

Staff Report



Development Services Department

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REPORT TO: Community and Infrastructure Services Committee

DATE OF MEETING: March 25, 2024

SUBMITTED BY: Chris Spere, Director Engineering 519-741-2200 ext. 7412

PREPARED BY: Monica Mazur, Project Manager, 519-741-2200 ext. 7135

WARD(S) INVOLVED: Ward 3

DATE OF REPORT: March 7, 2024

REPORT NO.: DSD-2024-119

SUBJECT: Hidden Valley Flood Risk Reduction Municipal Class Environmental Assessment Project File Report

RECOMMENDATION:

That the Hidden Valley Flood Risk Reduction Municipal Class Environmental Assessment – Project File Report, prepared by Matrix Solutions Inc., dated March 7, 2024, which recommends Alternative 4 as the preferred solution, be received; and further,

That the Hidden Valley Flood Risk Reduction Municipal Class Environmental Assessment – Project File Report, be filed with the Ministry of the Environment, Conservation and Parks (MECP) for the mandatory thirty (30) day review period as required by the Environmental Assessment (EA) Act.

REPORT HIGHLIGHTS:

- The purpose of this report is to document the planning process undertaken for this project in accordance with a 'Schedule B' Municipal Class Environmental Assessment (MCEA) process to define a preferred flood risk reduction solution to reduce existing flood risks and support future development in the Hidden Valley community. Schedule B projects are required, at a minimum, to complete phases one and two set out in the 2023 MCEA Planning Process, including mandatory consultation with Indigenous Communities, directly affected public and relevant review agencies, to ensure that they are aware of the project and that their concerns are identified and considered, and documenting the assessment requirements in a Project File Report.
- The key finding of this report is that increasing flood conveyance at Hidden Valley Road downstream of the Hidden Valley Provincially Significant Wetland (PSW) / Environmentally Sensitive Policy Area (ESPA) is the preferred solution.
- The financial implications are that funding for the project is through both development charges (10%) and the Storm Water Utility (90%), with detailed design scheduled for 2027 and construction in 2028.

*** This information is available in accessible formats upon request. ***
Please call 519-741-2345 or TTY 1-866-969-9994 for assistance.

- Community engagement included a Notice of Study Commencement, a Public Information Centre, First Nations Consultation, an Engage Page, and consultation with the Climate Change and Environment Committee.
- This report supports **the delivery of core services.**

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, and species at risk habitat. 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. Hidden Valley Creek subwatershed

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 of Alternative Solutions

Based on positive collaborative experiences of recent City of Kitchener projects, this Study adopts 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 Mississaugas of the Credit First Nation in September 2023 to present the alternative solutions and receive their input on their preferred solution. Input from the public at the Public Information Center on October 12th, 2023, hidden valley mailing list responses, and Engage Page was also incorporated in the decision-making process. A final evaluation of alternative solutions that incorporates input from the public and First Nations rights holders is presented in Table 1 below.

Table 1. Final 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				
Overall Screening Result				

Preferred Solution

Alternative 4 is the preferred solution based on the evaluation of Technical Environment, Social/Economic Environment and Natural Environment. Alternative 4 is also the preferred solution for the Six Nations of the Grand River and the Mississaugas of the Credit First Nation. Alternative 4 has the highest technical score of all alternatives, as it reliably

reduces flood risk, has minimal approval requirements, and requires relatively straightforward construction. Alternative 4 was assessed using a 3,900mm span by 1,200mm rise box culvert which was shown to meet the City and MTO roadway design criteria and reduce road overtopping to flows greater than the 1:50 year flow. Erosion control measures could be implemented upstream of the roadway. This would increase slope stability and reduce sedimentation at the road culvert.

In comparison, Alternative 1 does not improve flood risk, and Alternatives 2 and 3 have unreliable potential for reducing flood risk. Alternative 3 would have a prolonged and difficult approval process, which further reduces its technical scoring. Alternative 4 has the highest Cultural and Social-Economic score, as it will reduce flooding, maintain the existing land use, and not have an intensive construction cycle.

Alternative 4 improves upon the natural habitat of the area and has the highest Natural Environment scoring. Alternative 1 maintains the existing natural habitat, while Alternatives 2 and 3 have the potential to negatively impact species at risk habitat within the PSW/ESPA.



Figure 2. Option 4 – Preferred Solution

STRATEGIC PLAN ALIGNMENT:

This report supports **the delivery of core services.**

FINANCIAL IMPLICATIONS:

Capital Budget – At this stage, the capital budget required to implement the preferred alternative is \$1,000,000. This will be refined during detailed design. Funding for this project is budgeted through Development Charges and the Storm Water Utility, 10% of project cost is allotted to development charges and 90% to the Storm Utility.

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-flood-ea. A Notice of Completion will be issued and followed by a minimum 30-day public comment period upon Committee approval. The Project File Report will be posted on the Engage Page and filed with the Ministry of the Environment, Conservation and Parks (MECP) for the mandatory thirty (30) day review period as required by the Environmental Assessment (EA) Act. The Notice of Completion will be sent to the Minister of Environment, Conservation and Parks and Director of the Environmental Assessment Branch (EAB).

CONSULT –

First Nations Consultation: The Notice of Commencement was mailed to Nation Huronne-Wendat, Mississaugas of the Credit First Nation (MCFN), and Six Nations of the Grand River (SNGR). Acknowledgement of the notice was received from MCFN and SNGR. City of Kitchener staff held a meeting with the SNGR on June 15, 2023 and with the MCFN on June 23, 2023 to present the Notice of Commencement. A second meeting was held with MCFN and SNGR in September 2023 to present the alternative solutions, receive input on their preferred solution, and discuss how rights holder priorities and knowledge are incorporated into the EA process.

Public Information Centre: A Public Information Centre (PIC) was held on October 12 to share the study background; explain the Environmental Assessment process; outline existing conditions; evaluation criteria; and the alternative solutions. Input from the public at the Public Information Center on October 12th, 2023 was incorporated in the decision-making process. Questions about the project were also received and answered through the Engage Page (www.engagewr.ca/hidden-valley-flood-ea) and project email address (hiddenvalley@kitchener.ca).

Agency Consultation: Agency consultation included open communication and dialogue with Grand River Conservation Authority throughout the project. City staff presented the project to the City of Kitchener Climate Change and Environment Committee on October 19, 2023 and received support for the preferred alternative solution for flood risk reduction.

Landowner Consultation: The key landowner stakeholders within the study area (Pearl Valley Development Corporation and owners of 691 – 748 Hidden Valley Road) were personally emailed copies of the project Notices. Correspondence with landowners is provided in the Project File Report. The Hidden Valley ESPA/ PSW was investigated by Matrix and City Staff on September 27, 2023 under the approval of Pearl Valley Development Corporation.

PREVIOUS REPORTS/AUTHORITIES:

- Staff Report (No. DSD-2023-453) to Climate Change and Environment Committee on October 19, 2023 for the Hidden Valley Flood Risk Reduction Municipal Class Environmental Assessment presentation of preliminary alternatives considered in the EA process
- 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.

APPROVED BY: Justin Readman, General Manager, DSD

ATTACHMENTS:

Attachment A – Hidden Valley Flood Risk Reduction Schedule B Municipal Class Environmental Assessment