

**Review of EIS by Stantec, dated May 1, 2018, exp Hydrogeology report dated February 2018, and Parish Aquatic Services Erosion Assessment report dated May 2016.**

All received after EEPAC's August 2018 meeting when requested by the Committee  
Reviewed by S. Levin, B. Krichker, and I. Whiteside

**General Comments:**

EEPAC has site specific concerns and recommendation related to the EIS, Groundwater Study, and Erosion Assessment of Thornicroft Drain as outlined in the Document Review section, below. However, the Committee also has broader concerns regarding this development and other current and future adjacent developments in the Southwest Area of the City, specifically in the Talbot, Lambeth, and Bostwick Planning Districts. We have reviewed several studies for proposed developments in these Districts, and several consistent themes have emerged thereof, namely:

1. The lack of a system wide approach to evaluate environmental and ecological impacts, with individual projects looked at in isolation to adjacent developments. Rather, the cumulative impacts from future and existing developments should be used to look at the system's overall environmental and ecological health. For example, several of the proposed developments will be required to relocate existing onsite wetlands; however, there appears not to have been any coordination among the various involved parties to maximize the ecological benefit therefrom. Another example is the cumulative impact of stormwater runoff from the developments, with each development ignoring surface water flows from adjacent sites and their cumulative impact on soil erosion and sedimentation on downstream ecological receptors.
2. Certain proposed developments will rely on private SWM systems for part or the entire site. EEPAC's concern is twofold. First, SWM appear to rely on LID measures to limit surface run-off, with the reports implying that the measures will serve to manage stormwater quality and quantity to a certain extent. Our concern with respect to the reliance on LID measures is that a) the long term efficacy of the measures is not demonstrated and performance may degrade with time; and b) provisions for long term maintenance of the LID measures are not outlined, which is an added concern if the LID feature is located on private property. Secondly, the reports did not provide an estimate of retention/detention capacity of the storm water management systems during major and minor storm events. This figure is important to determine peak flow into the drainage channels to ensure that there is no adverse impact to downstream ecological receptors (e.g. fish habitat) via increased sediment flow or channel erosion.
3. The proposed developments are located in part of the Dingman Creek subwatershed, specifically Tributaries B, C, and D. However, none of the reports received to date for this area have referenced Dingman Creek Subwatershed Study Update 2004 ("DCSSU"). That document has been approved by the City Council and not superseded or rescinded, and is thus still applicable. In EEPAC's opinion, all DCSSU objectives and requirements should be referenced in relevant reports for new developments and all new developments should be screened against DCSSU requirements to ensure adherence. It also should be noted that the DCSSU includes (among others): the recommendations for the water resources and environmental requirements; SWM criteria and environmental targets; and, the

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requirements for preservation and protection of the environmental/ecological existing conditions of the system based on the tributaries approach. The reports provided for this proposed development and others have not identified these requirements, nor have they demonstrated compliance with these requirements, nor have their analysis been based on the system approach.

With these three points in mind, EEPAC is recommending that the City consider defer approval until a comprehensive plan can be developed for the entire area to deal with the cumulative impacts from the developments, including demonstrated compliance with the DCSSU criteria and recommendations for the relevant tributaries to Dingman Creek. Such deferral would be consistent with the London Plan, which requires that surface and groundwater features and their hydrological functions are to be considered as part of the systems approach to land use planning (paragraph 1302).

### **Document Review:**

EEPAC's comments are primarily related to groundwater and surface water management during and after construction. Our chief concern is related to the impact of any discharge into Thornicroft Drain, which is a tributary to Dingman Creek and has a warm water fishery downstream of the proposed development. Our comments below are informed by the Erosion Assessment prepared by Parish. Key points from that report are:

- The channel on the site (Thornicroft Drain) is characterized as "Transitional or Stressed", meaning channel morphology is within the range of variance for similar streams, but evidence of instability is frequent. The report found evidence of aggradation and widening within the study area, with the reach having "low ecological health" for among other reasons, a high degree of sediment suspended in the water column. Channel degradation appears to be caused by stormwater flows released upstream (e.g. from developments North of Southdale Rd.)
- Discharging directly to the watercourse is not the preferred solution, even with erosion protection established. The report recommends locating the stormwater outlet away from the existing watercourse and constructing an outlet change that incorporates natural in stream flow energy dissipation measures prior to entering the watercourse. The report goes on to note that localized erosion control will not mitigate the on-going issues affecting the watercourse, and that future large scale remediation work along Thornicroft drain is anticipated.

### **Theme 1 – Dewatering During Construction**

The hydrogeological report identifies shallow groundwater as close as ~4.5 meters below ground surface, present in a silty sand aquifer that extends throughout the site, with a hydraulic conductivity assumed to be  $10^{-4}$  to  $10^{-5}$  m/s (n.b. Single Well Recovery Tests were not done because the recharge in the wells was *too rapid* to measure). The report also does not characterize seasonal fluctuations in the water table, and thus the water table could be higher during construction. Lastly, the report identified surface water samples with levels of iron and aluminum that exceed the Ontario Provincial Water Quality Objectives.

The report is not specific on whether expected a Permit to Take Water will be required as part of the construction. However, given the hydraulic conductivity and relatively shallow depth of the underlying sandy silty aquifer, it is possible, especially given the site design calls for buildings up to 21 stories tall. EEPAC also has concerns that the water balance within the channel can be impacted by dewatering activities, as surface water quantity and quality may have substantial influence on adjacent groundwater conditions (and vice-versa). For instance, if the dewatering activities are taking place near to the channel, surface water flows could be diminished potentially impacting the downstream woodlot and warm water fishery. Conversely, dewatering discharges that end up in the channel may cause erosion and sediment problems within the channel, again impacting downstream receptors.

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### Recommendations:

1. Establish whether a Permit to Take Water will be required by evaluating seasonal groundwater fluctuations and expected excavation depths during construction.
2. Further characterize the surficial aquifer to determine the cone of influence during potential dewatering activities, with a particular focus on identifying dewatering activities that will impact surface water flows in the channel.
3. Establish a dewatering plan that includes an Erosion Sediment Control Plan, as well as appropriate measures to ensure the channel is not impacted by the dewatering activities.
4. During construction and post-construction dewatering, groundwater and surface water quality sampling should be conducted to ensure no change to the baseline conditions. Special attention should be paid to ensure that any discharged water met the Ontario Provincial Water Quality Objectives.
5. Even if a permit to take water is not required as volumes will be below the permit threshold, special attention should be paid to maintain the sites current equilibrium, and limiting any discharge to the channel to amounts that are removed as part of dewatering.

### **Theme 2 – Stormwater Management**

The site's approach to stormwater management is described in detail in the report entitled *Storm Drainage and Stormwater Management Plan (2016)* prepared by IBI Group. EEPAC has not received this report to review. The EIS provided some details from that report, including *inter alia* the following:

- Stormwater Management will be provided by a "Permanent Private Stormwater System", with quantity controls within each block for up to the 100-year storm event to the event feasible (n.b. the concept/ definition of what is "feasible" and what is "not feasible" is not defined).
- Future public roads will drain into Thornicroft drain without quantity control, and major flows up to the 250-year storm event (and presumably beyond) will drain directly into the open channel via the proposed street pattern.
- LID measures may be used to increase the existing infiltration and help manage stormwater run-off. However, the actual efficacy of these measures was not quantified given the site mostly consists of apartment blocks and associated parking lots was not articulated.
- Stormwater quality control measures were not articulated (e.g. for salt and from parked cars), which is important given the preliminary site design is composed of largely apartment blocks and associated parking lots.

EEPAC's concern is that the stormwater management plan, as it stands, will result in a significant increase in the flow into Thornicroft Drain, both through direct surface water flow and potentially through increased groundwater flow. Furthermore, the intensity/ velocity of that flow will be much greater than currently exists as the nature of the development with parking lots, roads, and buildings (i.e. impermeable) will result in a much higher peak discharge. As outlined in the Erosion Assessment prepared by Parish, Thornicroft drain does not have the capacity to handle large inflows without further degradation. The proposed stormwater management plan is at direct odds to the conclusions of the Erosion Assessment, which recommended no direct discharges to the channel. The current plan, as is, will likely have an adverse negative impact on the downstream warm water fishery and woodlot, and follow-on impacts to Dingman Creek.

### Recommendations:

6. Redesign the stormwater management system such that it meets current best practices. This may require work during the Southdale Road widening. These include, at minimum, quantity and quality

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control of stormwater discharges up to the 100-year storm event for the entire site (pre-and-post construction), with sufficient retention/detention capabilities to protect the integrity of Thornicroft drain. Of particular note, the stormwater management system appears to rely on secondary infiltration to detain the water, yet the hydrogeological report did not provide a seasonal evaluation of groundwater levels to determine whether the underlying sandy/silty aquifer can indeed absorb the water under a worst case scenario (e.g. high water table with a major storm event).

7. Should the revised stormwater management plan include LID systems, these systems be placed on public property, as the eventual homeowner may lack the desire or skill in maintain the LID measures and run-off may consequently increase over time as the efficacy of the LID measures wane.

EEPAC would also like to review the *Storm Drainage and Stormwater Management Plan* (2016) prepared by IBI Group, as well as any other SWM report completed and update for the subject site, and provide recommendations.

### **Theme 3 – Fluvial Geomorphic Study of Thornicroft Drain and DCSSU Compliance**

#### Recommendation:

8. Consistent with the a recommendation from the Erosion Assessment prepared by Parish, EEPAC echoes their recommendation that a comprehensive fluvial geomorphic investigation of the entire tributary be undertaken to assess the geomorphic character and systemic processes operating within the tributary to properly assess potential risk to downstream areas and develop responsible long-term solutions relating to urban development and SWM.
9. We also recommend that the City include a holding provision for this development until the developer or the consulting engineer demonstrate that the design will be in compliance with the approved DCSSU (2004) criteria and recommendations for this tributary and with the recommendations of the Parish report.