



File Numbers: D07-16-19-0026, D02-02-19-0123

October 9, 2020

Mike Dror
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Toronto, ON M5E 1M2

Sent via e-mail to mdror@bousfields.ca

Dear Mr. Dror,

Re: Draft Plan of Subdivision and Zoning By-law Amendment – 7000 Campeau Drive

The following review comments are provided in response to the second submission of the Draft Plan of Subdivision and Zoning By-law Amendment Applications for the proposed residential development at 7000 Campeau Drive. Please coordinate the changes made in response to the comments below across all plans and reports as applicable.

CITY OF OTTAWA

General

1. It is understood there is an application in Superior Court for an order that ClubLink be required to offer to convey the golf course to the City at no cost in accordance with ClubLink's contractual obligations flowing from the May 26, 1981 agreement between Campeau Corporation and The Corporation of the City of Kanata. In the event this issue cannot be determined in a timely manner, the City also reserves its right to consider seeking injunctive relief in form of an order requiring ClubLink to withdraw this application pending a determination by the court.
2. Based on the outcome of the court proceedings, an Official Plan Amendment application may be required to remove specific sections from the Official Plan that refer to the 40% agreement.
3. The City regularly inserts a condition of draft approval that the zoning for a proposed plan of subdivision is to be in place prior to registration, as opposed to being in place prior to draft approval. Thus, the enactment of the zoning by-law regularly follows after draft approval.

4. The City still has unanswered questions regarding the long-term integrity of the proposed landscape buffers. Creative mechanisms to ensure the buffer's integrity, such as conservation easements, should be explored. The City is open to discussion on how best to preserve the existing landscaping.
5. As mentioned in the pre-consultation notes (April 19, 2019), as well as the first round circulation comments (December 19, 2019), the minimum right-of-way width to be considered will be 18-metres for local roads. The current proposal for 16.5 metre right-of-way widths is not in keeping with the existing community and will not be approved. Please revise the plan to reflect right-of-way widths no less than 18-metres.

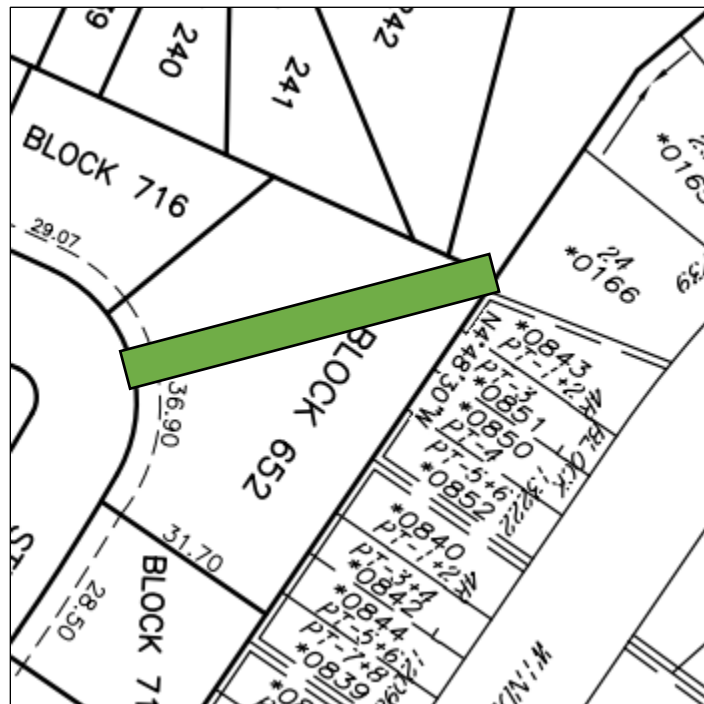
Planning & Urban Design

Draft Plan of Subdivision / Master Plan

6. The preliminary grading plan in the Functional Servicing Report does not show lotting or blocks. Based on the preliminary grading plan, please advise as to the approach in Section 13. It appears that the homes backing onto Balding Crescent will be underground at the rear. Section 11 should be updated to reflect the open space block between the existing and proposed lots.
7. Sections have been provided, but not at critical locations where the proposed design appears to be draining toward existing neighbouring properties. Please address follow up comments to Comment #94 (identified in the first-round comment letter).
8. Appropriate locations of mid-block connections and open space:
 - a. Open Space Block 630- should have an alternate means of access from Street 9.
 - b. Open Space Block 673- should have an alternate means of access from Street 7 in the vicinity of Lot 122.
 - c. Enlarge Open Space block 673 to the south and re-orient three lots as shown.



- d. Orient Blocks 645 and 701 to face the proposed Woodland Park (Block 649).
- e. Provide a walkway block from Street No. 2 to proposed Open Space Block 655.



- f. Is Block 733 Open Space? Lot 412 Should be combined with Block 733 to provide a clear vista and wider access to the existing woodlot park to the north.

- g. Is Block 734 Open Space? Please confirm.
- h. Removal of Lots 598 to 602 should be considered to provide greater frontage and views of existing Craig Park.
- i. Re-lot at intersection of Street 1 and Knudson Drive to avoid rear lotting on Knudson Drive and the associated need for noise walls.



- 9. Based on the proposed grading cross sections, the proposal will require significant site alteration. Please review to determine in areas with significant grading challenges (Cross Section 13 for example) if these areas can be re-evaluated to retain more of the existing topography.
- 10. Please clarify that cycling facilities (on-road bike lanes) exist on Knudson Drive and Weslock Way? If they do not, who is responsible for creating them? Is any on-street cycling facility being considered for any of the proposed new streets within the subject development? If not, one should be considered central to the development for example on Street No. 7.

Open Space Network

- 11. There are several areas identified to retain trees that are at the same locations as proposed servicing infrastructure. Please overlay the proposed servicing plans (STM/SAN/WM) with the Tree Retention Areas plan to ensure trees can in fact be retained where proposed. Please revise accordingly.

Density / Uses / Compatibility

12. It should be clear that this is not an Urban Expansion Area or Developing Community and the density requirements for lands under this designation do not apply to the subject lands. Therefore, no specific target or minimum density requirement applies. This is an infill scenario and as such a maximum density is required to be compatible with the surrounding community.
13. The lotting pattern should be finalized at this stage to provide larger lots abutting the larger existing lots and to ensure that only a specific percentage of the subject lots are at the proposed minimum lot width and lot area, which is generally not in character with the surrounding community. The introduction of a maximum density must be introduced for the various zoning designations. It should also be noted that there are many lots that are wider than 60 feet in both Beaverbrook and Kanata Lakes, and there are no examples of 30-foot detached lots in either community. Please revise accordingly.

Street Cross-Sections / Street Network

14. The 16.5 metre cross section does not include adequate room to allow for a sidewalk, trees and utility spacing based on recent attempted implementation. The proposed cross section illustrates the JUT located under the proposed sidewalk. This approach is currently not agreed upon and not in use. It should also be noted that this width of right-of-way is not in keeping with the surrounding community which has right-of-way widths of 20 metres and greater. Please revise to accommodate a minimum right-of-way of 18 metres.
15. Sidewalks are not required on both sides of local roads. Please revise.

Zoning By-law Amendment

All Zones

16. In the absence of a finalized unit count and associated lotting, a maximum density for each individual zoning designation must be required to ensure that a compatible maximum density is achieved for the community. please advise as to your proposed maximum density based on your proposal for a compatible approach to built form.

R1 Zones

17. It is noted that a 3-metre front and corner side yard setback is proposed. This is not compatible with the existing community and must be increased. Please revise.
18. A 6-metre rear yard setback for lots not abutting existing homes is not adequate. This must be increased to a minimum of 7.5 metre for adequate separation and rear yard amenity area. Please revise.

19. Lot coverage should be considered as a tool to ensure adequate separation and outdoor amenity area. Please propose a lot coverage.

R3 Zones

20. It is noted that a 3-metre front and corner side yard setback is proposed. This is not compatible with the existing community and must be increased. Please revise.
21. A 6-metre rear yard setback for lots not abutting existing homes is not adequate. This must be increased to a minimum of 7.5 m for adequate separation and rear yard amenity area. Please revise.
22. Lot coverage should be considered as a tool to ensure adequate separation and outdoor amenity area. Please propose a lot coverage.
23. The proposed lot area for a back to back townhome appears to be incorrect, 80 sq. m. is likely required. Please confirm and revise if required.
24. Please advise as to the need for 14 metre height limit for the back to back townhomes. Is this to accommodate a fourth floor? Please confirm.

R4 Zones

25. It is noted that a 3-metre corner side yard setback is proposed. This is not compatible with the existing community and must be increased. Please revise.
26. Please increase the proposed yard setback abutting Coulson Court to respect a rear yard relationship.
27. Lot coverage should be considered as a tool to ensure adequate separation and outdoor amenity area. Please propose a lot coverage.

R5 Zones

28. A demonstration plan is requested to ensure that the zoning requested is appropriate. Please provide.

Environmental

29. The EIS references the "Significant Wildlife Habitat Mitigation Support Tool" when describing habitat for the bull frog, however the significant habitat is described in a different document (the Ecoregional Criteria schedules) which state "Wetland with confirmed breeding Bullfrogs are significant ". The EIS indicates that egg masses or tadpoles were not observed. Please comment on the timing and methodology for this finding.

30. The EIS indicates that one of the reasons that the sites are not considered significant wildlife habitat is due to management practices. If they were to modify the moving schedule along the waterbodies would the emergent vegetation along the bank increase? Please provide a response.

Forestry

31. The City requires an analysis of the 3 metre buffer around the perimeter of the site to quantify the number and location of potentially retainable trees in conjunction with grading and other site development constraints that will influence retainability.
32. A site visit is required with the applicant's environmental consultant to review the buffer area prior to any analysis. Please coordinate with [Mark Richardson](#) (City Forester).

Natural Systems

33. An iTree analysis, or the equivalent, of future tree cover in the community is a requirement of the significant woodlands guidelines. The analysis is required to allow City staff, the public, and City Council to understand the long-term impacts of the proposed development on the urban forest and its ecological services. Please provide an iTree analysis as part of the next submission.

Parks

34. The neighbourhood park continues not to have a minimum 50 per cent street frontage as required by Section 2.4.3 of the Park Development Manual. It is appreciated that the southern portion of the park where the playground is proposed achieves the necessary frontage; the same should be achieved for the fitness station in the northern part of the park. Please revise.
35. The MUP running through the neighbourhood park should be a separate block and not contribute to the parkland dedication. Please revise the draft plan and recalculate the neighbourhood park size and total parkland dedication for the site.
36. A Facility Fit Plan for each of the four parks is to be prepared prior to draft approval.

Transportation

Transportation Engineering Services

Element 2.1.2 - Existing Conditions

37. Existing Area Traffic Management Measures: The TIA states that there are no existing traffic calming measures in the study area except for stop signs. However, Knudson Drive includes numerous regularly spaced "speed cushions". The existing pedestrian crossover at Knudson Drive / Nelford Crescent is also notable. Please revise.

Element 3.1.1 Trip Generation and Mode Shares

38. B. Estimate Total Development-Generated Person Trips: Table 12 correctly uses modal splits found in Table 3.13 of the TRANS Trip Generation Study, not the modal splits found in the TRANS 2011 OD study as stated in the text. Please correct the text.
39. C. Identify Existing Mode Shares for Traffic Assessment Zones: Note 1 under Table 13 is no longer accurate; other mode choice has not been included into the Auto Passenger percentage. As this is a residential development, modal split during the AM peak is more accurately estimated by blending from / within and modal split during the PM peak is more accurately estimated by blending to / within. Please revise.
40. D. Set Future Mode Share Targets for the Development: Justify why future mode share targets do not include the existing 'other' mode choice.

Module 4.1 Development Design

41. Any new enhanced intersections or pedestrian crossings on boundary streets will require an RMA. Please confirm where an RMA will be required.
42. Please provide justification for the method of traffic control- and this should include warrants for any proposed all-way stop control intersections, and/or selection of the appropriate pedestrian crossover (PXO) type per OTM Book 15.
43. At the intersection of Beaverbrook Road and Street No. 17, Figure 12 shows pedestrian crossings on the east and west sides of the intersection and Figure 14 shows a potential enhanced intersection. These two figures therefore seem to indicate that an all-way stop is envisioned for this location. However, it is unlikely this intersection would warrant an all-way stop control. The intersection is also too close to the existing all-way stop controls on Beaverbrook Road at Weslock Way to the west and at Varley Drive to the east. Please provide a sidewalk or pathway on the south side of Beaverbrook Road from Street No. 17 to Weslock Way. Please also provide new crosswalks on the south and east sides of the Weslock Way and Beaverbrook Road intersection. This would also partially address the deficiency noted in point #35 of the Summary and Conclusions section.
44. There are numerous inconsistencies within this module, and between this module of the TIA and the May 2020 Urban Design Brief by NAK Design Strategies. Please revise the below accordingly.
 - a. The TIA states that "on-street parking is proposed not to be restricted on either side of the street allowing for short term on-street parking to occur on either side of the road", whereas on page 32 and page 33 of the Urban Design Brief the descriptions of the 20.0m and 16.5m ROW concepts state that parking will be on one-side only. Figure 48 of the Urban Design Brief also provides a map of "single-sided on-street parking".

- b. The TIA and the Urban Design Brief differ in their placement of the sidewalk on one side of the 20.0m ROW concept.
- c. Figure 14 of the TIA shows an enhanced intersection at Street No. 1 and Street No. 5, whereas the Urban Design Brief instead shows an enhanced intersection at Street No. 1's southern intersection with Street No. 2. Figure 12 of the TIA doesn't show pedestrian crossings at either the intersection of Street No. 1 and Street No. 5 or the southern intersection of Street No. 1 and Street No. 2. The stop control locations shown in Figure 17 are also inconsistent with the pedestrian crossings of Figure 12 and the enhanced intersection locations of Figure 14. Overall, it is unclear if "enhanced intersections" are always intended to be all-way stop control with pedestrian crossings (as shown in Figure 43 of the Urban Design Brief) – or not. Please address.
- d. Figure 14 of the TIA shows the proposed midblock pedestrian crossings of Street No. 1 and Street No.2 too far south (not in-line with the pathway blocks). Please revise.

Appendix D – MMLOS Assessment

- 45. Note that transit LOS is only supposed to be evaluated for transit movements. For example, since there is no eastbound transit movement at the Campeau Drive and Terry Fox Drive intersection, the 'west' column of this intersection should not receive a TLOS score. Please revise.

Transit

- 46. The influence of Terry Fox Station is overstated throughout. Existing transit service in the development area is not oriented to Terry Fox Station - this could have been identified by consulting OC Transpo route maps and the system map. Peak period Connexion routes 265 and 268 do not connect to Terry Fox, instead operating along Westlock / Knudson / Kanata Ave before traveling east on Campeau in the AM towards downtown, and the reverse in the PM. The same applies to Route 62, which operates directly along Campeau. Taking Route 62 or walking to Terry Fox Station would be backtracking, as direct trips towards downtown are already provided in the community. While the West Transitway Extension (Eagleson/March to Terry Fox) by 2024 may draw some new residents to walk to Terry Fox, service along Campeau and the other existing neighbourhood service is unlikely to change and should therefore be able to accommodate all development-generated transit trips. Please revise.
- 47. Please revise Figure 13 - Proximity to Existing Transit Network to include a scale bar and to use a network-based approach to walking distance rather than straight-line distance. This will provide a more realistic view of 400m (5-min) walk transit coverage, accounting only for actual street and pathway connections between new residential units and existing bus stops. Include only pathways that would be winter maintained (i.e. MUPs or major pathway connections).

48. Please create a new figure showing 400m (5-min) walk distance increments from Terry Fox Station using a network-based approach instead of straight-line distance. Please report the percent of proposed units at each increment. Based on a cursory review, the closest part of the proposed development is Block 705 (Campeau at Street 11) which is approximately 1.2km from Terry Fox Station via Campeau Dr, Cordillera St, an assumed extension of Canadian Shield Ave to Kanata Ave, and Lord Byng Way.
49. Please revise Table 24 to reflect OC Transpo standard planning capacities in the peak periods: 45 persons on a standard forty-foot bus, 70 persons on a sixty-foot articulated bus, and 90 persons on a double decker bus

Engineering

Geotechnical Investigation

50. Follow Up Comment 113 – The bottom of pond elevations differ from those proposed in the Functional Servicing Report. Prior to resubmission, please review the FSR to ensure consistency.
51. Follow Up Comment 114 – Tree planting setbacks are not provided in Appendix 2, drawings PG4135-3 and PG4135-4 as indicated. Please address original comment 114.
52. Please provide a plan showing groundwater elevations and surface throughout the site.

Functional Servicing Report, DSEL (excluding SWM, see next section for SWM)

General

53. Please include Stormwater Management Approvals in Table 2 of the FSR (i.e. MECP ECAs, Conservation Authority)
54. In section 1.3 of the FSR, if listing Technical Bulletins, please list them all.

Watermain

55. Follow Up Comment 98a – Table 3 states that the Residential Peak Hour Demand is based on 2.2 x the average day demand. Technical Bulletin 2010-2 states that 2.2 x the maximum daily demand is to be used in the calculation. Please revise the Table and any affected calculations.
56. Follow Up Comment 98b – Table 3 includes a value of 2.3 persons/unit for Residential Medium Density, whereas the GeoAdvice Report in Appendix B utilizes 1.8 persons/unit. Please reconcile this difference and revise the GeoAdvice Report to reflect the proposed

design. Please note, that as per the follow up to comment #105, a report revision will be required.

57. Follow Up Comment 105 – Connection node J10, in GeoAdvice's Figure 1.1, appears to connect to the Beaverbrook watermain approximately 95m from Westlock Way. The Beaverbrook watermain is located within the 2W2C pressure zone as shown below. No boundary request was made for this connection point. Please revise the proposed watermain design to keep the entire subdivision within the 3W pressure zone and request revised boundary conditions.



58. Please loop watermain along Street 17 and Block 9 (pipe lengths P-18, P-19 and P-20) to reduce the size of the proposed 300mm dead-end watermain. Please note, oversizing

3. For multi-unit residential buildings which do not fall into the categories described above, options such as sprinklering systems, or two hour firewalls that

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compartmentalize the structure into separate fire areas are to be considered and applied as needed to limit the sizing of crescent, dead-end, and other distribution mains to a nominal size of no more than 200 mm.

local watermain to meet high fire flows is not permitted (see Technical Bulletin 4014-02 excerpt below).

Sanitary

59. Follow Up Comment 97 – Thank you for the added section on the Kanata Lakes Trunk (KLT) Sewer Realignment. Please note that the evaluation of the KLT realignment is to include Signature Ridge Pump Station (SRPS) flows, as the date of the proposed redirection of SRPS flows has not been set. The original comment still stands: As stated at the pre-consultation meeting, there are no guarantees that the City will agree to relocate any City owned infrastructure. Correspondence of City approval (if granted) shall be included in the Report appendices. Draft Plan Approval will not be granted until this issue is resolved.
60. Follow Up Comment 100 – Please re-write and re-organize Section 3.0 to paint a clear picture of the series of infrastructure changes that will ultimately impact the Kanata Lakes Trunk Sewer (i.e. North Kanata Truck Phase 2 [NKT2], re-direction of Marchwood Trunk to NKT2). Please also clearly indicate if there is/will be available capacity for the proposed subdivision within the Kanata Lakes Trunk sewer, Marchwood Trunk, and ultimately the NKT2.

Note 1: the proposed development will not introduce flows into the March Pump Station based on City Infrastructure construction timelines of the NKT2, therefore please do not justify that the March PS can receive the proposed flows of this development, as it is not applicable. However, flows from the March PS, soon to be March Lift Station, including KNUEA flows, are to be included when examining the capacity of the NKT2. The NKT2 report is attached to provide background information that the proponent may or may not have already.

Note 2: The Signature Ridge Pump Station (SRPS) flows are to be accounted for as there is no project start date for the re-direction of SRPS flows to the Main Street Trunk/Pentfield Trunk sewer system.

61. Follow Up Comment 106 – When updating the demand calculations, please note that the maximum Harmon's Peaking factor is 4.0, not 3.8 as indicated in the report Table 8 and the design sheets in Appendix C.
62. Follow Up Comment 108 – Please also ensure the maintenance hole IDs in the HGL analysis matches the design sheets and the sanitary servicing and drainage area plan.
63. Follow Up Comment 110 – It is unclear if the flows from the Signature Ridge Pump Station are included in the KLT sewer design sheets and HGL analysis. The HGL PCSWMM output profile plan has a note indicating Signature Ridge Pump Station (SRPS) flows are included; however, these flows are not identified in the design sheets. Please confirm existing conditions flow shown in Appendix C includes SRPS in all analyses. The SRPS and forcemain re-direction project is identified in the IMP, but no

date has been assigned to the project, therefore please proceed assuming flows from SRPS will continue to flow to the Kanata Lakes Trunk sewer system.

64. The proposed realignment is 330m longer, which results in reduced slopes and capacity, as well as barely self-cleansing velocities when flowing full. This is not acceptable. The City cannot accept a lower Level of Service (LOS) than is currently provided. Land use is to be more tailored to the trunk alignment. Please revise.

Preliminary Storm Servicing and Drainage Plan

65. The Parks department does not permit park land to be used for any stormwater management works including emergency overland flow routes. Please revise the proposed SWM design according to all 2nd review comments and ensure no emergency overland flow routes go through park land.
66. Follow Up Comment 124 – It does not appear that the City’s comment has been addressed with respect to the Storm Servicing and Drainage Plan.
 - a. After considering all 2nd review comments, please add major overland flow arrows including major overland flow arrows representing the Kinematic Wave cascade links that were used to simulate existing major overland flow conveyance from existing ROW flowing through existing private lots. These cascade links were referenced in the Ultimate model to “convey” this flow through the proposed residential property into the proposed ROW (please refer to the Ultimate model node Maj-076 which is an example of where this cascading flow was assumed to flow into the proposed ROW through proposed residential property).
 - b. As noted in the City’s 2nd review comments, it is not acceptable to direct major overland flow from the ROW into private lots. As such, this drawing shall be updated to include arrows to demonstrate how this major overland flow will be redirected to ensure it does not get directed through proposed residential property (and does not cause issues for the existing development).
 - c. Please refer to the red ellipses in the attached marked up preliminary grading plan which identifies locations of these cascade links as presented in this 2nd submission.
67. It appears that the legend references Pond 3 (however there is no SWMF 3 / Pond 3) – please revise.

Preliminary Grading and Cross Sections Plans

68. Follow Up Comment 94a – Given that the permissible grade raise in several areas is 2.5m, please split the colour coding for the 2.0m to 3.0m range into two colours for 2.0-2.5m and another for 2.5-3.0m. Also, please only show the range of proposed grade raises in the Legend so it is clear what the cut and fill lower and upper limits are, respectively.

69. Follow Up Comment 94b – Engineered solutions to grade raise restrictions can both be expensive and not always reliable. The proponent is to keep the design within the grade raise requirements unless it can be demonstrated that there are no other options.
70. Follow Up Comment 95a – Not all areas where 2.0m grade differences between the front and rear yards have been shown via section. Please provide sections between: Street 2 and Windeyer Crescent, Street 2 and Shaughnessy Crescent, and Street 9 cul-de-sac to the corner where existing lots from Balding Crescent and Knudson Drive meet.
71. Follow Up Comment 95b – Please also provide a section from Street 9 to Tiffany Crescent where a 2.0m+ difference in grades from road to rear lot line is expected.
City (DR IA) Follow Up Comment 95c – Although the following area is expected to have a difference less than 2.0m there are some grading and drainage concerns in this area. Please provide a section from Street 9 to Pentland Crescent where a 1.56m difference is expected.
72. Follow Up Comment 96a – In Section A-A (Pond 1), please show Lot 18 as existing residential property with the municipal address 85 Knudson Drive. The property to the East is labelled as future development however this land is Parkland (Hydro Corridor) and not expected to be development lands as it is designated O1. Additionally, the emergency spillway location/direction is unclear on the Preliminary Grading Plan as the cross section shows grading toward the Parkland (Hydro Corridor). Please clarify contemplated emergency spillway directions from all ponds on the Preliminary Grading Plan.
73. Follow Up Comment 96b – In Section B-B (Pond 2) please show proposed servicing infrastructure (sewers/main) portion within the Pond Block. Typically, a servicing block would be provided, however, since the Pond Block will be conveyed to the City both requirements can be combined. Ensure servicing block requirements are provided, including but not limited to a 6m or more “servicing block” width. Please ensure the “servicing block” is not impacted by any part of the SWMF functions. Additionally, as per the Geotech report, “the groundwater infiltration rate within the excavation side slopes and along the bottom of the pond” is expected during construction of the pond(s). Please review the expected groundwater elevation and discuss any impact the groundwater elevation may have on the proposed “servicing block”.
74. Follow Up Comment 96c – In Section C-C (Pond 4), please show Lot 427 as existing residential property with the municipal address 21 Borduas Court.
75. Follow Up Comment 96d – In Section D-D (Pond 5), as with the previous follow up comments for comment #96, please revise the lot numbers to existing municipal addresses if the residential lot already exists. Street 16 does not appear to be graded with usual ROW features, likely due to this submission being for Draft Plan review. Please revise ROW section at detailed design to reflect to proposed design. Additionally, the road is quite shallow in comparison to the Pond 5 grades. Please review alternative

grading related designs to help move the proposed storm pipe out of being submerged in this area.

76. Follow Up Comment 96e – For all sections please show the groundwater elevations, and please revise the lot numbers to existing municipal addresses if the residential lot already exists.
77. Section 13-13 appears to be in the reverse direction than indicated on the Preliminary Grading Plan. Please review and revise.
78. Please ensure all sections provided accurately reflect any existing lots with their municipal address.

General Stormwater Management Comments (Functional Servicing Report, DSEL, and Preliminary Stormwater Management Plan, JFSA)

79. Follow Up Comment 102a – Please revise to ensure OGS units are sized based on the drainage area tributary to each pond.
80. Follow Up Comment 102b – Please revisit the sizing of OGS 3 to take into account outflow from Pond 1 and update the report to justify how OGS 3 is sized. Provide the updated manufactured treatment device sizing sheet to support the proposed 80% TSS removal.

The following quotes are provided to show where discrepancies have been found to support Comments 102a and 102b. Per the Contech Engineered Solutions CDS sizing sheets provided in Attachment B - 7000 Campeau Drive Subdivision - Preliminary Stormwater Management Plan (JFSA, July 9, 2020):

Pond 1

- Drainage Area 57.87 ha (per the May 2020 Storm Drainage Figure)
- OGS sizing area = 54.99 ha (per attachment B – JFSA SWM Plan)

Pond 2

- Drainage Area 26.22 ha (per the May 2020 Storm Drainage Figure)
- OGS sizing area = 24.96 ha (per attachment B – JFSA SWM Plan)

Pond 4

- Drainage Area 48.50 ha (per the May 2020 Storm Drainage Figure)
- OGS sizing area = 55.46 ha (per attachment B – JFSA SWM Plan)

Pond 5

- Drainage Area 12.66 ha (per the May 2020 Storm Drainage Figure)
- OGS sizing area = 11.83 ha (per attachment B – JFSA SWM Plan)

OGS 3

- Drainage Area 9.34 ha (per the May 2020 Storm Drainage Figure)
- OGS sizing area = 9.34 ha (per attachment B – JFSA SWM Plan)

- Note that OGS 3 receives flow discharged from Pond 1 and as such, the drainage area proposed for sizing the OGS unit would then result in an undersized unit.
81. Follow Up Comment 103 – Thank you for the inclusion of LIDs in the report and modelling options. Further discussions are required with stakeholder City departments to review the options presented however more details are required for that discussion. Please provide where LIDs intend to be located within the ROW, and if any are proposed on private property. Please note private property LIDs are not the preference to the City. Please prepare this plan for further LID discussion with the City. Note, LID locations and approaches are to be decided and agreed upon prior to Draft Plan approval.
82. Follow Up Comment 112 – The following quote is provided to support the new sub-comments of Follow Up Comment 112:
- Per the 7000 Campeau Drive Subdivision - Preliminary Stormwater Management Plan (JFSA, July 2020): “Numerically reviewing the two datasets it was found that on average the City model appears to overestimate the peak flows into the minor system by 47% and 26% at Weslock Way and Campeau Drive, respectively. It was also found that the City model overestimated the total runoff volume into the minor system at both locations, with the simulated total volumes being 69% and 27% larger than the observed volumes at Weslock Way and Campeau Drive, respectively.”*
83. Follow Up Comment 112a – Based on the existing conditions modelling submitted, the existing level of service (minor system) declared by the proponent is unsatisfactory. If existing peak flows in the minor system simulated are overestimated by “47% and 26% at Weslock Way and Campeau Drive, respectively”, then the minor system HGL summary reported in Table C3 and C4, Appendix C of the 7000 Campeau Drive Subdivision - Preliminary Stormwater Management Plan (JFSA, July 2020), would not accurately represent the existing system; HGL results for the existing minor system would be lower than reported (therefore the proposed design would not be acceptable given that it shall not reduce the LOS/increase the HGL at existing MHs, for the existing development).

As requested in the 1st and this 2nd review, the proponent shall model the existing system:

- exclusively using dynamic wave routing;
- using engineering judgement when simulating the existing system (major and minor system);
- identify and simulate the existing stage storage in the existing golf course ponds;
- identify and simulate any flow discharged from these existing ponds, conveyed to the downstream existing minor system;
- include existing exfiltration out of these existing ponds/infiltration into the ground (as declared by the proponent in the 1st review response: “where runoff can further infiltrate and be attenuated through some of the on-site storages that are present within the golf course... much of the runoff from the small events... almost

disappear through the golf course, as observed by the measurements at the Weslock site.”);

- calibrate the PCSWMM model using this field monitored data and provide results (similar to the calibration and monitoring report);
- present the existing system simulated results, with less variation in simulated vs monitored field data; and
- provide all assumptions made with respect to parameters assigned.

The existing neighbourhood dual drainage system modelled needs to be updated to address comments in this memo.

84. Follow Up Comment 112b – As requested in the 1st review comment 138, please add a table that reports major system results for the existing development to support that during the stress test event the WSEL does not touch existing building envelopes (or the lowest building openings). Please report the lowest building opening/elevation of the existing building envelope and update the report to declare how the existing elevation at the building envelope or lowest building opening was calculated.
85. Follow Up Comment 112d – *Table C2: Minor System Freeboard Summary* (7000 Campeau Drive Subdivision - Preliminary Stormwater Management Plan (JFSA, July 9, 2020):
 - Please update the report to declare how the USF for the proposed development was calculated and update Table C2 to include the assumed USF for the proposed design. If calculating freeboard at MHs then please provide the lowest proposed/assumed USF between MHs.
 - Please update the table to include the stress test results and confirm HGL is below USF.
86. Follow Up Comment 112e – Please update to add all existing STM MHs in *Table C3: Existing Upstream Minor System HGL Summary*, and *Table C4: Existing Downstream Minor System HGL Summary* (7000 Campeau Drive Subdivision - Preliminary Stormwater Management Plan (JFSA, July 9, 2020).
87. Follow Up Comment 116 – For the 100-year event, please model submerged pipes (including existing STM pipes included in the model) 25% full of sediment and any partially submerged pipes are modelled with sediment based on the level of standing water. Please demonstrate that the HGL is below the proposed USF.
88. Follow Up Comment 117 – The Applicant’s response is acceptable. During detailed design the additional events are to be assessed.
89. Follow Up Comment 121 – The present proposal will introduce 4 shallow ponds prone to algae growth generating odor and providing a breeding ground for mosquitos. This comment has not been sufficiently addressed. Please read and address the new SMU comments keeping this original comment in mind.

90. Follow Up Comment 125 – Per the 7000 Campeau Drive Subdivision - Preliminary Stormwater Management Plan (JFSA, July 9, 2020): *“Based on the above findings, it is concluded that the City’s model is not a perfect reflection of the existing stormwater operations of the area, as it tends to overestimate both the peak flows and total flows into the system.”* The FSR also states: *“To assess the operation of the proposed SWM ponds, the City of Ottawa provided detailed PCSWMM (hydrology & hydraulic) models of the existing major and minor systems that discharge to the Beaver Pond”.*

Note that the City provided an email to JFSA on February 25, 2020 stating the following: *“want to be clear that the model provided includes a very high-level major system and want to stress that the major system included in the model may need adjustment...If your team would like to move forward using the PCSWMM model developed by the City then we suggest having a discussion on what should be considered when using this model (i.e. discuss suggested revisions to best represent the existing system – major system, golf course ponds etc...). We want to be clear that this model will need to be updated / revised to best support the SWM design for proposed Club Links development and to address the Club Links comments regarding the existing systems.”* The City provided JFSA a clip of the FRP model which is a proxy model used by the City. This model was provided to JFSA to facilitate the development of a dual drainage model for their analysis of the existing dual drainage system. The City was very clear that the model would need to be updated to address the City’s 1st Review Comments.

- a. The modeller/JFSA shall use engineering judgement to utilize components of the City’s high-level model, revising it to best represent the existing dual drainage system and re-evaluate the existing conditions model utilizing the monitored data collected by JFSA in 2019.
- b. Please reference the City-Wide Flood Risk Profile – Version 2 Report, Sections 3.2.3.2, 3.2.4 – model development and 3.2.5, 3.2.6 – limitations and notes on Flood Risk Profile model vs detailed models.
- c. Please revise the existing conditions model to address these sections of the City-Wide Flood Risk Profile – Version 2 Report and ensure the model includes a major system and subcatchment outlets that represent existing conditions.
- d. Please update the existing model to include the existing major system (as requested in first review and as requested as part of this second review), report all sources used and assumptions made with respect to existing inlet capture and existing major system modelled. If needed, please request lidar data/a DEM to facilitate the major system development and to report existing major system results.
- e. Please also note that the existing MHs modelled in the clipped FRP model provided to the proponent has MH rims artificially raised by 0.3m to account for ponding in the ROW. Please consider this in reporting results in the existing system and revise the model, if and where applicable to address this.
- f. Please update the existing (and proposed ultimate development) by exclusively modelling using the dynamic wave routing method given the interconnectivity of the major and minor systems of existing developed land and golf course/proposed development.

91. Follow Up Comment 127a – The City’s first review comment 127 requested an existing conditions model for two reasons: 1) to identify the existing level of service for the existing development (both the existing major system level of service and minor system level of service); 2) to serve as a base for building the proposed/Ultimate Condition model to then demonstrate compliance with City guidelines for the proposed development and demonstrate that the level of service is not reduced for the existing development.

The proponent is proposing to use the existing conditions PCSWMM model that “generally (not always)” overestimates peak flows in the minor system (per the 7000 Campeau Drive Subdivision - Preliminary Stormwater Management Plan, JFSA, July 2020). The City is not comfortable with this approach and is concerned that the existing level of service reported may be inaccurate (i.e. the existing minor system HGL reported would then be higher than observed/actual). By reporting a higher than observed HGL for the existing system the proponent may be assuming an artificially low level of service as a baseline for comparison of ultimate condition HGL/LOS (this may potentially have a negative impact on the existing system). Please see new comment 93, and 94 to fully address this concern.

92. Update the existing conditions model and validate it using the monitored data. This validation shall demonstrate that the revised, existing dual drainage PCSWMM model no longer overestimates peak flows in the minor system compared to the field monitored data collected.
- a. As requested in the first review comment 127, and in email correspondence from the City in February 2020: the proponent shall use engineering judgement to modify the City’s dual drainage PCSWMM model where applicable, including but not limited to revising the existing condition model to include a detailed major system in the existing neighbourhood (based on existing grades).
 - b. The existing condition model needs to include more details to simulate the existing golf course ponds and associated infiltration and attenuation they may provide. Although the following response from JFSA regarding first review comment 210 is with respect to the calibration of the sub-watershed model (SWMHYMO model), it is important to consider this description of the system when making revisions to the dual drainage existing conditions model using PCSWMM. JFSA noted in their response comment that *“The runoff from drainage area that is measured at the Campeau site, like a few other urbanized catchments around the golf course, is then directed to the golf course where runoff can further infiltrate and be attenuated through some of the on-site storages that are present within the golf course”* and *“runoff from the small events ...almost disappear through the golf course, as observed by the measurements at the Weslock site.”*
 - c. The proponent shall model the existing “ponds” in the golf course to consider retention (based on any intentional water reuse / retention on site and/or associated infiltration “benefits” as described in the proponent’s response to first review comment 149), detention provided by these “ponds” and attenuation of flow

where applicable (i.e. identify the existing invert of the pond outlets and whether these outlets have control devices).

93. Use the revised, validated, existing conditions dynamic wave PCSWMM model as a base for the Ultimate Conditions dual drainage dynamic model. This Ultimate Conditions model shall:
- Assign inverts to the major system to be consistent with existing grades and proposed grading;
 - Connect/route the existing and proposed major systems considering proposed grading, cascading flow and existing drainage (for example, please refer to the intersection of Street 1 and Knudson Drive as captured in the screenshot below);
 - Assign subcatchment outlets that are consistent with grading (existing and proposed). Please refer to the IPU NEW 2nd REVIEW DUAL DRAINAGE MODELLING COMMENTS; and
 - Ensure overflow from proposed ponds is routed to the right of way or to a receiving watercourse (removing outfalls modelled downstream of Pond 4 and 5).





94. Follow Up Comment 127b – In response to: “Current detailed modelling shows the following for Beaverbrook Road:

Existing 5-year = 0.558 L/s

Existing 100-year = 0.725

Existing 100-year +20% = 0.740

Post Dev 5-year = 0.481L/s

Post Dev 100-year = 0.724

Post Dev 100-year +20% = 0.751”

The proponent modelled outfall MHST11801 as a “free” outfall for all design events however this does not appear to represent the boundary conditions at this outfall. Please update the existing conditions and ultimate conditions models to include the dual drainage system along Beaverbrook Road and all drainage areas serviced by this system (including any drainage from the golf course). This shall include the dual drainage system up to and including the minor system discharging to the existing watercourse north of Beaverbrook Road (City structure outlet OUT04197). In the existing and ultimate models, please assign the boundary conditions used at the outfall to the receiving, existing watercourse at City structure outlet OUT04197 (and include this information within the applicable report). Furthermore, as requested in first review, please demonstrate existing level of service (major and minor) along Beaverbrook Road and existing and future peak flows directed to the existing watercourse (at the City structure outlet OUT04197). Please advise the PM in DR if the proponent wishes to request a DEM.

95. Follow Up Comment to 129a – Per the 7000 Campeau Drive Subdivision - Preliminary Stormwater Management Plan (JFSA, July 9, 2020): “downstream boundary of the model was fixed to the 100-year peak water level in the Beaver Pond of 92.55 m”.

The ECA (provided in Appendices of FSR states: “a stormwater management wet pond, located east of Goulbourn Forced Road, having a minimum liquid retention volume of approximately 41,042 cubic metres at an elevation of 90.47 metres, and a maximum active volume of approximately 236,696 cubic metres at an elevation of 92.60 metres for the 100 year storm event”.

Furthermore, Table 5 of the Kanata Golf & Country Club Monitoring and Calibration Report (JFSA, July 2020) reports peak measured WSEL in Beaver pond in May (May 15).

- a. How does the spring freshet impact the boundary conditions (100 year WSEL in the Beaver Pond)?
 - b. Please comment on whether the boundary conditions used consider the recorded peak WSEL in Beaver Pond and make applicable revisions to the model and report.
 - c. Please update the 7000 Campeau Drive Subdivision - Preliminary Stormwater Management Plan (JFSA, July 9, 2020) to provide a detailed section on the boundary conditions used for the dual drainage model (1st Review Comment 129).
96. Follow Up Comment 130 – The site currently has a legal outlet as a golf course. With the proposed change in land use and associated increase in runoff volume it is questionable whether these lands will continue to have a legal outlet. Please provide confirmation that a legal stormwater outlet has been obtained. This will be required prior to issuance of draft approval.
97. Follow Up Comment 131 – The proposed development will increase runoff volume discharged to Beaver Pond. As requested in first review comment 131, please provide an assessment of the existing Beaver Pond with respect to quality control and how 80% TSS removal will be maintained in the Beaver Pond considering the additional flow volumes from the proposed development that could affect the quality treatment that the pond currently provides.
98. Follow Up Comment 136 – Please revisit this comment (and first review comment 141) once all 2nd review comments are addressed. Please note that the City will be contacting the MECP to see if an amendment to the ECA is required.
99. Follow Up Comments to 139 – Please refer to and address the City’s response sub-comments to original Comment 205. Please also provide the water balance analysis for this proposed development which reflects the proposed, feasible LID/onsite retention as requested in first review comment 139.
100. Follow Up Comment 170, 171 and 172 – Comment noted with no further comments.
101. Follow Up Comment 173 – 1st review comment has not been addressed.

102. Follow Up Comment 174 – Please revisit first review comment 174 and make applicable revisions to the FSR once all 2nd Review comments have been addressed.
103. Follow Up Comment 175 – Please revisit first review comment 175 and make applicable revisions to the FSR once all 2nd Review comments have been addressed.
104. Follow Up Comment 176 – Please revisit first review comment 176 once all 2nd Review comments have been addressed.
105. Follow Up Comment 202 – MVCA will still need to review the proposed design and determine if it can be approved or not.
106. Follow Up Comment 205 – The following quotes are provided to support the City follow-up sub-comments below.

As per the Functional Servicing Report (DSEL, Submission 2, July 2020):

- Section 4.2 states: “this site it is proposed that a minimum of 3mm capture is to be targeted”.
- Section 4.2 states: “Rear-yard swales designed with minimum grades where possible, to promote infiltration”
- Section 4.2 states: “As per the functional grading plan found in Appendix E the site consists of both fill and cut areas. Ultimately the location of rock, in-situ silty clay soils and imported fill materials will determine the effectiveness, location and type of LID methods to be used.”
- Section 4.2: “LID measures within the proposed right-of-ways (ROW) could be the implementation of a subsurface chamber such as a Stormbrixx product (see brochure in Appendix D) however this would have to be coordinated with City staff as there is no standard preferred location or configuration for this type of installation within City ROWs.”
- Section 6 states: “LIDs could be implemented but would have to be coordinated with the City for preferred alternative location s as the time of detailed design”.

As per the May 2020 Geotech Report:

- “To reduce potential long-term liabilities, consideration should be given to accounting for a larger groundwater lowering and to provide means to reduce long term groundwater lowering (e.g. clay dykes, restriction on planting around the dwellings, etc).”

107. Please address the following in the third submission:

- a. 205a. The proponent has proposed infiltrating/retaining stormwater onsite to address downstream erosion however there is no mention of the “accounting for a larger groundwater lowering” as described in the Geotech report. Please address how the proponent plans to “reduce long term groundwater lowering”.

- b. 205b. If the proponent is proposing LID for the development then they shall provide a feasible plan that corresponds with geotechnical information, proposed grading, right of way cross section with LID included in the ROW configuration (as coordinated with City staff including O&M), during draft plan. The functional servicing design which clearly specifies the LID strategy/strategies to be applied at detailed design, is to provide updated water balance calculations that correspond with these strategies and propose a contingency plan in the event that the agreed upon, targeted retention/water balance cannot be achieved during detailed design. Draft Plan conditions will be drafted accordingly.
108. Follow Up Comment 208 - The proposed development will increase the runoff volumes to the Beaver pond. The proponent is to consider retrofitting the Beaver Pond outlet, including retrofitting the outlet to provide flows from the bottom of the pond.
109. The proposed infill development is part of the existing Kanata Lakes catchment serviced by a trunk sewer system and a central Stormwater Management Facility, the Beaver Pond, which provides water quality and quantity controls for the entire catchment. The proponent shall review the option of retrofitting the Beaver Pond and altering/adding to the existing trunk sewer system (i.e. twin sewers?) if needed to accommodate the proposed development and tributary areas to potentially eliminate on-site SWMFs. The Proponent will need to demonstrate evaluation of the existing trunk sewer capacities, as well as any upgrades to the trunk sewers and the Beaver Pond. If the analysis proves that the upgrades to the existing system are not achievable, the City would prefer full wet pond SWMF(s) that include sediment forebay, and sediment drying area. Please contact the City to discuss these options further.
110. From an operation and maintenance perspective, the 2nd submission's proposed system of 4 quantity control ponds and 7 OGS units (3 individual OGS units and 2 TWIN OGS units) would lead to a significant increase in operation and maintenance costs to the City. As per the above comment, the number of proposed ponds should be reduced to upgrading the existing Beaver Pond and/or adding one quantity and quality control wet pond on-site, complete with sediment forebay, and extended detention drawn down within 24-48 hours.
111. *Figure 1: Development Overview and Proposed SWM Facilities* in the JFSA Preliminary SWM Report is inconsistent with the proposed Stormwater Management approach of four water quantity wet ponds and seven OGS units (3 individual OGS units and 2 TWIN OGS units). Please address all other SMU comments, revise the design accordingly and change Figure 1 to reflect the proposed design.
112. The proposed pond blocks are tightly packed into the development. Please allow sufficient area for appropriate perimeter grading, pond maintenance access, sediment forebay, sediment drying area located near the sediment forebay as much as possible, wet cell, service roads with a minimum offset of 5.0m from private properties. The

SWM facility is to be accessible from municipal roads and the facility should be designed to minimize the number of inlets.

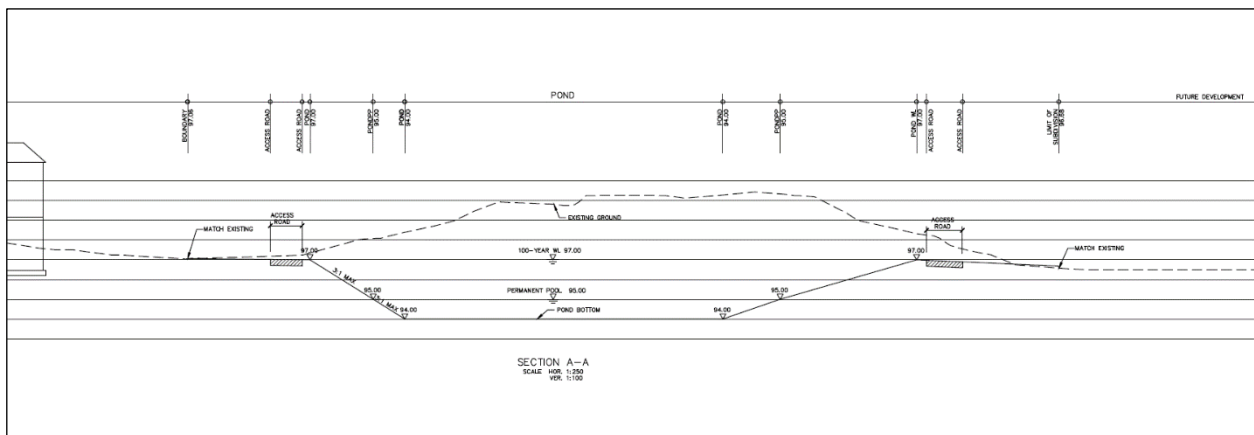
113. If any OGS units continue to be proposed, please note that they are to be sized accounting for the flow-through drainage areas and not just the flows requiring treatment. For very small drainage areas, an OGS can function as a flow through (online) device, however, for larger drainage areas, an OGS must be offline having a diversion of the first flush into the unit and the balance of runoff is to overflow.
114. Any future development Blocks located within the subdivision (i.e. to be developed by site plan later) are to be modelled with a realistic runoff coefficient value reflective of the proposed zoning.
115. There is several upsizing of existing pipes proposed within existing easements or existing service blocks.
 - a. Please provide authorization from the owners of those lands that these works can be done.
 - b. Please also provide latitudinal cross sections of these easements/service blocks to ensure the proposed removal and replacement work as well as new pipe size can be accommodated without impacting any buildings, foundations, etc.
116. Easements and service blocks need to be sized according to Section 3.3.1.2. of the Ottawa Sewer Design Guidelines. Please include discussion of each existing and proposed service block/easement intended to be used for this development in the Functional Servicing Report.
117. In Appendix D of the FSR, in the JFSA SWM Report, the following statement is made on page 7: *"Note that due to grading constraints within the development sump pumps will service several homes."* This is the only location where sump pumps are mentioned in all of the FSR document. If sump pumps are in fact proposed, the Applicant must discuss where sump pumps are expected within the body of the FSR and provide the required information as per Technical Bulletins 2018-04 and 2019-02. The proponent will need to ensure every criteria of the Technical Bulletins are met before the City will consider sump pump use in this area. However, every effort should be made to limit the number of proposed sump pumps if not eliminate them altogether.
118. Groundwater hydrostatic pressure will need to be considered during the design of the stormwater management pond(s), as per the Geotechnical Report.
 - a. The proponent is to ensure no groundwater infiltration/exfiltration occurs with the use of a clay liner and/or a geosynthetic liner along the bottom and side slope surfaces.
 - b. Assessment of hydrostatic pressure impact and potential rotational failure is to be provided prior to Draft Plan Approval. This is to ensure the proposed pond(s) can function where located, at all possible water levels, as well as any impact on structures designed to be part of the SWMF (i.e. inlet headwall or outlet structures).

All water levels to be assessed including but not limited to: empty (expected during maintenance of the pond), permanent pool elevation, extended detention, rapid drawdown and under emergency overflow conditions. Assessment is to include any impact water level fluctuations might have on the hydrostatic pressures and potential rotational failure on the pond system.

119. Upstream of pond 4 there are storm sewers proposed at 1.8m dia. (refer to PCSWMM model STM-4049-4050) with downstream storm sewers proposed at 1.65m dia. (refer to PCSWMM model STM-4050-4051). Please review and revise or justify the design approach here.
120. Per the 7000 Campeau Drive Subdivision - Preliminary Stormwater Management Plan (JFSA, July 9, 2020): *“Pond 2 will discharge a maximum flow of 0.549 m³/s to an emergency overflow drop structure that will connect to the existing trunk sewer on Weslock Way”*. Based on this approach there is concern that if the Pond outlets fail (i.e. blocked outlets), then flows in excess of the stress test flow simulated may be conveyed into the minor system via the drop structure. At detailed design, please add details for how this drop structure will be designed to cap flows at the maximum stress test peak flow reported (to ensure HGL in minor system does not rise higher than reported, in the event of an emergency event such as blocked outlets for the pond).
121. Per the 7000 Campeau Drive Subdivision - Preliminary Stormwater Management Plan (JFSA, July 9, 2020): *“Roads with preliminary centreline grades less than 0.65% will be designed with a ‘saw tooth’ or ‘sagged’ road profile...Note that as the development is only at the preliminary design stage, the exact details of the saw tothing have not been included in the model and only overall high and low points within the development have been included. Note that the future inclusion of the road saw tothing will provide greater storage within the development major system than what has been simulated in this model”*. Given the preliminary grading provided it is not clear where “saw tooth” / sags will be feasible as part of the SWM design. Please identify where “saw tooth” / sags are feasible within the preliminary grading design proposed. It is preferred that the proponent model the preliminary, feasible saw tooth design given:
- Major overland peak flows simulated for the 100-year Chicago storm along Street 16, Street 18 and Street 7 exceed 3.5m³/s and if saw tooth is modelled it may identify locations where velocity x depth exceeds 0.6 m²/s.
 - One of the few low point outlets simulated (at major system low point Maj-002) is modelled to convey a flow of 5m³/s during the 100-year, 3-hour Chicago design storm event. This is a very high flow rate (and it is not clear what type of outlet/catch basin structure could capture and convey this peak flow, as modelled). As such, it is not clear from the submission if HGL in the minor system (or the proposed STM sewer sizing) would be impacted if the feasible sags are modelled and flow into the minor system is distributed over several CBs STM MHs.

122. Per the 7000 Campeau Drive Subdivision - Preliminary Stormwater Management Plan (JFSA, July 9, 2020), Tables 3-6 (and associated models) declare SCS stress test WSEL and simulated max. storage volume for each proposed SWMF. However, it appears that the stage-storage (depth x area) modelled in PCSWMM for each of the proposed SWMFs would not contain/store the stress test max storage volumes referenced. Please ensure that the grading and stage storage modelled includes sufficient pond stage-storage to store the stress test volume for all proposed SWMFs to safely store and convey stress test runoff and/or emergency flow.

- a. POND 1 – Per the 7000 Campeau Drive Subdivision - Preliminary Stormwater Management Plan (JFSA, July 9, 2020): *“Pond 1 will discharge a peak flow of 0.005 m³/s to the proposed road within the development downstream of the pond”*. Pond 1 stage-storage modelled caps at 97m. The emergency spill weir was simulated at invert of 97.3m and as such, per DSEL’s section drawing, it appears flow from a stress test event would spill towards the existing development to the East. Table B-1 *Stage-Storage-Outflow Curve for SWM Facility 1 (Free Outfall Conditions)* includes stage-storage up to an elevation of 98m. This Table assumes that the only way water can be discharged out of the pond is through: a 153mm dia. orifice at an invert level of 95m, a rectangular orifice at an invert of 95.70m, and the emergency overflow weir at invert of 97.3m.
- i. Please ensure that the grading drawings clearly show that there are no other spill elevations lower than the emergency overflow weir.
 - ii. Please update the model to include all stage-storage up to and including the 98m as declared in JFSA’s table B-1.



- b. POND 2 – Per the 7000 Campeau Drive Subdivision - Preliminary Stormwater Management Plan (JFSA, July 9, 2020): *“Pond 2 will discharge a maximum flow of 0.549 m³/s to an emergency overflow drop structure that will connect to the existing trunk sewer on Weslock Way”*. Pond 2 stage-storage modelled caps at 97.5m, emergency spill weir was simulated at invert of 97.75. Table B-2 *Stage-Storage-Outflow Curve for SWM Facility 2 (Free Outfall Conditions)* includes stage-storage up to an elevation of 98.5m. This Table assumes that the only way water can be discharged out of the pond is through: a 95mm dia. orifice at invert

- of 95.5m, a rectangular orifice at an invert of 96.3m, and the emergency overflow weir at invert of 97.75m.
- i. Please ensure that the grading drawings clearly show that there are no other spill elevations lower than the emergency overflow weir.
 - ii. Please update the model to include all stage-storage up to and including the 98.5m as declared in JFSA's table B-2.
- c. **POND 4** – Per the 7000 Campeau Drive Subdivision - Preliminary Stormwater Management Plan (JFSA, July 9, 2020), during the stress test event: *“Pond 4 will discharge 0.144m³/s to a ditch in Weslock Park”*. Pond 4 stage-storage modelled caps at 96.0m and the proposed emergency overland flow is an existing ditch which appears to be in the rear-yard of existing homes (this emergency overland flow route is simulated at an upstream invert of 96.3m, 0.3m higher than the stage storage). Table B-3 *Stage-Storage-Outflow Curve for SWM Facility 4 (Free Outfall Conditions)* includes stage-storage up to an elevation of 97m. This Table assumes that the only way water can be discharged out of the pond is through: a 141mm dia. orifice at invert of 94m, a rectangular orifice at an invert of 94.5m, and the emergency overflow weir at invert of 96.3m.
- i. Please ensure that the grading drawings clearly show that there are no other spill elevations lower than the emergency overflow weir and update the model to include all stage storage up to and including the 97 m as declared in JFSA's table B-3.
 - ii. Please demonstrate, based on the geometry of this existing ditch, that this stress test WSEL in the “ditch” does not touch the existing building openings
 - iii. (DR Eng. Comment) Please show on the Grading Plan, the defined existing ditch where the proposed emergency overland flow route is proposed for Pond 4. If there may be any impact to the neighbouring properties, please consider regrading the ditch where necessary.
 - iv. (DR Eng. Comment) Also ensure that the emergency overland flow route can reach a ROW without having any impact on any private properties.
- d. **POND 5** – Per the 7000 Campeau Drive Subdivision - Preliminary Stormwater Management Plan (JFSA, July 9, 2020): *“Pond 5 will spill 0.379 m³/s to Weslock Park”*. Pond 5 stage-storage caps at 96.7m and the proposed emergency overland flow is directed to “Weslock Park” (this emergency overland flow route is simulated at an upstream invert of 96.73m, 0.03m higher than the stage-storage). Table B-4 *Stage-Storage-Outflow Curve for SWM Facility 5 (Free Outfall Conditions)* includes stage storage up to an elevation of 97.7m. This Table assumes that the only way water can be discharged out of the pond is through: a 65mm dia. orifice at invert of 94.7m, a rectangular orifice at an invert of 95.2m, and the emergency overflow weir at invert of 96.73m.
- i. Please ensure that the grading drawings clearly show that there are no other spill elevations lower than the emergency overflow weir and update the model to include all stage storage up to and including the 97.7 m as declared in JFSA's table B-4.
- e. Furthermore, major overland flow from the proposed SWMF4 and 5 shall be routed to the relevant major system modelled (existing or proposed) to account

for these flows as oppose to simulating outfalls for these emergency overland flow routes.

123. Please update Table 7 in JFSA's Preliminary Stormwater Management Plan to include major overland flow in addition to minor system flow (note that the proponent shall provide an updated Ultimate conditions model including the existing major system and routing between the existing and proposed major systems, modelled exclusively with a Dynamic Wave model).

124. Storage nodes modelled in PCSWMM are flooding in the Ultimate Dynamic Wave Model (100 year, 3hr Chicago):

MHST11772
IN46264
MHST04742
MHST12193
MHST12205
MHST11669
IN114502
MHST04741
MHST13012
MHST11773
MHST66182

Please ensure the models submitted in the 3rd submission are revised to demonstrate water is not lost from the system (both existing and ultimate conditions).

125. Per the 7000 Campeau Drive Subdivision - Preliminary Stormwater Management Plan (JFSA, July 9, 2020): *"As the development is only at the preliminary design stage, the majority of the subcatchments have been assumed to be 64% impervious (Runoff Coefficient=0.65)"*, also per the memo: *"The proposed development will consist of single detached homes, front drive towns, back to back towns, stacked towns and medium density blocks"*.

Please ensure that the imperviousness calculated (based on the RoC) and assigned to the PCSWMM model proposed subcatchments is consistent with the proposed land use concept plan (Land Use Concept Plan as attached in Appendix A of the FSR) and maximum driveway widths associated with this land use.

126. Please revise modelled imperviousness and provide runoff coefficient calculations for each different land use to support the composite runoff coefficients used (converted to imperviousness assigned to modelled subcatchments). Seven percent imperviousness is assigned in the dynamic model for some existing development residential area along Knudson Drive (where it appears that rooftop area accounts for half the RY subcatchments delineated). Please update these subcatchments to represent the as built imperviousness in this area.

127. Per the 7000 Campeau Drive Subdivision - Preliminary Stormwater Management Plan (JFSA, July 9, 2020): *“where there is an existing major system spill to the golf course, additional nodes were added to the Kinematic Wave model from the Dynamic Wave model. The inclusion of these nodes allows for the external flows onto the golf course simulated by the Kinematic Wave model to be passed to the correct location within the Dynamic Wave model, these include external major system flows into the development.”*

Per OSDG: “Flow from the street cannot be conveyed to rear yard areas. Flow can only be conveyed through private property if the flow path is a designated major system flow relief channel with an easement in favor of the City. The flow must be maintained within the channel for the 100-year event.”

Major system flow from the ROW shall not pass into private property. It is understood that this MAY be the case in the existing system (and the modeller shall continue to model these existing major system spill locations, where they exist), however major overland flow from existing ROW shall not be conveyed into proposed private property. Please update the submission to ensure this is addressed (i.e. designate Blocks with conveyance channels that intercept this existing cascading flow, directing this flow to an existing or proposed ROW and model it as such to report impacts to the overall system). Examples of these locations are identified by the red ellipses in the attached, marked up version of the preliminary grading plan. At most of these identified locations it is not clear how this cascading flow will be conveyed to the “correct location within the Dynamic Model” as described in the Preliminary SWM Plan and as simulated in the models submitted.

128. Rear Yard Drainage – Existing and Proposed (Grading and Overland Flow)

Per the 7000 Campeau Drive Subdivision - Preliminary Stormwater Management Plan (JFSA, July 9, 2020): *“Depth/Flow curves for each outlet were generated based on the 2-year peak flow from the proposed development and 5-year peak flow from the existing external rear yards that will discharge to the proposed storm sewer at each respective location.”*

Note that this application is unique where the major and minor systems are connected/interconnected, servicing both existing and proposed development. Although this is a Draft Plan design submission and it is acknowledged that the modelling will be adjusted in the future, note that all subcatchments (including RY drainage areas/catchments) appear to be outletting to a major system node in the ROW. The proposed grade profiles do not demonstrate RY swales throughout the development. Will there be rear yard swales proposed as part of the proposed design? If so, will they be designed with a saw tooth grading? If so, the proponent shall ensure that the model is adjusted to account for this routing, continuing to ensure no storage in the RY (the modeller has done this) however, major overland flow from rear yards shall be identified at the RY saw tooth spill location and directed to the applicable proposed or existing major system node/junction (in the ROW).

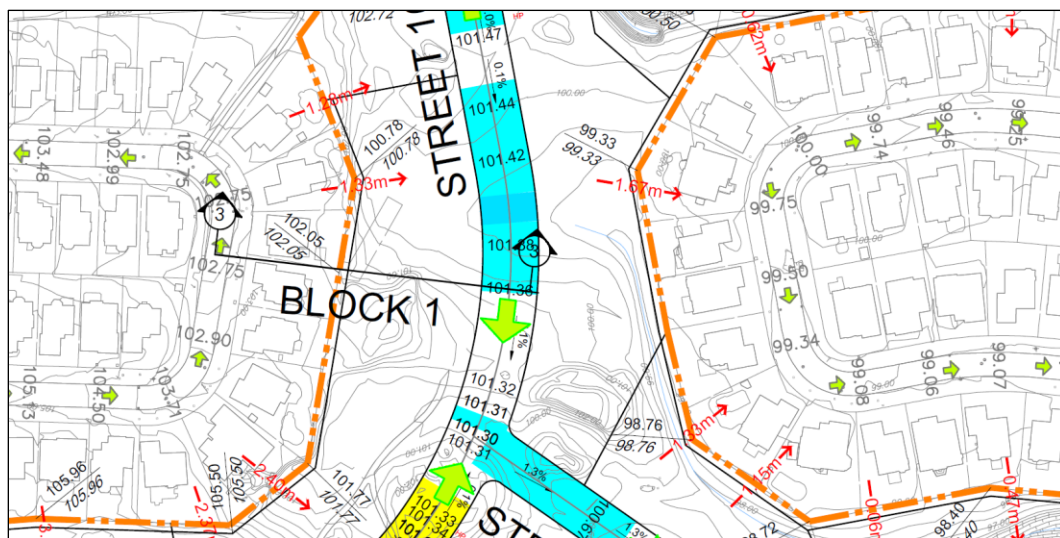
129. Subcatchment outlets assigned do not appear to be consistent with the preliminary grading plan. Please reference the examples below and revise the model to ensure that the outlets assigned are consistent with the proposed grading.

Example 1: Drainage from the proposed development RY, east of Street 16 would appear to flow to the existing lots' (Zokol Street) rear yards, given the grade raises proposed.

Its not clear how 100 % of the existing RY drainage for the existing lots on Zokol Street will flow to Street 16 dual drainage system as modelled (see screenshot of the PCSWMM model below).

Please extend section line 3-3 to include the proposed and existing lot east of Street 16 to Zokol Street.

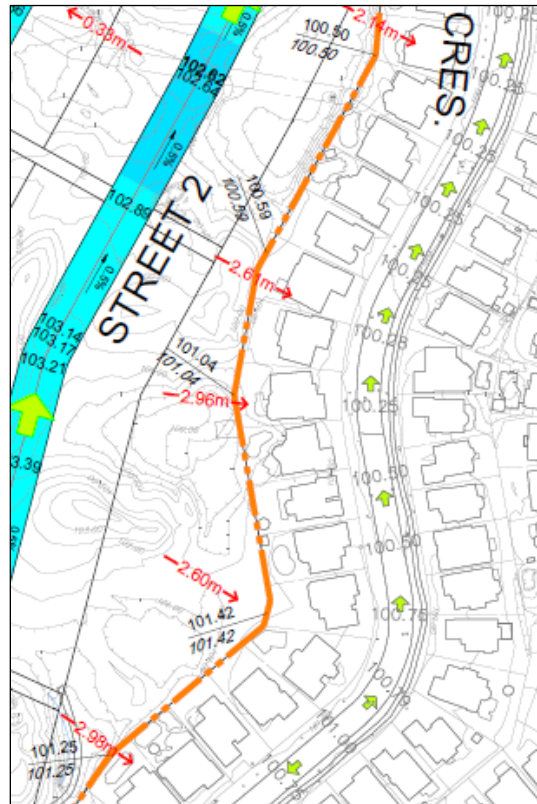
Depending on the SWM design it is typical that the STM sewer location/ minor system MH junction receiving flow from a RY CB lead (servicing a RY drainage area), is not the same location as the major system junction that receives the major overland flow from that same RY drainage area. Please adjust model subcatchment outlets (perhaps include some RY spill locations to best represent routing), where applicable to best represent the proposed and existing grading. It appears that some proposed RY spill may be directed to existing ROW. This is another reason it is essential that the model is revised to include the dual drainage for the existing system (major system), as requested in first review. The proponent shall revise the PCSWMM models for this proposed development to run exclusively as full dynamic wave models to ensure that model results best reflect the proposed servicing (and impacts to the existing major and minor system).





Example 2: With respect to the screenshot below of the preliminary grading plan and section 2-2, how will it be possible to convey 100% of rear yard drainage from new proposed RYs and existing RYs for homes on Slade Cres, to Street 16 (where grade raises are proposed)? Based on Section 2-2 (see screenshot below), it would appear all drainage from the proposed lot will flow directly into the existing lots located on Slade Crescent and likely onto Zokol Cres. (it does not appear that RY swale is proposed either). Please extend Section 2-2 to Zokol Cres. and revise subcatchment outlets and/or RY routing to address this.

Example 3: In the screenshots below, how is it possible that 100 % of existing RY drainage for existing lots located on Winderyer Cres will be conveyed to Street 2? Please provide a new grade profile section here to demonstrate how this can be achieved.





Example 4: In the screenshots below, how is it possible that 100 % of existing RY drainage from lots on Slade Cres and all rear yard drainage for proposed lots on Street 4 will be conveyed to Street 4? Please provide a new grade profile section here to demonstrate how this can be achieved.

130. Per the 7000 Campeau Drive Subdivision - Preliminary Stormwater Management Plan (JFSA, July 9, 2020): “*maximum flow velocity must be less than 0.60 m²/s on all roads. Table C-1 in Attachment C provides a summary of the maximum major system flow depths along with the flow depth velocity product for the 100-year SCS 24 hour and Chicago 3-hour storm. From this preliminary analysis, it was found that all flow depths within the development for both 100-year events are less than 0.35 m and the depth velocity product is less than 0.60 m²/s*”.

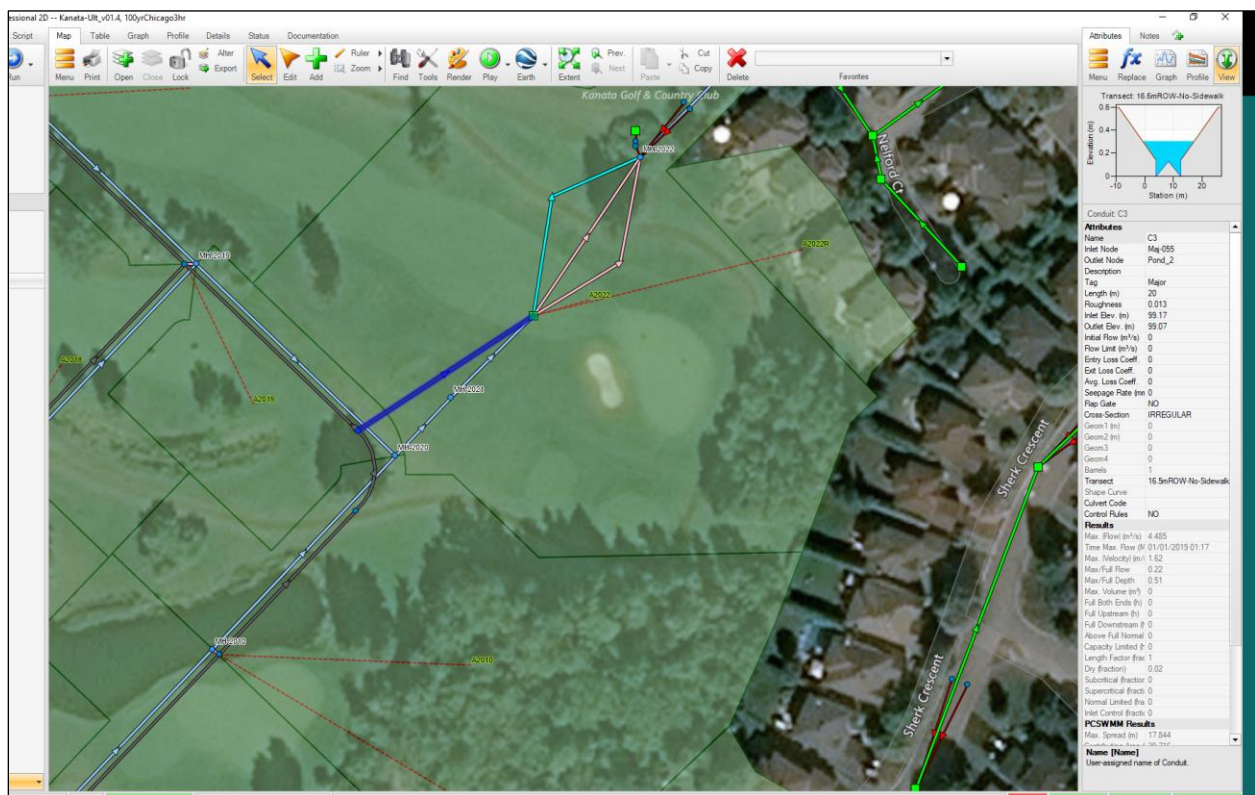
Table C1: Major System Depth Velocity Summary states Maj-002 has a max depth of 0.29 for the 100 year, 3hr Chicago event however the results in PCSWMM for junction **maj-02 is 39 cm for the 100 year, 3 hr. Chicago event (with velocity of 2.88 m/s** in the adjacent major system conduit). Flow x depth is greater than 0.6 m²/s. Please revise your Table C1 to be consistent with the models. Please update the table once all comments in this review are addressed.

Note that the proponent has not modelled the existing major system with enough detail to identify any major system impacts on the existing development (nor has this been reported). Please ensure that depth x velocity in the ultimate proposed and existing major system does not exceed 0.6 m²/s. If this is not achieved in the existing conditions model, please identify the locations where this guideline is not achieved.

131. The proponent appears to be focusing on demonstrating minor system compliance and have not provided enough details to support functional servicing of the major system proposed:
- Velocity x depth in ROW not met;
 - the proponent has not modelled a detailed major system in the existing development or routed major flows from the proposed development into the existing major system (via major system open channels/transect conduits in the ROW and RY spill via subcatchment outlets designated where it appears that the proposed grading would result in flows directed into existing private lots and into existing ROW).
 - Ponding in the ROW exceeds the 35 cm allowance in the 100-year, 3-hour Chicago event.
 - Not clear how 100% capture outlets at low points will convey modeled flows (for example, how will 5 m³/s be conveyed from major to minor system at one low point).
 - Would adding saw tooth major system (and accounting for RY overflow routing) impact both major system and minor system results both in existing and the proposed development.

Please revise the model to include existing major system and routing per the comments in this memo. Please provide full dynamic wave models for both existing and proposed development (vs the combination of kinematic wave and dynamic wave).

132. Please refer to the marked up preliminary grading drawing (green ellipse locations): there are a couple locations, for example Maj-144 which does not have an overland outlet. The major system profile slopes down towards this junction, which has an invert of 97.1, and the adjacent Weslock Way has elevations around ~ 96.5 - 96.6 m. It seems like this would spill back to Weslock Way but there is no connectivity in the model. Please revise accordingly.
133. Where is flow from Ultimate Kinematic Wave model for CASCADE_LINK_IN29567 directed? How will overland flow be conveyed to the Pond here (the modeller simulated this overland flow channel using a ROW transect – see screenshot of PCSWMM model below).

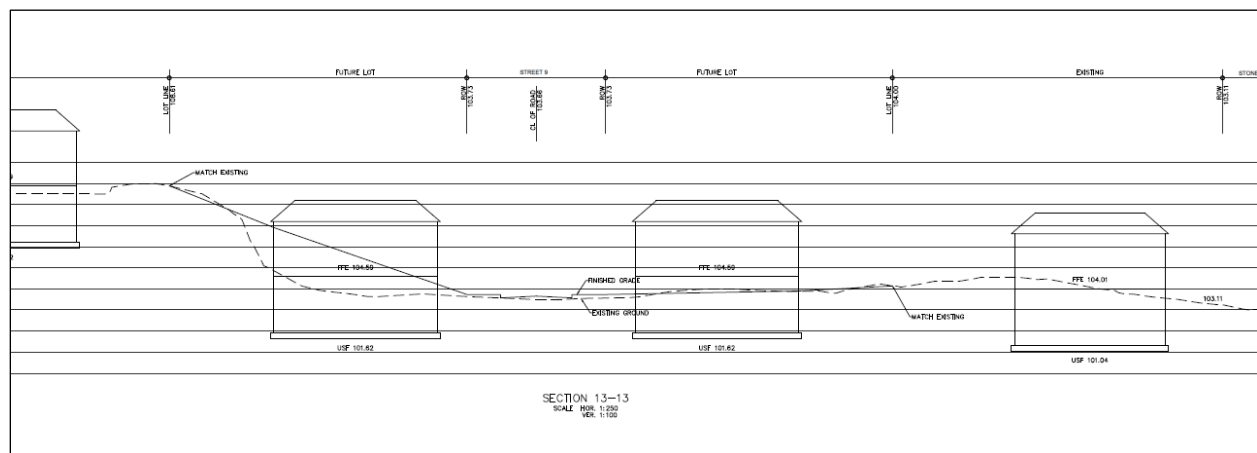


Please update to represent the proposed open channel, a freeboard of 0.3 m and ensure this overland flow path has a Block assigned to it.

Simulated Outlet rating curves

134. 100% Capture at low points – what type of CB structure is proposed to convey flows up to 5 m³/second (OL53 conveys 5 m³/s in the 100 year, 3hr Chicago model submitted). Will updating to a feasible saw tooth design in the right of way to distribute this flow into the minor system, across the subdivision change the results for the minor system HGL?

135. The simplistic approach taken to model each CB outlet on a slope shall be revisited given the comments in this memo. Please ensure that updates made to outlet rating curves (CBs on a continuous slope) account for depths greater than 30 cm during the 100 year and stress test events, where applicable.
136. Subcatchment Slopes assigned: please ensure that the subcatchment slopes assigned represent the proposed, preliminary grading plan. For example, please see section 13-13 where subcatchment slope is much greater than 2%. Furthermore, the proponent shall note that the minimum allowable lot grading is 2% (maximum 6%). Please revise the subcatchment slopes accordingly (an average for the development is fair however please ensure the next submission justifies the slope/s assigned).



137. Please note the model documentation has been reviewed for completeness and to confirm that parameters and methodologies applied are consistent with the current edition of the City of Ottawa Design Guideline (and any subsequent Technical Bulletins). The review has included spot checks of the model. Comments are provided on this basis, however the responsibility for overall model correctness and results rests with the engineer of record.

Kanata Golf & Country Club 2019 Monitoring and Hydrologic Model Calibration Report, JFSA

138. Follow Up Comment 147 – The proponent is to calibrate the Beaver Pond orifice.
139. Follow Up Comment 153 – As per the information presented in the Kanata Golf & Country Club Monitoring and Calibration Report (JFSA, July 2020) it is not clear how the calibration and validation has been considered acceptable by the proponent for this calibration of this converted continuous SWMYMO model. The City is concerned with:
- The discrepancy in the measured and simulated peak flows reported for the calibration and validation respective Tables 9 and 10 of the Kanata Golf & Country Club Monitoring and Calibration Report (JFSA, July 2020): Table 9 reports that simulated peak flows for 2019 are **20% lower** than those measured

and Table 10 reported simulated peak flows for 2013 being **50% greater** than the measured peak flow.

- b. The variation in coefficient of determination for the 2019 calibration ($R^2 = 0.72$) vs the 2013 validation ($R^2 = .55$).
- c. Results from the validation modelling (using 2013 monitored data) where the rainfall data collected includes one event comparable to a 10-year return period (which results in higher peak runoff/flow). Given that SWM design uses bigger return periods there is concern about the difference in measured vs peak flow results (a difference of 50%) for the 2013 Validation model and that the coefficient of determination is so low for the 2013 validation ($R^2 = .55$).
- d. The concerns raised above are also illustrated in the hyetograph / hydrographs proved in Appendix F of the Kanata Golf & Country Club Monitoring and Calibration Report (JFSA, July 2020). Please revisit the calibration and validation performed for this project, consider all comments from the second review and please make applicable revisions to address the three concerns listed above.

140. Follow Up Comment 154 – The subwatershed model was calibrated with rainfall data which does not include events greater than the equivalent 2 year event and validated (resulting in a low coefficient of determination and inconsistent peak flows simulated vs monitored) with rainfall data that includes one event comparable to a 10 year return period.

Given the City's Comment above (2nd Review response re: 1st Review comment 153), what is the risk on the proposed development (i.e. will beaver pond 100 year WSEL be greater and impact the 100 year HGL?), existing developments and downstream conveyance channels and infrastructure when referencing the results of calibrated continuous SWMHYMO model used to inform critical design events (up to the 100 year and stress test)?

The beaver pond model should be updated and re-calibrated to achieve a better fit (rather than a consistent bias) against existing data. The uncertainty currently introduced present risk to the NCC as a downstream landowner.

141. Follow Up Comment 210 – Per the Downstream of 7000 Campeau Drive – Hydrologic Assessment (JFSA July 2020): *“This model was also updated downstream of the development on Watts Creek to use subcatchment parameters that were more representative of field observed conditions obtained by C. Brennan et al and described in their September 2017 journal article “Continuous prediction of clay-bed stream erosion in response to climate model output for a small urban watershed”. Full details of this model calibration process have been documented in JFSA’s July 2020 “Kanata Golf & Country Club 2019 Monitoring & Hydrologic Model Calibration Report”.*

- a. The proponent shall not change model hydrologic parameters for catchments directly tributary to Kizell and Watt's Creek, as made in C. Brennan et. al journal article referenced above, given that some of the CN* parameters used in

Brennan's continuous modelling were atypical and very low compared to typical CN* values and thus reduce peak flows simulated.

- b. For catchments directly tributary to Kizell and Watt's Creek, where parameters are changed exclusively for the purpose of converting the model from single event to continuous, please justify how these parameters are equivalent to those approved by the City previously in the AECOM 2015 model.
- c. Please update the Kanata Golf & Country Club Monitoring and Calibration Report and the update the Kizell Drain Downstream of 7000 Campeau Drive Geomorphological and Erosion Threshold Assessment accordingly.

Downstream of 7000 Campeau Drive – Hydrologic Assessment, JFSA

- 142. Follow Up Comment to 134c – Please update the Downstream of 7000 Campeau Drive – Hydrologic Assessment (JFSA, July 2020) to include beaver pond water surface elevation (WSEL) in conjunction with peak outflows for each of the 100-year Design Storms.
- 143. Follow Up Comment 158 – Schematics are required to aid in review of the proponents proposed models. Please provide as part of the 3rd Draft Plan submission.
- 144. Follow Up Comment 162a – 1st review comment has not been addressed. Please update Table 1A and 1B: *Beaver Pond Inflow/Outflow Summary* in the Downstream of 7000 Campeau Drive – Hydrologic Assessment Memo to include these details (include the water surface elevations that correspond to the peak outflows from the beaver pond).
- 145. Please provide the Stage-Storage-Outflow curve of the Beaver Pond (that corresponds with the following from JFSA's July 2020 Kanata Golf & Country Club Monitoring and Calibration Report: "the Beaver Pond storage volume curve was updated based on IBI's latest detailed topographic survey...Outflows from the Beaver Pond were updated based on a theoretical partially full orifice equation").
 - a. Please provide the PCSWMM Ultimate Modelled major and minor system output hydrograph (tributary to the Beaver Pond modelled outfall), compared to the hydrograph for the same catchment area/s (drainage areas) modelled using SWMHMO (*KWEX_KGC scenario* referenced in the Downstream of 7000 Campeau Drive – Hydrologic Assessment Memo) representing the 7000 Campeau Club Links project (including proposed Storm Water Management (SWM) ponds and the existing drainage for developed land as modelled in the PCSWMM Ultimate model).
 - b. As requested in this second review, the proponent shall exclusively use the PCSWMM dynamic wave routing, updating the model to include the existing major system and the routing between the proposed major system and existing major system.
 - c. Please declare the total catchment areas associated with these dual drainage systems and proposed SWMF, and provide hydrograph comparisons for the 2, 5 year and 100yr design rainfall events, reporting the comparison of:

- Peak flow;
 - Time to peak flow to Beaver Pond; and
 - Total volume of water directed to Beaver Pond.
- d. Please comment on the comparison of the data requested above and justify whether the two models would provide the same response at the Beaver Pond and the Beaver Pond outlet (as modelled using the continuous, SWMHYMO sub-watershed model).

If the comparison yields inconsistent results, within reason, then the proponent shall make applicable revisions to the design package to ensure the results are comparable.

JFSA's Downstream of 7000 Campeau Drive – Hydrologic Assessment Memo shall be updated, if applicable, to report on any changes made to address this comment with respect to the Beaver Pond peak release rate, beaver pond volume released and results of the Kizell drain and Watt's Creek.

- a. Please update the Downstream of 7000 Campeau Drive – Hydrologic Assessment to address any changes to the continuous SWMHYMO model given all comments made in this 2nd review.
- b. Please confirm whether the continuous SWMHYMO model includes recent culvert replacements (i.e. Nordion/BTL culvert or Legett Drive) or service road culvert removals? If not, the model shall be updated accordingly.
- c. Does the SWMHYMO modelled scenario *KWEX_KNL9* include future urbanized Goulbourn Forced Road tributary to the sewer on Walden Dr and future urbanized Goulbourn major overland flow directed to Beaver Pond and Kizell Cell?
- d. Table 5 of the Kanata Golf & Country Club Monitoring and Calibration Report (JFSA, July 2020) reports peak measured WSEL in Beaver pond in May (May 15). Please update the Downstream of 7000 Campeau Drive – Hydrologic Assessment report to justify the WSEL used at the beginning of the continuous model. If the spring freshet was not used, is the WSEL used less than the spring freshet? If so, please revise to use the WSEL that best represents the worst-case scenario (which appears to be the spring freshet) and update the modelling throughout the submission to address this comment.

Kizell Drain Erosion Assessment

146. Follow Up Comment 177, 178 & 179 – These comments have essentially been addressed by the new Geomorphologic report and covered off by City follow up comments 181 and 191.

147. Follow Up Comment 191 – Please refer to the City's follow up comment to 1st review comment 205. Please revisit 1st review comment 181 as part of the third submission.

148. Follow Up Comment 191 –

- a. Please refer to the City's 2nd review comment regarding 1st review comment 205.
- b. Please revisit 1st review comment 191 as part of the third submission.
- c. City's 2nd review response regarding 1st review comment 210; and
- d. Please update all relevant reports (including but not limited to Downstream of 7000 Campeau Drive – Hydrologic Assessment with respect to the erosion analysis and the Geo Morphix Geomorphological and Erosion Threshold Assessment).

149. Please provide a revised geomorphology report for the 3rd submission after all 2nd review comments have been addressed.

Corporate Real Estate Office

150. The City has not been provided with a 153/04 compliant Phase One ESA, as per the Official Plan requirements. An ERIS report for the property was included in the 2nd submission, however, an updated Phase One which includes discussion of the ERIS report must be submitted. Comment 33 also notes other "Environmental Source Information" searches that were completed for the subject property only, but these must be done for the Phase One Study area and the results discussed in the Phase One ESA. Please submit an updated Phase One ESA.

151. Although additional sampling was undertaken throughout the course, the specific sample locations are not identified (e.g. green, tee box, fairway etc.) nor the rationale for each sample location provided. Table 4 should provide the location of each sample and the rationale for choosing the specific location. The scale of the photo on figure PE4321-3 makes it difficult to see where each sample location is situated on the golf course (e.g. green tee box, fairway) and figure PE4321-4R provides no indication of where the sample location is on the golf course. The 2020 sampling program identified additional areas of impacted soil and the extents of those impacts have yet to be delineated. It is also noted that duplicate samples were not collected for laboratory analysis during 2020 sampling which is a requirement of O. Reg 153/04. Additional delineation will be required prior to planning site remediation or risk management activities. An updated Phase Two completed to O. Reg 153/04 including lateral and vertical delineation of mercury impacted soil, appropriate QA/QC sampling, and sample location rationale must be submitted.

152. Delineation of mercury impacts in Parcel 3 is not provided by the Phase II ESA dated May 20, 2020. An exceedance of the mercury standard was identified in sample HA25-20 and there is no clean sample between this location and the eastern boundary of Parcel 3. Similarly, a mercury exceedance was identified in sample HA28-20 and the

nearest clean samples to the west and south (HA33-20 and HA 16) are located well within other parcels. Vertical delineation of mercury impacts was not achieved at either HA25-20 or HA28-20. It is also noted that duplicate samples were not collected for laboratory analysis during 2020 sampling which is a requirement of O. Reg 153/04. An updated Phase Two completed to O. Reg 153/04 including lateral and vertical delineation of mercury impacted soil, appropriate QA/QC sampling, and sample location rationale must be submitted.

EXTERNAL AGENCIES

Mississippi Valley Conservation Authority

MVCA requests further information on the following:

153. The existing swales and ponds provide an infiltration function on the site. Cumulative impacts were discussed in regards to the forest cover, but was not discussed in regards to the removal of the infiltration swales and their function for both natural heritage values or stormwater management and on-site water balance. Please provide further information regarding the on-site water balance and how it will be maintained post-development.
154. Please identify the Low Impact Development (LID) measures that are to be implemented with the proposed development and provide a conceptual level design, calculations, and locations of the LID measures within the site.
155. It is noted that the drainage areas, provided in Table 1A of the “Downstream of 7000 Campeau Drive – Hydrologic Assessment” report by JFSA, are inconsistent between the various model scenarios. In particular, there is a more than 60 ha variation between the MVCA and KWEX scenarios shown in the table. In addition, the drainage areas vary within each model scenario for different design storms. Please review Table 1A and update the calculations and table as necessary.
156. Please provide details regarding the differences in the updated existing conditions model (KWEX) and the MVCA model (drainage area, parameter, etc.) and discuss the peak flow, runoff volume, and water level variation, if any.

National Capital Commission

157. Comment 154 – The beaver pond model should be updated and re-calibrated to achieve a better fit (rather than a consistent bias) against existing data. The uncertainty currently introduced present risk to the NCC as a downstream landowner.
158. Comment 203 – An increase in runoff volume is anticipated (increased imperviousness generally results in increased runoff volume). The models submitted for review show the opposite trend. This should be reviewed, and either the models modified or the behaviour explained. NCC comment on the potential effectiveness of the conceptual "3

mm" and "5 mm" LIDs are reserved until the general behaviour between existing and proposed runoff volume is clarified.

159. Comment 205 – In addition to the CWI presented, please present the number and hours of erosion exceedances. Those are also important indicators for erosion potential. For channels with clay banks, wetting and drying cycles and differential pore pressure in the bank caused by 'flashy' urban hydrology are drivers of bank erosion and must be accounted for in addition to total stress.

160. Comment 206 – Please refer to response to 203 and 205 above.

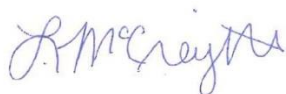
161. Comment 208 – Baseline and post-construction monitoring should be proposed to be implemented by the proponent to prove this position, or in the future if thermal impacts are observed, to identify the need for mitigation measures.

162. Comment 209 – Please refer to response 154 above.

163. Comment 210 – Response pending resolution of comments 203 and 205.

Please provide a resubmission that addresses each of the comments or issues. Five copies of each plan and five copies of each study are required. A cover letter must be included that states how each of the comments are addressed on the resubmission. All addenda or revisions to any studies, or drawings, shall be accompanied by a *.pdf copy (ie. USB).

Please contact me at Laurel.McCreight@ottawa.ca or at 613-580-2424 ext. 16587 if you have any other questions.



Laurel McCreight
Planner II
Development Review West