

March 7, 2022

National Capital Business Park Inc.
222 Somerset St West, Suite 401
Ottawa, Ontario K2P 2G3

Attention: National Capital Business Park Inc.

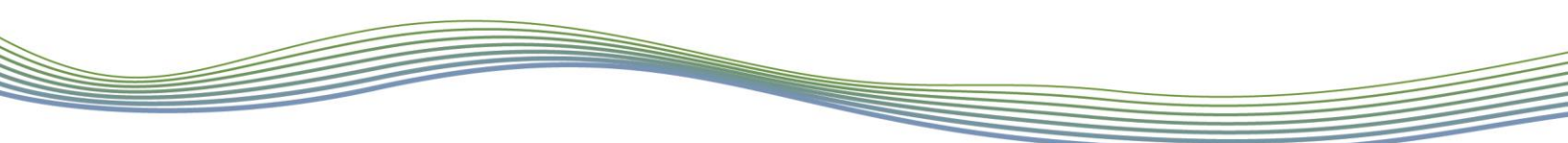
**Re: NCBP Site 2, Outlet 1 Erosion Assessment, RVCA Comments
Ottawa, Ontario
GEO Morphix Project No. 20055**

GEO Morphix Ltd. was previously retained by National Capital Business Park Inc., c/o J Murray Consulting, to complete an erosion mitigation assessment in support of the proposed developments at 4120 & 4055 Russell Road, Ottawa, ON. This exercise was completed to inform storm water management (SWM) strategies and ensure no exacerbated rates of erosion or sedimentation occur within the receiving watercourses following development. Regarding the submission materials from GEO Morphix for Site 1 and 2, the Rideau Valley Conservation Authority (RVCA) had issued the following comment:

In our October 14th, 2022 letter, we had identified the potential for erosion downstream in McEwan Creek if stormwater management is not adequately addressed. This concern was in relation to the drainage area to Outlet 1. We had recommended an explanation about if / how the erosion analyses for adjacent sites included flows from this site. It was our understanding based on discussions at a joint meeting held on November 23rd, between the City, the applicant, and applicant's consultants that a letter of opinion by the author of the report "4120 Russell Road (Site 1) – Erosion Assessment, McEwan Creek, Town of Milton, Ontario (assumed typo)" dated March 6th, 2021, prepared by Geo Morphix Ltd. would be submitted in the resubmission. We have not been provided with any additional information in relation to the downstream erosion resulting from flows to Outlet 1. Therefore, our previous concerns in this regard remain outstanding.

We note that to-date, GEO Morphix has completed a downstream erosion assessment for all SWMF outlets, detailed in the GEO Morphix report: *Revised 4120 & 4055 Russel Road Erosion Threshold and Exceedance Analysis*, dated April 21, 2022. As such, the *4120 Russell Road (Site 1) – Erosion Assessment, McEwan Creek, Town of Milton (typo), Ontario* memo dated March 6th, 2021, has been superseded and is no longer relevant. We also note that *Outlet 1* was previously named *Outlet D*, which is the naming convention used in all previous GEO Morphix submissions.

Regarding the original submissions pertaining to *Outlet 1*, it is understood that only the drainage area from Site 1 was included in the erosion exceedance analyses for both the existing and proposed conditions. Since the SWM plan had not been finalized for Site 2 at the time of analysis, associated drainage area contributions were excluded. The exceedance analysis was for Site 1



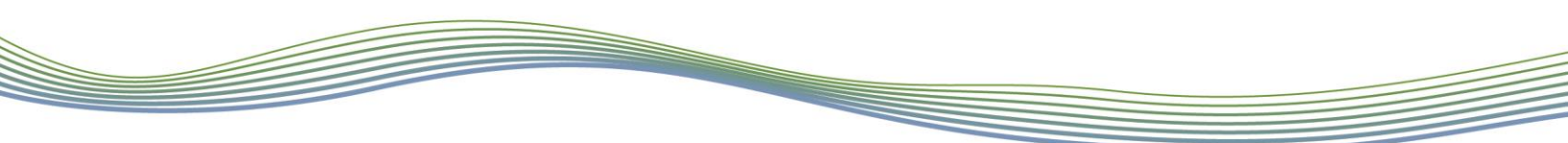
utilized unitary erosion threshold-based site-scaled 'allowable' release rate, which was determined using the drainage area of Site 1. A larger drainage area would equate to a larger, and consequently less-conservative, site-scaled allowable release rate. Confining the assessment to Site 1 ensured a conservative approach with respect to the proposed SWM facilities within the Site 1 area. Further, it is expected that inclusion of the flows from Site 2, which at the time of assessment would have been uncontrolled runoff consistent with the existing conditions, would have served to 'buffer' exceedances and reduce the magnitude of exceedances predicted for Site 1.

Since the original submission, the SWM plan for Site 2 has been proposed (LRL, 2022), and was reviewed in the context of potential downstream erosion. Specifically, the Stormwater Management Report and Servicing Brief for Site 2 (LRL, 2022) and the associated Hydrogeological Study for NCBP Site 2 (Paterson Group, 2022) were reviewed. It was noted that the Site 2 drainage area contributing to *Outlet 1* would be reduced from 2.095 ha in the pre-development conditions to 1.355 in post-development conditions, and that peak flows for the 2-year and 100-year events will be controlled to pre-development levels. It is understood that Site 2 runoff from the 1.355 ha catchment will be directed to a permeable gravel attenuation area and a grass swale along the site border designed to enhance infiltration and attenuate storms up to the 100-year event. Infiltration of 10mm of runoff is proposed by introducing these low impact design measures, which will result in an overall runoff volume reduction to Outlet 1 and McEwan Creek.

Through a water budget assessment for Site 2, Paterson (2022) indicated a potential 8.39% reduction in runoff to Outlet 1 under the proposed SWM plan (LRL, 2022). Impervious surfaces were considered to generate runoff with 100% of the precipitation captured, whereas up to 15-30% would realistically be lost to evaporation or infiltration, or infiltration within the grassy areas where runoff will be diverted to (Paterson Group, 2022). This ensured a conservative approach, and likely overestimates the actual runoff in the post-development conditions (LRL, 2022).

The predicted reductions in runoff indicate that downstream erosion within McEwan Creek will be appropriately mitigated following development. Inclusion of Site 2 flows into the original erosion exceedance modelling would not be expected to worsen results, as peak flows and total runoff volumes are decreased. It is expected that the combined Site 2 and Site 1 results would slightly improve upon the Site 1 exceedance results, as the Site 2 flows would provide additional buffer to the similarly-controlled Site 1 flows. Further, the additional 1.355 ha of contributing drainage from Site 2 comprises approximately 0.09% of the total drainage area of erosion-sensitive **Reach MC-3**, downstream of *Outlet 1*. When modified with regards to hydrological characteristics, contributing drainage area segments of similar relative proportions generally do not have any perceptible impact on the downstream channel and long-term rates of erosion.

Considering the runoff reductions and relative size of the additional area to *Outlet 1*, we do not believe it necessary to complete an additional assessment for Site 2 regarding the potential for erosion downstream on McEwan Creek. It is expected that the proposed LID and SWM measures will adequately mitigate, and potentially improve, downstream erosion following development of Site 2.



We trust this letter meets your current requirements. Should you have any questions or concerns, please do not hesitate to contact the undersigned.

Respectfully submitted,



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Director, Principal Geomorphologist



John Tweedie, M.Sc.
Watershed Scientist

References

LRL Engineering. 2022. Stormwater Management Report and Servicing Brief Site 2 National Capital Business Park, 1100 Last Mile Drive, Ottawa, ON. Prepared Dec 23, 2022.

Paterson Group. 2022. Proposed National Capital Business Park – Site 2, 4120 Russell Road, Ottawa, ON. Prepared Dec 16, 2022.