



10th Ave Estates Functional Servicing Report

Graham Design & Construction
1260 2nd. Ave. East,
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Clearwater Shores Inc.
37 Alice Street
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June 4th, 2024
24003.000

10th Ave Estates

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1 Introduction

Clearwater Shores Inc. has been retained by Graham Design and Construction to prepare a Functional Servicing Report for the 10th Ave Estates development. The new development is a 2.53ha residential development on the Northeast side of Owen Sound. The proposed new development consists of a 29-unit apartment, a 34-unit apartment, two single story 3-plex residences and four single story 4-plex residences. The development will extend off of the end of 10th Ave East, where there currently exists a residential subdivision. This report provides sufficient detail to support detailed design and a Site Plan Application.

1.1 Objectives

The objectives of this FSR are to:

- Confirm the location of existing infrastructure both internal and adjacent to the subject site.
- Evaluate and confirm adequate supply and on-site distribution of municipal water to meet domestic and fire flow requirements.
- Evaluate and confirm capacity for sanitary servicing.
- Stormwater Management has been provided under a separate cover.

1.2 Existing Conditions

The current legal description for the site is RANGE 9 EGR PT PARK LOT 7; PLAN 16M16 BLKS 35 AND 36; AND RP 16R8804 PT PART 1. The site is zoned as Medium Density Residential (R4) by the city of Owen Sound.

The approximate size of the lot is 2.53 hectares. The medium density residential lot is currently vacant with no existing structures. It is bounded on the southwest side by an existing subdivision on 10th Ave East and bounded on the east side by the Kenny Drain, a municipal drain for the City of Owen Sound. To the north of the lot is vacant medium-density residential land (R4) and to the south is Open Space (OS) and general industrial land (M1). The lot slopes from west to east and consists of no wetlands or protected areas. The existing conditions are shown on Drawing C100.

1.3 Proposed Development

The proposed development consists of a 29-unit apartment, a 34-unit apartment, two single story 3-plex residences and four single story 4-plex residences. The development

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will extend off of the end of the 10th Ave East cul-de-sac, where there currently exists a residential subdivision. The existing subdivision will bound the Southwest side of the proposed subdivision. The east side of the proposed development will exist adjacent to the Kenny Drain, with the northern and southern sides abutting vacant medium residential land and open space respectively. The development will have road access through the 10th Ave east cul-de-sac. The roadway for the proposed subdivision will be private. The site plan is shown on Drawing SP.

The proposed development will be graded so that the impact of the development will not adversely affect adjacent private properties and that drainage will be directed internally as best as possible to a stormwater management system before outletting to the Kenny Drain. An emergency overland flow route will also direct runoff towards the Kenny Drain.

2 Water Supply and distribution

Water servicing for the subject site will be designed according to the MOE Design guidelines for drinking-water systems to ensure that adequate pressures and fire flows are achieved.

- Specific flow rate: 400 L/c/d
- Specific max day peaking factor: 4

2.1 Existing Water Infrastructure

Based on the available information, existing water infrastructure in proximity to the site consists of 200mm diameter watermain from the 10th Ave east subdivision that ends at the cul-de-sac and is in the industrial pressure zone.

2.2 Proposed Water Servicing

It is proposed that a 200mm diameter watermain be installed in the new development and that the watermain loops back and reconnects at the tee in the development. The water demand for the development has been calculated to be 3.38 L/s -and is proposed to be provided through an extension of the watermain on 10th Ave East.

The water service connection to the apartment units will be 150mm in diameter.

The water service connection to the 3-plex and 4-plex buildings will be 25mm in diameter, with a single service for each residence.

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Water demand calculations are provided in Appendix A.

Refer to Drawing C102 for the site servicing layout.

3 Sanitary Servicing

Sanitary servicing will be designed in accordance with the MOE Design Guidelines for Sewage Works.

Sanitary design flows will be based on the following:

- Flow rate for average residential daily flow: 400 L/cap/day
- Population : 2.1 p.p.u.
- Maximum day peaking factor: 4
- Infiltration rate: 0.26 L/s

3.1 Existing sanitary Sewer structure

From information available, there is a sanitary sewer service south of the development on the corner of 23rd St East and 16 Ave East with a diameter of 200mm and an invert height of 209.56m above sea level (MASL).

3.2 Proposed Sanitary Servicing

Peak sanitary flow from the proposed development is calculated to be 4.04L/s and consists of residential and infiltration flow.

Since the new sanitary sewer services are to be lower than any existing services in the area, a pumping station (Designed by Others) is required to discharge sanitary sewage. 200mm diameter sanitary sewers are proposed to be installed throughout the development, where they will run to a pumping station on the south side of the development. The pumping station will pump the sanitary sewage south to proposed MH02. 200mm diameter service is proposed to take the sanitary flow to the existing MH on the corner of 23rd St East and 16th Ave East, see Servicing Drawing C102 for more details.

The proposed sanitary service connections to the apartment units are 200mm in diameter.

The proposed sanitary service connections to the 3-plex and 4-plex buildings are 100mm in diameter.

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The sanitary design calculations are shown in Appendix B; see Appendix C for the sanitary design sheet.

4 Storm servicing

The storm servicing will consist of pipe sizes ranging from 250mm diameter to 525mm diameter. The servicing will start at the high side at the west end of the site and work its way east to the proposed Stormwater Pond in the northeast corner of the site. See servicing drawing C102 for more details and Appendix D for the storm sewer design sheet.

The stormwater management design has been provided under separate cover.

5 Conclusions

The existing infrastructure and proposed servicing strategies for the new 2.53-hectare residential development in Owen Sound have been meticulously evaluated. The detailed analysis confirms the following:

Existing Infrastructure:

- The site is currently vacant, zoned for Medium Density Residential (R4), and well-positioned adjacent to existing residential, industrial, and open space areas. Existing water and sanitary sewer infrastructure are identified and evaluated for connectivity and capacity.

Water Supply and Distribution:

- The proposed water servicing plan includes a 200mm diameter watermain within the new subdivision, looping back and reconnects at the tee in the development. The calculated water demand of 3.32 L/s will be met through this extension, ensuring adequate pressure and fire flow in accordance with MOE Design Guidelines. Water service connections for the apartment units and multi-plex residences are appropriately sized to meet the anticipated demand.

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- Hydrants will be placed approximately 90m intervals for fire protection within the development.

Sanitary Servicing:

- The sanitary servicing design incorporates the construction of a pumping station due to the elevation and gravity flow constraints. The proposed 200mm diameter sanitary sewers will collect wastewater throughout the development and direct it to the pumping station, which will then discharge the flow through a 200mm diameter pipe to the existing sanitary sewer at the corner of 23rd St East and 16th Ave East. This system is designed to handle a peak sanitary flow of 4.05 L/s, inclusive of residential and infiltration flows.

Grading and Drainage:

- The site will be graded to direct drainage internally towards a stormwater management system, minimizing adverse impacts on adjacent properties. An emergency overland flow route will ensure runoff is effectively directed towards the Kenny Drain.

This Functional Servicing Report has been designed to be in support of the SPA approval. The findings of this report indicate that the proposed development can be constructed to the City of Owen Sound Engineering Standards with no impact on the undeveloped lands to the north.

Report Prepared By:



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Clearwater Shores Inc.

Report Reviewed By:



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Clearwater Shores Inc.

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Appendix A

Appendix A

Water Demand Calculations



CALCULATION SHEET

Project: 10th Ave Estates Development
Water Demand Calculations

Prepared by: Keith Welsh
Checked by: Michelle Henry
Project Number: 24003
Date: 04-Jun-24

Domestic Flow Calculations

Average Day Per Capita Flow = 400 L/c/d

Number of Proposed Units = 85

Residential Density = 2.1 ppu

Population = 178.5

Average Day Demand = 71,400 L/d

= 0.83 L/s

Peak Factor = 4

Total Domestic Peak Demand = 3.32 L/s

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Appendix B

Appendix B

Sanitary Flow Calculations



CALCULATION SHEET

Project: 10th Ave Estates Development
Sanitary Flow Calculations

Prepared by: Keith Welsh
Checked by: Michelle Henry
Project Number: 24003
Date: 04-Jun-24

Residential Sanitary Contribution

Average Day Per Capita Flow = 400 L/c/d

Number of Proposed Units = 85

Residential Density = 2.1 ppu

Population = 178.5

Average Day Demand = 71,400 L/d

= 0.83 L/s

Peak Factor = 4

Peak Flow = 3.32 L/s

Infiltration Allowance = 0.26 L/s/ha

Total Site Area = 2.53 ha

Infiltration = 0.66L/s

Total Peak Flow = 4.04 L/s

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Appendix C

Appendix C

Sanitary Sewer Design Sheet

SANITARY SEWER DESIGN SHEET

10th Ave Estates Development, The City of Owen Sound

Project #: 24003.0
 Date: 06/04/2024
 Designer: KDW
 Checked: MH

Min Diameter = 200 mm
 Manning's n = 0.013
 Min. Velocity = 0.75 m/s
 Max. Velocity = 3.65 m/s

Avg. Domestic Flow = 400.0 l/s
 Infiltration = 0.260 l/s
 Max. Peaking Factor = 4.00
 Min. Peaking Factor = 1.50

Factor of Safety = 10 %

NOMINAL PIPE SIZE USED



DESCRIPTION	FROM MH	TO MH	RESIDENTIAL				COMMERCIAL/INDUSTRIAL/INSTITUTIONAL				INFILTRATION				FLOW CALCULATIONS				PRELIMINARY DATA									
			AREA (sq ft)	ACC. AREA (sq ft)	UNITS (U)	DENSITY (P/UA)	DENSITY (P/UA)	AREA (sq ft)	ACC. AREA (sq ft)	EQUIV. POP. (P/UA)	EQUIV. POP. (P/UA)	FLOW RATE (gph)	RATE (gph)	EQUIV. POP. (P/UA)	EQUIV. POP. (P/UA)	ACCUM. EQUIV. POP.	INFILTRATION (l/s)	TOTAL ACCUM. POP.	FEASING FACTOR	POP. FLOW (l/s)	CONSTANT FLOW (l/s)	ACCUM. COMML FLOW (l/s)	TOTAL FLOW (l/s)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (l/s)	FULL FLOW VELOCITY (m/s)	ACTUAL VELOCITY (m/s)
	SAMH10	SAMH9	1.00	1.00	33	2.1	2.1	70	70							0.3	70	4.00	1.3	1.6		1.6	4.00	200	65.6	2.09	0.87	2%
	SAMH9	SAMH5	0.11	1.11	2	2.1	2.1	5	75							0.3	75	4.00	1.4	1.7		1.7	4.00	200	65.6	2.09	0.89	3%
	SAMH8	SAMH7	0.71	0.71	38	2.1	2.1	80	80							0.2	80	4.00	1.5	1.7		1.7	1.00	200	32.8	1.04	0.55	5%
	SAMH7	SAMH6	0.44	1.15	4	2.1	2.1	9	69							0.3	69	4.00	1.6	1.9		1.9	0.50	200	23.2	0.74	0.45	6%
	SAMH6	SAMH5	0.32	2.47	8	2.1	2.1	17	106							0.4	106	4.00	2.0	2.3		2.3	0.30	200	19.0	0.67	0.38	3%
	SAMH5	SAMH4	0.01	2.63	1	2.1	2.1	181	181							0.7	181	4.00	3.4	4.0		4.0	1.00	200	32.8	1.04	0.71	12%
	SAMH3	SAMH2	0.01	2.63	1	2.1	2.1	181	181							0.7	181	4.00	3.4	4.0		4.0	0.30	200	18.0	0.57	0.46	23%
	SAMH2	SAMH1	0.02	2.64	1	2.1	2.1	181	181							0.7	181	4.00	3.4	4.1		4.1	0.30	200	18.0	0.57	0.46	23%
	SAMH1	EX-SAMH	0.13	2.77																								

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Appendix D

Appendix D

Storm Sewer Design Sheet

