

INFORMATION REPORT

TO: Chair and Members Planning Committee	WARD(S) AFFECTED: Wards 6, 9, and 11
COMMITTEE DATE: October 4, 2011	
SUBJECT/REPORT NO: Sanitary and Storm Sewer Issues in New Development in Stoney Creek and Glanbrook (PED11155) (Wards 6, 9, and 11) (Outstanding Business List Item)	
SUBMITTED BY: Tim McCabe, General Manager Planning and Economic Development Department	PREPARED BY: Sally Yong-Lee, 905-546-2424 Ext. 1428
SIGNATURE:	

Council Direction:

Council at it's meeting of March 23, 2011 approved the Official Plan Amendment, Zoning, and Draft Plan of Subdivision (25T200806) for lands located within Part of Lot 29, Concession 6, Stoney Creek with an additional condition limiting development of these lands to 50% of the total developable lands until the Lower Davis Creek downstream erosion works have commenced construction. They further requested a report to address the cumulative storm and sanitary impacts from the proposed developments in the Upper Stoney Creek and Glanbrook areas; particularly those developments located within watersheds that drain to the Lower Davis Creek.

Information:

Storm Drainage

The Davis Creek subwatershed is 1 of 6 subwatersheds that drain to the Red Hill Creek. The Davis Creek subwatershed outlets to the Red Hill Creek Main Branch at King Street and Mount Albion Road. It has a drainage area above (Upper Davis Creek) and below (Lower Davis Creek) the Niagara Escarpment.

The Davis Creek Subwatershed Study (2006) identified multiple and severe erosion sites within the Lower Davis Creek requiring erosion control and stream restoration works. Hence, the Lower Davis Creek Class EA was initiated to develop

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recommendations to stabilize and rehabilitate Lower Davis Creek. The Lower Davis Creek Class EA was completed and filed on May 20, 2011.

The Lower Davis Creek reach extends from the base of the Niagara Escarpment to King Street and receives drainage from the Upper Davis Creek subwatershed. The Upper Davis Creek reach extends from the Niagara Escarpment upstream to south of Rymal Road East, as shown on Appendix "A" to Report PED11155. Drainage area for the Davis Creek subwatershed is 1168.3 ha comprised of 922.5 ha in Upper Davis and 245.8 ha in Lower Davis.

Watershed studies identify the natural environmental features and recommendations for their protection, restoration, and enhancement integrating the management of water, nature and community within the watershed ecosystem. They also identify the subwatersheds located within the watershed.

Subwatershed studies typically include a review of the hydrology, soils, topography, significant natural features, land uses and opportunities for enhancement. Subwatershed studies are completed in consultation with the Local Conservation Authorities ensuring for the provision of appropriate stormwater collection and treatment.

With development it is inevitable that the quantity and rate of run-off and from any storm will increase due to the increase in impervious hard surfaces. Anticipated storm runoff is determined based on future land uses, together with the proposed type and density of developments within each of the drainage areas. Sizing of storm sewers is based on the City's Storm Drainage Policies and Criteria Manual which outlines criteria to be used to determine storm run-off and includes factors such as run-off coefficients, storm frequencies, and storm hydrographs.

There are a number of development applications within the Davis Creek Subwatershed. Storm run-off from these developments will be piped and ultimately discharge to the Davis Creek watercourse. In addition to the sizing of the storm sewers, developments need to manage the capacity, frequency of flooding, and erosion of the receiving watercourse in accordance with the subwatershed recommendations. In the Davis Creek the proposed developments have a combined drainage area of 126.25 ha, representing 10.9% of the watershed.

Draft Approved Plans of Subdivision			
Mud Street West	25T200806	390 Highland Road West	25T200706
Penny Lane Estates	25T200808	Red Hill Summit Estates East	25T200208
Paletta – Felker Neighbourhood	25T200908		
Plans Under Consideration for Draft Approval			
Red Hill Developments	25T200901		

There are many methods of controlling run-off which includes stormwater management facilities, discharging rainwater roof leaders onto grassed areas, etc. Identification of solutions to control the quantity and quality of storm run-off must be compatible in allowance with the subwatershed recommendations.

A detailed stormwater management report is required to be submitted outlining how storm drainage from the perspective of both quantity and quality control will be addressed at the subdivision development stage.

Sanitary Drainage

The old City of Hamilton has one of the older sewer systems and is primarily a combined sewer system in the lower parts of the City as well as the escarpment from the brow to Mohawk Road. Separated sanitary and storm sewer systems have been constructed from Mohawk Road southerly.

The main outlet serving the Davis Creek subwatershed study area is the Felker Creek trunk sewer which discharges into the Red Hill Creek trunk sewer at King Street, as shown on Appendix "B" to Report PED11155. The easterly portions of the Lower Davis Creek subwatershed will discharge to the Centennial trunk sewer which is currently under construction and is anticipated to be in service for July 2012. Ultimately the flows from both the Red Hill and Centennial trunk sewers discharges to the wastewater interceptor sewer located along the South Service Road and are conveyed to the Woodward Avenue Sewage Treatment Plant (WSTP) located at 700 Woodward Avenue where it is treated prior to releasing into the Hamilton Harbour. The plant is capable of providing complete treatment for 409 MLD of mixed domestic, commercial, and industrial sewage.

The design of sanitary sewers is based on peak sewage flows expected from the tributary area for present and future conditions based on reference to the Official Plan which will contain future population densities and land uses. Sanitary sewage flows are made up of waste discharges from residential, commercial, institutional, and industrial establishments and extraneous non-waste flows from sources such groundwater, and surface runoff. Criteria in the City's Development Engineering Guidelines manual are:

- Sanitary Drainage:
 - Average residential flows - 360 litres/person/day
 - Peaking Factor (M) - $5/P^{0.2}$ where P is the population in thousands, and $2 < M < 5$
 - Infiltration Factor - 0.2-0.4 L/sec/ha
- Equivalent Population Densities:
 - Single Detached - 60 ppha

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|---|----------------|
| ○ Semi-Detached | - 75 ppha |
| ○ Townhouses | - 110 ppha |
| ○ Parks | - 12-25 ppha |
| ○ Schools and Institutional | - 75-125 ppha |
| ○ Commercial | - 125-750 ppha |
| ○ Industrial and Central Business Districts | - 125-750 ppha |

Sewage from proposed developments 390 Highland Road West, Mud Street West, Penny Lane Estates, and Paletta – Felker Neighbourhood will outlet to the Felker Creek Trunk Sewer, whereas Red Hill Summit Estates East outlets to the Red Hill Trunk Sewer. It is estimated these developments will generate an estimated sewage flow of 3.74 MLD, representing less than 1% of the WSTP plant capacity.

We have also received application for Draft Plan approval for the lands west of the Nash Neighbourhood and is subject to the completion of the Centennial trunk sewer. This development is expected to generate an estimated sewage flow of 0.55 MLD.

It should be noted sewers designed prior to the late 1990's were sized based on the criterion 455 litres/person/day. This has since been reduced to 360 litres/person/day. This reduction is reflective of the trends in the reduction of water consumption and confirmed through flow monitoring conducted to determine actual flows. Internal subdivision sanitary sewers are sized and designed at a depth to receive flows from the adjacent contributing developments. As proposed developments come forward, detailed sewage calculations are submitted to substantiate there is available capacity in the downstream sewer.

The Felker and Centennial trunk sewer systems have been sized to accommodate the future sewage flows and are sufficiently deep to provide a gravity outlet for each of the proposed developments.

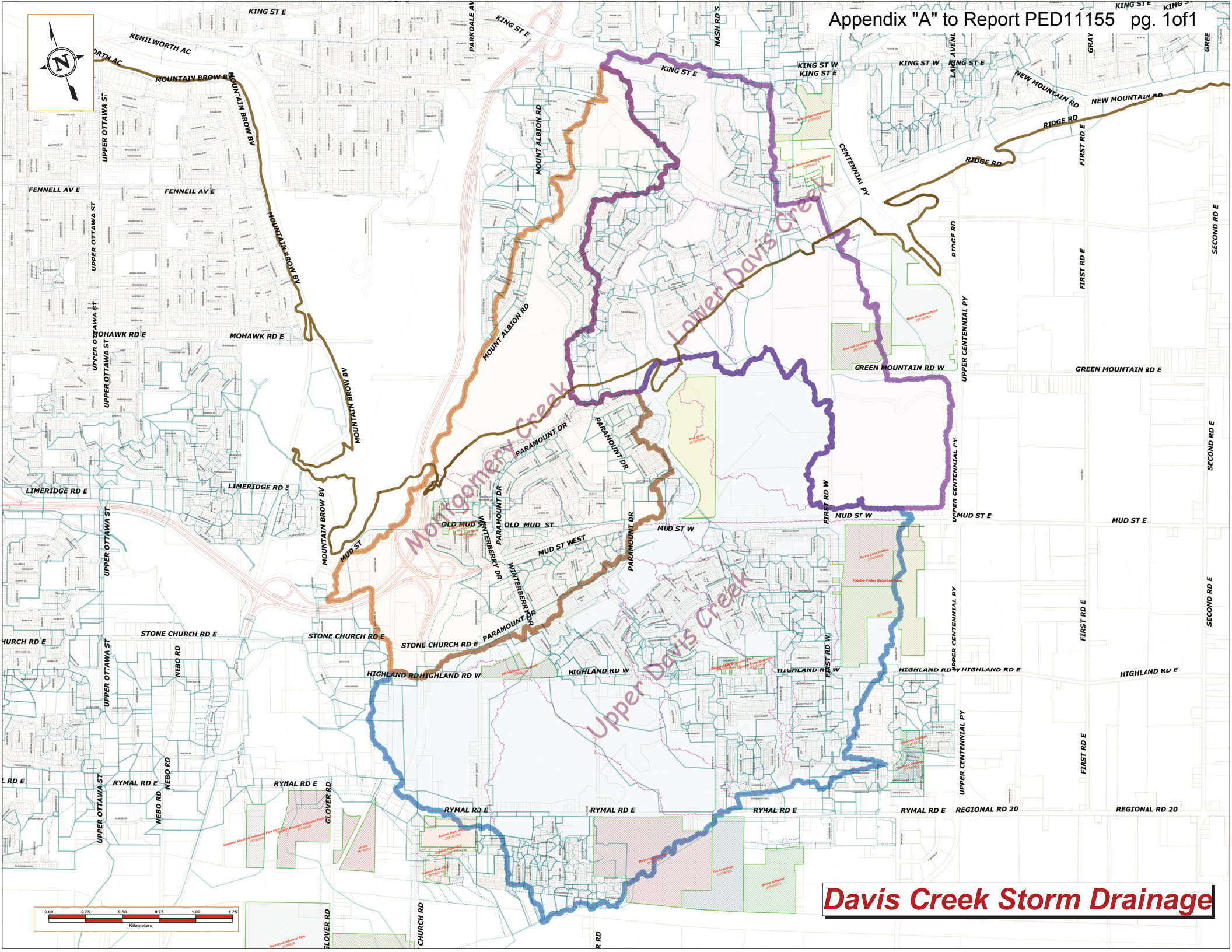
That this matter be considered complete and removed from the Planning Committee's Outstanding Business List.

Appendices:

- Appendix "A": Davis Creek Storm Drainage Map
- Appendix "B": Davis Creek Sanitary Drainage Map

SYL:tl

Attachs. (2)



Davis Creek Storm Drainage

