

Project Comment Form – Internal Review Comments

Project Name:	263512 Southgate Road 26, Southgate Proposed Wilders Lake Subdivision.		
Project File Number (Municipal):	C1-2020	Project File Number (Burnside):	300051718.0000
Reviewer:	R.J. Burnside & Associates Limited	Date of current comments:	July 24, 2020

Most Current Document Reviewed		
Title	Author	Report or Drawing Date (latest revision)
Civil Drawings	GM BluePlan Engineering Ltd	Sealed December 6, 2019
Stormwater Management Report	GM BluePlan Engineering Ltd	November 2019
Environmental Impact Assessment	SAAR Environmental Limited	December 13, 2019
Hydrogeological Report and Site Servicing Study	GM BluePlan Engineering Ltd.	January 2020

Comments:						
	1 st Submission	Developer's Response	2 nd Submission	Developer's Response	3 rd Submission	Developer's Response
	Stormwater Management Report Comments					
1.	The calculations used to determine the runoff coefficients and the initial abstractions values used in both the existing and proposed MIDUSS model found in Appendix A and B should be provided.					-
2.	The stage storage discharge table input into the MIDUSS model for Pond 31 does not match the stage storage discharge table provided in Appendix C. This inconsistency should be reviewed and resolved					-
3.	Consideration could be given to upgrading the side yard swales to enhanced grass swales on Lots 5, 6, 7, 8, 9, 10, 11 and 12 where the runoff is to discharge to Wilders Lake with no quality control. We recognize that this runoff is generally clean, however there are significant public concerns regarding the water quality of Wilders Lake. This will help to provide additional quality control and address the local concerns regarding the water quality of Wilders Lake.					-
4.	The floodplain extents of Camp Creek tributary and Wilders Lake should be delineated to show that the proposed development structures are not within the floodplain. Please show that the water surface elevations in Camp Creek are not increased in the proposed condition.					-

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	<p>Although the overall runoff during the 2 to 100-year storms is attenuated in the proposed condition, the Regional Storm runoff directed towards Camp Creek is increased in the proposed condition. The runoff from Catchments 500, 201 and 600 is proposed to discharge to the existing pond in Block 32 which outlets into the existing pond across the road. In the existing condition the runoff from Catchments 500, 201 and 600 flows overland to the west and then to the Camp Creek tributary. It must be shown that discharging all this flow in one location will not increase the water levels in Camp Creek downstream of the existing pond adjacent to Lot 2.</p> <p>In addition, it should be shown that the increase in the road profile at the Camp Creek road crossing, with the two existing 900 mm diameter culverts will not increase the headwater elevations compared to the existing condition.</p> <p>This comment could be accomplished with a HEC RAS model of camp Creek comparing the existing and proposed conditions of Camp Creek.</p>					
5.	The modelling of the enhanced grass swale should encompass the entire drainage area draining to the enhanced grass swale. For example, the total drainage area of catchment 500 is 1.69 ha, as shown on Figure 3. The modelling of the east and the west drainage areas only adds up to 1.52 ha.					
6.	In locations where the enhanced grass swale exceeds a longitudinal slope of 3%, rock check dams should be added to increase the runoff residence time and reduce potential erosion.					
7.	The modelling of the enhanced grass swale includes catchment 203. Please indicate where catchment 203 is located. For clarity a catchment area map showing the delineation of the catchment areas used in the enhanced grass swale modelling should be provided.					
8.	Provide the MIDUSS modelling referenced in Appendix F, used to size the driveway culverts.					
9.	The 5-year storm sewer design sheet should be updated so that the storm sewer slope is consistent with the drawings and the 100-year design storm sheet.					
10	Provide sizing calculations for all culverts inletting to the stormwater management ponds.					
11	Cross sections of all overland flow channels should be provided.					
12	Erosion protection should be provided at all cross culvert outlets and where the channels outlet into the SWM ponds.					

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13	The use of Low Impact Development (LID) options are considered which is a good approach to stormwater management from both an environmental and cost perspective. The hydrogeology report notes coarse grained materials allowing for high infiltration rates generally supporting LID SWM practices. At the feasibility stage a hydrogeological review of the current SWM plan is recommended to specifically comment on the risk of adverse impacts to wells from road de-icing salt use.					
14	Additional information/comments regarding fisheries and ecology from approval agencies such as the Saugeen Valley Conservation Authority (SVCA) and Department of Fisheries and Oceans (DFO) as applicable should also be provided as the feasibility of the design will be contingent on their comments, as the SWM design relies on enhancements to existing water features. Approval Agency comments may place constraints on these water features. Treatment levels for water quality for discharging runoff to natural watercourses or lakes will need to be confirmed.					
	DRAWINGS					
15	Provide cross sections of the proposed SWM ponds showing the inlets, outlets and the 5-year, 100-year and Regional Storm High Water Line (HWL). Indicate the inlet elevation of the orifice plates on the cross-section drawings.					
16	Drawing No. 5 - Will the culverts and ditches that outlet to the SWM ponds in blocks 30 and 31 combine into an overland flow channel that will inlet into the SWM pond? If so, please provide hydraulic calculations for the overland flow channel to show that it has capacity to convey the flows from the culvert and ditches to the pond.					
17	All stormwater management ponds should be designed to have a minimum 0.3 m freeboard from the Regional Storm HWL to the top of the pond berm.					
18	Erosion protection on all SWM pond overflow weirs should be provided. This could be shown on Drawing No. 5.					
19	Drawing No. 15 - Provide a typical cross section of the proposed enhanced grass swale with all dimensions labeled.					
20	The inlet and outlet inverts, length, slope and material on all culverts should be labeled on Drawings 8-15.					
21	Driveway culverts should be shown in profile view on Drawings 8-15.					

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22	A double catchbasin at all locations where the catchbasin is in a sag point should be specified.					
23	The proposed storm sewer system should be shown in profile view on Drawing 9.					
24	If the existing walking trail to the dock is to be maintained in the proposed condition, we suggest it may be advantageous to include the walkway within the SWM pond block for future maintenance purposes.					
25	A detail of the proposed side yard swale indicating the minimum depth of the swale should be provided. Per the Township of Southgate standards, the minimum depth of a yard swale is to be 0.15 m.					
26	Elevations at all lot corners should be provided on Drawings 3 and 4. If the lot corner is to remain undisturbed, please label the elevation where the proposed grading is to match into the existing ground.					
27	The surface water drainage arrows on lots 1, 8, 9 and 10 should be shown on Drawings 3 and 4.					
28	The slope on all swales should be labeled on Drawings 3 and 4. It is recommended that any swales with a slope less than 1% have a 150 mm diameter pipe subdrain installed under the swale.					
29	The minimum underside of slab elevation and the (interpolated) seasonal high groundwater elevation for each lot should be labeled on Drawings 3 and 4. We acknowledge that interpolated groundwater elevations are of limited accuracy, however they provide a useful visual when considering potential groundwater impacts to the lots. Actual borehole locations should be included on the same drawing as the interpolated values to give a sense of how far away the interpolated value is from the actual test result.					
30	It is our experience that the underside of the basement floor slab should be a minimum of 0.4 m above the seasonal high groundwater elevation. It would be beneficial to note this on the drawings as a requirement.					
31	We recommend that all grading of the SWM ponds occur in the SWM pond block. If some of the SWM pond is located on private property, this creates future maintenance issues.					
32	Maintenance access for all SWM ponds should be provided. The maintenance access should allow access for inspection of inlet/outlets and provide an area for future pond cleanout/maintenance. A full maintenance route around the entire pond perimeter may not be					

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	required as long as it can be shown and justified that the above activities can be carried out.					
33	Erosion protection should be provided on all pond outlets.					
34	A removals plan to indicate which existing buildings and features are being removed should be provided.					
35	Per the Township of Southgate standards, trees shall be planted in front of every lot on the Municipal Right-Of-Way at a location 300 mm from the street property line. However, it is unclear if this standard applies to estate residential lots. We defer this comment to the Township for review.					
36	The typical ditch detail should be revised to state that 200 mm topsoil and hydroseed is to be provided as per the Township of Southgate standards.					
37	Is street lighting proposed? If so, show the streetlights on the "typical section thru new road" section on Drawing 15. As per the Township Standards, streetlights are to be offset 1 m from the property line.					
38	Silt fence should be provided along the rear of all lots backing onto Wilders Lake and shown on Drawing 7. There is significant concern regarding the health of Wilders Lake and added protection during construction will help reduce the amount of construction sediment directed towards Wilders Lake.					
39	The Township of Southgate standards require a surface inlet for at least every second unit along rear lot line swales. As these are larger estate lots, we recommend that a rear yard drainage system with inlets be considered for Lots 22, 27, 28, 29 and the Golf Club Lot. These lots drain at least half of the lot to the rear yard swale.					
40	A low flow channel from each of the SWM pond outlets to Wilders Lake should be provided to prevent water from ponding in the low-lying areas. Maintenance access to the low flow channel should be provided.					
41	Hazard area setbacks should be shown on the drawings and referred to in the SWM Report for Wilder Lake and Camp Creek to delineate flooding setbacks as these setbacks impact lot layout and grading.					
42	Drainage blocks or easements for legal outlets for stormwater should be provided. For example, SWM pond block 30 appears to drain to an existing wet area and then overland across private property. Also, a portion of a proposed culvert on Lot 2 is shown on private property.					
43	The existing and Regulatory Lake Levels for Wilder Lake were not prominently noted. The Lake Levels should be added to the drawing set.					

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44	A "zoomed out" catchment map will need to be included to confirm if there are any external drainage areas to the site.					
45	We recommend a construction mud mat be specified at all construction entrance and exit locations as part of the Erosion and Sediment Control Plan. The mud mat should be shown on Drawing 7. A detail of the construction mud mat should be provided. It is recommended that the mud mat is a minimum 20 m in length and 5 m in width. The pad shall be a minimum of 450 mm thick, constructed with 50 mm diameter clear stone in the first 10 m of the pad extended from the street. The remainder of the pad shall be constructed with 150 mm diameter stone					
46	The following notes should be added to Drawing 7: <ul style="list-style-type: none"> - Construction areas that exceed 30 days of inactivity shall be stabilized by seeding. This is to include stockpiles of fill and topsoil. - Contractor to maintain all roads affected by construction free of sediment by sweeping as necessary or as directed by the Contract Administrator or the Township - Contractor to implement appropriate dust control measures to prevent excessive dust on site or migration of dust to adjacent properties. 					
	EIS					
47	The EIS recommended culverts for wildlife on the internal laneway in proximity to the pond chain. Please show the location of these culverts on the drawings.					
48	It is recommended that once the existing cottages are removed the gaps should be planted out with species consistent with or complimentary to the existing shoreline species. Please show this planting on Drawing 6.					
	Hydrogeology					
49	Camp Creek is not shown on any of the figures or cross - sections that accompany the report. The Creek is reported to be a cold water fishery, however there is no water level or water temperature data included in the Hydrogeological report to support this. Streambed piezometers should be installed to provide additional data on groundwater flow direction and so that the effects of the development can be assessed.					
50	The well names require some clarification. The well that provides water to the restaurant and clubhouse is referred to as 2593529 in Section 2.4 but is designated as 2513529 in later sections of the report. It appears that the well is labelled as DW-1 on the well location map. Similarly, well 7197381 is not cross referenced to the water well record in appendix B which is for Well tag					

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	A120515. There do not appear to be any well records for Well Tag A 227593 which is one of the wells tested. Also, the location of the well is not shown on any of the figures (is this DW-2 on Figure A?).					
51	Section 6.1.1 indicates that pumping tests were completed on 2513529, A227593 and 7197381. However, Section 6.2.4 mentions drawdown in well A227596. This well is not mentioned anywhere else in the report.					
52	Section 6.2.4 indicates that the domestic wells had between 0.7 and 2.8m of available drawdown. Additional detail is needed on how the available drawdown was calculated. Section 6.3 indicates that the drawdown from an individual well could be as much as 0.30m at a 25m distance from the well. The report indicates that this is insignificant, however it is not clear how this impacts the available drawdown. Well tag A019451 is for deepening of an existing 6 inch well from 82 to 135 feet (25 to 41m) below grade. This suggests that wells will have to be installed in the deeper overburden.					
53	Annual infiltration at the site is estimated to be 489mm per year which is very high and the predominant soils at the site are coarse grained. Please confirm that the 9m discharge distance from the wells was sufficient to eliminate recharge to the aquifer during the pumping tests.					
54	Flows used in the D-5-4 calculation are 1000L/day per lot, yet section 7.2 suggests that typical houses in the development will have between 4 and 7 bedrooms with design sewage flows as per table 8.7.4.1 of the OBC. For a 7- bedroom house flows would be 3500L/day. How will this impact the D-5-4 calculations?					
55	Background nitrate concentrations are 0.53mg/L in the shallow groundwater in wells on the development site. Given that there are few anthropogenic sources of nitrate nearby what is the source of the nitrate and how does it relate to the groundwater flow directions? Nitrate in bedrock wells ranged from 0.38 to 1.50 mg/L. The proponent should indicate if this is an aquifer issue or related to poor well construction. It appears that low concentrations of nitrate are quite common in both the overburden and bedrock aquifers. The source of the nitrate should be identified as it appears that there are limited sources of nitrate in the immediate vicinity of the site other than the golf course and a few residences.					
56	What is the current nitrate/phosphorous concentration in Wilder lake and Camp Creek? Since groundwater is indicated to discharge to Camp Creek there is potential for nitrate and phosphorous loadings to increase.					

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57	What are the predicted phosphorous concentrations that will be added to Wilder Lake/Camp Creek by the development? The report indicates there will be no impacts, however this needs to be quantified.					
58	It is estimated that the development will result in 30% impervious areas. How will this impact the dilution calculations for the septic effluent? Also please confirm that this will have an impact on groundwater discharge to Camp Creek.					
59	Section 9.2 indicates that the 4 lots directly adjacent to Camp Creek will not impact water quality. The actual concentrations of nitrate and phosphorous should be calculated based on dilution between the septic bed and the Creek and confirmation should be provided as to the Water quality Guidelines that are applicable. The local conservation authority should be contacted to see if they have any specific requirements for nitrate and phosphorous loadings to surface water. The impact from Lot 2 is a concern as it appears that the creek bisects the lot which limits dilution potential.					
60	Figure A provides groundwater levels and interpreted groundwater contours for the wells on site for data collected in November 2019. Three of the wells were dry. Given the lack of water level data it is not clear how the groundwater contours were developed. If only the three wells with water are used, the flow direction would be more southerly. The three ponds to the northwest do not appear to be strongly connected to the water table. Given the coarse- grained material described in the borehole logs it seems unlikely that Wilder Lake would be creating a localized groundwater mound unless it is underlain by fine grained material. Additional information on the depth of Wilder Lake and its influence on groundwater flow should be provided. This may require the addition of deeper monitors near MW5 and MW6 to confirm the deeper overburden conditions and construct wells (at MW6) that intersect the water table. Also, it appears that the shallow geology at the site is quite variable and that flow paths in the shallow overburden are not fully delineated. Additional interpretation is required to explain why the sand and gravel is saturated in some areas and not others.					
	General					
61	It is noted that Traffic Impact Study has not been included in the submission. This is noted to ensure there are no issues or concerns in this regard on the part of the Township or County					

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62	A Street lighting design is not provided with this submission. Please confirm if street lighting will be considered and how much lighting is expected such as throughout the entire subdivision or at intersections only and what level of lighting is proposed (ie: Dark Sky Lighting).					