

SITE SERVICING AND STORMWATER MANAGEMENT BRIEF IN SUPPORT OF SITE PLAN APPROVAL

Dr. John M. Denison Child Care Centre
900 Mulock Drive/ 605 Fernbank Road
Newmarket, ON



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TABLE OF CONTENTS

TABLE OF CONTENTS	2
LIST OF FIGURES, APPENDICES & DRAWINGS.....	3
1.0 INTRODUCTION	4
1.1 <i>Background.....</i>	4
1.2 <i>Proposed Development.....</i>	5
2.0 STORMWATER MANAGEMENT.....	6
2.1 <i>Existing Conditions.....</i>	6
2.2 <i>Proposed Conditions.....</i>	6
2.2.1 <i>Water Quantity.....</i>	7
2.2.2 <i>Water Quality.....</i>	7
2.2.3 <i>Water Balance.....</i>	7
3.0 SANITARY SERVICING.....	8
3.1 <i>Existing Conditions.....</i>	8
3.2 <i>Proposed Conditions.....</i>	8
4.0 WATER SERVICING.....	8
4.1 <i>Existing Conditions.....</i>	8
4.2 <i>Proposed Conditions.....</i>	8
5.0 EROSION & SEDIMENT CONTROL.....	8
6.0 CONCLUSIONS	10



LIST OF FIGURES, APPENDICES & DRAWINGS

Figures

Figure 1	Site Location Plan
Figure 2	Pre-Development Imperviousness Plan
Figure 3	Post- Development Imperviousness Plan

Appendices

Appendix A	Figures
Appendix B	Soak Away Pit Water Balance and Quality Calculations

Drawings

C1	Site Grading and Erosion and Sediment Control Plan
C2	Site Servicing and Utility Plan
C3	Notes & Details



1.0 INTRODUCTION

This Site Servicing and Stormwater Management Brief has been prepared in support of a Site Plan Approval for the proposed Dr. John M. Denison Child Care Centre development. The proposed development is located at 900 Mulock Drive/ 605 Fernbank Road in Newmarket, Ontario. The purpose of this report is to demonstrate that the proposed servicing strategy will function within the existing infrastructure and achieves both the Town of Newmarket and York Region design criteria.

1.1 Background

The subject site is located along the south side of Mulock Drive between Fernbank Road and Leslie Street. The site is bounded by Town owned property to the east, west and south including a community garden, soccer fields, and an existing parking lot.

An existing heritage building on site is to be maintained throughout construction and existing trees are to be maintained using best efforts in order to preserve the natural and historic elements of the site. A existing show room, fronting Mulock Drive is to be demolished prior to construction.

The following background and reference documents were used to develop the proposed functional servicing brief.

- “Town of Newmarket Engineering Design Standards and Criteria”, dated August 2019.
- “LSRCA Technical Guidelines for Stormwater Management Submissions”, dated September 2016.



1.2 Proposed Development

The new development will consist of a single storey childcare facility, playgrounds, pavement areas for parking and drop off, and landscaped areas. There is no proposed basement for the facility. The proposed building will work seamlessly with the existing heritage building located on-site by maintaining an accessible travel route to each building. Refer to **Figure 1 – Site Location Plan** below and **Drawing C1 – Site Grading and Erosion and Sediment Control Plan** for the development limit boundary.

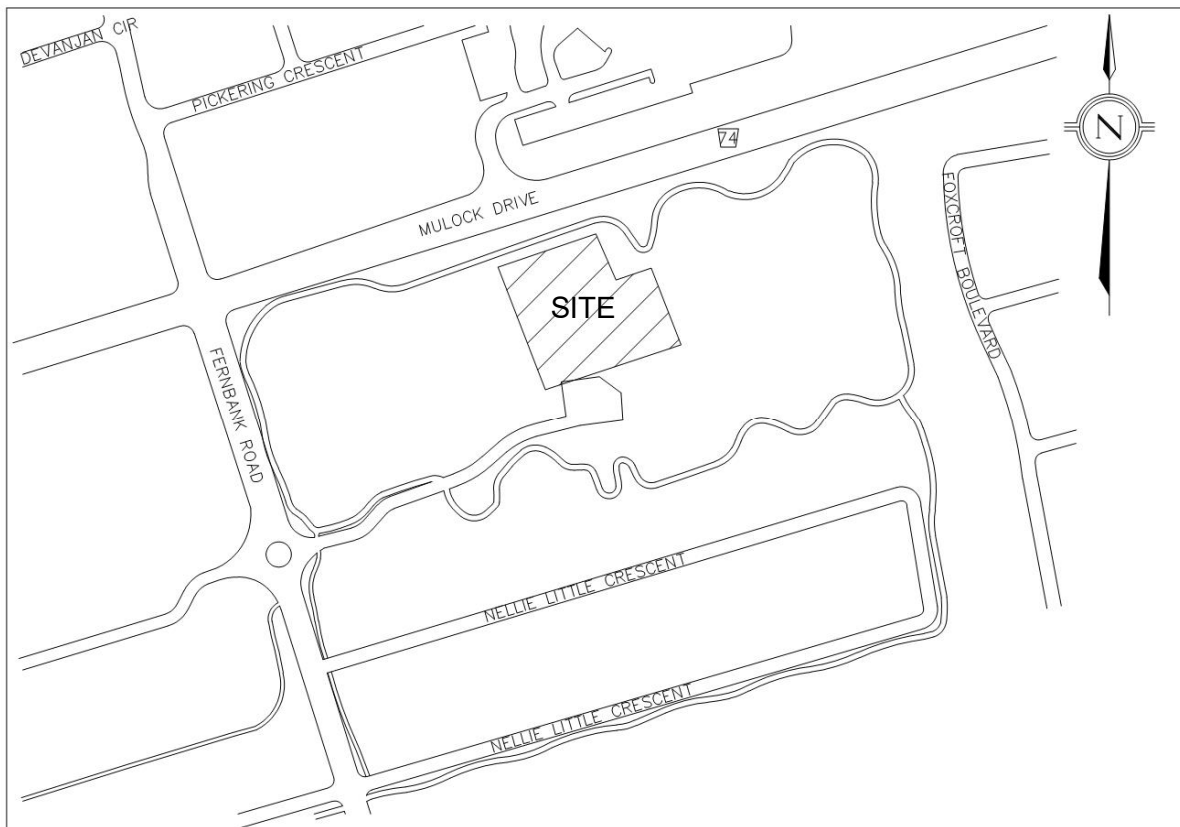


Figure 1 – Site Location Plan



2.0 STORMWATER MANAGEMENT

2.1 Existing Conditions

Under existing conditions, the subject site supports an existing heritage building, a show room and existing asphalt and gravel pathways. As per existing topographic information, the entire site primarily drains to the west to an existing ditch along the adjacent property.

It has been assumed throughout the stormwater strategy that all existing drainage patterns and outlet locations are to be maintained. Under existing conditions, approximately 19% of the site is covered with impervious area (i.e. roof, asphalt and gravel) with the remaining space being landscaped and vegetated.

Refer to **Appendix A** for **Figure 2 - Pre-Development Imperviousness Plan**.

2.2 Proposed Conditions

Under proposed conditions, the overall site imperviousness remains as per existing conditions. The show room fronting Mulock Drive and the existing gravelled portions will be replaced with grass and vegetation. As a result, the addition of the childcare facility does not ultimately increase or decrease the imperviousness of the site. Refer to **Appendix A** for **Figure 3 - Post-Development Imperviousness Plan**.

The proposed childcare building will have downspouts that will collect roof drainage and distribute it to grade. The majority of the drainage from the roof and new hard surfaces will be directed into one of two proposed soakaway pits. The soakaway pits provide water balance and stormwater quality controls.

To the south, in the existing parking lot located south of the subject site, a total of 330 m² of new pavement is proposed to accommodate additional parking pots. These additional parking spots will be required to be surfaced with permeable pavement. As no storm structures are currently located on the parking lot, the drainage will continue to flow overland. The permeable pavement will provide the required water balance and stormwater controls to compensate for the 330 m² increase in impervious area.

Refer to the **Drawing C2– Site Servicing and Utility Plan** for the servicing layout.



2.2.1 Water Quantity

As the net imperviousness of the site does not increase in post-development conditions, all post development flows will equal to the pre-development flows. Therefore, no further quantity controls are required on-site.

2.2.2 Water Quality

To satisfy the Town standards for stormwater quality, the site is to meet the Enhanced Level quality protection standard (80% TSS removal) as well as prove a net 80% reduction of phosphorus loading from pre-development conditions.

Two soakaway pits have been sized to capture runoff from paved and roof surfaces and provide quality control prior to discharging into the existing ditch along the west perimeter of the site. The soakaway pits provide over 80% TSS removal for the contributing areas.

Refer to **Appendix B** for detailed calculations for the soakaway pits and refer to drawing **C2 – Site Servicing and Utility Plan** for locations.

2.2.3 Water Balance

No net increase in impervious cover is expected as a result of the new development. However, the two soakaway pits on site have been sized to collect and infiltrate the 25mm event from the proposed childcare building roof area. The 530 m² roof area generates 13 m³ of stormwater volume in the 25 mm event.

A geotechnical report was not available at the time of this submission. As such the infiltration rates of the existing soils are not yet known. To be conservative, at this time an infiltration rate of 10 mm/hr has been carried in order to size the soakaway pits.

Each soakaway pit provides an infiltration volume of 10 m³, for a total of 20 m³ of water balance.

Refer to **Appendix B** for detailed calculations for the soakaway pits and refer to drawing **C2 – Site Servicing and Utility Plan** for locations.



3.0 SANITARY SERVICING

3.1 Existing Conditions

The existing heritage building on site is serviced with a sanitary connection along the west building face. The existing sanitary sewer runs west towards Fernbank Road.

3.2 Proposed Conditions

To facilitate the new retaining wall required between the existing heritage structure and the new childcare building, a drop structure is required at the perimeter of the heritage structure. Therefore, approximately 30 m of sanitary sewer will need to be removed and replaced to accommodate the lower sewer depth.

A new 200mm sanitary connection is required to service the proposed childcare facility. This connection will be made into the existing line located to the south.

4.0 WATER SERVICING

4.1 Existing Conditions

The existing heritage structure is serviced with a water connection along the south perimeter of the building face. The existing water supply runs west towards Fernbank Road.

4.2 Proposed Conditions

To service the new childcare building and provide adequate fire protection to both buildings as per Building Code, an extension to the existing watermain line is required. A fire hydrant is proposed within 45 of the primary building entrance.

5.0 EROSION & SEDIMENT CONTROL

The following erosion and sediment control measures will be implemented during construction to minimize sediment transport downstream of the site. The following is in conformance with the Town of Newmarket design notes and details.

- A sediment control fence shall be erected around the perimeter of the site wherever runoff has the potential of leaving the site;



- Temporary catchbasin sediment controls and conveyance swales will be installed as necessary;
- The contractor shall keep adjacent properties free of dust, mud and any other refuse throughout the duration of construction;
- All sediment and erosion control works shall be inspected after each rainfall and/or on a bi-weekly basis and repaired/maintained as necessary;
- Temporary modular fencing and filter socks are to be installed around the perimeter of the infiltration galleries throughout construction to prevent vehicular traffic and sediments from entering the gallery structures; and

All erosion and sediment control measures will be installed prior to commencement of site construction works and will remain in place through the duration of construction. During construction, the erosion and sediment control measures will be monitored and maintained. Refer to **Drawing C1 – Site Grading and Erosion and Sediment Control Plan** for design details, as well as associated notes and details.



6.0 CONCLUSIONS

The assessment provided above outlines the proposed servicing strategy for the childcare development.

We trust the information provided in the report meets with your requirements. Should there be any questions or comments, please feel free to contact the undersigned.

Sincerely,

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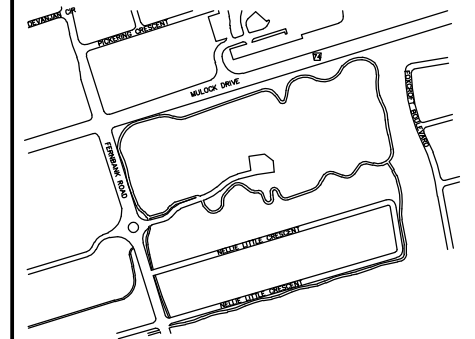
**Dr. John M Denison Child Care Centre
Newmarket, ON**

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APPENDIX A

FIGURES



KEY PLAN

LEGEND

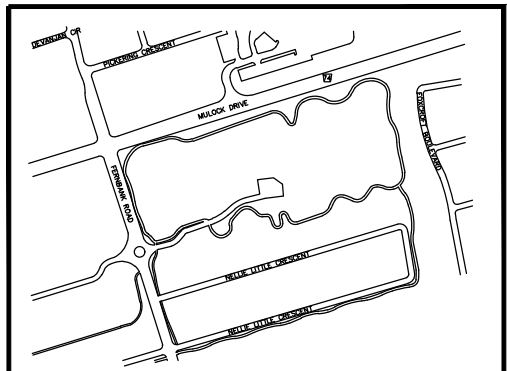
	IMPERVIOUSNESS (%)	AREA (m ²)
ROOF AREA	100%	553.5
ASPHALT AREA	100%	1,074.0
LANDSCAPED AREA	0%	6,980.5
TOTAL	19%	8,608.00

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DENISON CHILD CARE CENTRE
 605 FERNBANK (900 MULOCK DRIVE)
 NEWMARKET, ONTARIO

PRE-DEVELOPMENT IMPERVIOUSNESS PLAN

DESIGNED BY: ES	DATE: OCT 2019
CHECKED BY: CB	PROJECT No. 18055
DRAWING BY: ES	
CHECKED BY: CB	FIGURE No. 2
SCALE: N.T.S.	



KEY PLAN

LEGEND

	IMPERVIOUSNESS (%)	AREA (m ²)
ROOF AREA	100%	839.00
ASPHALT AREA	100%	854.0
LANDSCAPED AREA	0%	6,915.0
TOTAL	19%	8,608.00

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DENISON CHILD CARE CENTRE
605 FERNBANK (900 MULOCK DRIVE)
NEWMARKET, ONTARIO

POST-DEVELOPMENT IMPERVIOUSNESS PLAN

DESIGNED BY: ES	DATE: OCT 2019
CHECKED BY: CB	PROJECT No. 18055
DRAWING BY: ES	
CHECKED BY: CB	FIGURE No. 3
SCALE: N.T.S.	



APPENDIX B

SOAKAWAY PIT WATER BALANCE AND QUALITY CALCULATIONS

Counterpoint Engineering

Quality Control from LID Measures

Soakaway Pits

Table 3.2 Water Quality Storage Requirements based on Receiving Waters^{1, 2}

Protection Level	SWMP Type	Storage Volume (m ³ /ha) for Impervious Level			
		35%	55%	70%	85%
<i>Enhanced</i> 80% long-term S.S. removal	Infiltration	25	30	35	40
	Wetlands	80	105	120	140
	Hybrid Wet Pond/Wetland	110	150	175	195
	Wet Pond	140	190	225	250
<i>Normal</i> 70% long-term S.S. removal	Infiltration	20	20	25	30
	Wetlands	60	70	80	90
	Hybrid Wet Pond/Wetland	75	90	105	120
	Wet Pond	90	110	130	150
<i>Basic</i> 60% long-term S.S. removal	Infiltration	20	20	20	20
	Wetlands	60	60	60	60
	Hybrid Wet Pond/Wetland	60	70	75	80
	Wet Pond	60	75	85	95
	Dry Pond (Continuous Flow)	90	150	200	240

Contributing Area	0.200 ha
Contributing Area Imperviousness	55 %
Trench Volume Provided	20 m³
Trench Volume Required for 60% Removal	4 m ³
Trench Volume Required for 70% Removal	4 m ³
Trench Volume Required for 80% Removal	6 m ³

Total TSS Removal as per MECP Table 3.2 >80 %

SWM DESIGN CALCULATIONS

Water Balance Calculations

Project Name: Newmarket Daycare
Municipality: Newmarket
Project No.: 19055
Date: 10-Oct-19

Prepared by: CB
Checked by: ES
Last Revised: 10-Oct-19

Building Roof Area	530 m2
Increase to Impervious Area	0 m2

25mm Retention Target	13 m3
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**Roof Area only*

Assumed Infiltration Rate	10 mm/hr
Drawdown Time	48 hours
Max. Drawdown Depth	1.2 m
Drawdown Design Depth	1.0 m
Area of Soakway Pit 1	25 m2
Area of Soakway Pit 2	25 m2
Porosity	0.4

Total Infiltration Volume	20 m3
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