



Enhancing our communities




140 Mountain Road

FUNCTIONAL SERVICING REPORT

2596482 Ontario Ltd.

Document Control

File:	Prepared by:	Prepared for:
121036-1	Tatham Engineering Limited 115 Sandford Fleming Drive, Suite 200 Collingwood, Ontario L9Y 5A6 T 705-444-2565 tathameng.com	2596482 Ontario Ltd. 7429 Highway 26, Box 880 Stayner, Ontario L0M 1S0
Date:		
October 17, 2023		

Authored by:	Reviewed by:
	
Kevin Sansom, B.A.Sc., P.Eng. Senior Engineer	

Disclaimer	Copyright
The information contained in this document is solely for the use of the Client identified on the cover sheet for the purpose for which it has been prepared and Tatham Engineering Limited undertakes no duty to or accepts any responsibility to any third party who may rely upon this document.	This document may not be used for any purpose other than that provided in the contract between the Owner/Client and the Engineer nor may any section or element of this document be removed, reproduced, electronically stored or transmitted in any form without the express written consent of Tatham Engineering Limited.

Issue	Date	Description
1	November 28, 2022	Draft for Review
2	December 20, 2022	First Submission
3	October 17, 2023	Town Comments

Document Contents

1	Introduction	1
1.1	Site Description and Surrounding Use	1
1.2	Objective	1
2	Proposed Development	3
3	Sanitary Servicing	4
3.1	Existing Sanitary Sewage System	4
3.2	Proposed Sanitary Sewage System	4
4	Water Supply & Distribution	6
4.1	Existing Water Servicing	6
4.2	Proposed Water Servicing	6
5	Stormwater Management	7
6	Traffic Impact Assessment	8
7	Utilities	9
8	Summary	10

Appendices

- Appendix A: Sanitary Servicing Analysis
- Appendix B: Water Demand Calculations
- Appendix C: Utilities Information



1 Introduction

Tatham Engineering Limited (Tatham) has been retained by 2596482 Ontario Ltd. (the Owner) to prepare a Functional Servicing Report (FSR) in support of the proposed development at 140 Mountain Road in the Town of Collingwood, County of Simcoe. Currently the property is undeveloped and heavily vegetated with much of the site located within the Nottawasaga Valley Conservation Authority (NVCA) regulated area. This report presents an overview of the proposed servicing strategy for the development of the site, including sanitary sewage collection, water supply and distribution, and utility distribution (electrical, telephone, cable TV and gas). Additional servicing components such as transportation and stormwater management assessments have been completed under separate cover by Tatham.

1.1 SITE DESCRIPTION AND SURROUNDING USE

The subject property proposed for development is approximately 2.02 ha and fronts onto Mountain Road to the north, with 10th Line 575 m to the west and Black Ash Creek 325 m to the east. The property is zoned industrial (M5). The subject property is bounded by Mountain Road and undeveloped industrial land to the north and east, and vacant industrial land to the west (currently under construction), and Taylors Creek, a tributary to Black Ash Creek, to the south. Currently there is no existing site access from Mountain Road. The terrain on the subject property has an approximate slope ranging from 2.0% - 3.5% from southwest to northeast corner.

The existing topography, ground cover, and drainage patterns were obtained through a review of available plans and investigations including geotechnical investigations on either side of the property at 120 Mountain Road and 180 Mountain Road which indicate soils in the immediate area consist of very loose fine sand, silty sand, stiff silty clay till, silty sand till and dense fine to coarse sand. The investigations also revealed a relatively shallow silty clay layer which is not conducive to infiltration. The investigations also indicated that some of the existing soils will be highly susceptible to frost and significant loads but could be addressed by either temporarily aerating or wetting depending on the situation. Groundwater was encountered at elevations between 0.5m to 2.6 m below the surface. A permit to take water is not anticipated.

A detailed topographic and legal survey was completed by Zubek, Emo, Patten & Thomson Ltd. in spring 2012 to confirm existing site features and elevations.

1.2 OBJECTIVE

The objective of this report is to determine the services that are available at the subject property and demonstrate how the proposed development will use these services. It will confirm the



available capacity of the services and outline how the proposed development can access the services without adversely effecting surrounding properties in compliance with Town and Provincial Regulations.



2 Proposed Development

The proposed development is as shown on the Engineering Drawings included in the Site Plan application package. This development includes the construction of a proposed multi-unit industrial / commercial building and associated parking areas and on-site amenity areas as well as two stormwater management facilities (SMWF) adjacent to each of the site entrances.

The proposed development will be accessed from two proposed entrances along its east and west property lines that connect the site to Mountain Road. The proposed development consists of one multi-unit building potentially containing 36 individual units with a total floor area of 6,475 m², two paved parking areas complete with access lanes, a rear loading area, sidewalks, and two amenity and waste collection areas with a total combined paved area of 7,740 m². The remainder of the development area is to be landscaped or treed. A 414 m² area at the south portion of the subject property will remain undisturbed to maintain a treed buffer between the site and the Black Ash Creek tributary to the south.



3 Sanitary Servicing

3.1 EXISTING SANITARY SEWAGE SYSTEM

The existing sanitary sewer system was confirmed through the review the *Town of Collingwood MSP*, 2019, by Cole Engineering and the *Preliminary Servicing Report for Mair Mills Estates*, 1999, the *Preliminary Servicing Report for Mair Mills Village*, 2006, and the *Functional Servicing Report for Side Launch Brewery*, 2012 all of which were prepared by Tatham. The sanitary sewer design sheets prepared by Tatham for the above-mentioned studies have been used as the basis for assessing the available sewer capacity.

An existing 375 mm diameter sewer is located along Mountain Road across the frontage of the property and is upsized to 500 mm diameter approximately 360m east of the site at Ex. SAN MH 7 as shown in Appendix A on the Mair Mills Sanitary Servicing Plan. Tatham has completed depth measurements at the various maintenance holes accessible along Mountain Road and confirmed it is at sufficient depth for the proposed development.

The proposed development will connect between Ex. SAN MH 6 and Ex. SAN MH 7 located at the northeast property corner in front of the site on Mountain Road, as shown on the Site Servicing Plan (SS-1) in the Engineering Drawings submitted for Site Plan Approval. The 375 mm diameter section of trunk sewer along Mountain Road between SAN MH 6 and SAN MH 7 has a length of 123.9 m, a slope of 0.59% and a full flow capacity 134.66 L/s. The average flow in this section, including flow from the proposed development, has been determined to be 39.00 L/s with a peak flow of 67.28 L/s.

The composite slope in the 500 mm diameter sanitary trunk sewer located approximately 70 m downstream of the proposed connection point along Mountain Road between Ex. SAN MH 8 and Ex. SAN MH H26N-31 (shown in Appendix A, Mair Mills Sanitary Servicing Plan) at the intersection of Mountain Road & Highway 26, is 0.14 %, the full flow capacity of this section is 141.29 L/s.

3.2 PROPOSED SANITARY SEWAGE SYSTEM

The proposed development will be serviced by a single 200 mm diameter sanitary service connected to the existing 375 mm sanitary sewer on Mountain Road trunk sewer located between EX. SAN MH 5 and EX. SAN MH 6. The proposed sanitary servicing is illustrated on the Site Servicing Plan (drawing SS-1) included in the Site Plan application package.

3.2.1 Sewage Demands and Capacity

To determine the sewage design flows from the development area, an average daily demand rate for light industrial/commercial land use of 28.0 m³/ha/day is estimated based on the Ministry of



Environment, Conservation and Parks (MECP), *Design Criteria for Sanitary Sewers and Force mains for Alterations Authorized under Environmental Compliance Approval (V.1.1, dated July 28, 2022)*. Based on our experience with similar developments of this nature this is an overly conservative considering the small scale of the development and the light industrial/commercial use being proposed. An equivalent population of 372 has been determined using 260 L/capita/day and an infiltration flow rate of 0.23 L/s/ha as per the Town of Collingwood Standards, updated August 2022. Using these flow rates, the average day and maximum day flows for the development area were calculated to be 1.12 L/s and 3.11 L/s, respectively. Detailed sewage design flow calculations for the subject property are included in Appendix A.

It is our understanding that the Town maintains its own up to date sanitary flow conveyance model of this area, we expect this model will confirm reserve capacity is available in the downstream system through the development review process.



4 Water Supply & Distribution

4.1 EXISTING WATER SERVICING

An existing 300 mm diameter watermain is located along the south side of Mountain Road, complete with one accessible fire hydrant located at the northwest property corner of the proposed development.

4.2 PROPOSED WATER SERVICING

A 200 mm diameter watermain will be connected to the existing 300 mm diameter watermain on Mountain Road to service the site for both domestic and fire flows. The proposed water main will enter the buildings mechanical / electrical room where a backflow prevention device and water meter will be installed prior to any service connections per Town standards. The proposed watermain size will be verified following detailed building designs by the architect and mechanical engineer. A fire hydrant is located at the northwest property corner on Mountain Road and building will be sprinkled throughout to provide sufficient fire protection per Town standards.

4.2.1 Water Demands

To determine the water demands for the subject property, a conservative average daily demand rate for light industrial land use of 35.0 m³/ha/day is estimated based on the expected uses of the building. The proposed building will be constructed of non-combustible material and will be sprinklered. Fire Underwriters Survey (FUS) fire flow calculations (included in Appendix B) determined the maximum required fire flow for the development to be 133 L/s, however, the minimum fire flow required by the Town's Development Standards for an industrial/commercial subdivision is 136 L/s. Based on this requirement and the conservative use of 35.0 m³/ha/d, the Maximum Day Demand, Peak Hour Demand and Maximum Day + Fire Flow Demand were determined to be 1.64 L/s, 2.21 L/s, and 134.64 L/s respectively. Detailed demand calculations are included in Appendix B for reference. We understand the proposed watermain system will be added to the Town-wide model for confirmation of watermain sizes.

The subject property is located in Pressure Zone 1 and therefore no external upgrades are anticipated as peak water use for the development is relatively low.



5 Stormwater Management

A separate Stormwater Management (SWM) Report (Nov 2022) has been prepared by Tatham to address drainage and stormwater management requirements for the proposed development and should be read in conjunction with this report. A summary of the proposed SWM Plan is as follows:

- The proposed SWM system consists of on-site storm water collection through the use of parking area catch basins, Oil-Grit Separators (OGS) and two SWMF that will provide post-to-pre peak flow control to the existing outlet which is the Mountain Road south roadside ditch and ultimately Black Ash Creek.
- Stormwater quality control will be provided by two OGS units that will treat flows from the on-site storm sewer system to an enhanced level prior to entering the SWM ponds.
- An on-site storm sewer system will collect and convey minor storm drainage (up to and including the 1:5-year design storm) for most of the subject property to the SWM facility.
- Major storm drainage (greater than the 1:5-year design storm) for most of the site will flow overland through the parking areas and drive aisles to the proposed SWM facility. A small portion of the site will drain via overland flow to the Mountain Road drainage systems.

The proposed storm sewer system and SWM facility are shown on the plans in the Engineering Drawing package.



6 Traffic Impact Assessment

A separate Traffic Impact Study (Nov 2022) has been prepared by Tatham to address issues with traffic operations and the transportation system. It confirms an adequate road network exists to support the development and proposed entrances. This report should be read for details related to traffic operations. Access to Mountain Road has been developed to consider both the existing condition as well as the future condition with Mountain Road widened to an urban standard.



7 Utilities

The relevant utility companies (electrical, gas, telephone and cable) have been contacted to determine the availability of services for the site.

Collingwood Utility Services (COLLUS) currently has 44,000 volt and 4160/2400 volt feeders on the north side of Mountain Road as a point of connection for the site. An electrical design for the development will need to be completed to determine if the existing system has the capacity to handle the load from the development or if external upgrades are required. We understand connections to the existing system are on a first-come first-served basis in this area and that there are a few proposed developments near the site that maybe requesting connections in the near future.

Enbridge Gas has been contacted and confirmed they have a 4" (100 mm) diameter service running along the north side of Mountain Road that can be accessed to service this development.

Bell Canada has also indicated the cable and conduit located on Mountain Road along the frontage of the site that can be accessed for connection.

Locate sheets are included with this report in Appendix C.



8 Summary

As detailed in the previous sections herein, there are adequate services available to support the proposed development for sanitary drainage, potable water, stormwater management and utility services (hydro, natural gas, Bell).

The Stormwater Management Report submitted under separate cover describes the stormwater management plan for the proposed development and confirms the development can be adequately serviced for stormwater management. Additionally, a Traffic Impact Study submitted under separate cover confirms the proposed development will not adversely affect the existing surrounding road network. A summary of the proposed servicing strategy is as follows:

- Sanitary flows from the proposed development will drain via a proposed 200 mm diameter sanitary sewer to the existing trunk sanitary sewer in Mountain Road connecting at Ex. SAN MH 6 located to the northeast of the site.
- Water servicing for the proposed development will be provided by a 200 mm diameter watermain connected to the existing 300 mm diameter watermain in Mountain Road.
- Stormwater quality control will be provided two OGS units on site which will provide 80% TSS removal prior to the discharge from the site.
- COLLUS, Enbridge Gas Distribution and Bell Canada have confirmed they can provide utility servicing to the proposed development.



Appendix A: Sanitary Servicing Analysis

PROJECT	140 Mountain Road	FILE	121036
		DATE	November 22, 2022
SUBJECT	Sewage Design Flow Calculations	NAME	M. Ray
		PAGE	1 OF 1

Demand Rate - Light Industrial = 28.0 m³/ha/day (Gross ha site area)
 = 0.32 L/ha/s

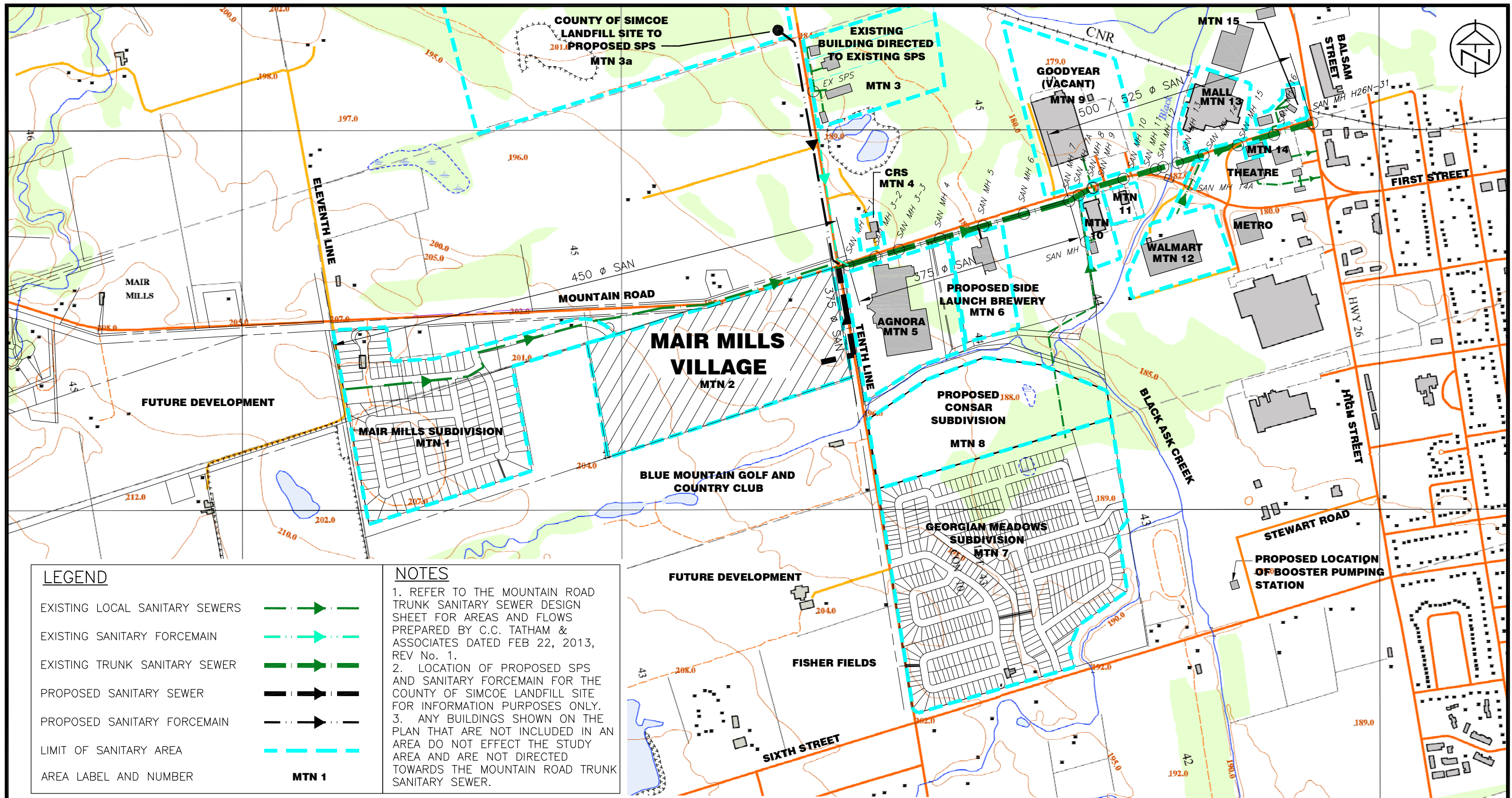
Infiltration Flow (I) = Infiltration Flow x Drainage Area
 = 0.23 L/s/ha x 2.02 ha 0.23 L/s/ha Town Standard
 = 0.46 L/s

Average Day Flow (ADF) = Site Area x Demand Rate + I
 = 2.02 ha x 0.32 L/ha/s + 0.46 L/s
 = 0.65 L/s + 0.46 L/s
 = 1.12 L/s

Equivalent Population (P) = ADF - I / Avg Flow per Capita
 = 1.12 L/s / 0.00301 L/cap/s 260 L/cap/d as per
 = 372 cap Town Standards
 August 2022 Update

Harmon Peaking Factor (PF) = $1 + \frac{14}{4 + (P/1000)^{0.5}}$
 = 4.04

Maximum Day Flow (MDF) = (ADF - I) x PF + I
 = 0.65 x 4.04 + 0.46
 = 3.11 L/s



LEGEND	
EXISTING LOCAL SANITARY SEWERS	
EXISTING SANITARY FORCEMAIN	
EXISTING TRUNK SANITARY SEWER	
PROPOSED SANITARY SEWER	
PROPOSED SANITARY FORCEMAIN	
LIMIT OF SANITARY AREA	
AREA LABEL AND NUMBER	MTN 1

NOTES


- REFER TO THE MOUNTAIN ROAD TRUNK SANITARY SEWER DESIGN SHEET FOR AREAS AND FLOWS PREPARED BY C.C. TATHAM & ASSOCIATES DATED FEB 22, 2013, REV No. 1.
- LOCATION OF PROPOSED SPS AND SANITARY FORCEMAIN FOR THE COUNTY OF SIMCOE LANDFILL SITE FOR INFORMATION PURPOSES ONLY.
- ANY BUILDINGS SHOWN ON THE PLAN THAT ARE NOT INCLUDED IN AN AREA DO NOT EFFECT THE STUDY AREA AND ARE NOT DIRECTED TOWARDS THE MOUNTAIN ROAD TRUNK SANITARY SEWER.

C.C. TATHAM & ASSOCIATES LTD. CLAIMS COPYRIGHT TO THIS DOCUMENT WHICH MAY NOT BE USED FOR ANY PURPOSE OTHER THAN THAT PROVIDED IN THE CONTRACT BETWEEN THE OWNER/CLIENT AND THE ENGINEER WITHOUT THE EXPRESS CONSENT OF C.C. TATHAM & ASSOCIATES LTD.

NO.	REVISIONS	DATE
1.	TOWN COMMENTS	FEB/13

**MAIR MILLS VILLAGE
TOWN OF COLLINGWOOD
FUNCTIONAL SERVICING REPORT**

SANITARY SERVICING PLAN



C.C. Tatham & Associates Ltd.
Consulting Engineers

Collingwood Bracebridge Orillia Barrie

SCALE: 1 : 10,000

DESIGN: PM CHECKED: AEB

DRAWN: PM DATE: JUN/12

JOB NO. 111042-7

DWG. **FIG-3**

Appendix B: Water Demand Calculations



Project: 140 Mountain Road	Date: November 2, 2022
File No.: 121036	Designed: MR
Subject: Fire Flow Demand Calculations	Checked: KRS
Revisions:	

Calculation Based on 2020 Publication "Water Supply for Public Fire Protection" by Fire Underwriters Survey (FUS).

Step	Description	Term	Options	Multiplier Associated with Option	Choose	Value used	Unit	Total Fire Flow (L/min)				
1	Frame Use for Construction of Unit	Coefficient related to type of construction (C)	Framing Material							-	N/A	
			Wood Frame	1.5	Non-combustible construction	0.8						
			Ordinary Construction	1								
			Non-combustible construction	0.8								
			Fire resistive construction (< 2 hrs)	0.7								
Fire resistive construction (> 2 hrs)	0.6											
2	Type of Housing (if Townhouse, enter number of units per TH block)	Type of Housing	Floor Space Area							Units	N/A	
			Single Family	1	0							
			Townhouse / Apartment- inform # of units	1	0							
			Other (Comm. Ind., etc.)	1	1							
2.1	Number of Storeys	Number of Floors / Storeys in the unit (do not include basement)				1	Storeys	N/A				
3	Floor Area (exclude basements, per unit for townhouses, per single family dwelling or per building for apartments, commercial or institutional)	Ground Floor Area (assume fire stop separation is being provided per unit)							0	Square Metres (m ²)	N/A	
		Total Floor Area - One Storey of Townhouse/Apartment Block							0			
		Total Floor Area - All Storeys							6821			
		Does the building have fire-resistive design?							No			6821
		Are vertical openings/communications properly protected (1 hour rating)?							No			6821
		Total Floor Area (A) - for all storeys excluding basement - Single Family							6821			
		Measurement Unis	Square Feet (ft ²)	0.093	6821	m ²						
	Square Metres (m ²)	1										
	Hectares (ha)	10000										
4	Required Fire Flow without Reductions or Increases	Required Fire Flows without Reductions or Increases per FUS: (FF= 220 x C x A ^{0.5})					L/min	15,000				
5	Factors Affecting Burning	Reductions / Increases Due to Factors Affecting Burning										
5.1	Combustibility of Building Contents	Occupancy content hazard reduction or surcharge	Non-combustible	-0.25	Non-combustible	-0.25	N/A	(3,750)	11,250			
			Limited combustible	-0.15								
			Combustible	0.00								
			Free burning	0.15								
			Rapid burning	0.25								
5.2	Reduction Due to Presence of Sprinklers	Sprinkler reduction	Fully supervised system	-0.5	Automatic sprinkler protection	-0.3	N/A	(3,375)	7,875			
			Water supply system/hose connections	-0.4								
			Automatic sprinkler protection	-0.3								
			None	0								
5.3	Separation Distance Between Units (Use 10% for 2 hour Fire Separation between adjacent units)	Exposure distance between units	North Side	30.1 to 45.0 m	0.00	0	%	-	7,875			
			East Side	30.1 to 45.0 m	0.00							
			South Side	Greater than 45.0 m	0.00							
			West Side	30.1 to 45.0 m	0.00							
Total Required Fire Flow, rounded to nearest 1000 L/min, with max/min limits applied:								8,000				
6	Required Fire Flow, Duration and Volume	Total Required Fire Flow (above) in L/s:							133			
		Required Duration of Fire Flow of 8,000 L/min (hrs):							2			
		Required volume for Fire Flow of 8,000 L/min (m ³):							960			

Appendix C: Utilities Information

PLEASE NOTE
THIS DRAWING IS FOR MARKUP ONLY. NOT FOR PERMIT TO EXCEED
CONSTRUCTION. BELL CANADA PLANT LOCATION IS APPROXIMATE

BELL CANADA

Municipal Operations Department
Floor 5 Blue, 100 Borough Drive
Scarborough, Ontario, M1P 4W2
Ph. 416-296-6929

This plan or drawing is the property of Bell Canada and the
copyright of which is owned by Bell Canada. This plan or
drawing may not be copied or used by others without the
written consent of Bell Canada, which may be withheld at
Bell Canada's discretion.

Bell Canada Legend Info	
C	Existing Conduit
B	Existing Buried
H	Existing Handhole
M	Existing Pedestal / MK

CALL FOR LOCATES
1-800-400-2255

HAND DIG
if within 1m of Bell plant

HAND DIG
when crossing Bell plant

Maintain clearance of 0.6m

If further details required
You must acquire Locates or Test Pits

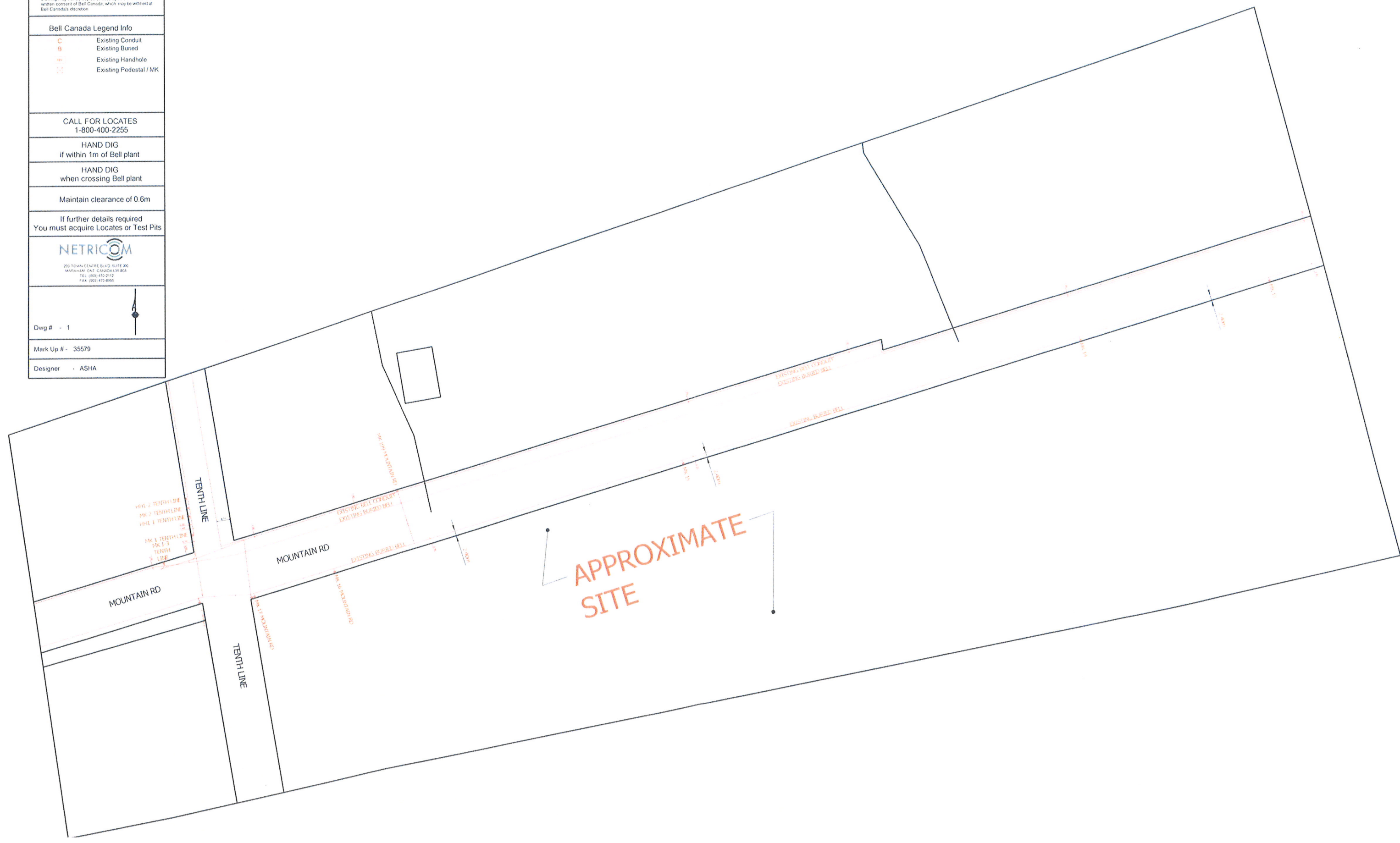


200 TOWN CENTRE BLVD SUITE 200
MARKHAM ONT CANADA L3R 0W4
TEL (905) 470-2112
FAX (905) 470-8866

Dwg # - 1

Mark Up # - 35579

Designer - ASHA



5-29-01
NPS 4 SC XHP

227

SC XHP LAM SCAN
5-50-30
5-182-73

0.9m

3WT

0.9m

★¹⁷

4" GAS

MOUNTAIN RD

★⁵⁵

NPS 1 ST XHP
5-182-83
5-50-54

100 Mountain Rd

★⁸

●⁹⁰

ENBRIDGE

●⁷⁴

★¹⁰⁰