Functional Servicing Report

650 Vindin Street Residential Development

Town of Midland
County of Simcoe

PEARSON
ENGINEERING LTD.
PEARSONENG.COM

May 2020
17086

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Functional Servicing Report
Vindin Street Residential Development

1. Introduction

PEARSON Engineering Ltd. (Pearson) has been retained by RCI (Marine Land) Inc. (Client) to prepare a Functional Servicing Report (FSR) in support of the proposed residential development (Project). The Project site is located east of Vindin Street, north of Victoria Street, south of Marina Park Avenue, and west of Midland Bay in the Town of Midland (Town) in the County of Simcoe (County).

The subject property is approximately 7.10 ha in size and is partially treed and relatively flat. A municipal park is located adjacent to the site and the project is to be developed into a residential development. There is currently an existing SWM Pond block to the north which outlets to Midland Bay. The location of the site can be seen on Figure 1.

This FSR assesses the existing municipal infrastructure in the vicinity of the Project, the onsite Stormwater Management (SWM) facilities and internal services required to service the proposed Project. The report also includes preliminary design calculations and a brief outline of the proposed internal services, as well as comments regarding the ability of the various secondary utilities to service the site.

2. Supporting Documents

The following documents have been referenced in the preparation of this report:

- Ministry of the Environment, Design Guidelines for the Drinking-Water Systems, 2008.
- Ministry of the Environment, Design Guidelines for the Sewage Works, 2008.
- The Ministry of the Environment Stormwater Management Planning and Design Manual, March 2003.
- The Town of Midland Engineering Development Design Standards, Revised December 2012

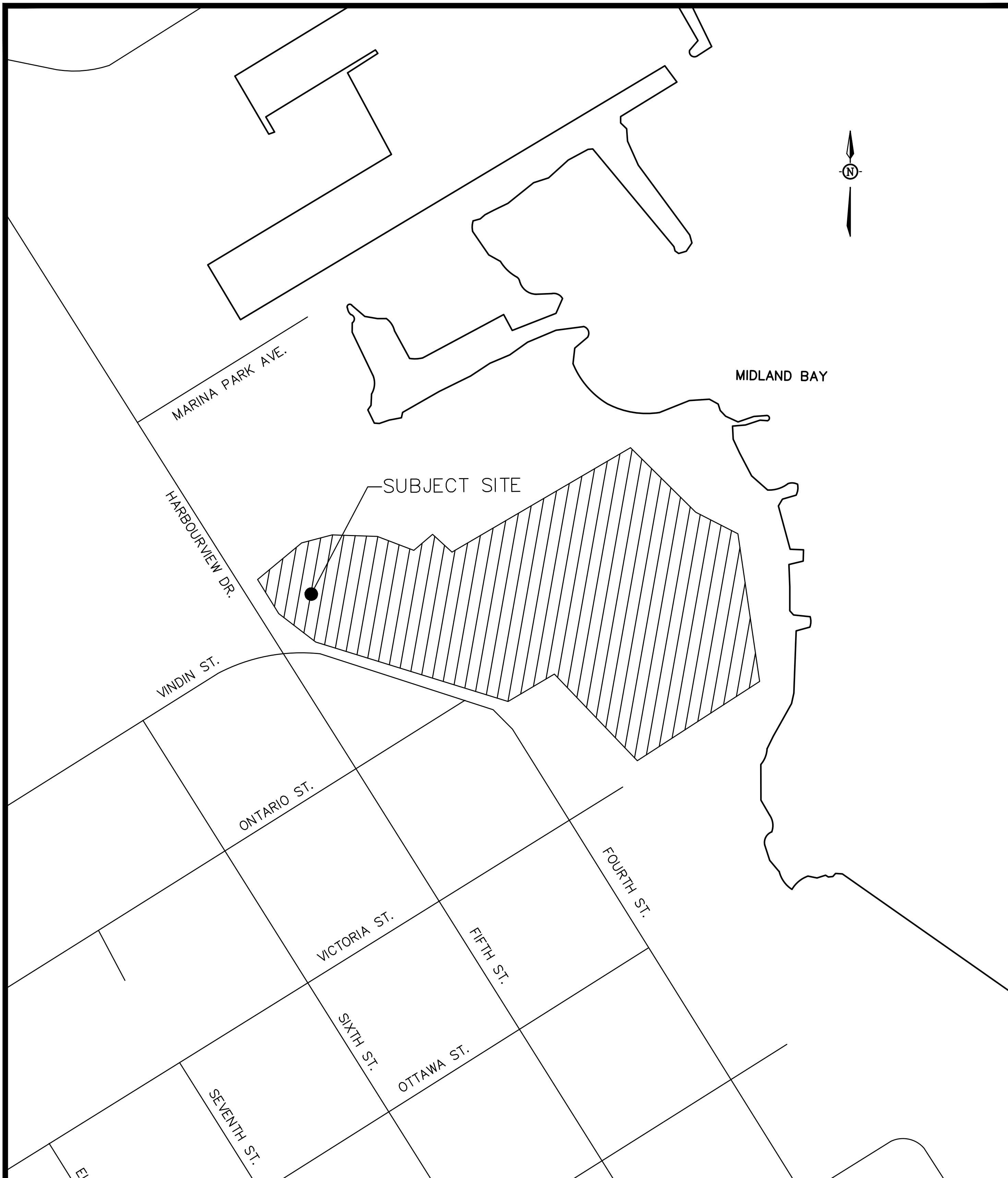
3. Design Population

The proposed residential development is composed of four (4) apartment buildings, each with 100 units each for a total of 400 units. The Project also proposes nine (9) townhouse blocks with a total of 53 units. Based on the average unit size and population density of the residential buildings, a design population of 2.34 persons per unit was selected. This results in a maximum projected design population of 1,060 persons.

4. Water Supply and Distribution

4.1. Water Servicing Design Criteria

The site is to have a total population of 1,060 persons. Utilizing the Ministry of the Environment, Conservation, and Parks (MECP) Guidelines for domestic water use of 225 L/capita/day, the Average Day Demand (ADD) that is required is 2.76 L/s. A Peak Rate factor of 4.13 was used in calculating the Peak Hour Demand (PHD) of 11.40 L/s for the development. Calculations for the domestic water requirements for the site can be found in Appendix A.



650 VINDIN STREET
MIDLAND, ONTARIO
COUNTY OF SIMCOE

LOCATION PLAN

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DESIGNED BY	MWD	HORIZ SCALE	NTS	PROJECT #	17086
DRAWN BY	MJWP	VERT SCALE		DRAWING #	FIG-1
CHECKED BY	MWD	DATE	MAY 2018	REVISION #	0

4.2. Internal Water Distribution System

The water system for this Project is intended for domestic and firefighting use. There is an existing municipal 300 mm diameter watermain on the north side of Fourth Street and an existing 400 mm diameter watermain stub at the end of Victoria Street. The site will be serviced by connecting a proposed watermain to the existing watermain on Fourth Street and to the existing watermain on Victoria Street. The Project's domestic water services will connect into the new loop between Fourth Street and Victoria Street. The proposed townhouses are to receive separate 25 mm water services. Refer to Figure 2 for the domestic and fire service watermain layout.

Internal fire hydrants are proposed to provide adequate firefighting coverage and have been spaced at the maximum intervals of 150 m as per Town Standards. Refer to Figure 2 for the proposed fire hydrant locations for the project.

We suggest that the Town review the existing watermain distribution system with respect to the Town's water treatment and supply capacities for both domestic and fire service for this development and confirm that capacity allocation is available. If required, a water pressure test on existing hydrants will be completed at detailed design to confirm existing pressure and flow.

5. Sanitary Servicing

5.1. Sanitary Design Criteria

The site is to have a total population of 1,060 persons. Utilizing the MECP Guidelines for domestic sewer use of 450 L/capita/day, an Average Daily Flow (ADF) of 2.76 L/s. is calculated. Using a Peaking Factor of 3.78 for this project, a Peak Flow of 10.44 L/s is calculated for the entire development. The peak flow including the infiltration allowance was calculated to be 12.08 L/s. The proposed 200 mm diameter sanitary sewer has a capacity of 23.2 L/s at 0.5% and is sufficient to convey the sanitary design flows. Sanitary design flow calculations can be found in Appendix B.

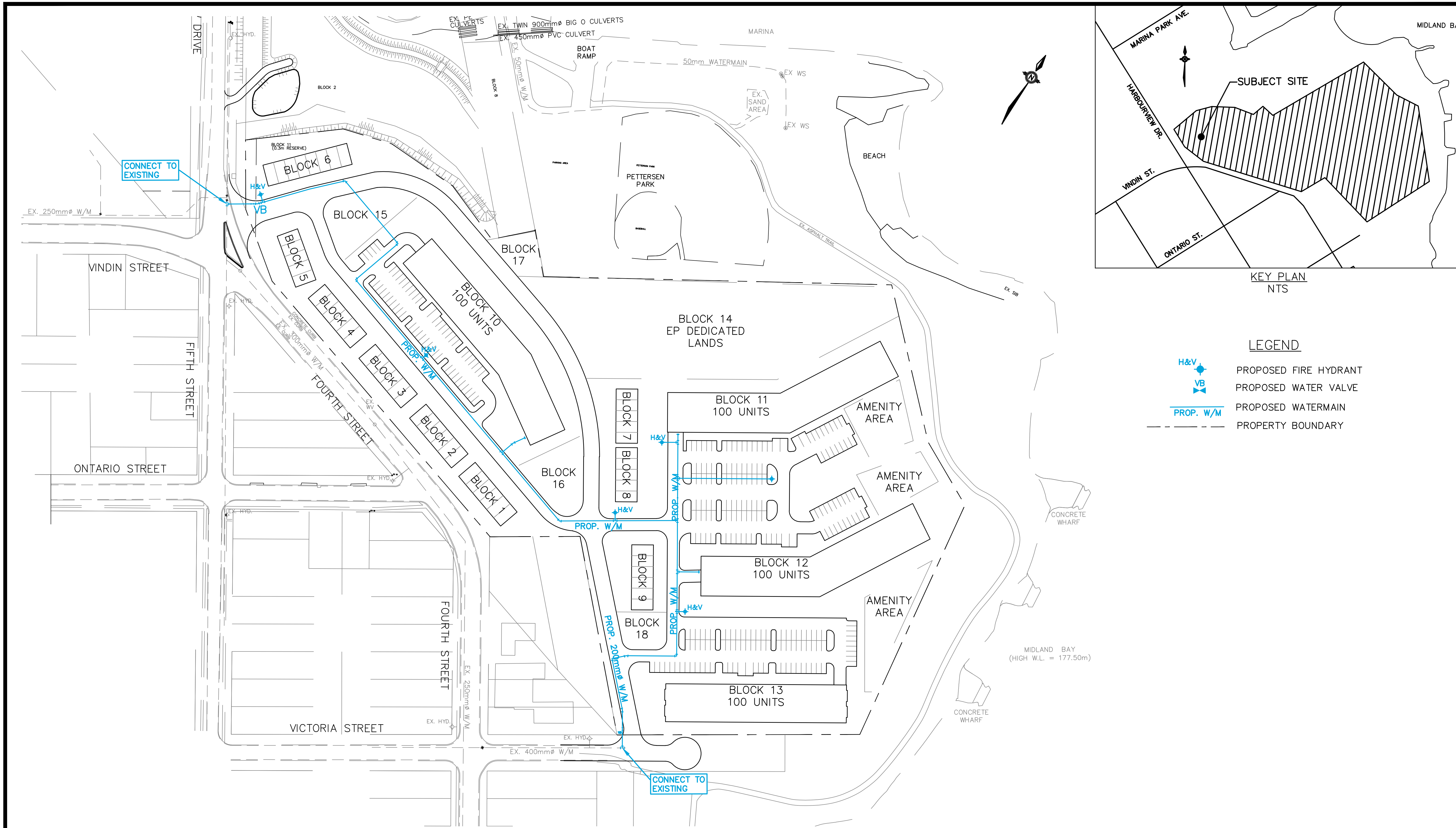
5.2. Internal Sanitary Sewer System

The Project's sanitary sewer system will convey flow via a proposed gravity sanitary sewer from the site and connect to the existing manhole located on Fourth Street northwest of the site. The sanitary sewer system will extend internally on the site to service each apartment building and each townhouse unit will be provided with a separate service connection to meet the mechanical design requirements. The proposed sanitary sewer system for the site can be seen on Figure 3.

An existing municipal pump station and forcemain is west of the project site on Vindin Street. The existing 200 mm diameter sanitary sewer on Fourth Street runs east to west and has a capacity of 23 L/s at 0.5%. The proposed peak flow is 52.5% of the existing capacity and therefore the existing 200 mm diameter sanitary sewer is sufficient to convey the sanitary design flows.

It is proposed that the sanitary sewers be constructed in accordance with the Town of Midland and the MECP guidelines to service the Project. The proposed sewers will consist of a minimum diameter of 200 mm and will be designed to meet minimum design grades and the required minimum and maximum velocities under flow conditions.

We suggest that the Town review the sanitary design flow from this Project with respect to the Town’s sanitary treatment capacities and confirm that capacity allocation is available for this Development.



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RCI (MARINE LAND) INC.
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MIDLAND, ONTARIO

WATERMAIN LAYOUT

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DESIGNED BY	MWD	HORIZ SCALE	1:2000	PROJECT #	17086
DRAWN BY	MJWP	VERT SCALE		DRAWING #	FIG-2
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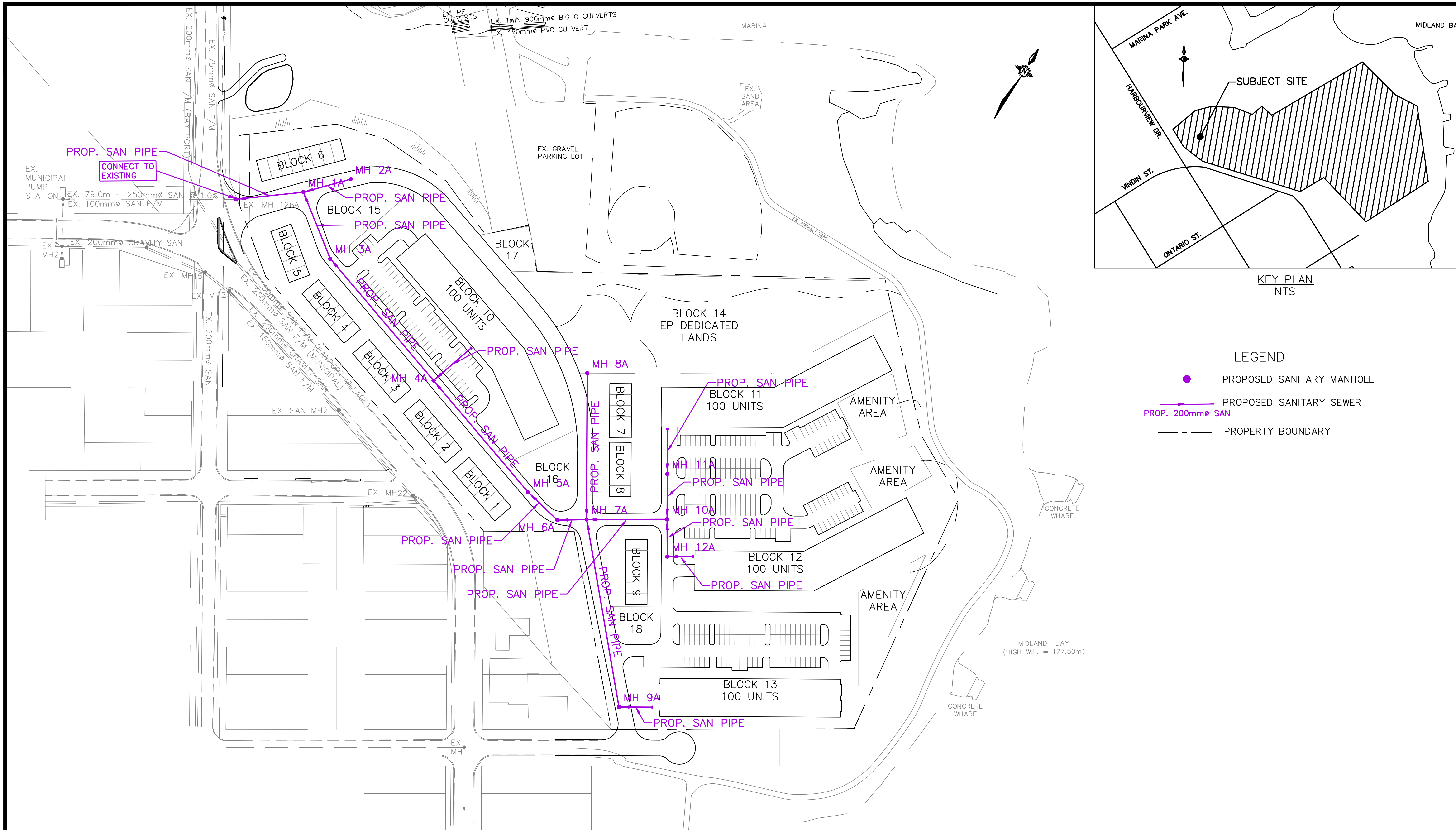

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MIDLAND, ONTARIO

SANITARY LAYOUT

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DESIGNED BY	MWD	HORIZ SCALE	1:2000	PROJECT #	17086
DRAWN BY	MJWP	VERT SCALE		DRAWING #	FIG-3
CHECKED BY	MWD	DATE	MAY 2020	REVISION #	0

6. Stormwater Management

A key component of the Development is the need to address environmental and related SWM issues. These are examined in a framework aimed at meeting the Town of Midland, and MECP requirements. SWM parameters have evolved from an understanding of the location and sensitivity of the site's natural systems. This FSR focuses on the necessary measures to satisfy the MECP's SWM requirements.

It is understood the objectives of the SWM plan are to:

- Protect life and property from flooding and erosion
- Maintain water quality for ecological integrity, recreational opportunities etc.
- Protect and maintain groundwater flow regime(s).
- Protect aquatic and fishery communities and habitats.
- Maintain and protect significant natural features.

6.1. Analysis Methodology

The design of the SWM Facilities for this site has been conducted in accordance with:

- The Ministry of the Environment Stormwater Management Planning and Design Manual, March 2003
- The Town of Midland Engineering Development Design Standards, Revised December 2012

In order to design the facilities to meet these requirements, it is essential to select the appropriate modeling methodology for the storm system design. Given the size of the site, the Modified Rational Method is appropriate for the design for the SWM system.

6.2. Existing Drainage Conditions

The project site is currently undeveloped lands, partially covered with trees with an existing concrete storage building at the south end. The site generally slopes from south to north at an average grade of approximately 1% - 2%. The majority of storm runoff is conveyed overland via sheet flow towards the existing SWM Facility located to the northwest of the site, which ultimately drains into Midland Bay. Existing catchbasins at the intersection of Ontario Street and Fourth Street currently outlet north through the site into the existing forest ultimately draining towards the existing SWM facility. A portion of the site drains as sheet flow northeast uncontrolled directly into Midland Bay.

The existing SWM facility is a retrofitted constructed wetland with a retention volume of approximately 5,380 m^3 with a 4.0 m wide berm. The pond has three outlet controls including a low flow hickenbottom structure with a 450 mm diameter orifice set at the permanent pool level, a ditch inlet catch basin at the top of the extended storage level and an 8.0 m wide emergency spillway. The pond outlets are directed towards the existing marina through twin 900 mm diameter Big O culverts.

According to the Geotechnical Investigation completed by Toronto Inspection Ltd., dated July 2019, the project site is comprised of fill material overlying silty sand, sand, clayey silt, and san and gravel deposits. Through the use of monitoring wells installed in four of the borehole locations, groundwater was found to be at a depth of 0.09 m to 1.63 m below the existing ground surface.

The pre-development peak flows from the site were calculated using the Rational Method and are provided in the Table below. Peak flow calculations can be found in Appendix C. Pre-development drainage patterns are shown on Figure 6.

Table 1 – Pre-Development Peak Flows

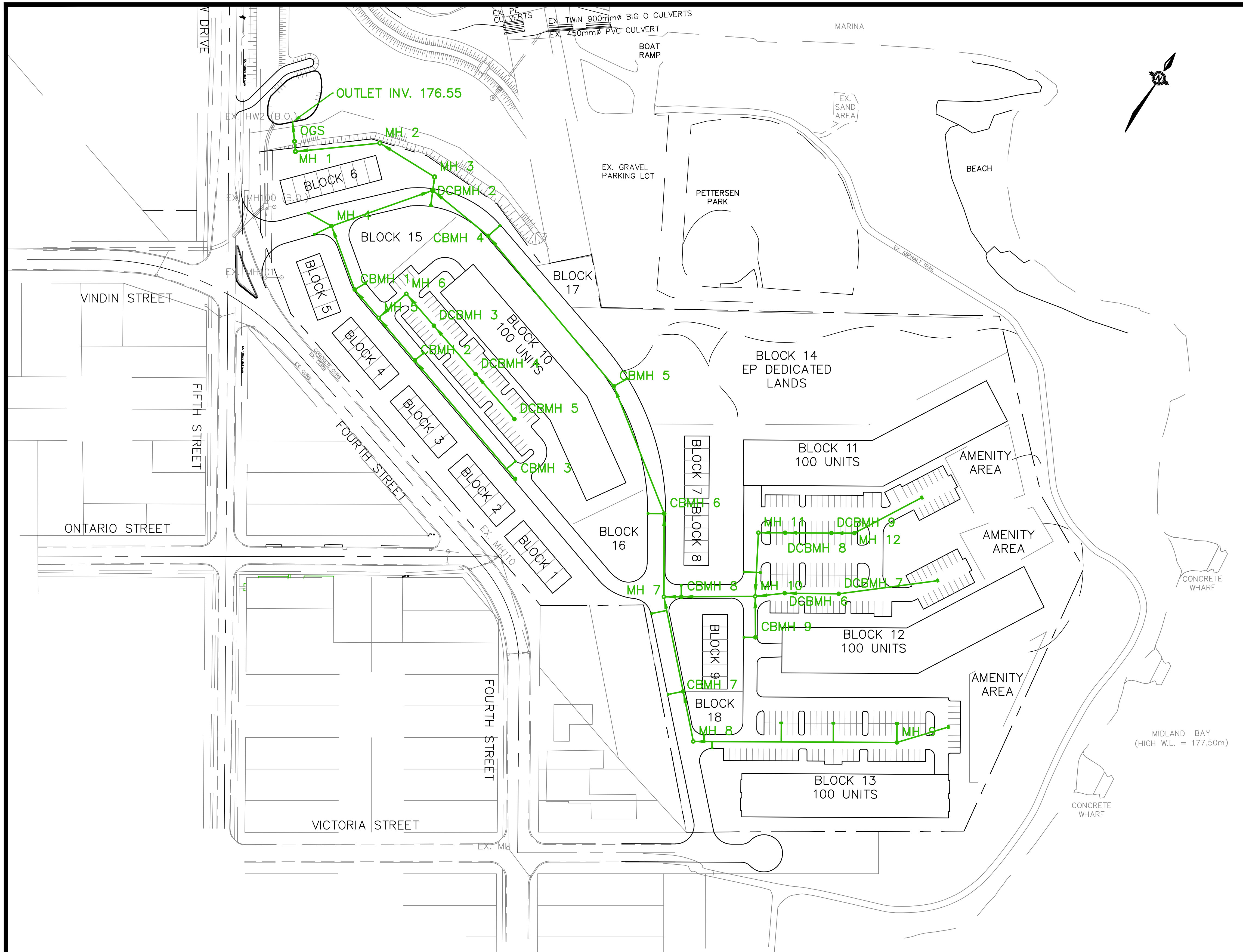
	2 Year Storm	5 Year Storm	10 Year Storm	25 Year Storm	50 Year Storm	100 Year Storm
Total Site (m^3/s)	0.18	0.24	0.29	0.37	0.45	0.52

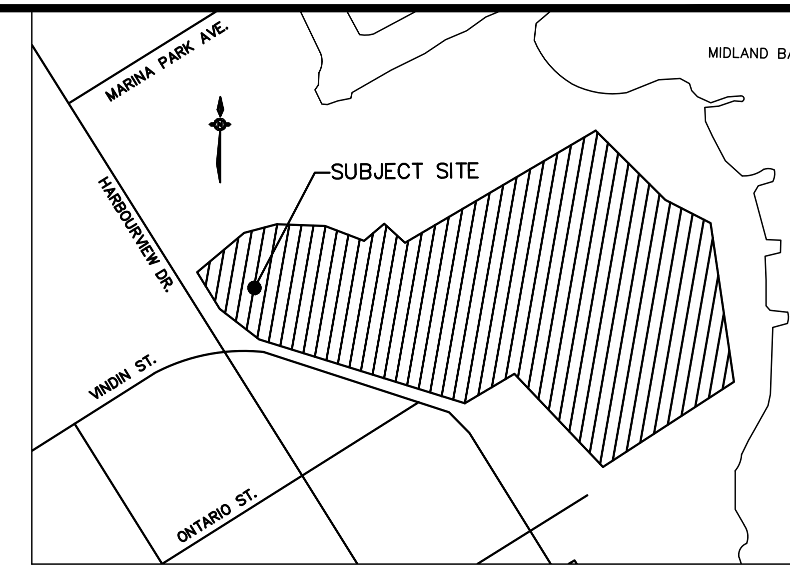
6.3. Proposed Storm Drainage System

The proposed drainage conditions from the site will generally follow pre-development. The majority of the proposed drainage from the project will be conveyed via a proposed storm sewer system to the northwest corner of the site into the existing SWM pond designed to retain flows and release them at a reduced rate through the marina and into Midland Bay via existing twin 900 mm diameter Big O culverts and an existing 450 mm diameter PVC culvert under the proposed road adjacent to the park. The grassed rear yards and rear half of the apartment buildings on the east side of the site will flow uncontrolled as sheet flow towards Midland Bay. The grassed rear half of the townhouse blocks on the west side of the project site will flow uncontrolled via sheet flow to the existing storm water sewer system on Fourth Street. The existing external flows outletting through the storm outlet at the intersection of Ontario Street and Fourth Street will be conveyed towards the existing SWM pond via a proposed storm sewer along Fourth Street. Table 2 below summarizes post-development peak flows for the development. By comparing Table 1 and Table 2, it can be seen that the post-development peak flow for the site are larger than pre-development for all storm events. The proposed storm drainage patterns can be seen on Figure 7.

Table 2 - Post Development Peak Flows

	2 Year Storm	5 Year Storm	10 Year Storm	25 Year Storm	50 Year Storm	100 Year Storm
Controlled (Areas 1 & 2) (m^3/s)	0.46	0.62	0.72	0.93	1.14	1.30
Uncontrolled (Areas 3, 4, & 5) (m^3/s)	0.11	0.15	0.17	0.23	0.27	0.31
Total Site (m^3/s)	**0.57**	**0.77**	**0.89**	**1.16**	**1.41**	**1.61**





KEY PLAN
NTS

LEGEND

- PROPOSED MANHOLE
- PROPOSED CATCHBASIN MANHOLE
- PROPOSED DOUBLE CATCHBASIN MANHOLE
- PROPOSED CATCHBASIN
- PROPOSED DOUBLE CATCHBASIN
- PROP. STM — PROPOSED STORM SEWER
- PROPERTY BOUNDARY

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MIDLAND, ONTARIO

STORM SEWER LAYOUT

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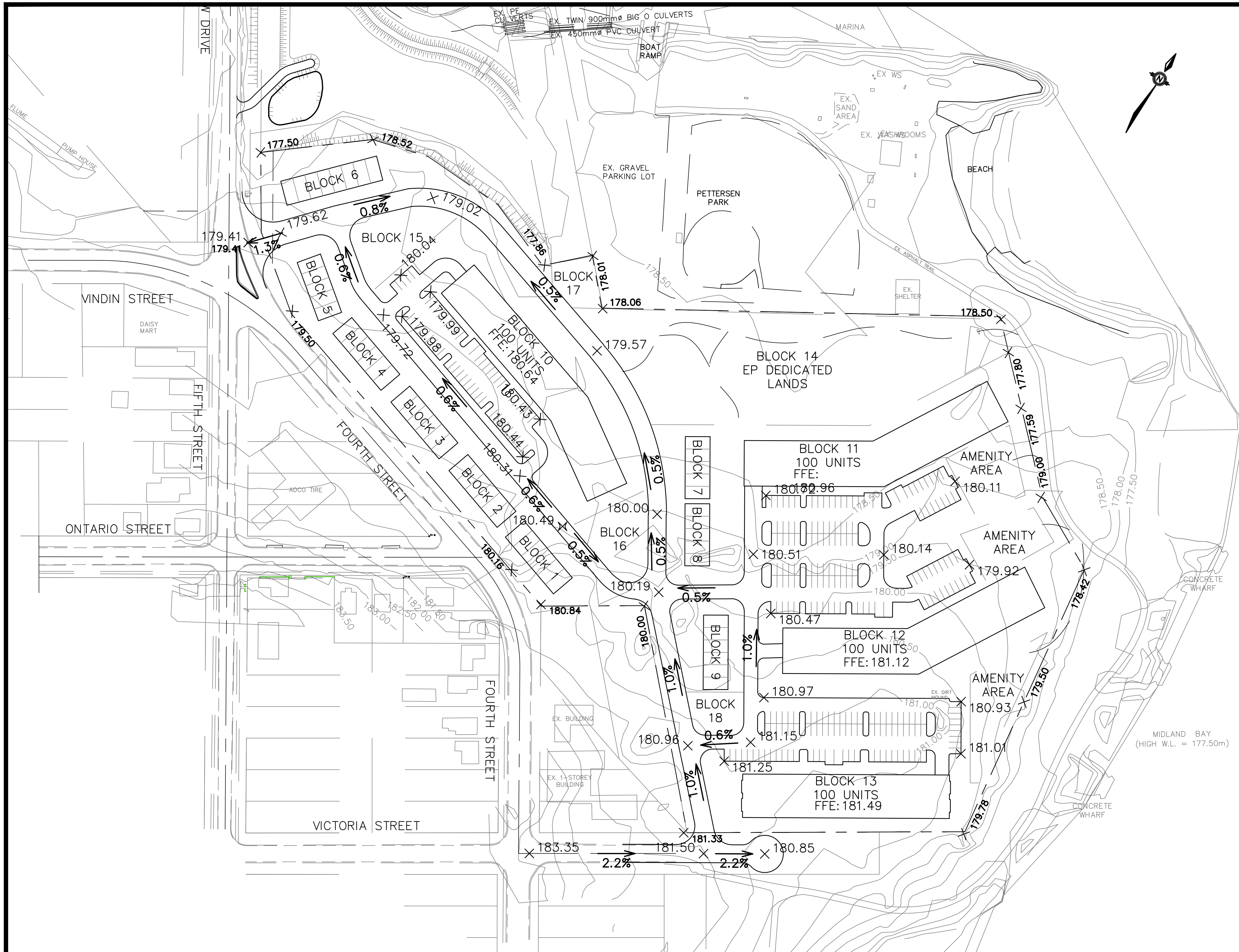

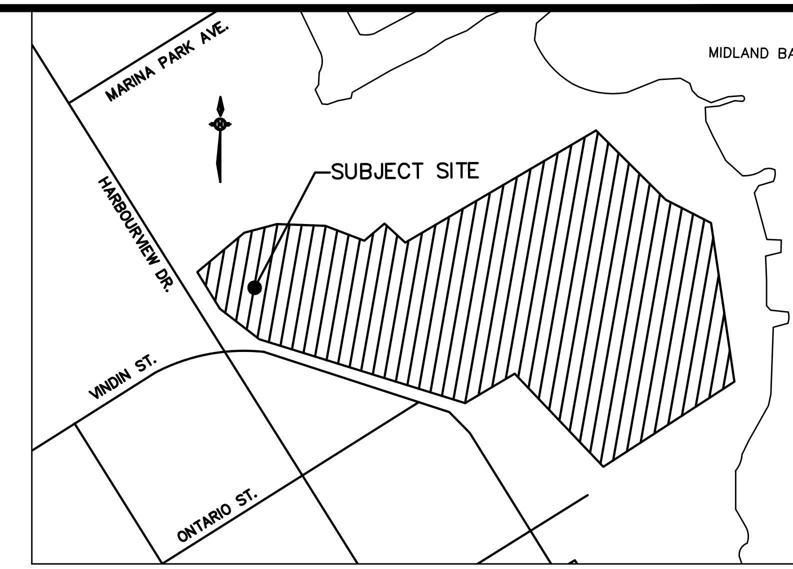

KEY PLAN
NTS

LEGEND

286.73	PROPOSED ELEVATION
× 286.73	EXISTING ELEVATION
→ 2.0%	PROPOSED DIRECTION AND GRADE
— - —	PROPERTY BOUNDARY

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RCI (MARINE LAND) INC.
650 VINDIN STREET
MIDLAND, ONTARIO

PRELIMINARY GRADING PLAN

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DRAWN BY	MJWP	VERT SCALE		DRAWING #	FIG–5
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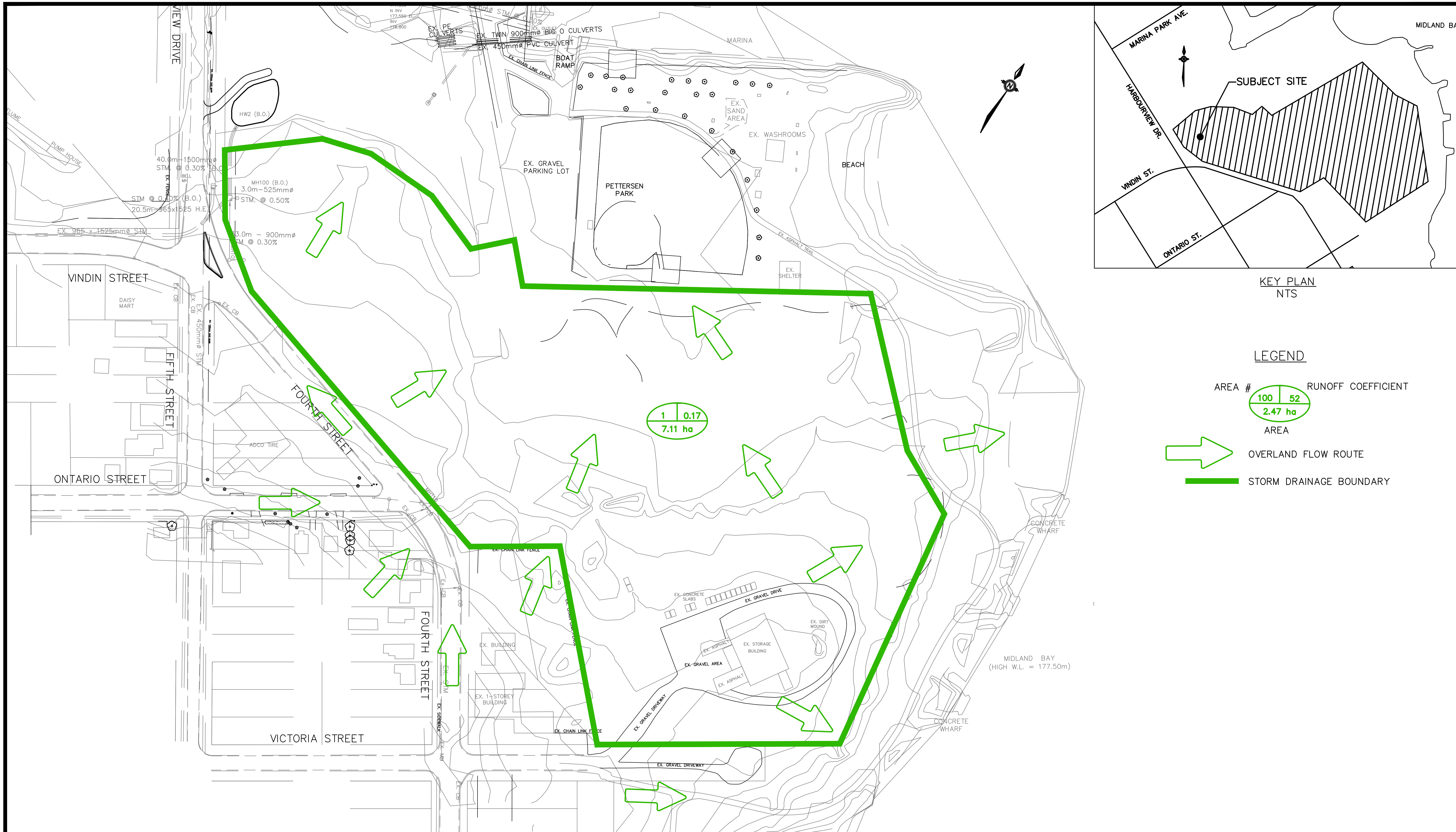

NO.	REVISION NOTE	DATE	BY

RCI (MARINE LAND) INC.
650 VINDIN STREET
MIDLAND, ONTARIO

PRE-DEVELOPMENT STORM DRAINAGE PLAN

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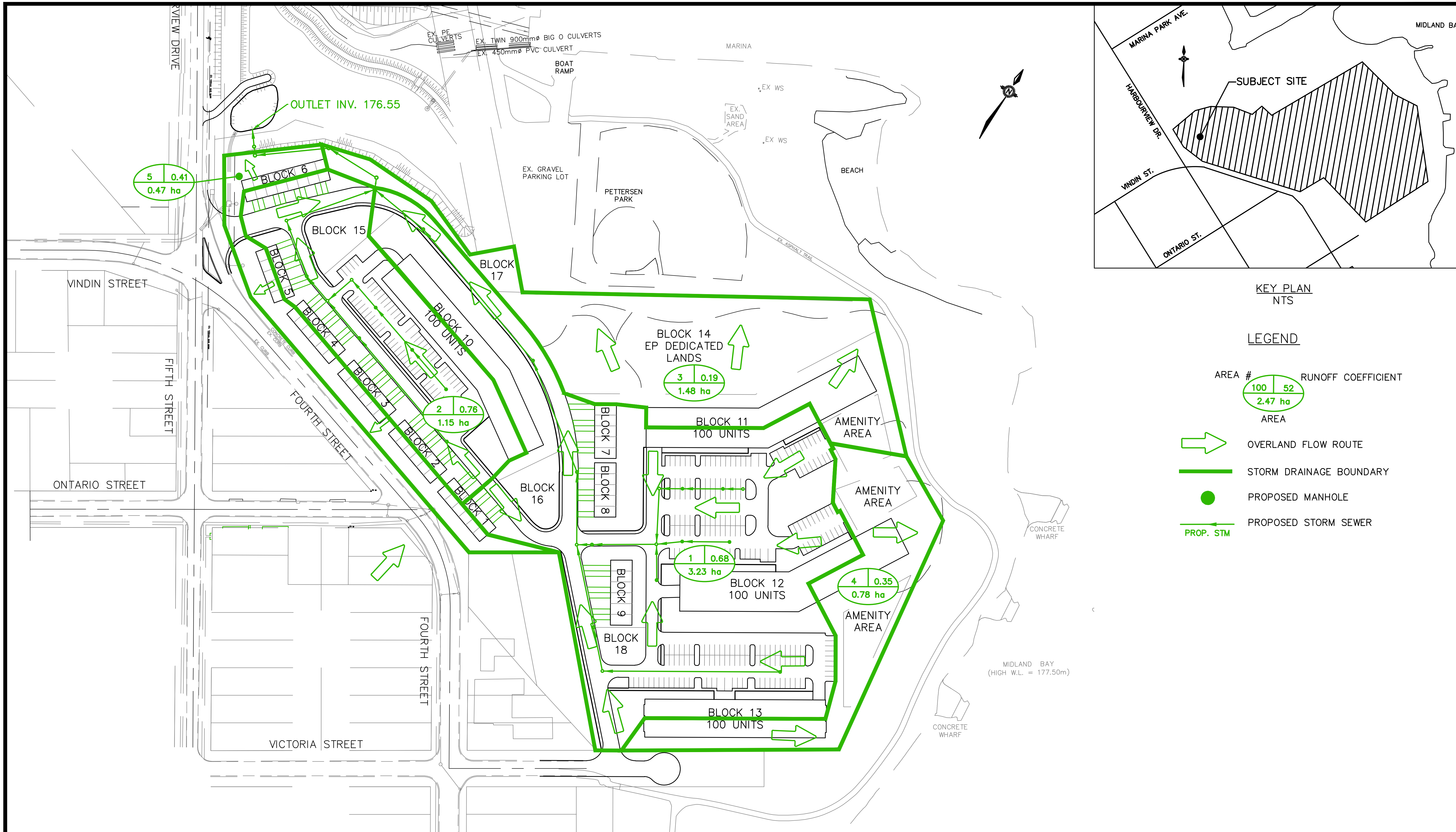
DESIGNED BY	MWD	HORIZ SCALE	1:2000	PROJECT #	17086
DRAWN BY	MJWP	VERT SCALE		DRAWING #	FIG-6
CHECKED BY	MWD	DATE	MAY 2020	REVISION #	0



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RCI (MARINE LAND) INC.
650 VINDIN STREET
MIDLAND, ONTARIO

POST-DEVELOPMENT STORM DRAINAGE PLAN

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DESIGNED BY	MWD	HORIZ SCALE	1:2000	PROJECT #	17086
DRAWN BY	MJWP	VERT SCALE		DRAWING #	FIG-7
CHECKED BY	MWD	DATE	MAY 2020	REVISION #	0

6.4. Stormwater Quantity Control

The proposed development will increase the imperviousness of the site and as such the post-development peak flows will increase. The post-development runoff coefficient of 0.54 is greater than the pre-development coefficient of 0.17, therefore considerations were taken regarding quantity control. Quantity control measures to reduce post-development peak flows to pre-development values are not required due to the close proximity to Midland Bay, however, the subject site is located near the outlet of an upstream 67 ha watershed. Post-development peak flows from the site will be released before the larger watershed peak flow reaches the outlet for the same storm events. The existing SWM Pond decreases the total watershed peak flow by preventing the peak flow from directly outletting into Midland Bay. By providing no additional storage on site, the peak flow from the site will already be conveyed downstream by the time the watershed's peak flow arrives, thus having no adverse effects on the overall peak flow for the watershed at this location.

The Project's roadways will be drained via the proposed catchbasin and storm sewer system designed to convey the minor system flows. Major system flows will be conveyed via overland sheet flow along the proposed roadways into the existing Stormwater Management Facility northwest of the project site.

Given the size of the site, the Modified Rational Method was used to determine the SWM release rates. IDF curve parameters were taken from the MTO Curve Lookup tool which were utilized for determining the storm intensity values and the following post-development peak flows have been calculated. Table 2 below summarizes post-development peak flows and demonstrates that the post-development flows for all storm events are larger than the pre-development peak flows.

6.5. Stormwater Quality Control

The MECP in March 2003 issued a "Stormwater Management Planning and Design Manual". This manual has been adopted by a variety of agencies including the Town of Midland. The objective of our Stormwater Quality Control will be to ensure Enhanced Protection quality control as stated in the MECP manual. To achieve enhanced protection, permanent and temporary control of erosion and sediment transport are proposed and are discussed in the following sections.

6.5.1. Permanent Quality Control

Permanent quality control measures are recommended to address the risk posed by the collection of grit, sand, and oils on the paved surfaces and parking facilities. The existing SWM Facility currently treats to MECP Normal or Level 2 Protection standard. An Oil/Grit Separator (OGS) or equivalent treatment unit is proposed in order to treat the stormwater released from the site to MECP Enhanced or Level 1 Protection standard. This MECP standard stipulates a Total Suspended Solids (TSS) removal of at least 80%.

6.5.2. Quality Control During Construction Activities

During construction, earth grading and excavation will create the potential for soil erosion and sedimentation. It is imperative that effective environmental and sedimentation controls are in place and maintained throughout the duration of construction activities to ensure stormwater runoff's quality.

Therefore, the following recommendations shall be implemented and maintained during construction to achieve acceptable stormwater runoff quality:

- Installation of silt fence along the entire perimeter of the site to reduce sediment migration onto surrounding properties;
- Installation of a construction entrance mat to minimize transportation of sediment onto roadways;
- Restoration of exposed surfaces with vegetative and non-vegetative material as soon as construction schedules permit. The duration in which surfaces are disturbed/exposed shall not exceed 30 days;
- Reduce stormwater drainage velocities where possible; and,
- Minimize the amount of existing vegetation removed.

7. Low Impact Development

Modern Stormwater Management (SWM) practices have evolved over recent years, with Low Impact Development (LID) techniques being widely used as the method of Stormwater Management and quality control. LID's are typically implemented to treat stormwater runoff from the impervious areas for quality control, as well as to reduce phosphorous levels.

However, since the subject site is in close proximity to Midland Bay, the groundwater is considered to be have similar characteristics as surface water and is considered to be under direct influence of surface water (GUDI). As a result of being GUDI, the groundwater is acceptable to microbial pathogens present in the surface water. Therefore, additional LID implementation to reduce phosphorous levels and water balance is not required. Quality control will be provided through the proposed OGS system and the existing SWM Pond.

Low Impact Development features are an emerging technology and therefore the guidelines listed above are subject to change. As standard details and specifications are still being developed, all details and locations are to be reviewed and approved by the Town.

8. Secondary Utilities

Given the location of the subject site is within the urban area of Midland, it is anticipated that secondary utilities (hydro, cable, phone and gas) will be readily available to service the site. Location of existing utilities will be confirmed at the detailed design stage.

9. Conclusion

The proposed development will require the connection of sanitary and watermain services to the existing municipal services on Fourth Street and Victoria Street.

The post-development storm drainage for the site takes into account the existing conditions and generally follows the existing drainage conditions. The existing SWM Pond will be utilised to provide quality control for the project. A proposed OGS will provide additional quality control for the impervious services.

The analysis and conceptual designs outlined in this report demonstrates that the servicing is feasible.

All of which is respectfully submitted,
Pearson Engineering Ltd.

Gary Pearson, P. Eng. Principal	Mike Dejean, P. Eng. Manager of Engineering Services

Appendix A

Water Servicing Calculations

PEARSON ENGINEERING LTD.

650 Vindin Street, Midland
Water Flow Calculations

Design Criteria

Demand per Capita (Q):	225	L/cap/day	
Peak Rate Factor (Max. Hour):	4.13		(Table 3-1: Peaking Factors, MOE Design Guidelines for Drinking-Water Systems)
Max. Day Factor:	2.75		(Table 3-1: Peaking Factors, MOE Design Guidelines for Drinking-Water Systems)
			*From MOE Manual based on Population of 500 - 1,000

Site Data

Description	Density		Units		Flow Rate	
Apartments	2.34	people/unit	400	units	225	L/cap/d
Townhomes	2.34	people/unit	53	units	225	L/cap/d

Calculate Population

Pop.	=	2.34	x	400	+	2.34	x	53
Pop.	=	1,060	people					

Calculate Average Day Demand

ADD	=	225	x	1060
ADD	=	238,505	L/day	
ADD	=	2.76	L/s	

Calculate Max Day Flow

MDF	=	2.76	x	2.75
MDF	=	7.59	L/s	

Calculate Peak Hour Demand

PHD	=	2.76	x	4.13
PHD	=	11.40	L/s	

Appendix B

Sanitary Servicing Calculations

PEARSON ENGINEERING LTD.

650 Vindin Street, Midland
Sanitary Flow Calculations

Design Criteria

Demand per Capita (Q):	225 L/cap/day			
Peak Flow:	Qp = P * Q * M / 86,400			
Peaking Factor (Harmon Formula):	M = 1 + (14 / (4 + (P / 1,000) ^ 0.5))		Where:	2 <= "M" <= 4

Site Data

Description	**Density**		**Units**		**Flow Rate**	
Apartments	2.34	people/unit	400	units	225	L/cap/d
Townhomes	2.34	people/unit	53	units	225	L/cap/d

<u>Calculate Population</u>

Pop. = 2.34 x 400 + 2.34 x 53

Pop. = 1,060 people

<u>Calculate Average Daily Flows</u>

$$ADF = \frac{225 \times 1060}{86,400}$$

ADF = 2.76 L/s

<u>Calculate Peaking Factor</u>

$$M = 1 + \frac{14}{4 + \left(\frac{1,060}{1,000}\right)^{0.5}}$$

M = 3.78

<u>Calculate Peak Flow</u>

Qp = 2.76 x 3.78

= 10.44 L/s

Infiltration Allowance = 0.23 x 7.11

= 1.64 L/s

Qp (Inc. Infiltration Allowance) = 12.08 L/s

Appendix C

Stormwater Management Calculations

650 Vindin Street, Midland
Calculation of Runoff Coefficients

Runoff Coefficient	=	0.15	0.95	0.95	0.40	0.95	Weighted
Surface Cover	=	Grass	Asphalt	Building	Gravel	Conc.	Runoff Coefficient
Pre Development	Total Area (m^2)	Area (m^2)	Area (m^2)	Area (m^2)	Area (m^2)	Area (m^2)	
1	71141	67469	258	859	2348	207	0.17
Pre Total	71141	67469	258	859	2348	207	0.17
Post Development	Total Area (m^2)	Area (m^2)	Area (m^2)	Area (m^2)	Area (m^2)	Area (m^2)	
1	32313	10778	12943	6599	0	1993	0.68
2	11547	2677	5254	2685	0	930	0.76
3	14761	13983	0	778	0	0	0.19
4	7822	5877	0	1945	0	0	0.35
5	4720	3208	129	1367	0	17	0.41
Post Total	71162	36523	18325	13374	0	2940	0.54

650 Vindin Street, Midland
Pre-Development Peak Flows

Town of Midland

Storm Event (Yrs)	Coeff A	Coeff B
2	**20.3**	**-0.697**
5	**27.3**	**-0.696**
10	**31.9**	**-0.695**
25	**37.7**	**-0.694**
50	**42.1**	**-0.695**
100	**46.3**	**-0.695**

Modified Rational Method
$Q = C_iCIA / 360$

Where:
- Q - Flow Rate (m^3/s)
- Ci - Peaking Coefficient
- C - Rational Method Runoff Coefficient
- I - Storm Intensity (mm/hr)
- A - Area (ha.)

Area Number	1	
Area	7.11	ha
Runoff Coefficient	0.17	
Time of Concentration	15	min
Return Rate	2	year
Peaking Coefficient (C_i)	1	
Rainfall Intensity	53.3	mm/hr
Pre-Development Peak Flow	0.18	m^3/s
Return Rate	5	year
Peaking Coefficient (C_i)	1	
Rainfall Intensity	71.6	mm/hr
Pre-Development Peak Flow	0.25	m^3/s
Return Rate	10	year
Peaking Coefficient (C_i)	1	
Rainfall Intensity	83.6	mm/hr
Pre-Development Peak Flow	0.29	m^3/s
Return Rate	25	year
Peaking Coefficient (C_i)	1.1	
Rainfall Intensity	98.7	mm/hr
Pre-Development Peak Flow	0.37	m^3/s
Return Rate	50	year
Peaking Coefficient (C_i)	1.2	
Rainfall Intensity	110.3	mm/hr
Pre-Development Peak Flow	0.45	m^3/s
Return Rate	100	year
Peaking Coefficient (C_i)	1.25	
Rainfall Intensity	121.3	mm/hr
Pre-Development Peak Flow	0.52	m^3/s

Note: Rainfall Intensity Coeffecients were selected using the MTO IDF Curve Lookup.

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650 Vindin Street, Midland
Post-Development Peak Flows

Town of Midland

Storm Event (Yrs)	Coeff A	Coeff B
2	**20.3**	**-0.697**
5	**27.3**	**-0.696**
10	**31.9**	**-0.695**
25	**37.7**	**-0.694**
50	**42.1**	**-0.695**
100	**46.3**	**-0.695**

Modified Rational Method
$Q = C_iCIA / 360$

Where:
- Q - Flow Rate (m^3/s)
- Ci - Peaking Coefficient
- C - Rational Method Runoff Coefficient
- I - Storm Intensity (mm/hr)
- A - Area (ha.)

	Controlled to Ex. Pond	Uncontrolled to Bay	Uncontrolled to Road
Area Number	Areas 1 & 2	Areas 3 & 4	Area 5
Area	4.39 ha	2.26 ha	0.47 ha
Runoff Coefficient	0.70	0.25	0.41
Time of Concentration	15.0 min	15.0 min	15.0 min
Return Rate	2 year	2 year	2 year
Peaking Coefficient (C_i)	1	1	1
Rainfall Intensity	53.3 mm/hr	53.3 mm/hr	53.3 mm/hr
Post-Development Peak Flow	0.46 m^3/s	0.08 m^3/s	0.03 m^3/s
Return Rate	5 year	5 year	5 year
Peaking Coefficient (C_i)	1	1	1
Rainfall Intensity	71.6 mm/hr	71.6 mm/hr	71.6 mm/hr
Post-Development Peak Flow	0.62 m^3/s	0.11 m^3/s	0.04 m^3/s
Return Rate	10 year	10 year	10 year
Peaking Coefficient (C_i)	1	1	1
Rainfall Intensity	83.6 mm/hr	83.6 mm/hr	83.6 mm/hr
Post-Development Peak Flow	0.72 m^3/s	0.13 m^3/s	0.04 m^3/s
Return Rate	25 year	25 year	25 year
Peaking Coefficient (C_i)	1.1	1.1	1.1
Rainfall Intensity	98.7 mm/hr	98.7 mm/hr	98.7 mm/hr
Post-Development Peak Flow	0.93 m^3/s	0.17 m^3/s	0.06 m^3/s
Return Rate	50 year	50 year	50 year
Peaking Coefficient (C_i)	1.2	1.2	1.2
Rainfall Intensity	110.3 mm/hr	110.3 mm/hr	110.3 mm/hr
Post-Development Peak Flow	1.14 m^3/s	0.20 m^3/s	0.07 m^3/s
Return Rate	100 year	100 year	100 year
Peaking Coefficient (C_i)	1.25	1.25	1.25
Rainfall Intensity	121.3 mm/hr	121.3 mm/hr	121.3 mm/hr
Post-Development Peak Flow	1.30 m^3/s	0.23 m^3/s	0.08 m^3/s

Note: Rainfall Intensity Coeffecients were selected using the MTO IDF Curve Lookup.