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FUNCTIONAL SERVICING BRIEF

53814 Zion Road
Township of Wainfleet
Revised November 4, 2022

INTRODUCTION

The purpose of this report is to address the servicing needs for the proposed six residential lot subdivision located at #53814 Zion Road in the Township of Wainfleet in support of the application for Draft Plan of Subdivision Approval.

The site is situated north of Highway 3 (Forks Road), south of Willford Road, east of Wellandport Road, and west of Smith Road. The site is approximately 4.63 hectares and comprises 6 residential lots and one Environmental Protection Area block (Block 7).

The objectives of this report are as follows:

1. Identify the domestic water service needs for the site;
2. Identify the sanitary servicing needs for the site; and,
3. Identify the stormwater management needs for the site.

DOMESTIC WATER SERVICING

Domestic water servicing will be provided by a private water cistern constructed for each residential lot. Water cisterns are to be located a minimum of 15m away from any septic system.

SANITARY SERVICING

Sanitary servicing will be provided by a private septic system constructed for each residential lot. Septic systems are to be designed in accordance with the requirements of the Ontario Building Code.

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STORMWATER MANAGEMENT

Existing Conditions

The site currently consists of predominantly undeveloped forested area except for the northern portion of the site, which was previously used for agricultural purposes. As shown in Figure 1, the existing drainage patterns for the subject lands comprise of three overall drainage areas:

1. A 3.03 hectare portion of the site (A1) conveys stormwater flows southerly overland to the Ellsworth Drain, which flows easterly along the south-west corner of the site, crossing Zion Road through an existing concrete culvert;

2. A smaller 1.11 hectare portion of the site (A2) drains overland to an existing ditch on the neighbouring property to the west; and,

3. The remaining 0.50 hectares (A3) drains overland to the neighbouring property to the north of the site.

Future Conditions

It is proposed to develop the subject lands as a 6-lot residential subdivision, with each future unit fronting onto Zion Road. Proposed side yard and rear yard swales will be constructed to convey future stormwater flows from the subject lands to the Ellsworth Drain. The future drainage areas are shown in Figure 2.

Stormwater Quantity Assessment

The subject lands will convey all future stormwater flows to the Ellsworth Drain via rear and side yard swales and sheet drainage within the proposed lots. The future impervious areas (roof and driveway) will typically not have a direct connection to the Zion Road ditches or the Ellsworth Drain. Roof leaders will discharge to the grassed area within each lot to promote infiltration and the entire driveway will typically not drain directly to the adjacent road or ditches. Therefore, only a portion of the proposed driveways will convey stormwater flows generated from directly connected impervious area to the receiving water course.

Each lot will be provided with a septic system constructed with pervious soils surrounding each septic bed. The pervious soils surrounding each septic bed will encourage additional infiltration into the soils during frequent storm events. Therefore, due to the increased infiltration potential, there will be negligible impact to future peak stormwater flows to the Ellsworth Drain as a result of the directly connected driveway areas.

Per the Niagara Peninsula Conservation Authority's "Watershed Hydrology Study (1989)", the Ellsworth Drain has an approximate drainage area of 318 hectares, upstream of the subject lands, which included existing area A1. The addition of existing areas A2 and A3 account for an overall increase in drainage area of 1.61 hectares, or 0.5% of the upstream 318 hectare drainage area. Additionally, the subject lands are located immediately adjacent to the Ellsworth Drain resulting in the future peak stormwater flows from the subject lands concentrating nearly immediately in the Ellsworth Drain watercourse compared to the larger upstream drainage area.

Therefore, there is expected to be negligible impact on the future peak stormwater flows conveyed through the Ellsworth Drain, and stormwater management quantity controls are not considered necessary.

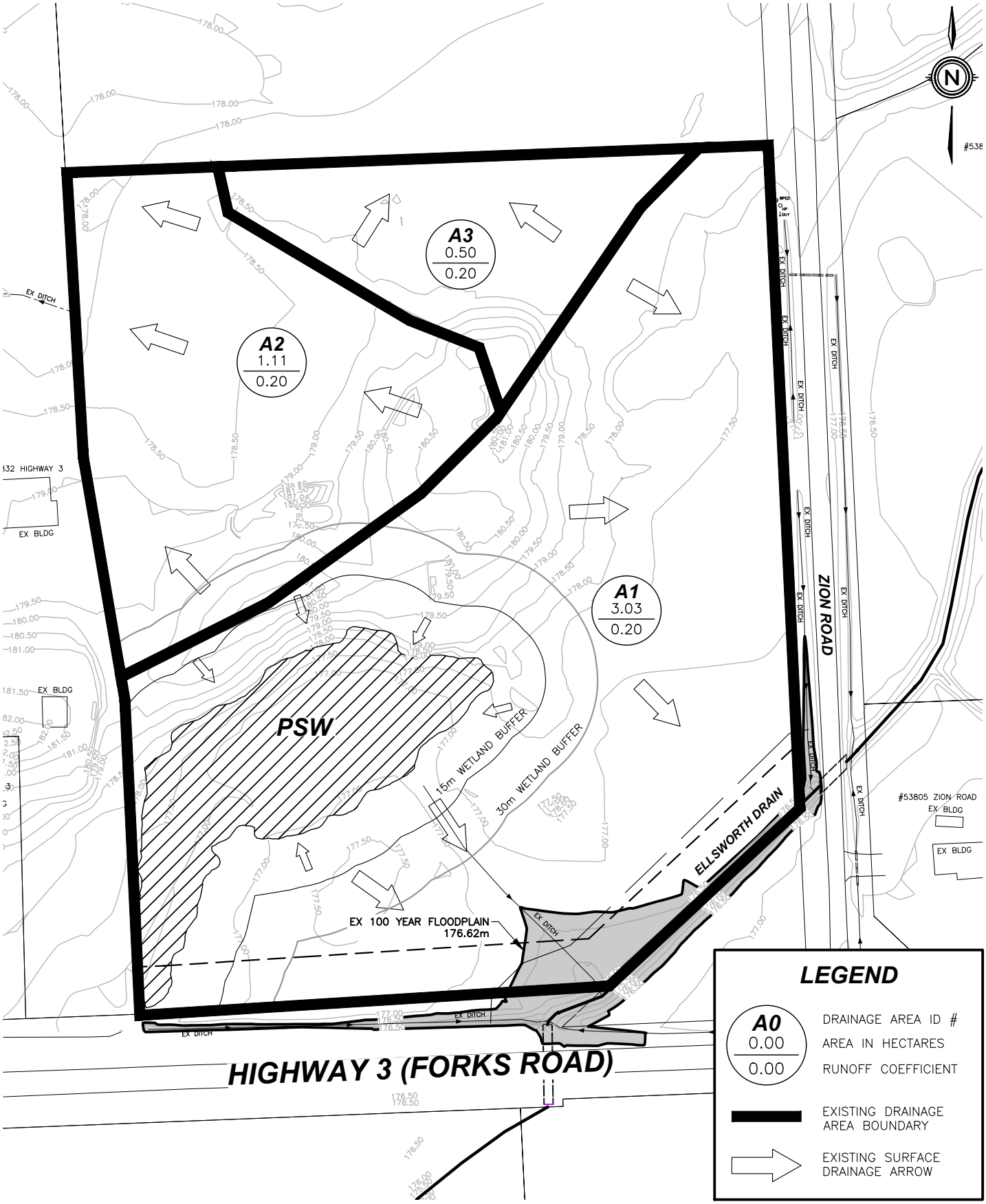
The existing topography of the site is such that the significant majority of the drainage area contributing surface flows to the PSW is contained within the 15m wetland buffer where no development or site alteration is permitted. Therefore, since the existing drainage area that supports the PSW will remain primarily unchanged, there will be no negative impact on the surface drainage contributing to the PSW.

Stormwater Quality Assessment

The directly connected portions of the driveway will be the only portions of the site contributing to the total suspended solid (TSS) concentrations in the stormwater flows discharging from the site. Since the driveway areas comprise a very small portion of the future drainage area A10 (which otherwise conveys clean stormwater flows from the grassed and roof areas), there is expected to be negligible impact on the TSS concentrations discharging to the Ellsworth Drain. Therefore, stormwater quality controls are not considered necessary.

Highway 3 Drainage

The site is bound to the south by MTO Highway 3. Drainage areas A20 and A30 discharge to lands that do not impact MTO controlled lands and area A10 conveys stormwater flows to the Ellsworth Drain, which conveys flows northerly to Zion Road, downstream of Highway 3. Therefore, the proposed development will not negatively impact MTO controlled lands.



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53814 ZION ROAD
TOWNSHIP OF WAINFLEET
EXISTING STORM DRAINAGE AREAS

DATE	2022-11-04
SCALE	1:1500 m
REF No.	2125
DWG No.	FIGURE 1

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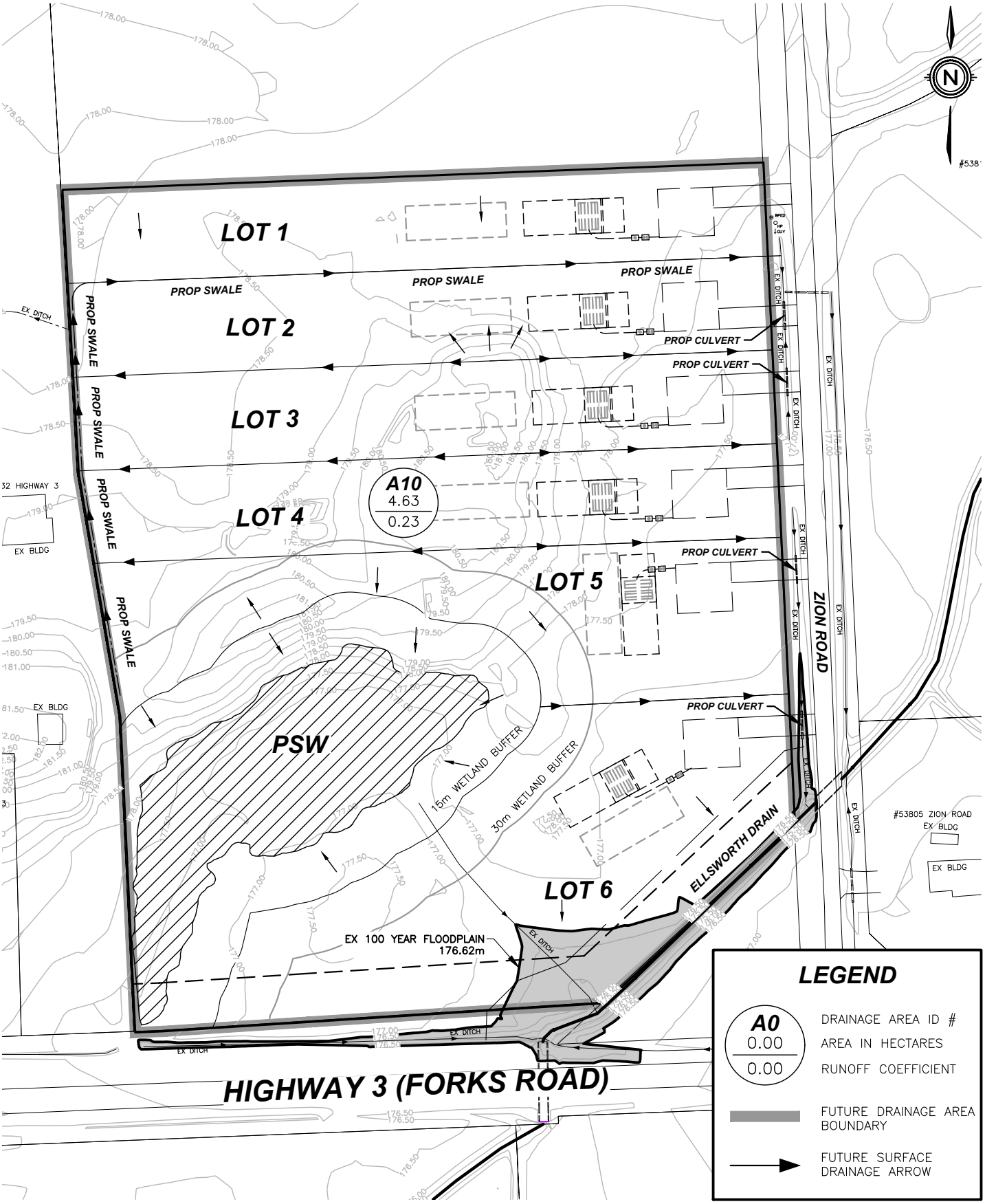

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53814 ZION ROAD
TOWNSHIP OF WAINFLEET
FUTURE STORM DRAINAGE AREAS

DATE	2022-11-04
SCALE	1:1500 m
REF No.	2125
DWG No.	FIGURE 2

DRAWING FILE: F:\2125\SWM\2125_SWMBASE.dwg PLOTTED: Nov 04, 2022 - 10:08am PLOTTED BY: brendan

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CONCLUSIONS AND RECOMMENDATIONS

Therefore, based on the above comments and design calculations provided for this site, the following summarizes the servicing for this site.

1. Stormwater quantity controls are not considered necessary for the subject lands.

2. Stormwater quality controls are not considered necessary for the subject lands.

3. There will be no negative impact to the stormwater drainage on MTO controlled lands (Highway 3).

We trust the above comments are satisfactory for approval. If you have any questions or require additional information, please do not hesitate to contact our office.

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