

OCTOBER 6, 2023
SENT VIA: EMAIL
PROJECT NUMBER: 1046-4031

Brian Worsley, P.Eng.
Manager, Development Engineering
Town of the Blue Mountains
32 Mill Street, PO Box 310
Thornbury, ON N0H 2P0

**RE: CRAIGLEITH RIDGE RESIDENTIAL DEVELOPMENT
TOWN OF THE BLUE MOUNTAINS
SANITARY SEWER DOWNSTREAM CAPACITY ANALYSIS**

Dear Brian,

It is understood that the Town of The Blue Mountains has requested assessment of the sanitary sewer system downstream of the Craigleith Ridge development to confirm available capacity in the existing sewer system between the connection points and the Craigleith Main Sewage Lift Station. This information has been requested in support of the CLI-ECA application for sanitary sewers for the Parkbridge Craigleith Development.

The following letter summarizes the capacity analysis that was completed for the sanitary sewer system upstream of the Craigleith Main Sewage Lift Station to confirm that there is sufficient capacity in the existing sanitary sewer to accommodate the Parkbridge Craigleith Ridge Development.

Background

The Craigleith Ridge Residential Development consists of 211 proposed units (a mix of townhouses, back-to-back townhouses, and single detached units) and a club house. Sanitary flows in the site flow to Lakeshore Road East, connecting to the existing sewer in two locations. From the connections at Lakeshore Road East, flows join at an existing manhole and cross north to Hwy 26, and continue east prior to outletting to the Craigleith Main Sewage Lift Station, referred to herein as the Craigleith SPS.

This analysis was built on information gathered from the following documents:

- TOBM Town Wide Sanitary Collection System Model and Needs Assessment – Model Calibration Report – (Cole, March 2020)
- TOBM Town Wide Sanitary Collection System Model and Needs Assessment – System Deficiencies Report – (Cole, March 2020)
- TOBM Engineering Standards (TOBM, May 2023)
- 5th Submission Craigleith Sanitary Sewer Design (Crozier, November 2022)

This analysis was also completed using the Town of The Blue Mountains Sanitary Model as received April 2019. Please refer to the attached for relevant supporting documentation from external reports.

Analysis

This analysis was conducted by first dividing the total flows contributing to the Craigleith SPS into two distinct catchments. The first catchment, denoted EXT-1, contains the sanitary flows and areas

associated with the lands west of the Craigleith SPS. A second catchment denoted EXT-2 contains the sanitary flows and areas associated with the lands to the east and south of the Craigleith SPS. The existing flows from both catchment EXT-1 and EXT-2 were monitored by flow monitoring stations FM05 and FM06 respectively. Results from this monitoring were compiled within both the Town of The Blue Mountains (TOBM) Town Wide Sanitary Collection System Model and Needs Assessment System Deficiencies Report, and the Model Calibration Report.

Using the Town of The Blue Mountains Sanitary Model, the total contributing area and population for catchments EXT-1 and EXT-2 were determined. Following this, an average flow of 350 L/cap/d (TOBM, May 2023) was used to determine sanitary design flow. Additionally, an inflow allowance of 0.28 L/s/ha (TOBM, May 2023) was accounted for throughout the contributing areas.

The sanitary design flows for the Parkbridge site were updated to reflect the design values in the Town's May 2023 Engineering Standards. Flows from the Subject Site are accounted for in this capacity analysis by adding the flows to the existing sanitary network at the proposed connection points on Lakeshore Road East. The updated Parkbridge Craigleith Ridge sanitary sewer design sheet has been attached to this letter.

A design sheet was set up to assess the flows from EXT-1 and EXT-2 with the addition of flows from the Craigleith Ridge site. Pipes from the connection points to the Craigleith SPS are included in the sheet to calculate the total sanitary flow and capacity of the system downstream of the Craigleith site. Slope and invert elevations for the sanitary sewers were gathered from the Town of The Blue Mountains Sanitary Model. This Downstream Sanitary Capacity Analysis design sheet has been attached to this letter.

Conclusion

Based on the completed sewage capacity analysis, the following can be concluded;

1. All sanitary sewers downstream of the Parkbridge Craigleith development have adequate capacity to convey the proposed design flows from the development to the Craigleith Sewage Pumping Station.
2. All sanitary sewers downstream of the Parkbridge Craigleith development remain below the 80% capacity threshold set by the Town of The Blue Mountains engineering standards and therefore, do not require additional flow monitoring, hydraulic grade monitoring or field condition inspections.

Yours truly,

C.F. CROZIER & ASSOCIATES INC.

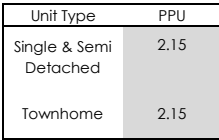
Project Manager

Attachments: Craigleith Ridge Sanitary Sewer Design Sheet (updated per 2023 Standards)
Downstream Sanitary Capacity Analysis – Sanitary Sewer Design Sheet
Craigleith Ridge General Servicing Plans
External Reference Material

J:\1000\1046-Parkbridge Lifestyle\4031-Craigleith Fogal Land Acq\Letters\2023.08.28 - SAN Capacity Letter\2023.08.28- San Capacity Letter.docx

PARKBRIDGE CRAIGLEITH 1046-4031 SANITARY SEWER DESIGN SHEET																																																									
C CROZIER CONSULTING ENGINEERS								<table><tr><th>Unit Type</th><th>PPU</th></tr><tr><td>Single & Semi Detached</td><td>2.15</td></tr><tr><td>Townhome</td><td>2.15</td></tr></table>		Unit Type	PPU	Single & Semi Detached	2.15	Townhome	2.15	<table><tr><td>Mannings "n":</td><td>0.013</td></tr><tr><td>Peak Factor (M):</td><td>1+[14/4+(P/1000)^0.5]</td></tr><tr><td>Residential</td><td></td></tr><tr><td>Avg. Daily/Capita Flow (L/cap.d):</td><td>350</td></tr><tr><td>Infiltration Q (L/ha.s):</td><td>0.28</td></tr></table>														Mannings "n":	0.013	Peak Factor (M):	1+[14/4+(P/1000)^0.5]	Residential		Avg. Daily/Capita Flow (L/cap.d):	350	Infiltration Q (L/ha.s):	0.28	<table><tr><td>DESIGNED BY:</td><td>JE</td></tr><tr><td>CHECKED BY:</td><td>RW</td></tr><tr><td>DATE:</td><td>2020-06-16</td></tr><tr><td>REVISION NO.:</td><td>2</td></tr><tr><td>REVISED BY:</td><td>JE</td></tr><tr><td>DATE:</td><td>2023-10-02</td></tr></table>						DESIGNED BY:	JE	CHECKED BY:	RW	DATE:	2020-06-16	REVISION NO.:	2	REVISED BY:	JE	DATE:	2023-10-02
Unit Type	PPU																																																								
Single & Semi Detached	2.15																																																								
Townhome	2.15																																																								
Mannings "n":	0.013																																																								
Peak Factor (M):	1+[14/4+(P/1000)^0.5]																																																								
Residential																																																									
Avg. Daily/Capita Flow (L/cap.d):	350																																																								
Infiltration Q (L/ha.s):	0.28																																																								
DESIGNED BY:	JE																																																								
CHECKED BY:	RW																																																								
DATE:	2020-06-16																																																								
REVISION NO.:	2																																																								
REVISED BY:	JE																																																								
DATE:	2023-10-02																																																								
CATCHMENT I.D.	STREET	FROM MH NO	TO MH NO	AREA (Ha)	UNITS	POP.	TOTAL TRIB. POP.	RESIDENTIAL PEAK FACTOR	RESIDENTIAL AVG. FLOW (l/s)	MAX FLOW (l/s)	INFILT. (l/s)	TOTAL INFILT. (l/s)	TOTAL FLOW (l/s)	LENGTH (m)	PIPE DIAM. (mm)	UPPER INV. EL.	LOWER INV. EL.	UPPER OBV. EL.	LOWER OBV. EL.	SLOPE (%)	CAP. (l/s)	CAP. (%)	FULL FLOW VELOCITY (m/s)	MH DROP (m)	GROUND UPPER	GROUND LOWER	COVER UPPER	COVER LOWER																													
SANITARY SYSTEM TO NORTHWEST OUTLET																																																									
1	Hawthorn Way	SAMH27	SAMH26	0.36	6	13	13.0	4.40	0.05	0.23	0.10	0.10	0.33	42.8	200	214.04	212.32	214.24	212.52	4.0%	65.60	0.51%	2.09		217.42	215.26	3.18	2.74																													
2	Hawthorn Way	SAMH26	SAMH24	0.32	5	11	24.0	4.37	0.10	0.42	0.09	0.19	0.62	20.3	200	211.45	211.24	211.65	211.44	1.0%	32.80	1.88%	1.04	0.87	215.26	214.27	3.61	2.83																													
3	Hawthorn Way	SAMH24	SAMH23	0.07	0	0	24.0	4.37	0.10	0.42	0.02	0.21	0.63	41.4	200	211.19	209.53	211.39	209.73	4.0%	65.60	0.97%	2.09	0.05	214.27	212.15	2.88	2.42																													
4	Hawthorn Way	SAMH23	SAMH21	0.03	0	0	24.0	4.37	0.10	0.42	0.01	0.22	0.64	20.1	200	208.06	207.87	208.26	208.07	0.9%	31.80	2.02%	1.01	1.47	212.15	211.15	3.89	3.08																													
6	Periwinkle Crescent	SAMH52	SAMH50	0.26	7	16	16.0	4.39	0.06	0.28	0.07	0.07	0.36	39.0	200	209.89	208.72	210.09	208.92	3.0%	56.81	0.63%	1.81		212.66	211.29	2.57	2.37																													
5	Periwinkle Crescent	SAMH50	SAMH21	0.03	0	0	16.0	4.39	0.06	0.28	0.01	0.08	0.37	15.4	200	208.67	208.33	208.87	208.53	2.2%	48.76	0.75%	1.55	0.05	211.29	211.15	2.42	2.62																													
9	Hawthorn Way	SAMH21	SAMH19	0.05	0	0	40.0	4.33	0.16	0.70	0.01	0.31	1.02	35.0	200	207.77	206.04	207.97	206.24	4.9%	72.82	1.39%	2.32	0.56	211.15	209.14	3.18	2.90																													
7	Periwinkle Crescent	SAMH49	SAMH48	0.22	7	16	16.0	4.39	0.06	0.28	0.06	0.06	0.35	37.6	200	207.38	206.04	207.58	206.24	3.6%	61.97	0.56%	1.97		210.93	209.75	3.35	3.51																													
8	Periwinkle Crescent	SAMH48	SAMH19	0.13	6	13	29.0	4.36	0.12	0.51	0.04	0.10	0.61	39.0	200	205.96	205.47	206.16	205.67	1.3%	36.67	1.66%	1.17	0.08	209.75	209.14	3.59	3.47																													
10	Hawthorn Way	SAMH19	SAMH18	0.07	0	0	69.0	4.28	0.28	1.20	0.02	0.43	1.63	42.9	200	205.39	203.25	205.59	203.45	5.0%	73.34	2.22%	2.33	0.08	209.14	206.64	3.55	3.19																													
11	Coltsfoot Lane	SAMH47	SAMH46	0.33	9	20	20.0	4.38	0.08	0.35	0.09	0.09	0.45	70.1	200	203.51	202.81	203.71	203.01	1.0%	32.80	1.36%	1.04		207.30	206.64	3.59	3.63																													
12	Coltsfoot Lane	SAMH46	SAMH18	0.01	0	0	20.0	4.38	0.08	0.35	0.00	0.10	0.45	6.4	200	202.76	202.73	202.96	202.93	0.5%	23.19	1.94%	0.74	0.05	206.64	206.64	3.68	3.71																													
13	Hawthorne Way	SAMH18	SAMH17	0.03	0	0	89.0	4.26	0.36	1.53	0.01	0.53	2.07	33.1	200	202.65	200.99	202.85	201.19	5.0%	73.34	2.82%	2.33	0.08	206.64	204.69	3.79	3.50																													
17	Squill Cescent	SAMH45	SAMH44	0.16	4	9	9.0	4.42	0.04	0.16	0.04	0.04	0.21	29.5	200	204.50	202.47	204.70	202.67	6.9%	86.09	0.24%	2.74		207.58	206.54	2.88	3.87																													
16	Squill Cescent	SAMH44	SAMH43	0.10	4	9	18.0	4.39	0.07	0.32	0.03	0.07	0.39	32.0	200	202.41	201.10	202.61	201.30	4.1%	66.49	0.59%	2.12	0.06	206.54	205.41	3.93	4.11																													
15	Squill Cescent	SAMH43	SAMH42	0.10	1	3	21.0	4.38	0.09	0.37	0.03	0.10	0.47	32.8	200	201.05	200.59	201.25	200.79	1.4%	38.95	1.22%	1.24	0.05	205.41	204.65	4.16	3.86																													
14	Squill Cescent	SAMH42	SAMH17	0.01	0	0	21.0	4.38	0.09	0.37	0.00	0.10	0.48	6.8	200	200.54	200.47	200.74	200.67	1.0%	32.80	1.45%	1.04	0.05	204.65	204.69	3.91	4.02																													
21	Hawthorne Way	SAMH17	SAMH16	0.06	0	0	110.0	4.23	0.45	1.89	0.02	0.66	2.54	47.4	200	200.05	198.16	200.25	198.36	4.0%	65.60	3.87%	2.09	0.42	204.69	201.86	4.44	3.50																													
18	Squill Cescent	SAMH41	SAMH40	0.27	5	11	11.0	4.41	0.04	0.20	0.08	0.08	0.27	35.9	200	204.50	202.89	204.70	203.09	4.5%	69.58	0.39%	2.21		208.58	206.13	3.88	3.04																													
19	Squill Cescent	SAMH40	SAMH39	0.30	14	31	42.0	4.33	0.17	0.74	0.08	0.16	0.90	50.8	200	202.01	199.73	202.21	199.93	4.5%	69.58	1.29%	2.21	0.88	206.13	202.29	3.92	2.36																													
20	Squill Cescent	SAMH39	SAMH38	0.10	3	7	49.0	4.32	0.20	0.86	0.03	0.19	1.04	21.5	200	199.68	198.82	199.88	199.02	4.0%	65.60	1.59%	2.09	0.05	202.29	201.79	2.41	2.77																													
22	Squill Cescent	SAMH38	SAMH16	0.01	0	0	49.0	4.32	0.20	0.86	0.00	0.19	1.05	7.7	200	198.18	197.95	198.38	198.15	3.0%	56.43	1.86%	1.80	0.64	201.79	201.86	3.41	3.71																													
23	Hawthorne Way	SAMH16	SAMH15	0.05	0	0	159.0	4.18	0.64	2.69	0.01	0.86	3.55	43.3	200	197.36	195.63	197.56	195.83	4.0%	65.60	5.42%	2.09	0.59	201.86	198.62	4.30	2.79																													
24	Hawthorne Way	SAMH15	SAMH14	0.02	0	0	159.0	4.18	0.64	2.69	0.01	0.87	3.56	15.2	200	194.83	194.22	195.03	194.42	4.0%	65.60	5.43%	2.09	0.80	198.62	197.49	3.59	3.07																													
24a	Hawthorne Way	SAMH14	SAMH13	0.03	0	0	159.0	4.18	0.64	2.69	0.01	0.87	3.57	19.0	200	193.42	192.66	193.62	192.86	4.0%	65.60	5.44%	2.09	0.80	197.49	196.06	3.87	3.20																													
24b	Hawthorne Way	SAMH13	SAMH12	0.02	0	0	159.0	4.18	0.64	2.69	0.01	0.88	3.57	16.0	200	191.86	191.22	192.06	191.42	4.0%	65.60	5.45%	2.09	0.80	196.06	194.85	4.00	3.43																													
25	Hawthorne Way	SAMH12	SAMH10	0.13	2	5	164.0	4.18	0.66	2.78	0.04	0.92	3.69	60.5	200	190.42	187.70	190.62	187.90	4.5%	69.58	5.31%	2.21	0.80	194.85	190.66	4.23	2.76																													
26	Hawthorne Way	SAMH10	SAMH9	0.13	4	9	173.0	4.17	0.70	2.92	0.04	0.95	3.87	20.5	200	187.20	186.48	187.40	186.68	3.5%	61.36	6.31%	1.95	0.50	190.66	189.89	3.26	3.21																													
27	Hawthorne Way	SAMH9	SAMH8	0.19	6	13	186.0	4.16	0.75	3.13	0.05	1.01	4.14	24.4	200	186.16	185.31	186.36	185.51	3.5%	61.36	6.75%	1.95	0.32	189.89	189.00	3.53	3.49																													
28	Hawthorne Way	SAMH8	SAMH7	0.45	15	33	219.0	4.13	0.89	3.67	0.13	1.13	4.80	58.2	200	185.26	183.54	185.46	183.74	3.0%	56.43	8.50%	1.80	0.05	189.00	187.00	3.54	3.26																													
29	Hawthorne Way	SAMH7	SAMH5	0.28	3	7	226.0	4.13	0.92	3.78																																															

SANITARY SEWER DESIGN SHEET



Mannings "n":	0.013
Peak Factor (M):	$1 + (14/4 + (P/1000))^{0.5}$
Residential Avg. Daily/Capita Flow (L/cap.d):	350
Infiltration Q (L/ha.s):	0.28

DESIGNED BY:	JE
CHECKED BY:	RW
DATE:	2020-06-16
REVISION NO.:	2
REVISED BY:	JE
DATE:	2023-10-02

CATCHMENT I.D.		STREET	FROM MH NO	TO MH NO	AREA (Ha)	UNITS	POP.	TOTAL TRIB. POP.	RESIDENTIAL PEAK FACTOR	RESIDENTIAL AVG. FLOW (l/s)	MAX FLOW (l/s)	INFILT. (l/s)	TOTAL INFILT. (l/s)	TOTAL FLOW (l/s)	LENGTH (m)	PIPE DIAM. (mm)	UPPER INV. EL.	LOWER INV. EL.	UPPER OBV. EL.	LOWER OBV. EL.	SLOPE (%)	CAP. (l/s)	CAP. (%)	FULL FLOW VELOCITY (m/s)	MH DROP (m)	GROUND UPPER	GROUND LOWER	COVER UPPER	COVER LOWER	
SANITARY SYSTEM TO NORTHEAST OUTLET																														
40		Thistle Trail	SAMH74	SAMH73	0.16	4	9	9.0	4.42	0.04	0.16	0.04	0.04	0.21	30.7	200	183.09	182.13	183.29	182.33	3.1%	58.03	0.35%	1.85		186.49	185.63	3.20	3.30	
39		Butternut Court	SAMH75	SAMH73	0.38	12	26	26.0	4.36	0.11	0.46	0.11	0.11	0.57	47.2	200	184.44	182.13	184.64	182.33	4.9%	72.60	0.78%	2.31		188.07	185.63	3.43	3.30	
41		Thistle Trail	SAMH73	SAMH72	0.17	4	9	44.0	4.33	0.18	0.77	0.05	0.20	0.97	31.7	200	182.08	181.26	182.28	181.46	2.6%	52.89	1.83%	1.68	0.05	185.63	184.70	3.35	3.24	
42		Thistle Trail	SAMH72	SAMH56	0.24	6	13	57.0	4.30	0.23	0.99	0.07	0.27	1.26	57.2	200	181.21	179.95	181.41	180.15	2.2%	48.65	2.59%	1.55	0.05	184.70	183.50	3.29	3.35	
45		Thistle Trail	SAMH69	SAMH68	0.28	4	9	9.0	4.42	0.04	0.16	0.08	0.08	0.24	53.1	200	182.07	181.48	182.27	181.68	1.1%	34.56	0.69%	1.10		185.06	184.41	2.79	2.73	
44		Thistle Trail	SAMH68	SAMH66	0.09	0	0	9.0	4.42	0.04	0.16	0.03	0.10	0.26	38.7	200	181.43	180.64	181.63	180.84	2.0%	46.85	0.57%	1.49	0.05	184.41	183.90	2.78	3.06	
43		Thistle Trail	SAMH66	SAMH56	0.05	0	0	9.0	4.42	0.04	0.16	0.01	0.12	0.28	30.2	200	180.59	179.82	180.79	180.02	2.6%	52.37	0.53%	1.67	0.05	183.90	183.50	3.11	3.48	
46		Thistle Trail	SAMH69	SAMH70	0.14	2	5	5.0	4.44	0.02	0.09	0.04	0.04	0.13	23.1	200	182.08	181.85	182.28	182.05	1.0%	32.80	0.39%	1.04		185.06	185.32	2.78	3.27	
47		Thistle Trail	SAMH70	SAMH71	0.16	1	3	8.0	4.42	0.03	0.14	0.04	0.08	0.23	24.7	200	181.80	181.68	182.00	181.88	0.5%	22.49	1.01%	0.72	0.05	185.32	185.62	3.32	3.74	
48		Thistle Trail	SAMH71	SAMH64	0.08	0	0	8.0	4.42	0.03	0.14	0.02	0.11	0.25	22.0	200	181.63	181.53	181.83	181.73	0.5%	22.49	1.11%	0.72	0.05	185.62	185.67	3.79	3.94	
49		Thistle Trail	SAMH64	SAMH63	0.23	5	11	19.0	4.38	0.08	0.34	0.06	0.17	0.51	27.0	200	181.48	181.35	181.68	181.55	0.5%	22.96	2.21%	0.73	0.05	185.67	185.43	3.99	3.88	
50		Thistle Trail	SAMH63	SAMH62	0.12	2	5	24.0	4.37	0.10	0.42	0.03	0.20	0.63	22.2	200	181.29	181.17	181.49	181.37	0.6%	24.54	2.56%	0.78	0.06	185.43	185.25	3.94	3.88	
51		Thistle Trail	SAMH62	SAMH61	0.11	2	5	29.0	4.36	0.12	0.51	0.03	0.24	0.75	11.6	200	181.12	181.04	181.32	181.24	0.7%	26.65	2.80%	0.85	0.05	185.25	185.13	3.93	3.89	
52		Thistle Trail	SAMH61	SAMH60	0.22	2	5	34.0	4.35	0.14	0.60	0.06	0.30	0.90	16.7	200	180.99	180.91	181.19	181.11	0.5%	22.72	3.94%	0.72	0.05	185.13	184.97	3.94	3.86	
53		Thistle Trail	SAMH60	SAMH59	0.51	8	18	52.0	4.31	0.21	0.91	0.14	0.44	1.35	66.3	200	180.86	180.54	181.06	180.74	0.5%	22.72	5.93%	0.72	0.05	184.97	184.42	3.91	3.68	
54		Thistle Trail	SAMH59	SAMH58	0.26	4	9	61.0	4.30	0.25	1.06	0.07	0.51	1.57	31.0	200	180.49	180.32	180.69	180.52	0.6%	24.76	6.36%	0.79	0.05	184.42	184.14	3.73	3.62	
55		Thistle Trail	SAMH58	SAMH57	0.18	3	7	68.0	4.29	0.28	1.18	0.05	0.56	1.74	24.0	200	180.27	180.15	180.47	180.35	0.5%	23.19	7.52%	0.74	0.05	184.14	183.93	3.67	3.58	
56		Thistle Trail	SAMH57	SAMH56	0.29	6	13	81.0	4.27	0.33	1.40	0.08	0.64	2.04	51.7	200	180.10	179.85	180.30	180.05	0.5%	22.72	9.00%	0.72	0.05	183.93	183.50	3.63	3.45	
N/A		SWMF Access Road	SAMH56	SAMH55	0.00	0	0	147.0	4.19	0.60	2.50	0.00	1.03	3.52	38.2	200	179.77	179.57	179.97	179.77	0.5%	23.65	14.90%	0.75	0.08	183.50	183.24	3.53	3.47	
N/A		SWMF Access Road	SAMH55	SAMH76	0.00	0	0	147.0	4.19	0.60	2.50	0.00	1.03	3.52	46.5	200	179.52	179.29	179.72	179.49	0.5%	23.19	15.20%	0.74	0.05	183.24	181.77	3.52	2.28	
N/A		SWMF Access Road	SAMH76	SAMH77	0.00	0	0	147.0	4.19	0.60	2.50	0.00	1.03	3.52	55.8	200	179.24	178.96	179.44	179.16	0.5%	23.19	15.20%	0.74	0.05	181.77	181.56	2.33	2.40	
Totals					10.61	217	(211 Residential, Club House - counted as 5 units)																							

Downstream Sanitary Capacity Analysis
Parkbridge Craigleith
1046-4031

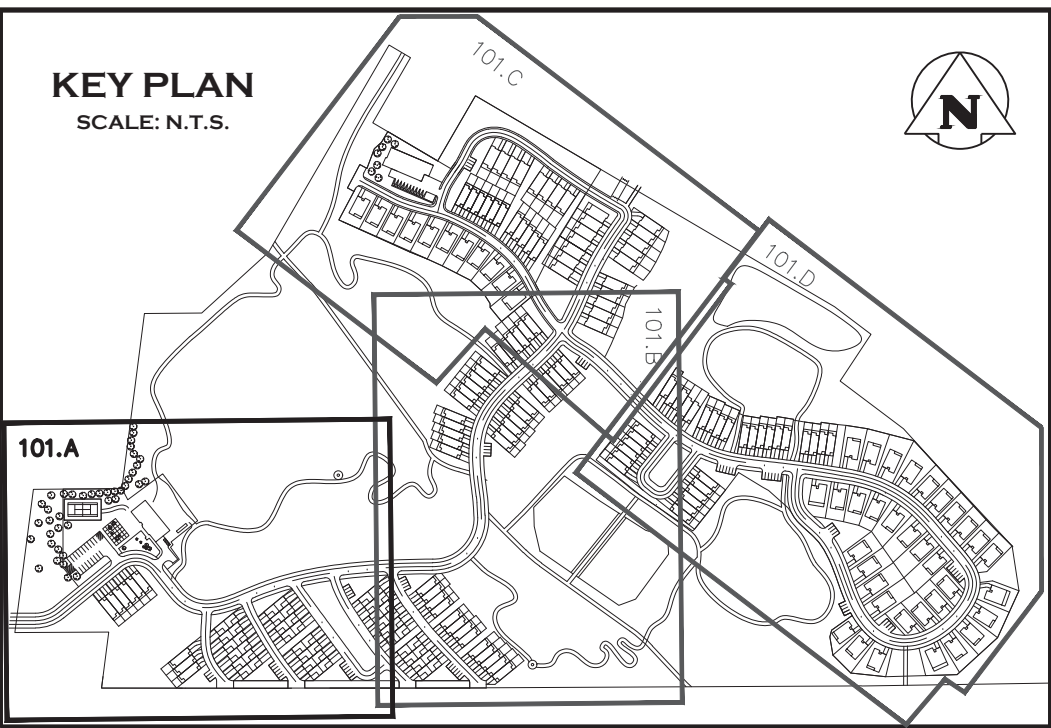
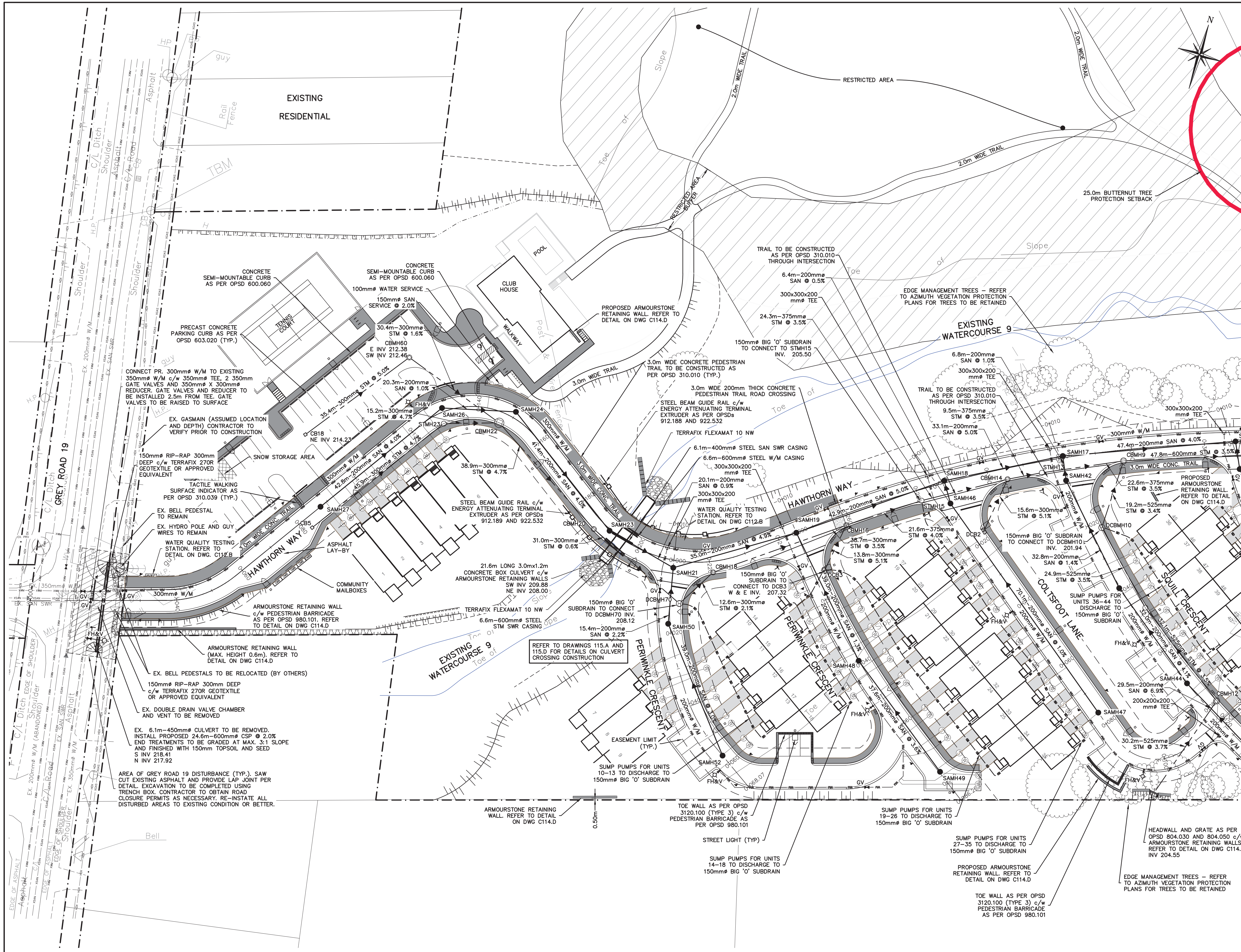


PPU: 2.15
L/C*D 350
Infiltration (L/ha*s) 0.28

Harmon Formula: (14/4+(P/1000)^0.5)

DESIGNED BY: TM
CHECKED BY: JE/CS
DATE: 2023-10-06
REVISION NO.:
REVISED BY:
DATE:

CATCHMENT DESCRIPTION	STREET	FROM MH NO	TO MH NO	Pop.	Total Trib Pop.	Residential Peaking Factor	Residential Avg Flows (L/s)	Max Flow (L/s)	INFILT. (L/s)	TOTAL INFILT. (L/s)	TOTAL FLOW (l/s)	LENGTH (m)	PIPE DIAM. (mm)	UPPER INV. EL.	LOWER INV. EL.	SLOPE (%)	CAP. (l/s)	CAP. (%)
EXT 1 - WEST	N/A	West Catchment FM05	EX SAMH2	1849	1849	3.61	7.51	27.11	57.66	57.66	84.77	100.0	525	178.94	178.31	0.63%	341.35	24.84%
Craigleith Ridge Site (WEST)	Lakeshore Road	SANMH1	EX SAMH2	341	341	4.05	1.38	5.60	1.94	1.94	9.48	28.40	200.00	180.17	178.75	5.00%	73.34	12.93%
Lakeshore Road (east of site)	Lakeshore Road	EX SAMH2	WWSRE828	0	2190	3.55	8.87	31.54	0.00	59.60	91.14	104.18	525	178.3	178.08	0.21%	197.63	46.11%
	Lakeshore Road	WWSTR828	WWSTR833	0	2190	3.55	8.87	31.54	0.00	59.60	91.14	115.2	525	178.07	176.66	1.22%	475.79	19.15%
Craigleith Ridge Site (EAST)	Lakeshore Road	XXXX000003	SAMH77	6	6	4.43	0.03	0.11	0.16	0.16	0.27	83.38	525	177.26	176.93	0.40%	270.56	0.10%
Lakeshore to Hwy 26	SWM Pond Access Road Connection to Lakeshore Rd	SAMH76	SAMH77	147	147	4.19	0.60	2.50	1.03	1.03	3.53	55.8	200	179.24	178.96	0.50%	23.23	15.17%
		SAMH77	WWSTR833	0	153	4.19	0.62	2.60	0.00	1.19	3.79	11.3	525			1.00%	430.06	0.88%
Hwy 26 (west of cross from Lakeshore)	Between Lakeshore and HWY 26	WWSTR833	WWSTR27	0	2343	3.53	9.49	33.52	0.00	60.79	94.31	53.61	525	176.59	176.38	0.39%	269.16	35.04%
S_RES_WWSTR827_1	HWY 26	XXXX000063	WWSTR27	45	45	4.32	0.18	0.78	0.77	0.77	1.55	88.32	200	177.52	176.75	0.87%	30.62	0.59%
S_RES_WWSTR825_1 S_RES_WWSTR824_1 S_RES_WWSTR823_1	HWY 26	WWSTR27	WWSTR826	15	2403	3.52	9.74	34.29	0.17	61.72	96.02	139.83	525	176.36	176.27	0.10%	136.00	70.60%
	HWY 26	WWSTR826	WWSTR825	0	2403	3.52	9.74	34.29	0.00	61.72	96.02	5.54	525	176.27	176.26	0.18%	182.72	52.55%
	HWY 26	WWSTR825	WWSTR824	7	2410	3.52	9.76	34.38	0.13	61.85	96.24	130.44	525	176.25	176.01	0.18%	184.47	52.17%
	HWY 26	WWSTR824	WWSTR823	13	2423	3.52	9.82	34.55	0.16	62.01	96.56	113.57	525	175.99	175.77	0.19%	189.28	51.02%
	HWY 26	WWSTR823	WWSTR822	7	2430	3.52	9.84	34.64	0.16	62.18	96.81	88.17	525	175.76	175.56	0.23%	204.83	47.27%
	HWY 26	WWSTR822	WWSTR821	0	2430	3.52	9.84	34.64	0.00	62.18	96.81	86.44	525	175.54	175.4	0.16%	173.08	55.94%
	HWY 26	WWSTR821	WWSTR820	3	2433	3.52	9.86	34.68	0.00	62.18	96.85	22.32	525	175.34	175.31	0.13%	157.67	61.43%
EXT 2 - EAST	N/A	WWSTR813	WWSTR820	4804	4804	3.26	19.46	63.46	62.03	62.03	125.49	77.49	750	174.41	174.17	0.31%	619.56	20.25%
Pumping Station	N/A	WWSTR820	Craigleith_Main_SPS	0	7237	3.09	29.32	90.67	0.00	124.20	214.87	27.59	750	174.17	174.12	0.18%	473.93	45.34%



NOTE:
SUMP PUMP DISCHARGE TO BE DIRECTED TO REAR YARDS. BACK-TO-BACK UNITS TO BE DIRECTED TO BIG 'O' SUBDRAIN WHERE SPECIFIED c/w AIR GAP.

NOTE:
UNITS 1-66 TO BE EQUIPPED WITH INDIVIDUAL PRESSURE REDUCING VALVES AS REQUIRED.

NOTE:
ALL GATE VALVES INSTALLED ON THE EDGE OF PAVEMENT ARE TO BE CONSTRUCTED c/w PAVEMENT APRON. REFER TO DETAIL ON DWG C112.C

NOTE:
REFER TO DWG C114.D FOR DETAIL ON STEEL LINER AND CASING SPACERS.

1. THIS DRAWING IS THE EXCLUSIVE PROPERTY OF C.F. CROZIER & ASSOCIATES INC. AND THE REPRODUCTION OF ANY PART WITHOUT PRIOR WRITTEN CONSENT OF THIS OFFICE IS STRICTLY PROHIBITED.
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, LEVELS, AND DATUMS ON SITE AND REPORT ANY DISCREPANCIES OR OMISSIONS TO THIS OFFICE PRIOR TO CONSTRUCTION.
3. THIS DRAWING IS TO BE READ AND UNDERSTOOD IN CONJUNCTION WITH ALL OTHER PLANS AND DOCUMENTS APPLICABLE TO THIS PROJECT.
4. DO NOT SCALE THE DRAWINGS.
5. ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

TEMPORARY BENCHMARKS
TBM#1 - ELEVATIONS HEREON ARE GEODETIC AND ARE REFERRED TO A SPIKE IN HYDRO POLE ON GREY ROAD 19 SOUTH OF CRAIGLEITH ROAD HAVING AN ELEVATION OF 222.88 METRES.

TOPOGRAPHIC SURVEY COMPLETED BY ZUBEK, EMO, PATTEN AND THOMSEN LTD. O.L.S., DATED MARCH 2006.

No.	ISSUE	DATE: MM/DD/YYYY
2	ISSUED FOR 3rd SUBMISSION	05/14/2021
3	ISSUED FOR 4th SUBMISSION	03/23/2022
4	ISSUED FOR 5th SUBMISSION (PARTIAL)	10/26/2022
5	ISSUED FOR 5th SUBMISSION	11/23/2022
6	ISSUED FOR 6th SUBMISSION (SWMFs ONLY)	03/29/2023
7	ISSUED FOR 6th SUBMISSION	04/20/2023
8	ISSUED FOR 7th SUBMISSION (PRV DETAILS)	07/28/2023
9	ISSUED FOR SUBDIVISION AGREEMENT	08/30/2023

PARKBRIDGE CRAIGLEITH
THE TOWN OF THE BLUE MOUNTAINS

GENERAL SITE SERVICING PLAN
(WEST)



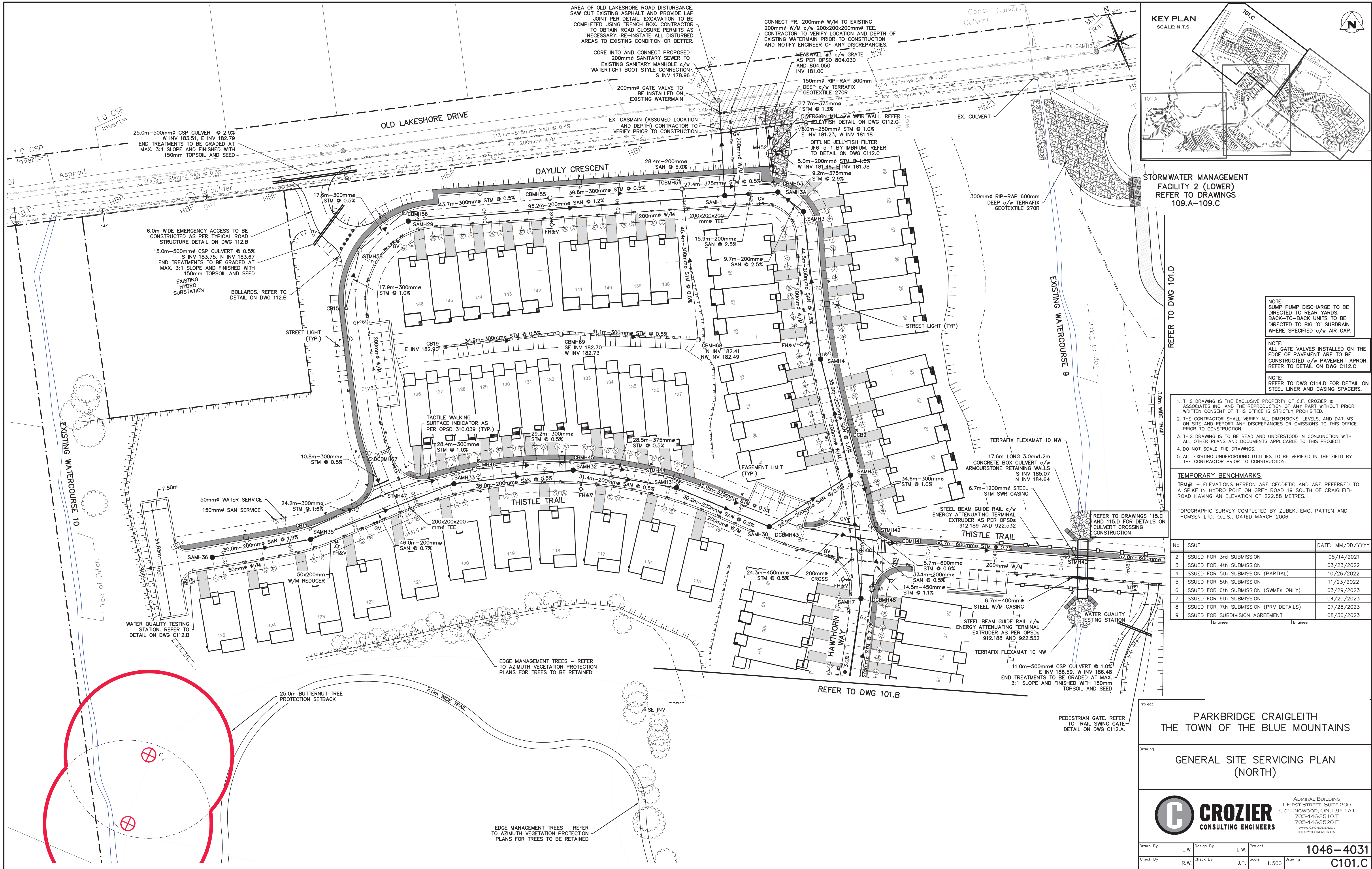
ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON, L9Y 1A1
705-446-3510 T
705-446-3520 F
WWW.CFCROZIER.CA
INFO@CFCROZIER.CA

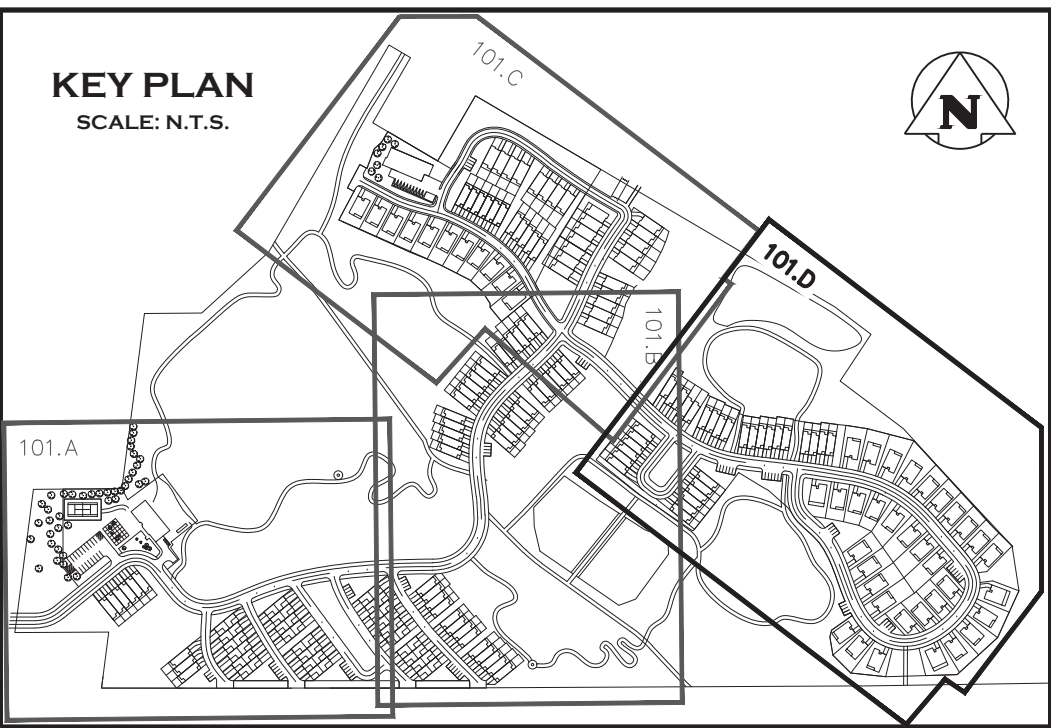
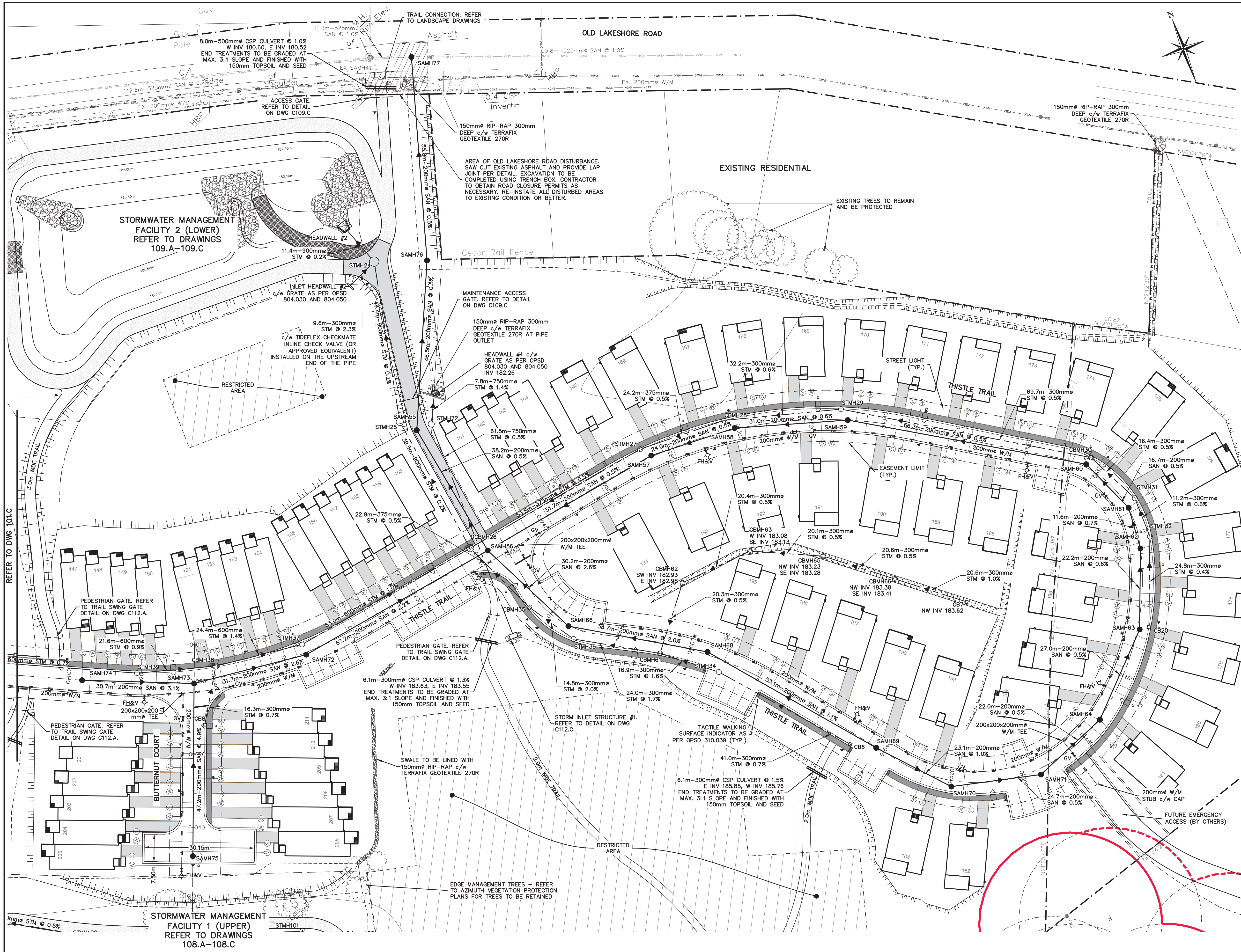
Drawn By	L.W.	Design By	L.W.	Project	1046-4031
Check By	R.W.	Check By	J.P.	Scale	1:500
				Drawing	C101.A

REFER TO DWG 101.B

Project

Drawing





NOTE:
SUMP PUMP DISCHARGE TO BE DIRECTED TO REAR YARDS. BACK-TO-BACK UNITS TO BE DIRECTED TO BIG 'O' SUBDRAIN WHERE SPECIFIED C/W AIR GAP.

NOTE:
SAMH69 TO BE CONSTRUCTED WITH TWO TERMINATION ENDS OR BARRIER TO BE INSTALLED IN BENCHING CHANNEL TO THE SATISFACTION OF THE TOWN.

NOTE:
ALL GATE VALVES INSTALLED ON THE EDGE OF PAVEMENT ARE TO BE CONSTRUCTED C/W PAVEMENT APRON. REFER TO DETAIL ON DWG C112.C

NOTE:
REFER TO DWG C114.D FOR DETAIL ON STEEL LINER AND CASING SPACERS.

1. THIS DRAWING IS THE EXCLUSIVE PROPERTY OF C.F. CROZIER & ASSOCIATES INC. AND THE REPRODUCTION OF ANY PART WITHOUT PRIOR WRITTEN CONSENT OF THIS OFFICE IS STRICTLY PROHIBITED.
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, LEVELS, AND DATUMS ON SITE AND REPORT ANY DISCREPANCIES OR OMISSIONS TO THIS OFFICE PRIOR TO CONSTRUCTION.
3. THIS DRAWING IS TO BE READ AND UNDERSTOOD IN CONJUNCTION WITH ALL OTHER PLANS AND DOCUMENTS APPLICABLE TO THIS PROJECT.
4. DO NOT SCALE THE DRAWINGS.
5. ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

TEMPORARY BENCHMARKS
TBM#1 - ELEVATIONS HEREON ARE GEODETIC AND ARE REFERRED TO A SPIKE IN HYDRO POLE ON GREY ROAD 19 SOUTH OF CRAIGLEITH ROAD HAVING AN ELEVATION OF 222.88 METRES.

TOPOGRAPHIC SURVEY COMPLETED BY ZUBEK, EMO, PATTEN AND THOMSEN LTD. O.L.S., DATED MARCH 2006.

No.	ISSUE	DATE: MM/DD/YYYY
2	ISSUED FOR 3rd SUBMISSION	05/14/2021
3	ISSUED FOR 4th SUBMISSION	03/23/2022
4	ISSUED FOR 5th SUBMISSION (PARTIAL)	10/26/2022
5	ISSUED FOR 5th SUBMISSION	11/23/2022
6	ISSUED FOR 6th SUBMISSION (SWMF'S ONLY)	03/29/2023
7	ISSUED FOR 6th SUBMISSION	04/20/2023
8	ISSUED FOR 7th SUBMISSION (PRV DETAILS)	07/28/2023
9	ISSUED FOR SUBDIVISION AGREEMENT	08/30/2023

PARKBRIDGE CRAIGLEITH
THE TOWN OF THE BLUE MOUNTAINS

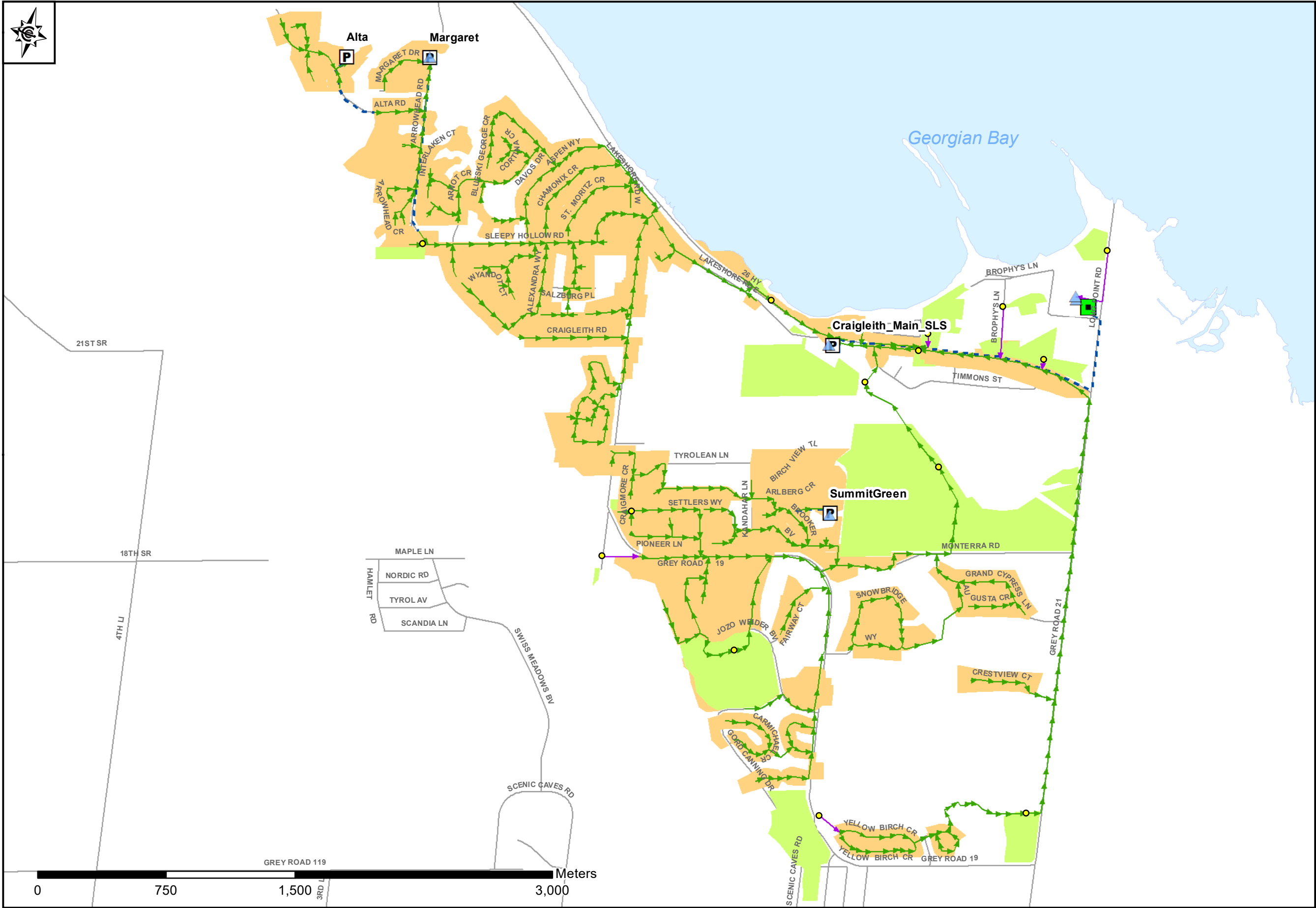
GENERAL SITE SERVICING PLAN
(EAST)



ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON, L9Y 1A1
705-446-3510 T
705-446-3520 F
WWW.CFCROZIER.CA
INFO@CFCROZIER.CA

Drawn By	L.W.	Design By	L.W.	Project	1046-4031
Check By	R.W.	Check By	J.P.	Scale	1:500
				Drawing	C101.D

Figure 4.5 - Craigleith Service Area: Future Peak Dry Weather Conditions



Legend

- ▲ Outfall
- Ⓟ Sewage Pumping Station
- Craigleith WWTP
- Future Flow Load Points (MHs)
- d/D > 85%
- d/D <= 85%
- Future Sanitary Sewer
- - - - - Forcemain
- Existing Developments
- Future Developments

Town-Wide Sanitary Collection Model
Craigleith Service Area Results
Town of Blue Mountains

 **COLE**

Project No.: 2017-0333 Date: June 2019

Figure 2.3 - Craigleith Sanitary Infrastructure





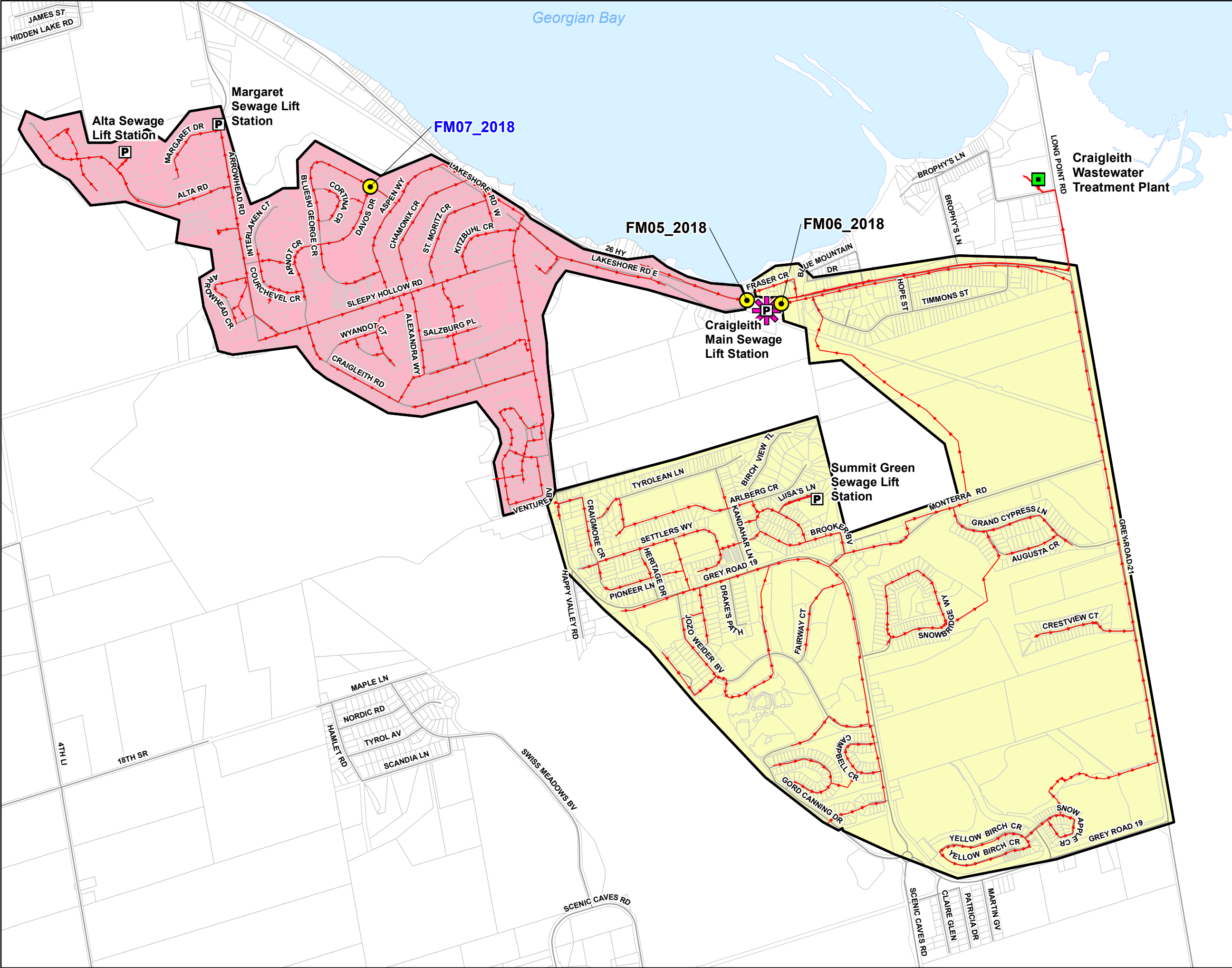


Figure 3-2
Flow and Rainfall
Monitoring Locations in
Craileith

- Lift Station
- WWTP
- Flow Monitoring Locations - 2018
- Rain Gauge Location
- Sanitary Pipe Network
- Flow Monitoring Areas 2018**
 - FM05_2018
 - FM06_2018



COLE

0 200 400 600 800
Meters



Table 3.1 2018 Flow Monitored Location and Period

2018 Site ID	Maintenance Hole ID	Sewer Diameter (mm)	Sensor Location	Installation Date	Removal Date
FM01	WWSTR126	450	NW Inlet	01-May-18	31-Aug-18
FM02	WWSTR1102	750	SE Outlet	01-May-18	31-Aug-18
FM03	WWSTR289	250	SE Inlet	01-May-18	31-Aug-18
FM04	WWSTR342	450	SE Inlet	01-May-18	31-Aug-18
FM05	WWSTR822	525	W Inlet	01-May-18	31-Aug-18
FM06	WWSTR813	750	E Inlet	01-May-18	31-Aug-18
FM07 ¹		200	E Inlet	17-Jul-18	Ongoing

Note:

1. FM07 was installed later at the request of the Town to assess flow at that location. It was not intended that a full database would be collected to support calibration.

A detailed review of the collected flow and rainfall monitoring data was completed to assess the overall quality of the data. The review focused on ensuring consistent measurements were taken over the monitoring period. Data considered as “good” or “fair” is usable for modelling, while “poor” data may be incomplete or have periods of inconsistency between velocity and depth, thus making it unusable for model calibration. **Table 3.2** provides a summary of the flow data qualitative review.

Table 3.2 Flow Data Qualitative Review

2018 Site ID – Pipe Diameter (Upstream Monitored Area)	General Observations and Data QA/QC Review Results
FM01 – 450mm (80ha)	• Located in close proximity to Mill Sewage Lift Station and upstream of FM02. Pump cycling effect was observed every 3-hours. • Recorded level and velocity were generally consistent over the monitoring period. • Velocity versus depth graph indicated a reasonable relationship between velocity and level. • Surge conditions were not observed. • Data quality is good.
FM02 – 750mm	• Located downstream of FM01 and upstream of Mill Sewage Lift Station. Pump cycling effect was observed in flow data.