Staff Report

Development Services Department *www.kitchener.ca*

REPORT TO:	**Climate Change and Environment Committee**
DATE OF MEETING:	**October 19, 2023**
SUBMITTED BY:	**Natalie Goss, Manager Policy and Research 519-741-2200 ext. 7648**
PREPARED BY:	**Monica Mazur, Project Manager, 519-741-2200 ext. 7135**
WARD(S) INVOLVED:	**Ward 3**
DATE OF REPORT:	**October 5, 2023**
REPORT NO.:	**DSD-2023-453**
SUBJECT:	**Hidden Valley Flood Risk Reduction Municipal Class Environmental Assessment**

RECOMMENDATION:

That the Climate Change and Environment Committee supports the preferred alternative solution for flood risk reduction in the Hidden Valley Creek subwatershed.

REPORT HIGHLIGHTS:

- The purpose of this report is to present the preliminary alternatives considered for flood risk reduction in the Hidden Valley creek subwatershed.
- The key finding of this report is that implementing conveyance improvements downstream of the wetland is the preferred solution.
- The recommendation has no impact on the Capital or Operating Budget. Funds are currently available from Development Charges.
- Community engagement included is First Nations consultation, a Public Information Center on October 12, an Engage Page, and a page for Hidden Valley on the City of Kitchener website.
- This report supports **Cultivating a Green City Together: Focuses a sustainable path to a greener, healthier city; enhancing & protecting parks & natural environment while transitioning to a low-carbon future; supporting businesses & residents to make climate-positive choices.**

BACKGROUND:

The City of Kitchener (the City) retained Matrix Solutions Inc. (Matrix) to provide a Municipal Class Environmental Assessment (EA) for flood risk reduction in the Hidden Valley Creek subwatershed. There are several flood vulnerable areas and erosion vulnerable reaches in the downstream portion of the Hidden Valley Creek subwatershed close to Hidden Valley Road. This EA is being undertaken to define a flood risk reduction solution to reduce existing flood risks and support future development in the Hidden Valley community. The project is being carried out in accordance with the requirements of the Environmental Assessment Act and it is being planned under Schedule B. The intent of this project is to identify solutions

and design alternatives to reduce the flood hazard in the vulnerable downstream reaches of the Hidden Valley Creek subwatershed.

The Hidden Valley Creek subwatershed is approximately 200 ha located in southeast Kitchener (see Figure 1). The Hidden Valley Creek subwatershed contains a large wetland/woodland environmental complex, which holds classifications of a Provincially Significant Wetland (PSW), Environmentally Sensitive Policy Area (ESPA), and Core Environmental Feature (CEF). Within the study area there are Regionally Significant Woodland and Significant Valley, species at risk habitat, and a warmwater fishery. In addition to being an environmentally sensitive area, the Hidden Valley ESPA/PSW is the hydrologically dominant landscape feature in the subwatershed. The area downstream of the Hidden Valley ESPA/PSW has experienced past flood and erosion impacts related to both specific rainfall-runoff events and/or the release of natural debris-blockages (e.g., beaver dams or natural debris jams) within the wetland feature.

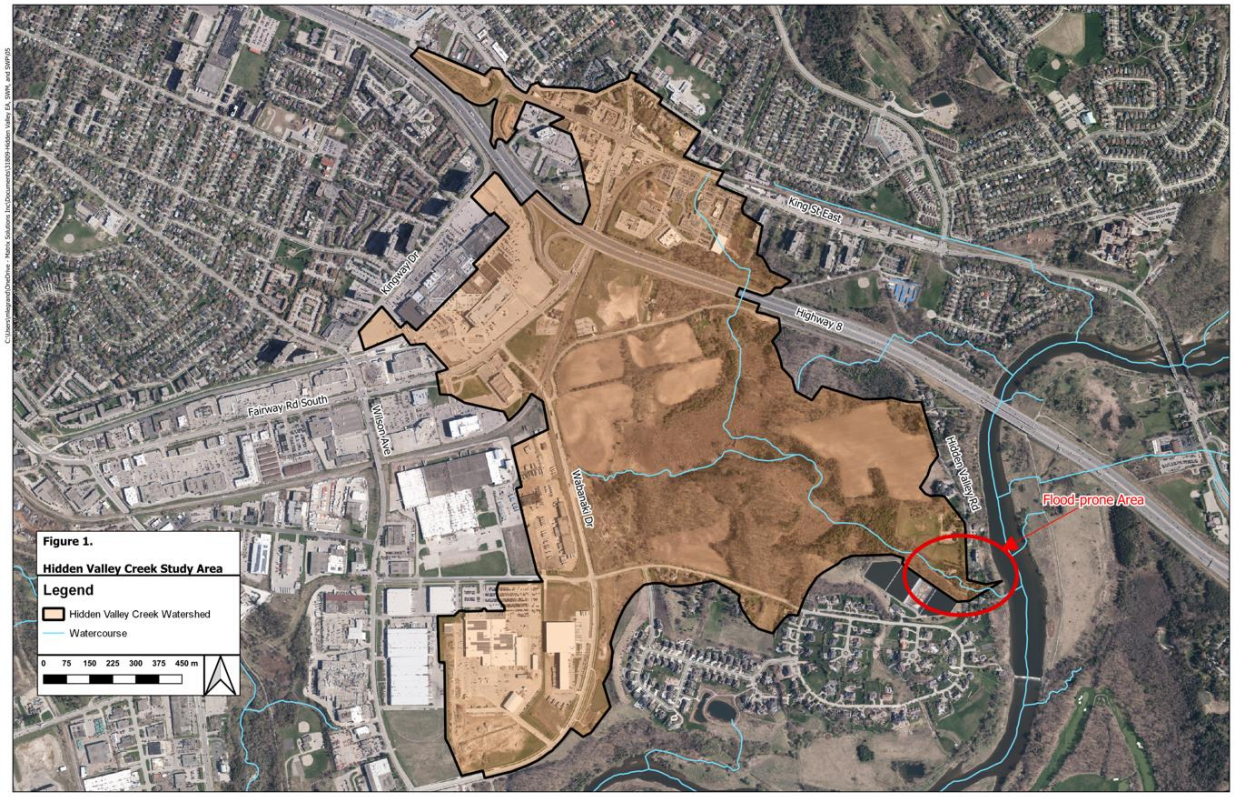

Figure 1

REPORT:

Four preliminary alternatives are considered to reduce the flood hazard in the vulnerable downstream reaches of the Hidden Valley Creek subwatershed.

Alternative 1: Do Nothing

Alternative 1 proposes a “Do Nothing” scenario in which no changes are made, as per requirements of the Municipal Class EA process. Based on available hydrologic modeling (flows) and hydraulic modeling (elevations), a property downstream of the wetland is flooded during the 1:25 year event and Hidden Valley Road is overtopped during the 1:10 year event under existing conditions. Prior occurrences of flooding at the subject locations are thought

to have been, at least in part, the result of beaver dam failure within the wetland. Beaver dams and other partial debris jams within the wetland are still at potential risk for failure under existing conditions.

Alternative 2: Reduce Flows Upstream of Wetland
Alternative 2 includes the potential implementation of flow attenuation measures upstream of the Hidden Valley wetland, such as stormwater controls to temporarily detain some runoff volume and release it at a reduced rate. Much of the existing development in the headwaters of the subwatershed occurred prior to the large-scale adoption of stormwater management practices; there may be some potential to retroactively implement flow reduction measures for these areas as either standalone facilities (i.e., new facilities to service existing development) or in conjunction with future development.

Several new developments are currently proposed upstream of the Hidden Valley wetland that will include stormwater management mitigation measures (e.g., control of post-development flows back to existing rates). These facilities could potentially be modified to "over-control" runoff from newly developing areas (e.g., control of post-development flows to below existing rates) to help reduce flood potential downstream.

Alternative 3: Flow Control Structure in Wetland
Alternative 3 includes constructing a flow control structure, such as a dam, within the Hidden Valley wetland to create / utilize storage volume above the normal wetland water levels to provide peak flow attenuation for surface water flows to / through the feature. Under existing conditions, it is speculated that naturally occurring beaver dams and/or vegetative debris jams (i.e., deadfall) have built up and subsequently, either partially or completely, at various times over the past decade, resulting in or exacerbating downstream flooding. Engineered flow control measures would replicate the naturally occurring conditions within the wetland while increasing the reliability of the structure. Attenuation within the wetland would reduce the peak flow rate downstream and mitigate future flooding.

Alternative 4: Conveyance Improvements Downstream of the Wetland (preferred alternative)
Alternative 4 would entail improving conveyance systems through the Hidden Valley Creek corridor downstream of the wetland to safely pass elevated flows across private property and Hidden Valley Road, reducing flooding. There are two intact engineered crossings constricting flow downstream of the Hidden Valley wetland, a driveway crossing on private property and the municipal road crossing under Hidden Valley Road.

Hidden Valley Road does not meet MTO drainage design standards for local roadway crossings under existing conditions, and frequent overtopping of the roadway increases the potential for channel erosion downstream of the crossing. This is of particular interest as the channel runs through or adjacent to other private properties downstream of Hidden Valley Road, and long-term erosion could impact these properties. Improving conveyance at Hidden Valley Road would also improve erosion and long-term slope stability around and immediately downstream of the crossing.

Evaluation Criteria
Based on positive collaborative experiences of recent City of Kitchener projects, this Study proposes to adopt the "Framework for incorporating First Nations rights holder priorities and

knowledge into an Environmental Assessment" (City of Kitchener and Stantec, 2023). The intent of using this framework is to incorporate rights holder priorities and knowledge into the EA process and achieve a balance of alternative evaluation criteria weighting between ecological, technical, socio-economic and cultural considerations. The integration of indigenous knowledge, lands, land claims, and treaty rights are not specifically identified as a stand-alone category, but rather woven into and throughout all of the considerations identified below. City staff met with the Six Nations of the Grand River and the Mississauga's of the Credit First Nation in September 2023 to present the alternative solutions and receive their input on their preferred solution. The preferred solution at the time of writing this report is Alternative 4. Input from the public at the Public Information Center on October 12th, 2023 will also be incorporated in the decision-making process when confirming the preferred solution. A preliminary evaluation of alternative solutions is presented in Table 1 below.

Table 1. Preliminary Evaluation of Alternative Solutions

	Alternative 1: Do-Nothing	Alternative 2: Reduce Flows Upstream of Wetland	Alternative 3: Flow Control Structure in Wetland	Alternative 4: Conveyance Improvement Downstream of Wetland
Natural Environment				
Socio-economic and Cultural Environment				
Technical Environment				

STRATEGIC PLAN ALIGNMENT:

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FINANCIAL IMPLICATIONS:

Capital Budget – The recommendation has no impact on the Capital Budget. Funds are currently available from Development Charges.

Operating Budget – The recommendation has no impact on the Operating Budget.

COMMUNITY ENGAGEMENT:

INFORM –

A Notice of Study Commencement and Notice of Public Information Center have been shared with the public, stakeholders, and rights holders. Project information can be found on www.kitchener.ca/hiddenvalley and www.engagewr.ca/hidden-valley-aood-ea.

CONSULT –

First Nations Consultation: City staff met with the Six Nations of the Grand River and the Mississauga's of the Credit First Nation in September 2023 to present the alternative solutions, receive input on their preferred solution, and incorporate rights holder priorities and knowledge into the EA process.

Public Information Centre: A key component of the EA process is consultation with interested stakeholders (public, landowners, and agencies). As part of this study, consultation is being undertaken. A Public Information Centre (PIC) is planned on October 12 to share the study background; explain the Environmental Assessment process; outline existing conditions; evaluation criteria; and the alternative solutions.

PREVIOUS REPORTS/AUTHORITIES:

- Hidden Valley Land Use Master Plan
- Ongoing Hidden Valley Secondary Plan
- Staff Report (No. DSD-19-133) to Planning & Strategic Initiative Committee on June 10, 2019 for the Neighbourhood Planning Review: Hidden Valley Land Use Master Plan.

REVIEWED BY: Carlos Reyes, Manager Development Engineering

ATTACHMENTS:

Attachment A – Notice of Study Commencement
Attachment B – Notice of Public Information Centre