	55,000	L/gross ha/d
Shopping Centres	2,500	L/(1000m² /d
Hospital	900	L/(bed/day)
Schools	70	L/(Student/d)
Trailer Park with no Hook-Ups	340	L/(space/d)
Trailer Park with Hook-Ups	800	L/(space/d)
Campgrounds	225	L/(campsite/d)
Mobile Home Parks	1,000	L/(Space/d)
Motels	150	L/(bed-space/d)
Hotels	225	L/(bed-space/d)
Tourist Commercial	28,000	L/gross ha/d
Other Commercial	28,000	L/gross ha/d

AVERAGE DAILY DEMAND	**Residential**	**0.34**	**L/s**
	Commerical/Industrial/ Institutional	**0.01**	**L/s**

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MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	4.9	x avg. day	L/c/d
Industrial	1.5	x avg. day	L/gross ha/d
Commercial	1.5	x avg. day	L/gross ha/d
Institutional	1.5	x avg. day	L/gross ha/d
MAXIMUM DAILY DEMAND	**Residential**	**1.67**	**L/s**
	Commerical/Industrial/ Institutional	**0.01**	**L/s**

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	7.4	x avg. day	L/c/d
Industrial	1.8	x max. day	L/gross ha/d
Commercial	1.8	x max. day	L/gross ha/d
Institutional	1.8	x max. day	L/gross ha/d
MAXIMUM HOUR DEMAND	**Residential**	**2.52**	**L/s**
	Commerical/Industrial/ Institutional	**0.02**	**L/s**

WATER DEMAND DESIGN FLOWS PER UNIT COUNT
CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010

AVERAGE DAILY DEMAND	0.35	L/s
MAXIMUM DAILY DEMAND	1.68	L/s
MAXIMUM HOUR DEMAND	2.54	L/s

McINTOSH PERRY

CCCO-22-0402 - 347 Franktown Road - Fire Underwriters Survey

Project:	347 Franktown Road
Project No.:	CCCO-22-0402
Designed By:	RRR
Checked By:	NBV
Date:	March 21, 2024

From the Fire Underwriters Survey (2020)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:
City of Ottawa Technical Bulletin ISTB-2018-02 Applied Where Applicable

A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x √A Where:

F = Required fire flow in liters per minute
C = Coefficient related to the type of construction.
A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type Ordinary Construction

C	1	**A**	**7,780.0 m^2**

Total Floor Area (per the 2020 FUS Page 20 - Total Effective Area) **7,780.0 m^2**

Calculated Fire Flow	**19,404.9 L/min**
	19,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From Page 24 of the Fire Underwriters Survey:

Limited Combustible	-15%

Fire Flow	**16,150.0 L/min**

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Standard Water Supply Sprinklered	-40%

Reduction	**-6,460.0 L/min**

D. INCREASE FOR EXPOSURE (No Rounding)

	Separation Distance (m)	Cons.of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	Length-Height Factor		
Exposure 1	Over 30 m	Ordinary - Mass Timber (Unprotected)	98	4	392.0	0%	
Exposure 2	Over 30 m	Ordinary - Mass Timber (Unprotected)	36	2	72.0	0%	
Exposure 3	Over 30 m	Ordinary - Mass Timber (Unprotected)	50	4	200.0	0%	
Exposure 4	10.1 to 20	Ordinary - Mass Timber (Unprotected)	26	1	26.0	0%	*both buildings sprinklered
					% Increase*	**0%**	

Increase*	**0.0 L/min**

E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

Fire Flow	**9,690.0 L/min**
Fire Flow Required**	**10,000.0 L/min**

*In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%
**In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min

McINTOSH PERRY

CCCO-22-0402 - 347 Franktown Road - Phase 3 Water Demands

Project:	347 Franktown Road
Project No.:	CCCO-22-0402
Designed By:	RRR
Checked By:	NBV
Date:	March 21, 2024
Site Area:	0.41 gross ha

Residential	**NUMBER OF UNITS**		**UNIT RATE**	
Single Family		homes	3.4	persons/unit
Semi-detached		homes	2.7	persons/unit
Townhouse		homes	2.7	persons/unit
Bachelor Apartment		units	1.4	persons/unit
1 Bedroom Apartment		units	1.4	persons/unit
2 Bedroom Apartment		units	2.1	persons/unit
3 Bedroom Apartment		units	3.1	persons/unit
Average Apartment		units	1.8	persons/unit
Total Population		persons		
Commercial	1144	m2		
Industrial - Light		m2		
Industrial - Heavy		m2		

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	280	L/c/d
Industrial - Light	35,000	L/gross ha/d
Industrial - Heavy	55,000	L/gross ha/d
Shopping Centres	2,500	L/(1000m² /d
Hospital	900	L/(bed/day)
Schools	70	L/(Student/d)
Trailer Park with no Hook-Ups	340	L/(space/d)
Trailer Park with Hook-Ups	800	L/(space/d)
Campgrounds	225	L/(campsite/d)
Mobile Home Parks	1,000	L/(Space/d)
Motels	150	L/(bed-space/d)
Hotels	225	L/(bed-space/d)
Tourist Commercial	28,000	L/gross ha/d
Other Commercial	28,000	L/gross ha/d

AVERAGE DAILY DEMAND	**Residential**	**0.00**	**L/s**
	Commerical/Industrial/ Institutional	**0.04**	**L/s**

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MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	4.9	x avg. day	L/c/d
Industrial	1.5	x avg. day	L/gross ha/d
Commercial	1.5	x avg. day	L/gross ha/d
Institutional	1.5	x avg. day	L/gross ha/d
MAXIMUM DAILY DEMAND	**Residential**	**0.00**	**L/s**
	Commerical/Industrial/ Institutional	**0.06**	**L/s**

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	7.4	x avg. day	L/c/d
Industrial	1.8	x max. day	L/gross ha/d
Commercial	1.8	x max. day	L/gross ha/d
Institutional	1.8	x max. day	L/gross ha/d
MAXIMUM HOUR DEMAND	**Residential**	**0.00**	**L/s**
	Commerical/Industrial/ Institutional	**0.10**	**L/s**

WATER DEMAND DESIGN FLOWS PER UNIT COUNT
CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010

AVERAGE DAILY DEMAND	0.04	L/s
MAXIMUM DAILY DEMAND	0.06	L/s
MAXIMUM HOUR DEMAND	0.10	L/s

McINTOSH PERRY

CCCO-22-0402 - 347 Franktown Road - Fire Underwriters Survey

Project:	347 Franktown Road
Project No.:	CCCO-22-0402
Designed By:	RRR
Checked By:	NBV
Date:	March 21, 2024

From the Fire Underwriters Survey (2020)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:
City of Ottawa Technical Bulletin ISTB-2018-02 Applied Where Applicable

A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x √A Where:

F = Required fire flow in liters per minute
C = Coefficient related to the type of construction.
A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type Ordinary Construction

C	1	**A**	**1,144.0 m^2**
	Total Floor Area (per the 2020 FUS Page 20 - Total Effective Area)		**1,144.0 m^2**

Calculated Fire Flow	**7,441.1 L/min**
	7,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From Page 24 of the Fire Underwriters Survey:

Limited Combustible	-15%

Fire Flow	**5,950.0 L/min**

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Non-Sprinklered	0%

Reduction	**0.0 L/min**

D. INCREASE FOR EXPOSURE (No Rounding)

	Separation Distance (m)	Cons.of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	Length-Height Factor	
Exposure 1	20.1 to 30	Ordinary - Mass Timber (Unprotected)	26	4	104.0	5%
Exposure 2	Over 30 m	Ordinary - Mass Timber (Unprotected)	26	2	52.0	0%
Exposure 3	10.1 to 20	Ordinary - Mass Timber (Unprotected)	50	4	200.0	10%
Exposure 4	20.1 to 30	Ordinary - Mass Timber (Unprotected)	20	1	20.0	0%
					% Increase*	**15%**

Increase*	**892.5 L/min**

E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

Fire Flow	**6,842.5 L/min**
Fire Flow Required**	**7,000.0 L/min**

*In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%
**In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min

McINTOSH PERRY

CCCO-22-0402 - 347 Franktown Road - Phase 4 Water Demands

Project:	347 Franktown Road
Project No.:	CCCO-22-0402
Designed By:	RRR
Checked By:	NBV
Date:	March 5, 2024
Site Area:	0.39 gross ha

Residential	**NUMBER OF UNITS**		**UNIT RATE**	
Single Family		homes	3.4	persons/unit
Semi-detached		homes	2.7	persons/unit
Townhouse	**18**	homes	2.7	persons/unit
Bachelor Apartment		units	1.4	persons/unit
1 Bedroom Apartment		units	1.4	persons/unit
2 Bedroom Apartment		units	2.1	persons/unit
3 Bedroom Apartment		units	3.1	persons/unit
Average Apartment		units	1.8	persons/unit

Total Population **49 persons**

Commercial	m2
Industrial - Light	m2
Industrial - Heavy	m2

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	280	L/c/d
Industrial - Light	35,000	L/gross ha/d
Industrial - Heavy	55,000	L/gross ha/d
Shopping Centres	2,500	L/(1000m² /d
Hospital	900	L/(bed/day)
Schools	70	L/(Student/d)
Trailer Park with no Hook-Ups	340	L/(space/d)
Trailer Park with Hook-Ups	800	L/(space/d)
Campgrounds	225	L/(campsite/d)
Mobile Home Parks	1,000	L/(Space/d)
Motels	150	L/(bed-space/d)
Hotels	225	L/(bed-space/d)
Tourist Commercial	28,000	L/gross ha/d
Other Commercial	28,000	L/gross ha/d

AVERAGE DAILY DEMAND	**Residential**	**0.16**	**L/s**
	Commerical/Industrial/ Institutional	**0.00**	**L/s**

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MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	4.9	x avg. day	L/c/d
Industrial	1.5	x avg. day	L/gross ha/d
Commercial	1.5	x avg. day	L/gross ha/d
Institutional	1.5	x avg. day	L/gross ha/d
MAXIMUM DAILY DEMAND	**Residential**	**0.78**	**L/s**
	Commerical/Industrial/ Institutional	**0.00**	**L/s**

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	7.4	x avg. day	L/c/d
Industrial	1.8	x max. day	L/gross ha/d
Commercial	1.8	x max. day	L/gross ha/d
Institutional	1.8	x max. day	L/gross ha/d
MAXIMUM HOUR DEMAND	**Residential**	**1.18**	**L/s**
	Commerical/Industrial/ Institutional	**0.00**	**L/s**

WATER DEMAND DESIGN FLOWS PER UNIT COUNT
CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010

AVERAGE DAILY DEMAND	0.16	L/s
MAXIMUM DAILY DEMAND	0.78	L/s
MAXIMUM HOUR DEMAND	1.18	L/s

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McINTOSH PERRY

CCCO-22-0402 - 347 Franktown Road - Fire Underwriters Survey

Project:	347 Franktown Road
Project No.:	CCCO-22-0402
Designed By:	RRR
Checked By:	NBV
Date:	March 5, 2024

From the Fire Underwriters Survey (2020)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:
City of Ottawa Technical Bulletin ISTB-2018-02 Applied Where Applicable

A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x √A Where:

F = Required fire flow in liters per minute
C = Coefficient related to the type of construction.
A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type Wood Frame

C	1.5	**A**	**1,152.0 m^2**

Total Floor Area (per the 2020 FUS Page 20 - Total Effective Area) **1,152.0 m^2**

Calculated Fire Flow	**11,200.6 L/min**
	11,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From Page 24 of the Fire Underwriters Survey:

Limited Combustible	-15%

Fire Flow	**9,350.0 L/min**

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Non-Sprinklered	0%

Reduction	**0.0 L/min**

D. INCREASE FOR EXPOSURE (No Rounding)

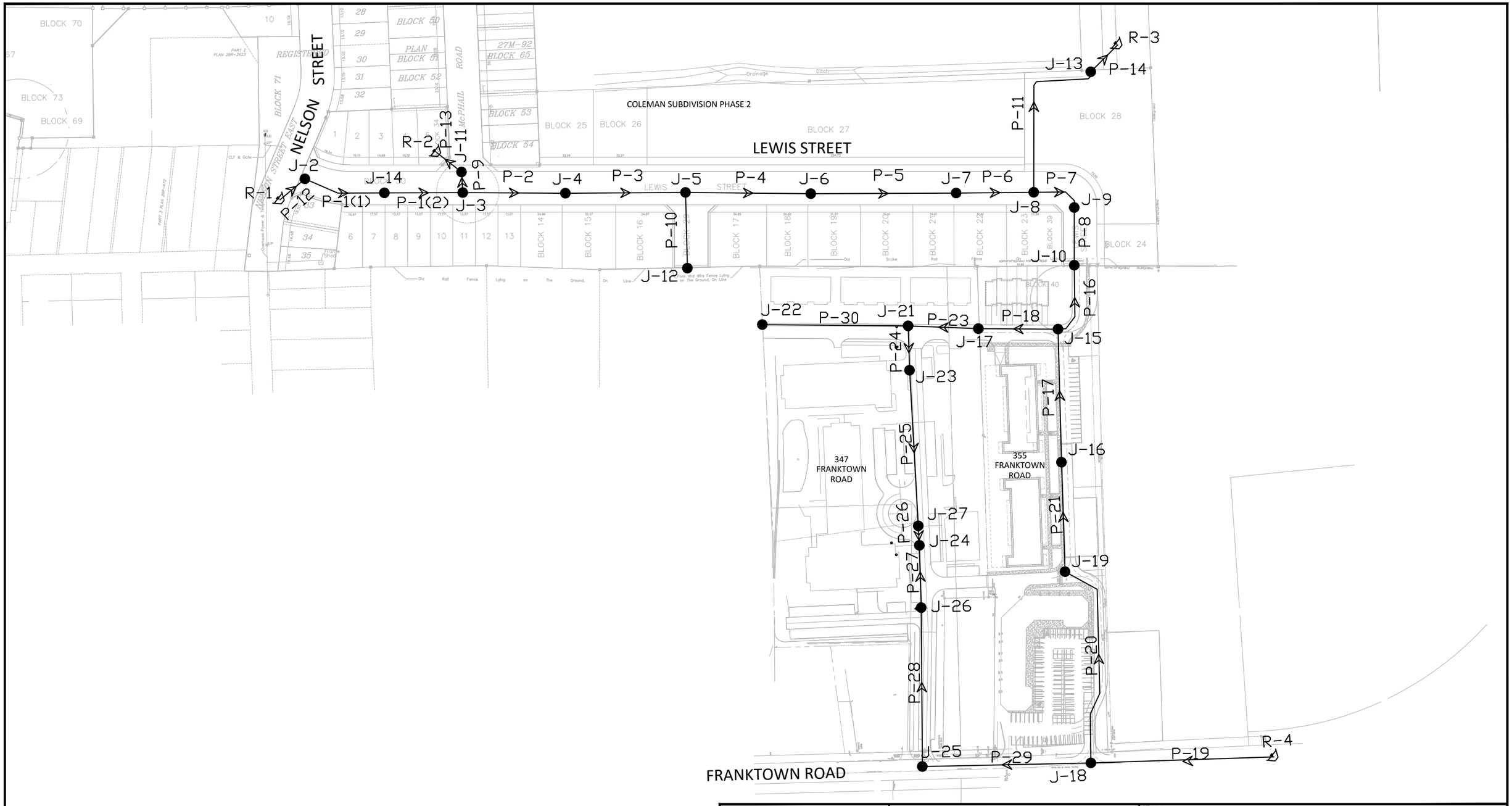
	Separation Distance (m)	Cons.of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	Length-Height Factor	
Exposure 1	3.1 to 10	Wood frame	16	2	32.0	16%
Exposure 2	10.1 to 20	Wood frame	29	2	58.0	12%
Exposure 3	3.1 to 10	Wood frame	16.6	2	33.2	16%
Exposure 4	Over 30 m	Ordinary - Mass Timber (Unprotected)	65.7	4	262.8	0%
					% Increase*	**44%**

Increase*	**4,114.0 L/min**

E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

Fire Flow	**13,464.0 L/min**
Fire Flow Required**	**13,000.0 L/min**
Adjusted Fire Flow**	**10,000.0 L/min**

*In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%
**In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min



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Client: 11309455 CANADA INC
768 BOULEVARD SAINT-JOSEPH SUITE 100, GATINEAU, QUEBEC

Project: COLEMAN PHASE 2, 347-355 FRANKTOWN ROAD
CARLETON PLACE, ON

Drawing Title: HYDRAULIC WATER MODEL

Drawn by:	Checked By:
J.H.	B.C.
Scale: N.T.S.	Project Number:

No.	Revisions	Date
2	UPDATE LAYOUT	2024-MAR
1	WATER MODEL	2023-AUG

Drawing Number: C1

FILENAME: U:\Ottawa\01 Project - Proposals\2018 Jobs\CCO\CCO-18-0360-01 Cavanagh_NuGlobe Subdivision Ph 2_Carleton Place\Civil\03 - Servicing\WaterCAD\Background\Pipes_Export_2024-03-20.dwg
LAST SAVED: Wednesday, March 20, 2024 1:47:54 PM By: JHewson
LAST PLOTTED: Wednesday, March 20, 2024 CIVIL LEGEND

Coleman Phase 2, 347-355 Franktown Water Model

Average Day Demands

Junction Table - Time: 0.00 hours

ID	Label	Elevation (m)	Demand (L/s)	Hydraulic Grade (m)	Pressure (psi)
31	J-2	133.92	0.00	181.14	67
32	J-3	133.31	0.07	181.16	68
34	J-4	133.50	0.12	181.16	68
36	J-5	133.19	0.39	181.17	68
38	J-6	133.35	0.10	181.17	68
40	J-7	133.35	0.10	181.18	68
42	J-8	133.06	0.04	181.19	68
44	J-9	133.12	0.03	181.20	68
46	J-10	133.10	0.00	181.21	68
48	J-11	133.26	0.00	181.16	68
50	J-12	133.27	0.00	181.17	68
52	J-13	130.65	0.00	181.18	72
54	J-14	133.56	0.11	181.15	68
88	J-15	133.31	0.00	181.22	68
90	J-16	133.91	0.58	181.23	67
92	J-17	134.88	0.06	181.22	66
95	J-18	136.18	0.00	181.26	64
97	J-19	136.41	0.25	181.24	64
102	J-21	134.46	0.16	181.22	66
103	J-22	134.57	0.00	181.22	66
104	J-23	134.55	0.35	181.23	66
105	J-24	134.60	0.74	181.23	66
106	J-25	135.84	0.00	181.25	64
107	J-26	134.75	0.00	181.24	66
108	J-27	134.60	0.00	181.23	66

Reservoir Table - Time: 0.00 hours

ID	Label	Elevation (m)	Hydraulic Grade (m)
57	R-1	181.14	181.14
58	R-2	181.16	181.16
59	R-3	181.18	181.18
94	R-4	181.32	181.32

Pipe Table - Time: 0.00 hours

ID	Label	Length (Scaled) (m)	Start Node	Stop Node	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)
35	P-2	62	J-3	J-4	204.0	PVC	110.0	-2.55	0.08
37	P-3	72	J-4	J-5	204.0	PVC	110.0	-2.67	0.08
39	P-4	75	J-5	J-6	204.0	PVC	110.0	-3.06	0.09
41	P-5	87	J-6	J-7	204.0	PVC	110.0	-3.16	0.10

Coleman Phase 2, 347-355 Franktown Water Model

Average Day Demands

Pipe Table - Time: 0.00 hours

ID	Label	Length (Scaled) (m)	Start Node	Stop Node	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)
43	P-6	47	J-7	J-8	204.0	PVC	110.0	-3.26	0.10
45	P-7	31	J-8	J-9	204.0	PVC	110.0	-5.78	0.18
47	P-8	35	J-9	J-10	204.0	PVC	110.0	-5.81	0.18
49	P-9	12	J-11	J-3	204.0	PVC	110.0	1.81	0.06
51	P-10	45	J-12	J-5	204.0	PVC	110.0	0.00	0.00
53	P-11	103	J-13	J-8	204.0	PVC	110.0	-2.48	0.08
55	P-1(1)	50	J-2	J-14	204.0	PVC	110.0	-4.18	0.13
56	P-1(2)	47	J-14	J-3	204.0	PVC	110.0	-4.29	0.13
60	P-12	20	R-1	J-2	204.0	PVC	110.0	-4.18	0.13
61	P-13	19	R-2	J-11	204.0	PVC	110.0	1.81	0.06
62	P-14	23	R-3	J-13	204.0	PVC	110.0	-2.48	0.08
89	P-16	45	J-10	J-15	204.0	PVC	110.0	-5.81	0.18
91	P-17	80	J-15	J-16	204.0	PVC	110.0	-3.56	0.11
93	P-18	48	J-15	J-17	204.0	PVC	110.0	-2.25	0.07
96	P-19	110	R-4	J-18	204.0	PVC	110.0	7.95	0.24
98	P-20	128	J-18	J-19	204.0	PVC	110.0	4.39	0.13
99	P-21	66	J-19	J-16	204.0	PVC	110.0	4.14	0.13
109	P-23	42	J-17	J-21	204.0	PVC	110.0	-2.31	0.07
110	P-24	27	J-21	J-23	204.0	PVC	110.0	-2.47	0.08
111	P-25	94	J-23	J-27	204.0	PVC	110.0	-2.82	0.09
112	P-26	12	J-27	J-24	204.0	PVC	110.0	-2.82	0.09
113	P-27	37	J-24	J-26	204.0	PVC	110.0	-3.56	0.11
114	P-28	95	J-26	J-25	204.0	PVC	110.0	-3.56	0.11
115	P-29	102	J-25	J-18	204.0	PVC	110.0	-3.56	0.11
116	P-30	88	J-22	J-21	204.0	PVC	110.0	0.00	0.00

Coleman Phase 2, 347-355 Franktown Water Model

Peak Hour Demands

Junction Table - Time: 0.00 hours

ID	Label	Elevation (m)	Demand (L/s)	Hydraulic Grade (m)	Pressure (psi)
31	J-2	133.92	0.00	181.04	67
32	J-3	133.31	1.00	180.94	68
34	J-4	133.50	1.72	180.84	67
36	J-5	133.19	5.58	180.75	68
38	J-6	133.35	1.43	180.71	67
40	J-7	133.35	1.43	180.69	67
42	J-8	133.06	0.57	180.68	68
44	J-9	133.12	0.43	180.63	67
46	J-10	133.10	0.00	180.57	67
48	J-11	133.26	0.00	180.95	68
50	J-12	133.27	0.00	180.75	67
52	J-13	130.65	0.00	180.79	71
54	J-14	133.56	1.57	180.98	67
88	J-15	133.31	0.00	180.49	67
90	J-16	133.91	8.15	180.48	66
92	J-17	134.88	0.86	180.45	65
95	J-18	136.18	0.00	180.54	63
97	J-19	136.41	3.58	180.48	63
102	J-21	134.46	2.29	180.42	65
103	J-22	134.57	0.00	180.42	65
104	J-23	134.55	5.01	180.41	65
105	J-24	134.60	10.58	180.40	65
106	J-25	135.84	0.00	180.48	63
107	J-26	134.75	0.00	180.43	65
108	J-27	134.60	0.00	180.40	65

Reservoir Table - Time: 0.00 hours

ID	Label	Elevation (m)	Hydraulic Grade (m)
57	R-1	181.06	181.06
58	R-2	180.95	180.95
59	R-3	180.81	180.81
94	R-4	180.74	180.74

Pipe Table - Time: 0.00 hours

ID	Label	Length (Scaled) (m)	Start Node	Stop Node	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)
35	P-2	62	J-3	J-4	204.0	PVC	110.0	14.62	0.45
37	P-3	72	J-4	J-5	204.0	PVC	110.0	12.90	0.39
39	P-4	75	J-5	J-6	204.0	PVC	110.0	7.32	0.22
41	P-5	87	J-6	J-7	204.0	PVC	110.0	5.89	0.18

Coleman Phase 2, 347-355 Franktown Water Model

Peak Hour Demands

Pipe Table - Time: 0.00 hours

ID	Label	Length (Scaled) (m)	Start Node	Stop Node	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)
43	P-6	47	J-7	J-8	204.0	PVC	110.0	4.46	0.14
45	P-7	31	J-8	J-9	204.0	PVC	110.0	15.34	0.47
47	P-8	35	J-9	J-10	204.0	PVC	110.0	14.91	0.46
49	P-9	12	J-11	J-3	204.0	PVC	110.0	5.25	0.16
51	P-10	45	J-12	J-5	204.0	PVC	110.0	0.00	0.00
53	P-11	103	J-13	J-8	204.0	PVC	110.0	11.45	0.35
55	P-1(1)	50	J-2	J-14	204.0	PVC	110.0	11.94	0.37
56	P-1(2)	47	J-14	J-3	204.0	PVC	110.0	10.36	0.32
60	P-12	20	R-1	J-2	204.0	PVC	110.0	11.94	0.37
61	P-13	19	R-2	J-11	204.0	PVC	110.0	5.25	0.16
62	P-14	23	R-3	J-13	204.0	PVC	110.0	11.45	0.35
89	P-16	45	J-10	J-15	204.0	PVC	110.0	14.91	0.46
91	P-17	80	J-15	J-16	204.0	PVC	110.0	4.58	0.14
93	P-18	48	J-15	J-17	204.0	PVC	110.0	10.33	0.32
96	P-19	110	R-4	J-18	204.0	PVC	110.0	15.55	0.48
98	P-20	128	J-18	J-19	204.0	PVC	110.0	7.15	0.22
99	P-21	66	J-19	J-16	204.0	PVC	110.0	3.57	0.11
109	P-23	42	J-17	J-21	204.0	PVC	110.0	9.47	0.29
110	P-24	27	J-21	J-23	204.0	PVC	110.0	7.19	0.22
111	P-25	94	J-23	J-27	204.0	PVC	110.0	2.18	0.07
112	P-26	12	J-27	J-24	204.0	PVC	110.0	2.18	0.07
113	P-27	37	J-24	J-26	204.0	PVC	110.0	-8.40	0.26
114	P-28	95	J-26	J-25	204.0	PVC	110.0	-8.40	0.26
115	P-29	102	J-25	J-18	204.0	PVC	110.0	-8.40	0.26
116	P-30	88	J-22	J-21	204.0	PVC	110.0	0.00	0.00

Coleman Phase 2, 347-355 Franktown Water Model

Max Day + Fire Flow, Reduced HGL (Min. 190L/sec)

Fire Flow Results Table - Time: 0.00 hours

Label	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (psi)	Junction w/ Minimum Pressure (Zone)	Pipe w/ Maximum Velocity	Velocity of Maximum Pipe (m/s)	Satisfies Fire Flow Constraints ?
J-2	300.00	53	J-19	P-12	6.62	True
J-3	300.00	56	J-19	P-13	6.38	True
J-4	300.00	37	J-12	P-2	6.56	True
J-5	300.00	27	J-12	P-2	5.47	True
J-6	300.00	25	J-12	P-6	4.85	True
J-7	300.00	32	J-6	P-6	6.01	True
J-8	300.00	42	J-9	P-14	4.66	True
J-9	300.00	35	J-10	P-7	6.37	True
J-10	300.00	30	J-15	P-7	5.81	True
J-11	300.00	60	J-19	P-13	8.54	True
J-12	237.71	20	J-5	P-10	7.27	True
J-13	300.00	64	J-19	P-14	8.98	True
J-14	300.00	49	J-19	P-1(2)	4.80	True
J-15	300.00	25	J-17	P-7	5.19	True
J-16	263.53	20	J-19	P-17	4.85	True
J-17	268.42	20	J-22	P-18	6.04	True
J-18	300.00	26	J-25	P-19	5.91	True
J-19	248.95	20	J-16	P-19	4.50	True
J-21	241.38	20	J-22	P-18	5.03	True
J-22	166.23	20	J-21	P-30	5.09	False
J-23	232.34	20	J-22	P-18	4.62	True
J-24	218.24	20	J-27	P-19	3.97	True
J-25	235.37	20	J-26	P-29	4.85	True
J-26	219.57	20	J-24	P-19	4.03	True
J-27	218.61	20	J-24	P-19	3.97	True

Junction Table - Time: 0.00 hours

ID	Label	Elevation (m)	Demand (L/s)	Hydraulic Grade (m)	Pressure (psi)
31	J-2	133.92	0.00	176.04	60
32	J-3	133.31	0.67	175.95	61
34	J-4	133.50	1.14	175.89	60
36	J-5	133.19	3.70	175.83	61
38	J-6	133.35	0.95	175.80	60
40	J-7	133.35	0.95	175.77	60
42	J-8	133.06	0.38	175.77	61
44	J-9	133.12	0.29	175.73	60
46	J-10	133.10	0.00	175.70	60
48	J-11	133.26	0.00	175.95	61
50	J-12	133.27	0.00	175.83	60
52	J-13	130.65	0.00	175.81	64
54	J-14	133.56	1.04	175.99	60

Coleman Phase 2, 347-355 Franktown Water Model

Max Day + Fire Flow, Reduced HGL (Min. 190L/sec)

Junction Table - Time: 0.00 hours

ID	Label	Elevation (m)	Demand (L/s)	Hydraulic Grade (m)	Pressure (psi)
88	J-15	133.65	0.00	175.66	60
90	J-16	134.88	5.41	175.65	58
92	J-17	133.91	0.57	175.64	59
95	J-18	136.18	0.00	175.67	56
97	J-19	136.41	2.37	175.65	56
102	J-21	134.46	1.52	175.62	58
103	J-22	134.57	0.00	175.62	58
104	J-23	134.55	3.32	175.61	58
105	J-24	134.60	7.03	175.61	58
106	J-25	135.84	0.00	175.64	56
107	J-26	134.75	0.00	175.62	58
108	J-27	134.60	0.00	175.61	58

Reservoir Table - Time: 0.00 hours

ID	Label	Elevation (m)	Hydraulic Grade (m)
57	R-1	176.06	176.06
58	R-2	175.95	175.95
59	R-3	175.81	175.81
94	R-4	175.74	175.74

Pipe Table - Time: 0.00 hours

ID	Label	Length (Scaled) (m)	Start Node	Stop Node	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)
35	P-2	62	J-3	J-4	204.0	PVC	110.0	11.38	0.35
37	P-3	72	J-4	J-5	204.0	PVC	110.0	10.24	0.31
39	P-4	75	J-5	J-6	204.0	PVC	110.0	6.53	0.20
41	P-5	87	J-6	J-7	204.0	PVC	110.0	5.58	0.17
43	P-6	47	J-7	J-8	204.0	PVC	110.0	4.63	0.14
45	P-7	31	J-8	J-9	204.0	PVC	110.0	11.39	0.35
47	P-8	35	J-9	J-10	204.0	PVC	110.0	11.10	0.34
49	P-9	12	J-11	J-3	204.0	PVC	110.0	1.74	0.05
51	P-10	45	J-12	J-5	204.0	PVC	110.0	0.00	0.00
53	P-11	103	J-13	J-8	204.0	PVC	110.0	7.13	0.22
55	P-1(1)	50	J-2	J-14	204.0	PVC	110.0	11.35	0.35
56	P-1(2)	47	J-14	J-3	204.0	PVC	110.0	10.31	0.32
60	P-12	20	R-1	J-2	204.0	PVC	110.0	11.35	0.35
61	P-13	19	R-2	J-11	204.0	PVC	110.0	1.74	0.05
62	P-14	23	R-3	J-13	204.0	PVC	110.0	7.13	0.22
89	P-16	45	J-10	J-15	204.0	PVC	110.0	11.10	0.34
91	P-17	80	J-15	J-16	204.0	PVC	110.0	3.86	0.12

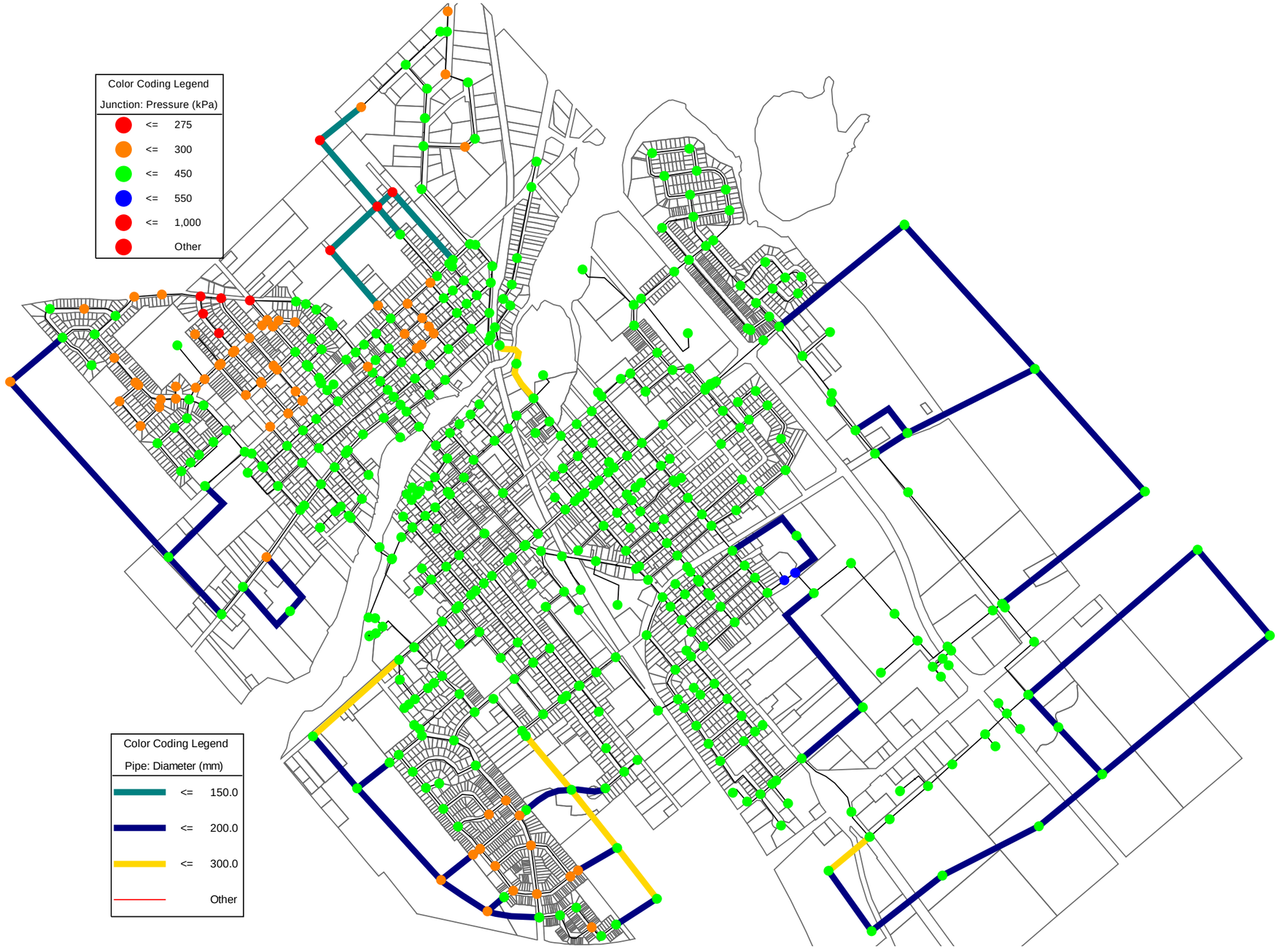
Coleman Phase 2, 347-355 Franktown Water Model

Max Day + Fire Flow, Reduced HGL (Min. 190L/sec)

Pipe Table - Time: 0.00 hours

ID	Label	Length (Scaled) (m)	Start Node	Stop Node	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)
93	P-18	48	J-15	J-17	204.0	PVC	110.0	7.24	0.22
96	P-19	110	R-4	J-18	204.0	PVC	110.0	9.13	0.28
98	P-20	128	J-18	J-19	204.0	PVC	110.0	3.93	0.12
99	P-21	66	J-19	J-16	204.0	PVC	110.0	1.56	0.05
109	P-23	42	J-17	J-21	204.0	PVC	110.0	6.67	0.20
110	P-24	27	J-21	J-23	204.0	PVC	110.0	5.15	0.16
111	P-25	94	J-23	J-27	204.0	PVC	110.0	1.83	0.06
112	P-26	12	J-27	J-24	204.0	PVC	110.0	1.83	0.06
113	P-27	37	J-24	J-26	204.0	PVC	110.0	-5.20	0.16
114	P-28	95	J-26	J-25	204.0	PVC	110.0	-5.20	0.16
115	P-29	102	J-25	J-18	204.0	PVC	110.0	-5.20	0.16
116	P-30	88	J-22	J-21	204.0	PVC	110.0	0.00	0.00

Active Scenario: Peak Hour - Build-out



APPENDIX D
SANITARY CALCULATIONS

McINTOSH PERRY

McINTOSH PERRY

CCO-22-0402 - 355 Franktown - Phase 1 Sanitary Demands

Project:	355 Franktown
Project No.:	CCO-22-0402
Designed By:	R.R.R.
Checked By:	N.B.V.
Date:	Mar-24

Site Area	1.21	Gross ha	
Bachelor	102	1.40	Persons per unit
1 Bedroom	45	1.40	Persons per unit
2 Bedroom	5	2.10	Persons per unit
Total Population	217	Persons	

DESIGN PARAMETERS

Institutional/Commercial Peaking Facto	1.5	*Check technical bulleting (Either use 1.0 or 1.5)
Residential Peaking Factor	3.51	* *Using Harmon Formula* = 1+(14/(4+P^0.5))*0.8
		where P = population in thousands, Harmon's Correction Factor = 0.8
Mannings coefficient (n)	0.013	
Demand (per capita)	280	L/day
Infiltration allowance	0.33	L/s/Ha

EXTRANEOUS FLOW ALLOWANCES

Infiltration / Inflow	Flow (L/s)
Dry	0.06
Wet	0.34
Total	0.40

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	POPULATION / AREA	Flow (L/s)
Residential	280	L/c/d	217	0.70
Industrial - Light**	35,000	L/gross ha/d		0
Industrial - Heavy**	55,000	L/gross ha/d		0
Commercial / Amenity	2,800	L/(1000m² /d)	0.00	0.00
Hospital	900	L/(bed/day)		0
Schools	70	L/(Student/d)		0
Trailer Parks no Hook-Ups	340	L/(space/d)		0
Trailer Park with Hook-Ups	800	L/(space/d)		0
Campgrounds	225	L/(campsite/d)		0
Mobile Home Parks	1,000	L/(Space/d)		0
Motels	150	L/(bed-space/d)		0
Hotels	225	L/(bed-space/d)		0
Office	75	L/7.0m^2/d		0
Tourist Commercial	28,000	L/gross ha/d		0
Other Commercial	28,000	L/gross ha/d		0

AVERAGE RESIDENTIAL FLOW	0.70	L/s
PEAK RESIDENTIAL FLOW	2.47	L/s
AVERAGE ICI FLOW	0.00	L/s
PEAK INSTITUTIONAL/COMMERCIAL FLOW	0.00	L/s
PEAK INDUSTRIAL FLOW	0.00	L/s
TOTAL PEAK ICI FLOW	0.0	L/s

TOTAL SANITARY DEMAND

TOTAL ESTIMATED AVERAGE DRY WEATHER FLOW	0.76	L/s
TOTAL ESTIMATED PEAK DRY WEATHER FLOW	2.53	L/s
TOTAL ESTIMATED PEAK WET WEATHER FLOW	2.86	L/s

McINTOSH PERRY

CCO-22-0402 - 355 Franktown - Phase 2 Sanitary Demands

Project:	355 Franktown
Project No.:	CCO-22-0402
Designed By:	R.R.R.
Checked By:	N.B.V.
Date:	Mar-24

Site Area	1.14	Gross ha	
Bachelor	23	1.40	Persons per unit
1 Bedroom	37	1.40	Persons per unit
2 Bedroom	10	2.10	Persons per unit
Total Population	105	Persons	

DESIGN PARAMETERS

Institutional/Commercial Peaking Facto	1.5	*Check technical bulleting (Either use 1.0 or 1.5)
Residential Peaking Factor	3.59	** Using Harmon Formula* = 1+(14/(4+P^0.5))*0.8
		where P = population in thousands, Harmon's Correction Factor = 0.8
Mannings coefficient (n)	0.013	
Demand (per capita)	280	L/day
Infiltration allowance	0.33	L/s/Ha

EXTRANEOUS FLOW ALLOWANCES

Infiltration / Inflow	Flow (L/s)
Dry	0.06
Wet	0.32
Total	0.38

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	POPULATION / AREA	Flow (L/s)
Residential	280	L/c/d	105	0.34
Industrial - Light**	35,000	L/gross ha/d		0
Industrial - Heavy**	55,000	L/gross ha/d		0
Commercial / Amenity	2,800	L/(1000m² /d)	0.00	0.00
Hospital	900	L/(bed/day)		0
Schools	70	L/(Student/d)		0
Trailer Parks no Hook-Ups	340	L/(space/d)		0
Trailer Park with Hook-Ups	800	L/(space/d)		0
Campgrounds	225	L/(campsite/d)		0
Mobile Home Parks	1,000	L/(Space/d)		0
Motels	150	L/(bed-space/d)		0
Hotels	225	L/(bed-space/d)		0
Office	75	L/7.0m^2/d		0
Tourist Commercial	28,000	L/gross ha/d		0
Other Commercial	28,000	L/gross ha/d		0

AVERAGE RESIDENTIAL FLOW	0.34	L/s
PEAK RESIDENTIAL FLOW	1.22	L/s
AVERAGE ICI FLOW	0.00	L/s
PEAK INSTITUTIONAL/COMMERCIAL FLOW	0.00	L/s
PEAK INDUSTRIAL FLOW	0.00	L/s
TOTAL PEAK ICI FLOW	0.00	L/s

TOTAL SANITARY DEMAND

TOTAL ESTIMATED AVERAGE DRY WEATHER FLOW	0.40	L/s
TOTAL ESTIMATED PEAK DRY WEATHER FLOW	1.28	L/s
TOTAL ESTIMATED PEAK WET WEATHER FLOW	1.60	L/s

McINTOSH PERRY

CCO-22-0402 - 355 Franktown - Phase 3 Sanitary Demands

Project:	355 Franktown
Project No.:	CCO-22-0402
Designed By:	R.R.R.
Checked By:	N.B.V.
Date:	Mar-24

Site Area	0.41	Gross ha	
Bachelor	0	1.40	Persons per unit
1 Bedroom	0	1.40	Persons per unit
2 Bedroom	0	2.10	Persons per unit
Total Population	0	Persons	
Commercial/Institutional Area	1144	m^2	
Amenity Space	0.00	m^2	

DESIGN PARAMETERS

Institutional/Commercial Peaking Factor	1.5	*Check technical bulleting (Either use 1.0 or 1.5)
Residential Peaking Factor	3.80	* *Using Harmon Formula* = 1+(14/(4+P^0.5))*0.8
		where P = population in thousands, Harmon's Correction Factor = 0.8
Mannings coefficient (n)	0.013	
Demand (per capita)	280	L/day
Infiltration allowance	0.33	L/s/Ha

EXTRANEOUS FLOW ALLOWANCES

Infiltration / Inflow	Flow (L/s)
Dry	0.02
Wet	0.12
Total	0.14

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	POPULATION / AREA	Flow (L/s)
Residential	280	L/c/d	0	0.00
Industrial - Light**	35,000	L/gross ha/d		0
Industrial - Heavy**	55,000	L/gross ha/d		0
Commercial / Amenity	2,800	L/(1000m^2 /d)	1144.00	0.04
Hospital	900	L/(bed/day)		0
Schools	70	L/(Student/d)		0
Trailer Parks no Hook-Ups	340	L/(space/d)		0
Trailer Park with Hook-Ups	800	L/(space/d)		0
Campgrounds	225	L/(campsite/d)		0
Mobile Home Parks	1,000	L/(Space/d)		0
Motels	150	L/(bed-space/d)		0
Hotels	225	L/(bed-space/d)		0
Office	75	L/7.0m^2/d		0
Tourist Commercial	28,000	L/gross ha/d		0
Other Commercial	28,000	L/gross ha/d		0

AVERAGE RESIDENTIAL FLOW	0.00	L/s
PEAK RESIDENTIAL FLOW	0.00	L/s
AVERAGE ICI FLOW	0.04	L/s
PEAK INSTITUTIONAL/COMMERCIAL FLOW	0.06	L/s
PEAK INDUSTRIAL FLOW	0.00	L/s
TOTAL PEAK ICI FLOW	0.06	L/s

TOTAL SANITARY DEMAND

TOTAL ESTIMATED AVERAGE DRY WEATHER FLOW	0.06	L/s
TOTAL ESTIMATED PEAK DRY WEATHER FLOW	0.08	L/s
TOTAL ESTIMATED PEAK WET WEATHER FLOW	0.19	L/s

McINTOSH PERRY

CCO-22-0402 - 355 Franktown - Phase 4 Sanitary Demands

Project:	355 Franktown			
Project No.:	CCO-22-0402			
Designed By:	R.R.R.			
Checked By:	N.B.V.			
Date:	Mar-24			
Site Area	0.39	Gross ha		
Townhouse	18		2.70	Persons per unit
Total Population	49	Persons		

DESIGN PARAMETERS

Institutional/Commercial Peaking Facto	1.5	*Check technical bulleting (Either use 1.0 or 1.5)
Residential Peaking Factor	3.65	* *Using Harmon Formula* = 1+(14/(4+P^0.5))*0.8
		where P = population in thousands, Harmon's Correction Factor = 0.8
Mannings coefficient (n)	0.013	
Demand (per capita)	280	L/day
Infiltration allowance	0.33	L/s/Ha

EXTRANEOUS FLOW ALLOWANCES

Infiltration / Inflow	Flow (L/s)
Dry	0.02
Wet	0.11
Total	0.13

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	POPULATION / AREA	Flow (L/s)
Residential	280	L/c/d	49	0.16
Industrial - Light**	35,000	L/gross ha/d		0
Industrial - Heavy**	55,000	L/gross ha/d		0
Commercial / Amenity	2,800	L/(1000m² /d)	0.00	0.00
Hospital	900	L/(bed/day)		0
Schools	70	L/(Student/d)		0
Trailer Parks no Hook-Ups	340	L/(space/d)		0
Trailer Park with Hook-Ups	800	L/(space/d)		0
Campgrounds	225	L/(campsite/d)		0
Mobile Home Parks	1,000	L/(Space/d)		0
Motels	150	L/(bed-space/d)		0
Hotels	225	L/(bed-space/d)		0
Office	75	L/7.0m^2/d		0
Tourist Commercial	28,000	L/gross ha/d		0
Other Commercial	28,000	L/gross ha/d		0

AVERAGE RESIDENTIAL FLOW	0.16	L/s
PEAK RESIDENTIAL FLOW	0.58	L/s
AVERAGE ICI FLOW	0.00	L/s
PEAK INSTITUTIONAL/COMMERCIAL FLOW	0.00	L/s
PEAK INDUSTRIAL FLOW	0.00	L/s
TOTAL PEAK ICI FLOW	0.00	L/s

TOTAL SANITARY DEMAND

TOTAL ESTIMATED AVERAGE DRY WEATHER FLOW	0.18	L/s
TOTAL ESTIMATED PEAK DRY WEATHER FLOW	0.60	L/s
TOTAL ESTIMATED PEAK WET WEATHER FLOW	0.71	L/s

SANITARY SEWER DESIGN SHEET

PROJECT:
LOCATION: 347 Franktown Road
CLIENT: Dr Neel Chadha

McINTOSH PERRY

LOCATION				RESIDENTIAL									ICI AREAS							INFILTRATION ALLOWANCE			FLOW	SEWER DATA						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
STREET	AREA ID	FROM MH	TO MH	UNIT TYPES 1-BED	2-BED	TH	APT	AREA (ha)	POPULATION IND	CUM	PEAK FACTOR	PEAK FLOW (L/s)	AREA (ha) INSTITUTIONAL IND	CUM	COMMERCIAL IND	CUM	INDUSTRIAL IND	CUM	PEAK FLOW (L/s)	AREA (ha) IND	CUM	FLOW (L/s)	DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	DIA (mm)	SLOPE (%)	VELOCITY (full) (m/s)	AVAILABLE CAPACITY L/s	AVAILABLE CAPACITY (%)
		MH101A	MH102A	207	15			2.34	321.3	321	3.45	3.59		0.00	0.11	0.11		0.00	0.06	2.34	2.34	0.77	4.42	19.36	129.34	200	0.32	0.597	14.93	77.15
	Chadha Lands	MH105A	MH102A			12		0.45	32.4	32	3.68	0.39		0.00		0.00		0.00	0.00	0.45	0.45	0.15	0.54	19.36	87.61	200	0.32	0.597	18.82	97.23
		MH102A	MH106A			6		0.20	16.2	370	3.43	4.11		0.00		0.11		0.00	0.06	0.20	2.99	0.99	5.16	19.36	39.96	200	0.32	0.597	14.20	73.36
	Heafy Lands	MH106A	MH103A			6		0.35	16.2	386	3.42	4.28		0.00		0.11		0.00	0.06	0.35	3.34	1.10	5.44	19.36	50.39	200	0.32	0.597	13.91	71.88
	Mall Lands	A-MH1A	A-MH2A											0.00	0.73	0.73		0.00	0.35	0.73	0.73	0.24	0.59	34.22	28.18	200	1.00	1.055	33.62	98.26
	Heafy Lands	A-MH2A	H-MH1A						0.0	0	3.80	0.00		0.00		0.73		0.00	0.35	0.00	0.73	0.24	0.59	48.39	75.17	200	2.00	1.492	47.79	98.77
	Heafy Lands	H-MH1A	MH103A	36	60			0.99	176.4	176	3.53	2.02		0.00		0.73		0.00	0.35	0.99	1.72	0.57	2.94	57.46	71.63	200	2.82	1.772	54.52	94.88
	Municipal Road	MH103A	MH104A						0.0	563	3.36	6.12		0.00		0.84		0.00	0.41	0.00	5.06	1.67	8.20	22.95	12.40	200	0.45	0.708	14.75	64.27
	Municipal Road	MH104A	MH207A						0.0	563	3.36	6.12		0.00		0.84		0.00	0.41	0.00	5.06	1.67	8.20	22.95	32.35	200	0.45	0.708	14.75	64.27

Design Parameters:

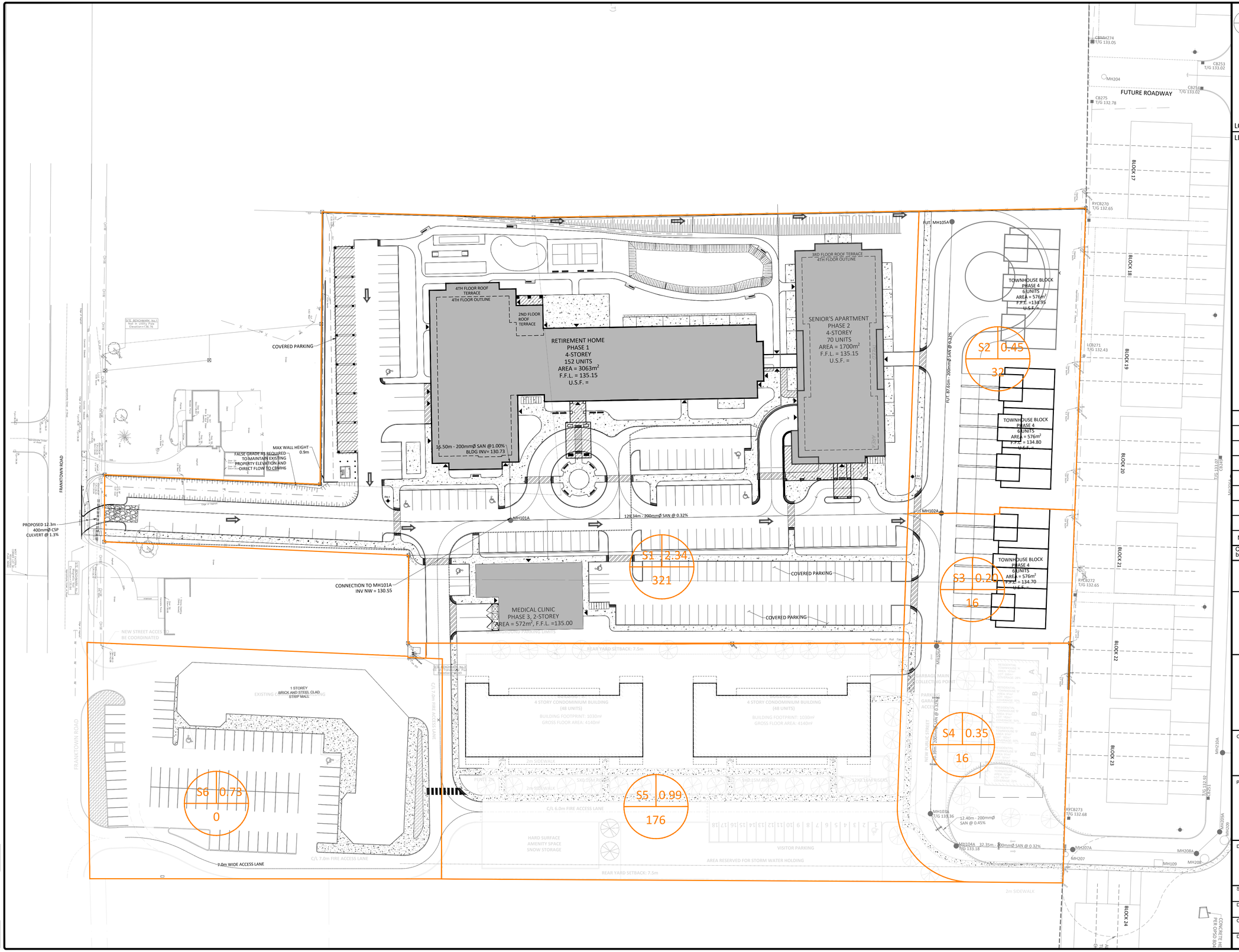
Residential			ICI Areas			
						Peak Factor
1-BED	1.4	p/p/u				
TH/SD	2.7	p/p/u	INST	28,000	L/Ha/day	1.5
2-BED	2.1	p/p/u	COM	28,000	L/Ha/day	1.5
Apt	1.8	p/p/u	IND	35,000	L/Ha/day	MOE Chart
Other	60	p/p/Ha				

Notes:
1. Mannings coefficient (n) = 0.013
2. Demand (per capita): 280 L/day
3. Infiltration allowance: 0.33 L/s/Ha
4. Residential Peaking Factor:
Harmon Formula = 1+(14/(4+P^0.5)*0.8)
where P = population in thousands

Designed: RRR
Checked: NBV
Project No.: CCO-22-0025

No.	Revision	Date
1.	ISSUED FOR REVIEW	2022-03-25
2.	ISSUED FOR REVIEW	2023-03-02
3	ISSUED FOR REVIEW	2024-03-01

Sheet No:
1 of 1



N

COLEMAN STREET SUBDIVISION

FRANKTOWN ROAD

SUBJECT PROPERTY

LOCATION PLAN

LEGEND

AREA NAME

AREA (Ha)

S1 0.23

255

POPULATION

FOR REVIEW ONLY
NOT FOR CONSTRUCTION

No.	Revisions	Date
1	ISSUED FOR REVIEW	MAR. 04, 2024

Check and verify all dimensions before proceeding with the work — Do not scale drawings

SCALE 1 : 150

0 5 10 15 Metres

McINTOSH PERRY
115 Walgreen Road, RR3, Carp, ON K0A 1L0
Tel: 613-836-2184 Fax: 613-836-3742
www.mcintoshperry.com

Stamp:

Client:

DR NEEL CHADHA
727 BUNCHBERRY WAY
OTTAWA, ON K1T 0J8

Project:

347 FRANKTOWN ROAD
CARLETON PLACE, ONTARIO

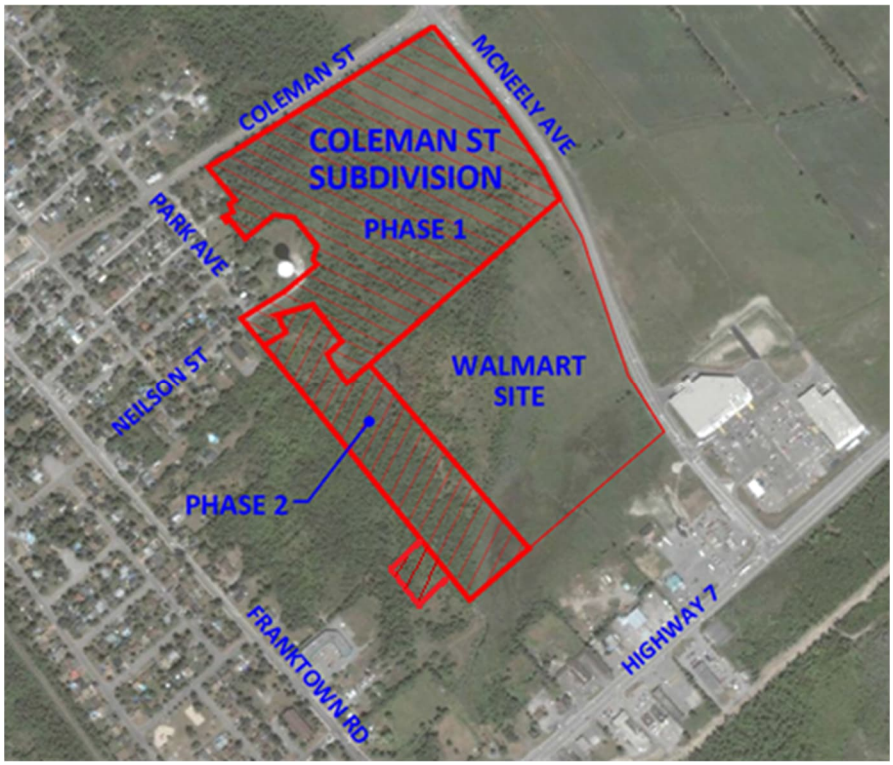
Drawing Title:

SANITARY DRAINAGE PLAN

Scale:	1:500
Drawn By:	N.V
Checked By:	R.F
Designed By:	N.V
Project Number:	CCO-22-0025
Drawing Number:	SAN

FILENAME: I:\Ottawa\03 Project - Proposals\2022 Jobs\CCO\CCO-22-0025 Chadha_347 Franktown Rd\Drawings\CCO-22-0025 Presentation.dwg
LAST SAVED: Monday, March 11, 2024 LAST SAVED BY: F. Valenti
LAST PLOTTED: Monday, March 11, 2024 7:16 PM EDT

SERVICING & STORMWATER MANAGEMENT REPORT
COLEMAN CENTRAL SUBDIVISION – PHASE 2



Project No.: CCO-18-0360-01

Prepared for:

Cavanagh Developments

Prepared by:

McIntosh Perry Consulting Engineers Ltd.
115 Walgreen Road
Carp, ON K0A 1L0

November 17, 2023

McINTOSH PERRY

Based upon this assessment, the existing sanitary sewer extending between SAN MH100c and SAN MH301 (approximately 230m) has adequate capacity to support the development of Phase 2 with remaining capacity to support commercial property C1.

See *Offsite Sanitary Sewer Design Sheet – Assessment 1* in Appendix D of this report for more details.

4.3.2 *Adequacy Assessment 2 – Full Build-Out*

The purpose of this assessment is to confirm the existing sanitary infrastructure can adequately convey flows from Coleman Central Subdivision (Phase 1 – R1b and Phase 2 – R2a) in addition to the surrounding existing developments while ensuring sufficient capacity for adjacent properties currently earmarked for development to move forward. These properties include those to the north (R1a) being developed for regular apartment dwellings and those to the west (R2c and R2d) being developed for regular and senior apartment dwellings, a retirement home, townhouse dwellings and commercial/medical use. Also included are the undeveloped parcels to the northwest which are south of Nelson Street (R2b, R2e and R2f), which are recognized as Residential District designation within the Town's Official Plan and Development Permit Bylaw. Through discussions with the Town, 293 Franktown Road (R2e) has allowed for 200 residential units versus the 60 people per hectare typically allotted for area weighted residential properties. Commercial areas C1 – C6 are also included in the assessment. Area C2 has been revised in this assessment to show a future residential development consisting of apartment units north of the existing Walmart noted as R3 in Figure 2. It shall be noted that area C4 in future buildout is directed to MH101b and includes all new and existing development fronting HWY 7 in the boundary shown. This has been done to account for the entire area being directed to the future R.O.W (ultimately directed to MH101b) as a conservative approach to ensure the upgraded sanitary sewer may accommodate such a scenario. Please see Figure 2 below for a visual of the contributing property parcels (both commercial and residential) included in the assessment.

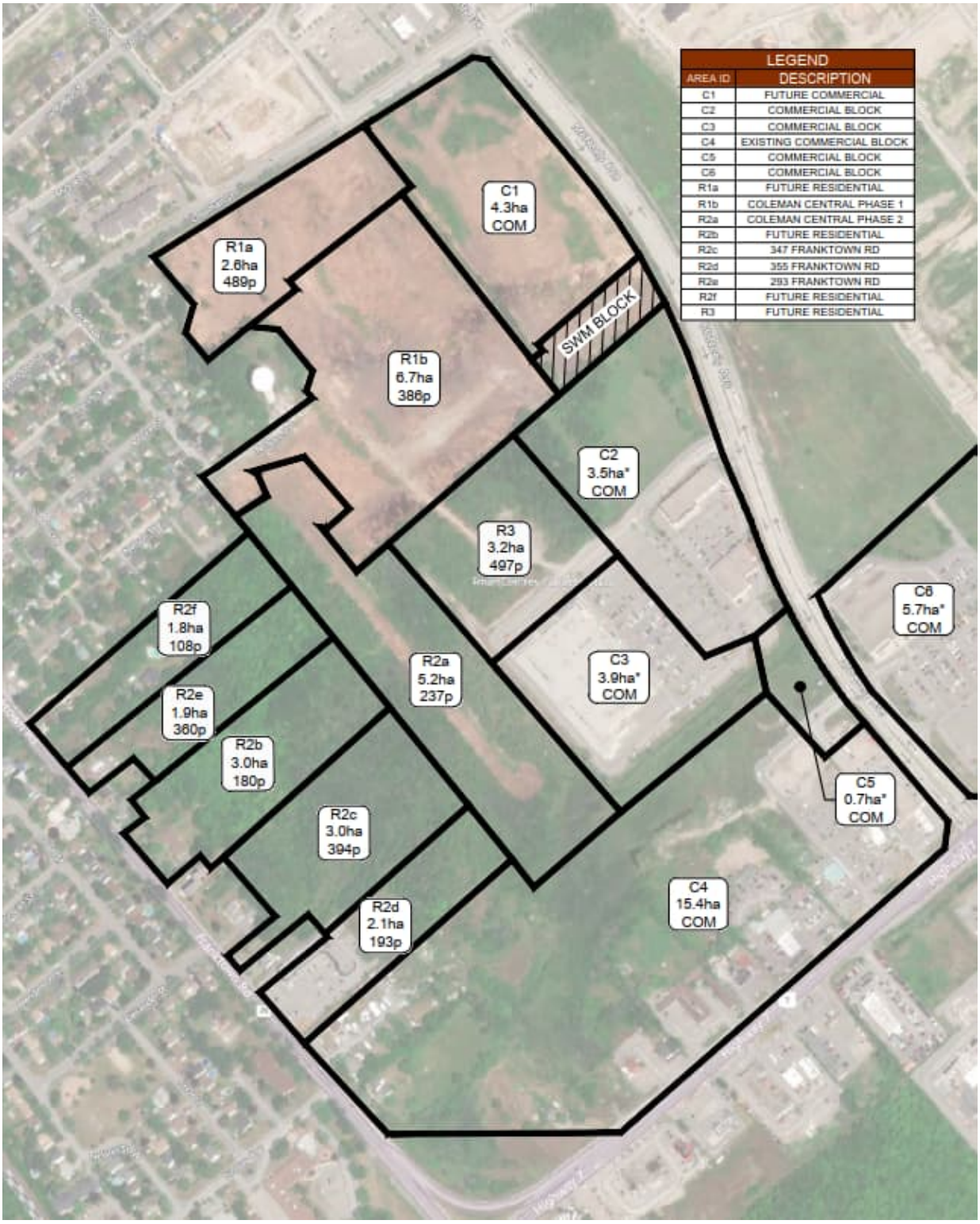


Figure 2 - Sanitary Drainage Areas

**Note – Areas marked with an asterisk have been taken from the Nu Globe Sanitary Capacity Memorandum prepared by the Corporation of the Town of Carleton Place dated Sept. 6, 2018.*

Populations for the areas have been further broken down in the Tables below:

Table 5: Population by Unit Type

Area ID	Area (ha)	Unit Types						Resulting Population
		SF	SD	TH	APT	APT (1-Bd)	APT (2-Bd)	
R2a	5.2	13	-	48	35	-	-	236.8
R2b	3.0	-	-	-	-	-	-	0
R2c	3.0	-	-	18	70	143	9	393.7
R2d	2.1	-	-	6	-	36	60	192.6
R2e	1.9	-	-		200	-		360.0
R2f	1.8	-	-	-	-	-	-	0
Total		13	0	72	305	179	69	1183.1

Area ID	Area (ha)	Unit Types						Resulting Population
		SF	SD	TH	APT	APT (1-Bd)	APT (2-Bd)	
R1a	2.6	*Population provided by town.*						489.0
R1b	6.7	35	38	61	-	-	-	386.3
R3	3.2	-	-	-	276	-	-	496.8
Total		35	38	61	276	-	-	1372.1

Table 6: Population by Area

Area ID	Area (ha)	Areas (ha)			Resulting Population
		Residential*1	Commercial	Institutional	
R2a	5.2	-	-	-	-
R2b	3.0	3.0	-	-	180.0
R2c	3.0	-	0.06	0.42	-
R2d	2.1	-	0.73	-	-
R2e	1.9	-	-	-	-
R2f	1.8	1.8	-	-	108.0
Total from Site					288.0

Table 7: Population Summary

Area ID	Area (ha)	Population by Unit Type	Population by Area	Resulting Population
R2a	5.2	236.8	0	236.8
R2b	3.0	0	180.0	180.0
R2c	3.0	393.7	0	393.7
R2d	2.1	192.6	0	192.6
R2e	1.9	360.0	0	360.0
R2f	1.8	0	108.0	108.0
Total from Site				1471.1

Notes:

- *[*1] – Residential contributing areas only shown where unit type breakdown is not available or number of units is unknown.*
- *Commercial and Institutional areas have been included as contributing flows in the design sheets however do not contribute a population. Refer to the design sheets in Appendix D.*
- *Design Populations for the table above are based on the following (taken from the City of Ottawa Sewer Design Guidelines):*
  - *Residential*
    - *SF – 3.4 p/p/u*
    - *TH/SD – 2.7 p/p/u*
    - *APT – 1.8 p/p/u*
    - *APT (1bd) – 1.4 p/p/u*
    - *APT (2bd) – 2.1 p/p/u*
    - *Area Weighted – 60 p/p/ha*

Using Figure 2, the anticipated sanitary flows for the contributing properties have been assessed. It should be noted that that commercial area C4 has been included in this assessment however, the sanitary infrastructure will not extend through the proposed Coleman Central Phase 2 development and the existing properties are currently privately serviced.

Based upon this assessment, the existing sanitary sewer extending between SAN MH101b and SAN MH301 (approximately 270m) will need to be upsized from a 300mm diameter sewer to a 375mm diameter sewer to support full build out of the additional contributing properties detailed above.

See *Offsite Sanitary Sewer Design Sheet – Assessment 2* in Appendix D of this report for more details. Details of the future pipe upgrades can also be found on drawings 107-108.

SANITARY SEWER DESIGN SHEET

PROJECT: Adequacy Assessment 2 - Full Build-Out
LOCATION: Carleton Place
CLIENT: Cavanagh Developments Ltd.

*Assumes 227 unit (489p) buildout of the Lepine development (various apartment unit sizes so this sheet adds 489p to total)

McINTOSH PERRY

LOCATION				RESIDENTIAL										ICI AREAS							INFILTRATION ALLOWANCE			FLOW	SEWER DATA					
1	2	3	4	5	6	7	8	9		10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	31	32
STREET	AREA ID	FROM MH	TO MH	UNIT TYPES						AREA	POPULATION		PEAK FACTOR	PEAK FLOW (L/s)	AREA (ha)						PEAK FLOW (L/s)	AREA (ha)		FLOW (L/s)	DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	DIA (mm)	SLOPE (%)	AVAILABLE CAPACITY	
				SF	SD	TH	APT	1BD APT	2BD APT	(ha)	IND	CUM			INSTITUTIONAL		COMMERCIAL		INDUSTRIAL			IND	CUM							L/s	(%)
															IND	CUM	IND	CUM	IND	CUM										
	R2a, R2b, R2c, R2d, R2e, R2f	102	102b	13	0	72	305	179	69	15.80	1471.1	1471.1	3.15	15.01	0.42	0.42	0.79	0.79			0.59	17.01	17.01	5.61	21.21	51.63	64.90	300	0.26	30.42	58.92
		102b	102c								0.0	1471.1	3.15	15.01		0.42		0.79				0.00	17.01	5.61	20.62	50.98	66.57	300	0.26	30.36	59.55
	C3	102c	101								0.0	1471.1	3.15	15.01		0.42	3.90	4.69			2.48	3.90	20.91	6.90	24.39	49.97	81.51	300	0.25	25.58	51.18
	R1a, R1b, R3, C1, C2		101	35	38	61	276			12.43	1372.1	1372.1	3.17	14.08			7.84	7.84			3.81	20.27	20.27	6.69	24.58						
	C5	101	101b								0.0	2843.2	2.97	27.36		0.42	0.70	13.23			6.64	0.70	41.88	13.82	47.82	49.49	112.20	300	0.24	1.67	3.37
	C4	101b	100a								0.0	2843.2	2.97	27.36		0.42	15.40	28.63			14.12	15.40	57.28	18.90	60.39	93.27	39.60	375	0.26	32.88	35.25
		100a	100c								0.0	2843.2	2.97	27.36		0.42	0.00	28.63			14.12	0.00	57.28	18.90	60.39	91.46	39.40	375	0.25	31.07	33.97
	C6	100c	100d								0.0	2843.2	2.97	27.36		0.42	5.70	34.33			16.89	5.70	62.98	20.78	65.04	79.73	62.57	375	0.19	14.69	18.43
		100d	100e								0.0	2843.2	2.97	27.36		0.42	0.00	34.33			16.89	0.00	62.98	20.78	65.04	70.84	65.10	375	0.15	5.80	8.19
		100e	100f								0.0	2843.2	2.97	27.36		0.42	0.00	34.33			16.89	0.00	62.98	20.78	65.04	87.49	69.94	375	0.23	22.45	25.66
		100f	301								0.0	2843.2	2.97	27.36		0.42	0.00	34.33			16.89	0.00	62.98	20.78	65.04	101.84	31.94	375	0.31	36.80	36.14

Design Parameters:

Residential		ICI Areas			Peak Factor
SF	3.4	INST	28,000	L/Ha/day	1.5
TH/SD	2.7	COM	28,000	L/Ha/day	1.5
APT	1.8	IND	35,000	L/Ha/day	1.5
1BD APT	1.4				
2BD APT	2.1				
Other	60				

Notes:
1. Mannings coefficient (n) = 0.013
2. Demand (per capita): 280 L/day
3. Infiltration allowance: 0.33 L/s/Ha
4. Residential Peaking Factor:
   Harmon Formula = 1+(14/(4+P^0.5)*1)
   where P = population in thousands

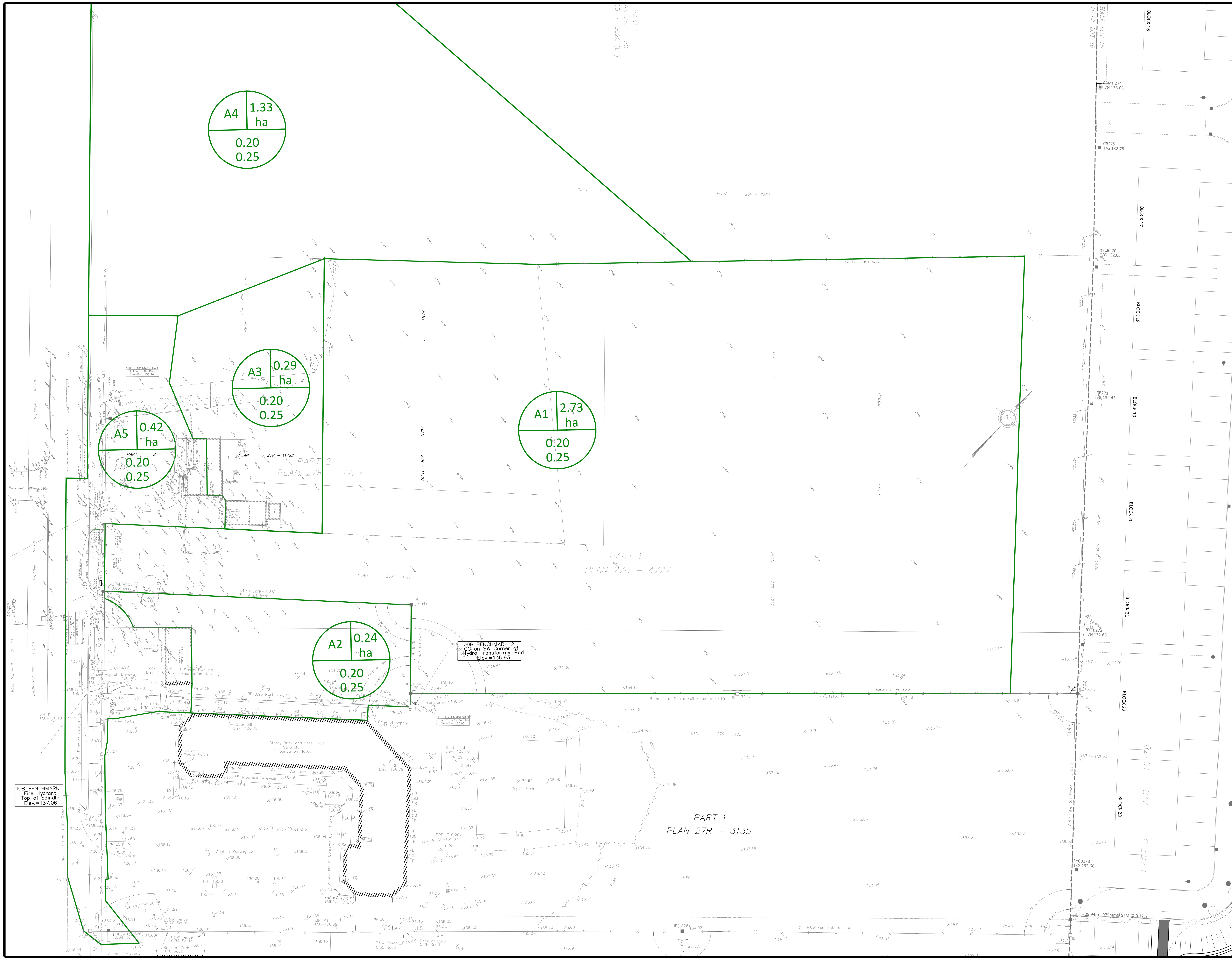
Designed: BC
Checked: CH
Project No.: CCO-18-0360-01

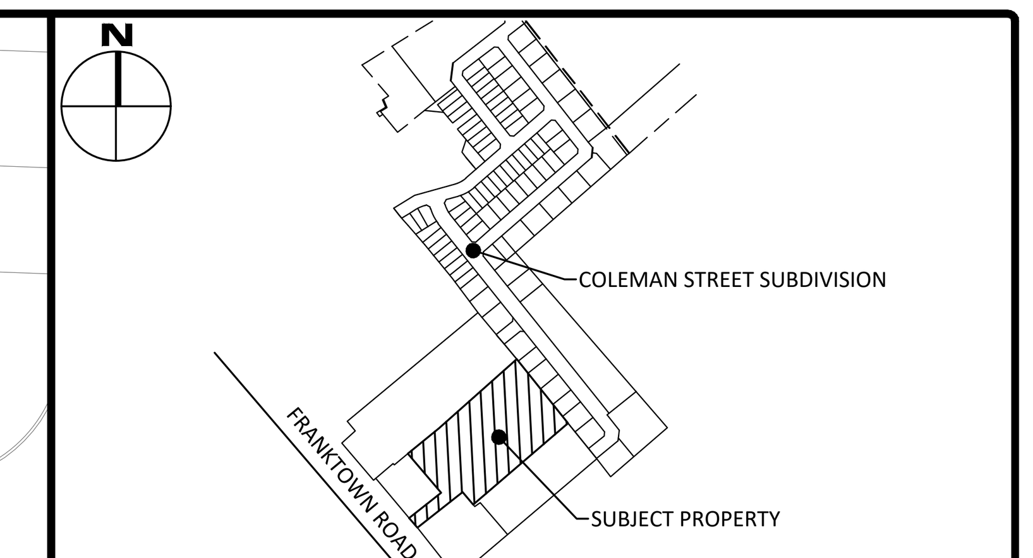
No.	Revision	Date
1	Issued For Review	2021-04-27
2	Issued For Review	2021-12.17
3	Issued For Review	2022.03.21
4	Revised as per Comments	2022.10.07
5	Revised as per Comments	2023.05.31
5	Revised as per Comments	2023.09.08

Sheet No: 1 of 1

APPENDIX E
PRE-DEVELOPMENT DRAINAGE PLAN

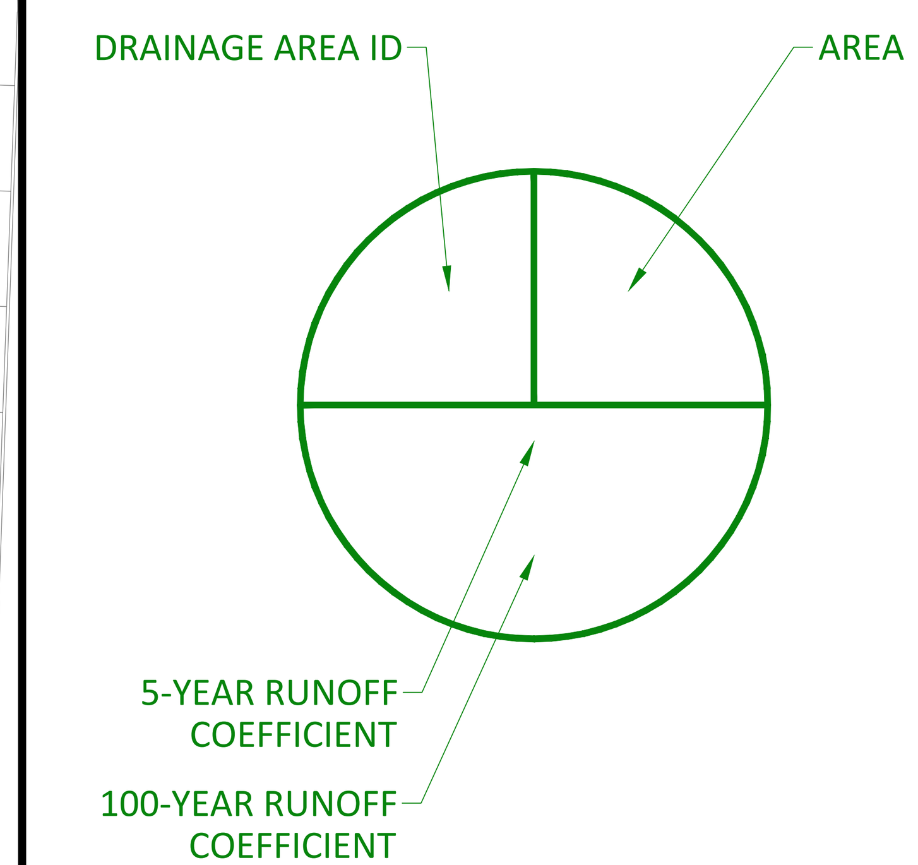
McINTOSH PERRY





LOCATION PLAN

LEGEND



FOR REVIEW ONLY
NOT FOR CONSTRUCTION

No.	Revisions	Date
4	ISSUED FOR REVIEW	MAR. 21, 2024
3	ISSUED FOR REVIEW	JUNE 20, 2022
2	ISSUED FOR REVIEW	MAR. 04, 2022
1	ISSUED FOR REVIEW	AUG. 13, 2021

Check and verify all dimensions before proceeding with the work — Do not scale drawings

SCALE 1 : 500 (0 10 20 30 40 50 Metres)

McINTOSH PERRY
egis GROUP

Stamp:

Client:
DR NEEL CHADHA
727 BUNCHBERRY WAY
OTTAWA, ON K1T 0J8

Project:
347 FRANKTOWN ROAD
CARLETON PLACE, ONTARIO

Drawing Title:
PRE-DEVELOPMENT DRAINAGE AREA PLAN

Scale: 1:500
Drawn By: N.V
Checked By: R.F
Designed By: N.V
Project Number: CCO-22-0025
Drawing Number: PRE

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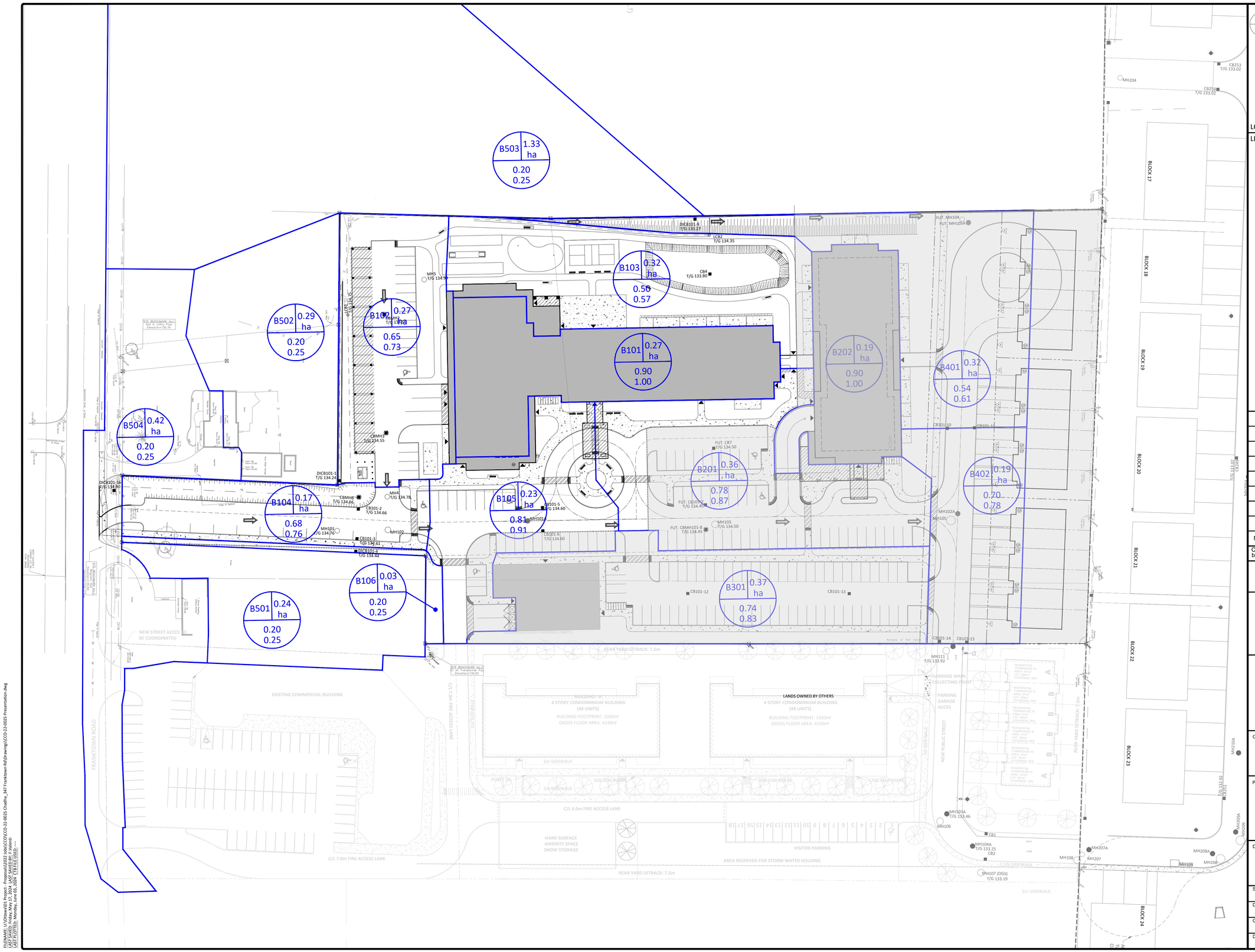
LAST PLOTTED: Thursday, March 21, 2024 CTB FILE USED: ----

APPENDIX F
POST-DEVELOPMENT DRAINAGE PLAN

McINTOSH PERRY



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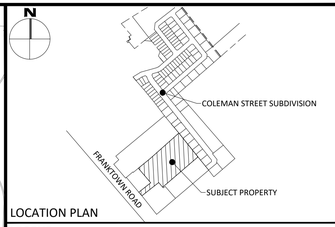

LOCATION PLAN

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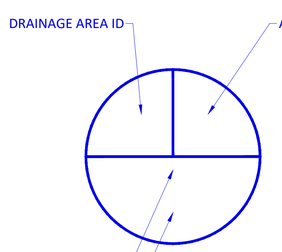

FOR REVIEW ONLY
NOT FOR CONSTRUCTION

No.	Revisions	Date
5	ISSUED FOR REVIEW	JUN. 03, 2024
4	ISSUED FOR REVIEW	MAR. 21, 2024
3	ISSUED FOR REVIEW	JUNE 20, 2022
2	ISSUED FOR REVIEW	MAR. 04, 2022
1	ISSUED FOR REVIEW	AUG. 09, 2021

Check and verify all dimensions before proceeding with the work

Do not scale drawings

SCALE 1 : 500

0 10 20 30 40 50 Metres

McINTOSH PERRY

egis GROUP

Stamp:

Client:

DR NEEL CHADHA
727 BUNCHBERRY WAY
OTTAWA, ON K1T 0J8

Project:

347 FRANKTOWN ROAD
CARLETON PLACE, ONTARIO

Drawing Title:

POST-DEVELOPMENT DRAINAGE AREA PLAN

Scale:	1:500	Project Number:	CCO-22-0025
Drawn By:	N.V		
Checked By:	R.F	Drawing Number:	POST
Designed By:	N.V		

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LAST SAVED: Friday, May 17, 2024 LAST SAVED BY: F.Valenti
LAST PLOTTED: Monday, June 03, 2024 CTB FILE USED: —

APPENDIX G
STORMWATER MANAGEMENT CALCULATIONS

McINTOSH PERRY

Pre-Development Runoff Coefficient

Drainage Area	Area (ha)	Impervious Area (m^2)	C	Gravel Area (m^2)	C	Pervious Area (m^2)	C	C_{AVG} 5-Year	C_{AVG} 100-Year	
A1	2.73	0.00	0.90	0.00	0.60	27,306.1	0.20	0.20	0.25	Development Area
A2	0.24	0.00	0.90	0.00	0.60	2,448.4	0.20	0.20	0.25	External Drainage - 349
A3	0.29	0.00	0.90	0.00	0.60	2,856.0	0.20	0.20	0.25	External Drainage - 347
A4	1.33	0.00	0.90	0.00	0.60	13,342.7	0.20	0.20	0.25	External Drainage - NW
A5	0.42	0.00	0.90	0.00	0.60	4,224.8	0.20	0.20	0.25	External Drainage - SW

Pre-Development Runoff Calculations

Drainage Area	Area (ha)	C 2/5-Year	C 100-Year	Tc (min)	I (mm/hr)			Q (L/s)		
					2-Year	5-Year	100-Year	2-Year	5-Year	100-Year
A1	2.73	0.20	0.25	10	76.8	104.2	178.6	116.61	158.19	338.87
A2	0.24	0.20	0.25	10	76.8	104.2	178.6	10.46	14.18	30.38
A3	0.29	0.20	0.25	10	76.8	104.2	178.6	12.20	16.55	35.44
A4	1.33	0.20	0.25	10	76.8	104.2	178.6	56.98	77.30	165.58
A5	0.42	0.20	0.25	10	76.8	104.2	178.6	18.04	24.48	52.43
Total	5.02							214.28	290.69	622.70

Post-Development Runoff Coefficient

Drainage Area	Area (ha)	Impervious Area (m^2)	C	Gravel Area (m^2)	C	Pervious Area (m^2)	C	C_{AVG} 2/5-Year	C_{AVG} 100-Year	
B101	0.27	2,676.00	0.90	0.00	0.60	0.00	0.20	0.90	1.00	Phase 1 Roof
B102	0.27	1,755.71	0.90	0.00	0.60	989.29	0.20	0.65	0.73	Phase 1 Parking
B103	0.32	1,388.79	0.90	0.00	0.60	1,822.21	0.20	0.50	0.57	Phase 1 Rear Yard
B104	0.17	1,178.78	0.90	0.00	0.60	548.22	0.20	0.68	0.76	Private Road (Entry)
B105	0.23	2,038.19	0.90	0.00	0.60	295.20	0.20	0.81	0.91	Phase 1 Front Parking
B106	0.03	0.00	0.90	0.00	0.60	297.73	0.20	0.20	0.25	Phase 1/3 Unrestricted
B201	0.36	2,956.80	0.90	0.00	0.60	613.70	0.20	0.78	0.87	Phase 1 & 2 Front Parking
B202	0.19	1,867.08	0.90	0.00	0.60	0.00	0.20	0.90	1.00	Phase 2 Building
B301	0.37	2,880.94	0.90	0.00	0.60	849.40	0.20	0.74	0.83	Phase 3 Bldg/Prkg
B401	0.32	1,536.66	0.90	0.00	0.60	1,671.60	0.20	0.54	0.61	Phase 4 & Unrestricted
B402	0.19	1,365.88	0.90	0.00	0.60	563.26	0.20	0.70	0.78	Phase 4 & Unrestricted
B501	0.24	0.00	0.90	0.00	0.60	2,448.53	0.20	0.20	0.25	External Drainage - 349
B502	0.29	0.00	0.90	0.00	0.60	2,855.90	0.20	0.20	0.25	External Drainage - 347
B503	1.33	0.00	0.90	0.00	0.60	13,342.70	0.20	0.20	0.25	External Drainage -NW
B504	0.42	0.00	0.90	0.00	0.60	4,221.03	0.20	0.20	0.25	External Drainage - SW

Post-Development Runoff Calculations

Drainage Area	Area (ha)	C 2/5-Year	C 100-Year	Tc (min)	I (mm/hr)			Q (L/s)		
					2-Year	5-Year	100-Year	2-Year	5-Year	100-Year
B101	0.27	0.90	1.00	10	76.8	104.2	178.6	51.42	69.76	132.84
B102	0.27	0.65	0.73	10	76.8	104.2	178.6	37.96	51.50	99.43
B103	0.32	0.50	0.57	10	76.8	104.2	178.6	34.47	46.76	91.55
B104	0.17	0.68	0.76	10	76.8	104.2	178.6	24.99	33.91	65.32
B105	0.23	0.81	0.91	10	76.8	104.2	178.6	40.43	54.84	104.84
B106	0.03	0.20	0.25	10	76.8	104.2	178.6	1.27	1.72	3.69
B201	0.36	0.78	0.87	10	76.8	104.2	178.6	59.44	80.64	154.39
B202	0.19	0.90	1.00	10	76.8	104.2	178.6	35.88	48.67	92.68
B301	0.37	0.74	0.83	10	76.8	104.2	178.6	58.99	80.02	153.55
B401	0.32	0.54	0.61	10	76.8	104.2	178.6	36.67	49.74	97.02
B402	0.19	0.70	0.78	10	76.8	104.2	178.6	28.65	38.87	74.79
B501	0.24	0.20	0.25	10	76.8	104.2	178.6	10.46	14.18	30.39
B502	0.29	0.20	0.25	10	76.8	104.2	178.6	12.20	16.54	35.44
B503	1.33	0.20	0.25	10	76.8	104.2	178.6	56.98	77.30	165.58
B504	0.42	0.20	0.25	10	76.8	104.2	178.6	18.03	24.45	52.38
Total	5.02							507.83	688.92	1,353.89

Required Restricted Flow for Areas B101-B401

Drainage Area	Area (ha)	C 5-Year	C 100-Year	Tc (min)	I (mm/hr) 5-Year	I (mm/hr) 100-Year	Q (L/s) 5-Year	Q (L/s) 100-Year
A1	2.73	0.20	0.25	10	104.2	178.6	158.19	338.87
Total	2.73							

Post-Development Restricted Runoff Calculations

Drainage Area	Unrestricted Flow (L/s)		Restricted Flow (L/s)		Storage Required (m^3)		Storage Provided (m^3)		
	5-Year	100-Year	5-Year	100-Year	5-Year	100-Year	5-Year	100-Year	
B101	69.76	132.84	3.84	3.84	67.08	150.61	70.25	160.56	Phase 1 Roof
B102	51.50	99.43	12.66	13.85	105.31	243.86	105.67	246.02	Phase 1 Parking
B103	46.76	91.55							Phase 1 Rear Yard
B104	33.91	65.32							Private Road (Entry)
B105	54.84	104.84	12.66	13.55	29.18	73.38	-	-	Phase 1 Front Parking
B106	1.72	3.69	1.72	3.69					Phase 1/3 Unrestricted
B201	80.64	154.39	18.62	19.92	42.90	108.13	-	-	Phase 1 & 2 Front Parking
B202	48.67	92.68	1.60	1.60	54.40	119.67	59.40	124.74	Phase 2 Building
B301	80.02	153.55	18.47	19.77	42.58	107.65	-	-	Phase 3 Bldg/Prkg
B401	49.74	97.02	49.74	97.02					Phase 4 & Unrestricted
B402	38.87	74.79	38.87	74.79					Phase 4 & Unrestricted
Total (Site)	556.44	1070.10	158.19	248.03	341.45	803.31	235.32	531.32	
B501	14.18	30.39	14.18	30.39					External Drainage - 349
B502	16.54	35.44	16.54	35.44					External Drainage - 347
B503	77.30	165.58	77.30	165.58					External Drainage -NW
Total (Site + Collected External)	664.47	1301.51	266.21	479.44	341.45	803.31	235.32	531.32	
B504	24.45	52.38	24.45	52.38					External Drainage - SW
Total (Franktown)	24.45	52.38	24.45	52.38					

Note: Available storage for areas B105, B201 & B301 to be determined during detailed design.

Storage Requirements for Area B101

5-Year Storm Event

Tc (min)	I (mm/hr)	B101 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
A3					
			(L/s)	(L/s)	(m^3)
10	104.2	69.76	3.84	65.92	39.55
20	70.3	47.04	3.84	43.20	51.83
30	53.9	36.11	3.84	32.27	58.08
40	44.2	29.58	3.84	25.74	61.78
50	37.7	25.21	3.84	21.37	64.11
60	32.9	22.06	3.84	18.22	65.58
70	29.4	19.67	3.84	15.83	66.47
80	26.6	17.78	3.84	13.94	66.93
90	24.3	16.26	3.84	12.42	67.08
80	26.6	17.78	3.84	13.94	66.93
90	24.3	16.26	3.84	12.42	67.08
100	22.4	15.00	3.84	11.16	66.97

Maximum Storage Required 5-Year (m^3) =	67.08

100-Year Storm Event

Tc (min)	I (mm/hr)	B101 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
120	32.9	24.47	3.84	20.63	148.55
130	30.9	22.99	3.84	19.15	149.34
140	29.2	21.69	3.84	17.85	149.91
150	27.6	20.54	3.84	16.70	150.30
160	26.2	19.52	3.84	15.68	150.53
170	25.0	18.61	3.84	14.77	150.61
180	23.9	17.78	3.84	13.94	150.57
190	22.9	17.03	3.84	13.19	150.42

Maximum Storage Required 100-Year (m^3) =	150.61

5-Year Storm Event

Roof Storage			
Location	Area*	Depth	Volume (m^3)
Roof	2007.00	0.035	70.25
		Total	70.25

Storage Available (m^3) =	70.25
Storage Required (m^3) =	67.08

100-Year Storm Event

Roof Storage			
Location	Area*	Depth	Volume (m^3)
Roof	2007.00	0.080	160.56
		Total	160.56

Storage Available (m^3) =	160.56
Storage Required (m^3) =	150.61

**Storage area is 75% of the total roof area*

Roof Drain Flow (B101)

Roof Drains Summary		
Type of Control Device	Watts Drainage - Accutrol Weir	
Number of Roof Drains	12	
	5-Year	100-Year
Rooftop Storage (m^3)	70.25	160.56
Storage Depth (m)	0.035	0.080
Flow (Per Roof Drain) (L/s)	0.32	0.32
Total Flow (L/s)	3.84	3.84

Flow Rate Vs. Build-Up (One Weir, Closed Position)	
Depth (mm)	Flow (L/s)
15	0.19
20	0.25
25	0.32
30	0.32
35	0.32
40	0.32
45	0.32
50	0.32
55	0.32

*Roof Drain model to be Accutrol Weirs, See attached sheets

*Roof Drain Flow information taken from Watts Drainage website

CALCULATING ROOF FLOW EXAMPLES

2 roof drains during a 5 year storm
elevation of water = 30mm
Flow leaving 2 roof drains = (2 x 0.36 L/s) = 0.72 L/s

2 roof drains during a 100 year storm
elevation of water = 45mm
Flow leaving 2 roof drains = (2 x 0.54 L/s) = 1.08 L/s

	Roof Drain Flow		
	Flow (l/s)	Storage Depth (mm)	Drains Flow (l/s)
	0.19	15	2.28
	0.25	20	3.00
	0.32	25	3.84
	0.32	30	3.84
5-Year	0.32	35	3.84
	0.32	40	3.84
	0.32	45	3.84
	0.32	50	3.84
	0.32	55	3.84
	0.32	60	3.84
	0.32	65	3.84
	0.32	70	3.84
	0.32	75	3.84
100-Year	0.32	80	3.84
	0.32	85	3.84
	0.32	90	3.84
	0.32	95	3.84
	0.32	100	3.84
	0.32	105	3.84
	0.32	110	3.84
	0.32	115	3.84
	0.32	120	3.84
	0.32	125	3.84
	0.32	130	3.84
	0.32	135	3.84
	0.32	140	3.84
	0.32	145	3.84
	0.32	150	3.84

Note: The flow leaving through a restricted roof drain is based on flow vs. head information

Storage Requirements for Areas B102-B104

5-Year Storm Event

Tc (min)	I (mm/hr)	B102-B104 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
30	53.9	68.41	12.66	55.75	100.34
35	48.5	61.54	12.66	48.88	102.66
40	44.2	56.05	14.38	41.67	100.00
45	40.6	51.54	12.66	38.88	104.97
50	37.7	47.76	12.66	35.10	105.31
55	35.1	44.55	12.66	31.89	105.25
60	32.9	41.79	12.66	29.13	104.86
65	31.0	39.38	12.66	26.72	104.20
70	29.4	37.26	12.66	24.60	103.31

Maximum Storage Required 5-Year (m^3) =	105.31

100-Year Storm Event

Tc (min)	I (mm/hr)	B102-B104 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
70	49.8	71.47	13.85	57.62	241.99
75	47.3	67.83	13.85	53.98	242.91
80	45.0	64.58	13.85	50.73	243.50
85	43.0	61.65	13.85	47.80	243.80
90	41.1	59.01	13.85	45.16	243.86
95	39.4	56.60	13.85	42.75	243.70
100	37.9	54.40	13.85	40.55	243.33

Maximum Storage Required 100-Year (m^3) =	243.86

5-Year Storm Event Storage Summary

Water Elev. (m) =		134.16		
T/G	INV. (out)	Head (m)	Depth (m)	Volume (m^3)
133.80	131.58	2.35	0.36	105.7

Storage Available (m^3) =	105.7
Storage Required (m^3) =	105.3

*Storage Calculated in AutoCAD

100-Year Storm Event Storage Summary

Water Elev. (m) =		134.47		
T/G	INV. (out)	Head (m)	Depth (m)	Volume (m^3)
133.80	131.58	2.66	0.67	246.0

Storage Available (m^3) =	246.0
Storage Required (m^3) =	243.9

*Storage Calculated in AutoCAD

Storage Requirements for Area B105

5-Year Storm Event

Tc (min)	I (mm/hr)	B105 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	104.2	54.84	12.66	42.18	25.31
15	83.6	43.98	12.66	31.32	28.19
20	70.3	36.98	12.66	24.32	29.18
25	60.9	32.05	12.66	19.39	29.09
30	53.9	28.39	12.66	15.72	28.30
35	48.5	25.54	12.66	12.88	27.04
40	44.2	23.26	12.66	10.60	25.43
45	40.6	21.39	12.66	8.72	23.56
50	37.7	19.82	12.66	7.16	21.48

Maximum Storage Required 5-Year (m^3) =	29.18

100-Year Storm Event

Tc (min)	I (mm/hr)	B105 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
20	120.0	70.43	13.55	56.88	68.26
25	103.8	60.97	13.55	47.42	71.14
30	91.9	53.94	13.55	40.39	72.71
35	82.6	48.48	13.55	34.94	73.37
40	75.1	44.12	13.55	30.57	73.38
45	69.1	40.54	13.55	26.99	72.89
50	64.0	37.55	13.55	24.00	72.01

Maximum Storage Required 100-Year (m^3) =	73.38

5-Year Storm Event Storage Summary

Storage Required (m^3) =	29.2

100-Year Storm Event Storage Summary

Storage Required (m^3) =	73.4

Storage Requirements for Area B201

5-Year Storm Event

Tc (min)	I (mm/hr)	B201 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	104.2	80.64	18.62	62.02	37.21
15	83.6	64.67	18.62	46.05	41.45
20	70.3	54.37	18.62	35.75	42.90
25	60.9	47.13	18.62	28.51	42.77
30	53.9	41.74	18.62	23.12	41.62
35	48.5	37.55	18.62	18.93	39.76
40	44.2	34.19	18.62	15.58	37.39
45	40.6	31.44	18.62	12.83	34.64

Maximum Storage Required 5-Year (m^3) =	42.90

100-Year Storm Event

Tc (min)	I (mm/hr)	B201 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
30	91.9	79.43	19.92	59.51	107.13
35	82.6	71.40	19.92	51.48	108.11
40	75.1	64.97	19.92	45.06	108.13
45	69.1	59.70	19.92	39.79	107.42
50	64.0	55.30	19.92	35.38	106.14
55	59.6	51.55	19.92	31.64	104.40
60	55.9	48.33	19.92	28.41	102.28

Maximum Storage Required 100-Year (m^3) =	108.13

5-Year Storm Event Storage Summary

Storage Required (m^3) =	42.9

100-Year Storm Event Storage Summary

Storage Required (m^3) =	108.1

Storage Requirements for Area B202

5-Year Storm Event

Tc (min)	I (mm/hr)	B202 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
120	19.5	9.09	1.60	7.49	53.96
125	18.9	8.81	1.60	7.21	54.08
130	18.3	8.55	1.60	6.95	54.18
135	17.8	8.30	1.60	6.70	54.26
140	17.3	8.07	1.60	6.47	54.32
145	16.8	7.85	1.60	6.25	54.36
150	16.4	7.64	1.60	6.04	54.39
155	15.9	7.45	1.60	5.85	54.40
160	15.6	7.27	1.60	5.67	54.40
165	15.2	7.09	1.60	5.49	54.38

Maximum Storage Required 5-Year (m^3) =	54.40

100-Year Storm Event

Tc (min)	I (mm/hr)	B202 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
285	16.6	8.60	1.60	7.00	119.62
290	16.3	8.48	1.60	6.88	119.65
295	16.1	8.36	1.60	6.76	119.66
300	15.9	8.25	1.60	6.65	119.67
305	15.7	8.14	1.60	6.54	119.67
310	15.5	8.03	1.60	6.43	119.67
315	15.3	7.93	1.60	6.33	119.66
320	15.1	7.83	1.60	6.23	119.64

Maximum Storage Required 100-Year (m^3) =	119.67

5-Year Storm Event

Roof Storage			
Location	Area*	Depth	Volume (m^3)
Roof	1188.00	0.050	59.40
		Total	59.40

Storage Available (m^3) =	59.40
Storage Required (m^3) =	54.40

100-Year Storm Event

Roof Storage			
Location	Area*	Depth	Volume (m^3)
Roof	1188.00	0.105	124.74
		Total	124.74

Storage Available (m^3) =	124.74
Storage Required (m^3) =	119.67

**Storage area is 75% of the total roof area*

Roof Drain Flow (B202)

Roof Drains Summary		
Type of Control Device	Watts Drainage - Accutrol Weir	
Number of Roof Drains	5	
	5-Year	100-Year
Rooftop Storage (m^3)	59.40	124.74
Storage Depth (m)	0.050	0.105
Flow (Per Roof Drain) (L/s)	0.32	0.32
Total Flow (L/s)	1.60	1.60

Flow Rate Vs. Build-Up (One Weir, Closed Position)	
Depth (mm)	Flow (L/s)
15	0.19
20	0.25
25	0.32
30	0.32
35	0.32
40	0.32
45	0.32
50	0.32
55	0.32

*Roof Drain model to be Accutrol Weirs, See attached sheets

*Roof Drain Flow information taken from Watts Drainage website

CALCULATING ROOF FLOW EXAMPLES

2 roof drains during a 5 year storm
elevation of water = 30mm
Flow leaving 2 roof drains = (2 x 0.36 L/s) = 0.72 L/s

2 roof drains during a 100 year storm
elevation of water = 45mm
Flow leaving 2 roof drains = (2 x 0.54 L/s) = 1.08 L/s

	Roof Drain Flow		
	Flow (l/s)	Storage Depth (mm)	Drains Flow (l/s)
	0.19	15	0.95
	0.25	20	1.25
	0.32	25	1.60
	0.32	30	1.60
	0.32	35	1.60
	0.32	40	1.60
	0.32	45	1.60
5-Year	0.32	50	1.60
	0.32	55	1.60
	0.32	60	1.60
	0.32	65	1.60
	0.32	70	1.60
	0.32	75	1.60
	0.32	80	1.60
	0.32	85	1.60
	0.32	90	1.60
	0.32	95	1.60
	0.32	100	1.60
100-Year	0.32	105	1.60
	0.32	110	1.60
	0.32	115	1.60
	0.32	120	1.60
	0.32	125	1.60
	0.32	130	1.60
	0.32	135	1.60
	0.32	140	1.60
	0.32	145	1.60
	0.32	150	1.60

Note: The flow leaving through a restricted roof drain is based on flow vs. head information

5-Year Storm Event

Tc (min)	I (mm/hr)	B301 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	104.2	80.02	18.47	61.55	36.93
15	83.6	64.18	18.47	45.70	41.13
20	70.3	53.96	18.47	35.48	42.58
25	60.9	46.77	18.47	28.30	42.45
30	53.9	41.42	18.47	22.94	41.30
35	48.5	37.26	18.47	18.79	39.46
40	44.2	33.94	18.47	15.46	37.11
45	40.6	31.20	18.47	12.73	34.37

Maximum Storage Required 5-Year (m^3) =	42.58

100-Year Storm Event

Tc (min)	I (mm/hr)	B301 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
30	91.9	79.00	19.77	59.23	106.62
35	82.6	71.01	19.77	51.25	107.61
40	75.1	64.62	19.77	44.85	107.65
45	69.1	59.38	19.77	39.61	106.95
50	64.0	55.00	19.77	35.23	105.69
55	59.6	51.27	19.77	31.51	103.97
60	55.9	48.07	19.77	28.30	101.88

Maximum Storage Required 100-Year (m^3) =	107.65

5-Year Storm Event Storage Summary

Storage Required (m^3) =	42.6

100-Year Storm Event Storage Summary

Storage Required (m^3) =	107.6

STORM SEWER DESIGN SHEET

PROJECT: CCO-22-0025
LOCATION: 347 Franktown
CLIENT: Dr Neel Chadha

McINTOSH PERRY

LOCATION				CONTRIBUTING AREA (ha)				RATIONAL DESIGN FLOW							SEWER DATA							
1	2	3	4	5	6	7	8	9	10	11	14	17	18	19	20	21	22	23	25	26	27	28
Phase	AREA ID	FROM MH	TO MH	C-VALUE	AREA	INDIV AC	CUMUL AC	INLET (min)	TIME IN PIPE	TOTAL (min)	i (100) (mm/hr)	100yr PEAK FLOW (L/s)	FIXED FLOW (L/s)	DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	PIPE SIZE (mm) DIA	PIPE SIZE (mm) W	SLOPE (%)	VELOCITY (m/s)	AVAIL CAP (5yr) (L/s)	AVAIL CAP (5yr) (%)
	B502	DICB101-1	MH101	0.25	0.29	0.07	0.07	10.00	0.17	10.17	178.56	35.44		35.44	48.39	15.06	200		2.00	1.492	12.95	26.76%
	B106 + B501	DICB101-4	MH101	0.25	0.27	0.07	0.07	10.00	0.10	10.10	178.56	34.08		34.08	48.39	8.65	200		2.00	1.492	14.31	29.57%
External Drainage - 347 & 349 Franktown		MH101	MH102				0.14	10.17	0.18	10.35	177.04	68.93		68.93	100.88	15.22	300		1.00	1.383	31.95	31.67%
	B103	CB4	MH5	0.57	0.32	0.18	0.18	10.00	1.58	11.58	178.56	91.55		91.55	148.72	85.93	450		0.25	0.906	57.16	38.44%
		MH5	CBMH2				0.18	11.58	0.29	11.87	165.29	84.75		84.75	148.72	15.90	450		0.25	0.906	63.97	43.01%
	B102	CBMH2	CBMH3	0.73	0.27	0.20	0.38	11.87	0.59	12.47	163.07	174.42		174.42	224.33	35.64	525		0.25	1.004	49.91	22.25%
		CBMH3	MH4				0.38	12.47	0.32	12.78	158.78	169.82		169.82	224.33	19.21	525		0.25	1.004	54.50	24.30%
	B104	CB101-3	CB101-2	0.76	0.17	0.13	0.13	10.00	0.09	10.09	178.56	65.32		65.32	87.74	9.75	250		2.00	1.731	22.42	25.55%
		CB101-2	CBMH6				0.13	10.09	0.03	10.12	177.71	65.01		65.01	87.74	3.15	250		2.00	1.731	22.73	25.91%
		CBMH6	MH4				0.13	10.12	0.08	10.21	177.43	64.90		64.90	87.74	8.54	250		2.00	1.731	22.83	26.02%
Restricted Runoff (B102-B104)		MH4	MH102			0.00	0.52	12.78	0.09	12.88	156.57	224.73	13.85	13.85	297.43	9.97	450		1.00	1.812	283.58	95.34%
Restricted Roof Flow (Phase 1)	B101	Roof	Prop 600mm	1.00	0.27	0.27	0.27	10.00	0.24	10.24	178.56	132.84	3.84	3.84	62.04	17.50	250		1.00	1.224	58.20	93.81%
Restricted Runoff - B105	B105	CB101-5	CB101-6	0.91	0.23	0.21	0.21	10.00	0.06	10.06	178.56	104.84		104.84	142.67	7.00	300		2.00	1.955	37.83	26.52%
		CB101-6	Prop 600mm				0.21	10.06	0.02	10.08	178.02	104.52	13.55	13.55	142.67	2.43	300		2.00	1.955	129.12	90.50%
Restricted Runoff (B101-B105)		MH102	MH103				1.00	12.88	2.07	14.95	155.94	431.40	31.24	31.24	230.96	98.38	600		0.13	0.791		
Unrestricted Runoff (B501+B502)							0.14	12.88	2.07	14.95	155.94	60.72		60.72	230.96	98.38	600		0.13	0.791		
Total							1.14	12.88	2.07	14.95	155.94			91.95	230.96	98.38	600		0.13	0.79	139.00	60.19%
Restricted Runoff - B201	B201	CB7	CB101-7	0.87	0.36	0.31	0.31	10.00	0.18	10.18	178.56	154.39		154.39	182.91	17.22	375		1.00	1.604	28.52	15.59%
		CB101-7	CBMH101-8				0.31	10.18	0.07	10.25	176.94	152.99		152.99	182.91	7.00	375		1.00	1.604	29.92	16.36%
		CBMH101-8	MH103				0.31	10.25	0.03	10.28	176.29	152.43	19.92	19.92	182.91	3.13	375		1.00	1.604	162.99	89.11%
Restricted Roof Flow (Phase 2)	B202	Roof	Prop 600mm	1.00	0.19	0.19	0.19	10.00	0.22	10.22	178.56	92.68	1.60	1.60	62.04	16.00	250		1.00	1.224	60.44	97.42%
Restricted Runoff (B1+B2)		MH103	MH105				1.49	14.95	1.49	16.44	143.18	594.24	52.76	52.76	230.96	70.93	600		0.13	0.791		
Unrestricted Runoff (B501+B502)							0.14	14.95	1.49	16.44	143.18	55.75		55.75	230.96	70.93	600		0.13	0.791		
Total							1.63	14.95	1.49	16.44	143.18			108.51	230.96	70.93	600		0.13	0.791	122.45	53.02%
External Drainage (NW)	B503	DICB101-9	MH104	0.25	1.33	0.33	0.33	10.00	1.05	11.05	178.56	165.58		165.58	210.32	80.39	450		0.50	1.281	44.74	21.27%
Phase 4 Unrestricted	B401	CB101-11	CB101-10	0.61	0.32	0.20	0.20	10.00	0.08	10.08	178.56	97.02		97.02	123.55	8.17	300		1.50	1.693	26.53	21.47%
		CB101-10	Prop 675				0.20	10.08	0.02	10.10	177.83	96.63		96.63	123.55	2.31	300		1.50	1.693	26.93	21.80%
Phase 4 + External Drainage		MH104	MH105				0.53	11.05	1.95	12.99	169.53	249.33		249.33	290.85	92.02	675		0.11	0.787	41.52	14.27%
Phase 3	B301	CB101-12	CB101-13	0.83	0.37	0.31	0.31	10.00	0.90	10.90	178.56	153.55		153.55	200.65	48.54	525		0.20	0.898	47.10	23.47%
		CB101-13	Prop 825mm				0.31	10.90	0.55	11.45	170.72	146.81	19.77	19.77	200.65	29.74	525		0.20	0.898	180.88	90.15%
Phase 4 Unrestricted	B402	CB101-15	CB101-14	0.78	0.19	0.15	0.15	10.00	0.07	10.07	178.56	97.02		97.02	142.67	8.16	300		2.00	1.955	45.65	31.99%
		CB101-14	Prop 825mm				0.15	10.07	0.02	10.09	177.93	96.68		96.68	142.67	2.09	300		2.00	1.955	45.99	32.24%
Restricted Runoff (B1-B3)		MH105	MH111				1.80	16.44	0.76	17.20	135.33	677.99	72.52	72.52	473.55	39.19	825		0.10	0.858		
Unrestricted Runoff (B4 + B5)							0.82	16.44	0.76	17.20	135.33	308.39		308.39	473.55	39.19	825		0.10	0.858		
Total							2.62	16.44	0.76	17.20	135.33			380.92	473.55	39.19	825		0.10	0.86	92.63	19.56%
Restricted Runoff		MH111	MH106				1.80	17.20	0.86	18.06	131.68	659.71	72.52	72.52	654.22	51.39	900		0.12	0.996		
Unrestricted Runoff							0.82	17.20	0.86	18.06	131.68	300.08		300.08	654.22	51.39	900		0.12	0.996		
Total							2.62	17.20	0.86	18.06	131.68			372.60	654.22	51.39	900		0.12	1.00	281.62	43.05%
Restricted Runoff		MH106	MH107				1.80	18.06	0.31	18.38	127.81	640.33	72.52	72.52	809.89	19.71	975		0.12	1.051		
Unrestricted Runoff	B4 (Heafey)			0.64	0.32	0.20	1.02	18.06	0.31	18.38	127.81	364.03		364.03	809.89	19.71	975		0.12	1.051		
Total							2.83	18.06	0.31	18.38	127.81			436.56	809.89	19.71	975		0.12	1.05	373.33	46.10%
Restricted Runoff	B1-B3 (Heafey)	MH107	MH108	0.78	1.58	1.23	3.04	18.38	0.46	18.84	126.46	1,067.29	207.63	207.63	809.89	29.11	975		0.12	1.051		
Unrestricted Runoff							1.02	18.38	0.46	18.84	126.46	360.20		360.20	809.89	29.11	975		0.12	1.051		
Total							4.06	18.38	0.46	18.84	126.46			567.83	809.89	29.11	975		0.12	1.05	242.06	29.89%

Restricted Runoff		MH108	MH109				3.04	18.84	0.45	19.29	124.53	1,051.00	207.63	207.63	809.89	28.56	975		0.12	1.051		
Unrestricted Runoff							1.02	18.84	0.45	19.29	124.53	354.70		354.70	809.89	28.56	975		0.12	1.051		
Total							4.06	18.84	0.45	19.29	124.53			562.33	809.89	28.56	975		0.12	1.05	247.56	30.57%
Restricted Runoff		MH109	MH110				3.04	19.29	0.56	19.85	122.70	1,035.55	207.63	207.63	784.83	39.10	525	x3	0.34	1.171		
Unrestricted Runoff							1.02	19.29	0.56	19.85	122.70	349.49		349.49	784.83	39.10	525	x3	0.34	1.171		
Total							4.06	19.29	0.56	19.85	122.70			557.12	784.83	39.10	525	x3	0.34	1.17	227.71	29.01%
Restricted Runoff		MH110	Headwall				3.04	19.85	0.32	20.17	120.53	1,017.23	207.63	207.63	784.83	22.62	525	x3	0.34	1.171		
Unrestricted Runoff							1.02	19.85	0.32	20.17	120.53	343.31		343.31	784.83	22.62	525	x3	0.34	1.171		
Total							4.06	19.85	0.32	20.17	120.53			550.94	784.83	22.62	525	x3	0.34	1.17	233.89	29.80%

Definitions:
Q = 2.78CiA, where:
Q = Peak Flow in Litres per Second (L/s)
A = Area in Hectares (ha)
i = Rainfall intensity in millimeters per hour (mm/hr)
[i = 998.071 / (TC+6.053)^0.814] 5 YEAR
[i = 1174.184 / (TC+6.014)^0.816] 10 YEAR
[i = 1735.688 / (TC+6.014)^0.820] 100 YEAR

Notes:
1. Mannings coefficient (n) = 0.013

Designed:
FV

Checked:
AG

Project No.:
CCO-22-0402

No.	Revision	Date
1.	ISSUED FOR REVIEW	2022-03-25
2	ISSUED FOR REVIEW	2022-06-20
3	ISSUED FOR REVIEW	2024-03-19
4	ISSUED FOR REVIEW	2024-06-03

Date:
2015-05-21

Sheet No:
1 of 1