Class Environmental Assessment for Mount Joy Creek Flood Mitigation

First Public Information Centre (PIC)

May 5th, 2025

Land Acknowledgement

We begin today by acknowledging the traditional territories of Indigenous peoples and their commitment to stewardship of the land. We acknowledge the communities in circle. The North, West, South and Eastern directions, and Haudenosaunee, Huron- Wendat, Anishnabeg, Seneca, Chippewa, and the Mississaugas of the Credit peoples.

As a municipality, the City of Markham shares the responsibility with the caretakers of this land to ensure the dish is never empty and to restore relationships that are based on peace, friendship, and trust. We are committed to reconciliation, partnership and enhanced understanding.

Study Area Overview

- The study area encompasses a section of a residential area and industrial area located in the Mount Joy Creek (Exhibition Creek) corridor, between Major Mackenzie Drive and Bur Oak Avenue for the Northern and Southern limits, and between Kentland Street and Metrolinx Railway corridor for the Western and Eastern limits.
- Within this area, Mount Joy Creek is a combination of piped and open channel segments causing recurrent tableland flooding issues.

Existing Structure Images

Upstream of Major MacKenzie Drive

Upstream of Harvard Way

Upstream of 9833 Markham Road

Downstream of Major MacKenzie Drive

Downstream of Harvard Way / Markham Road

Downstream of Anderson Avenue

Study Purpose / Problem Definition

The City of Markham is undertaking a Municipal Class Environmental Assessment (Class EA) Study for the Mount Joy Creek Flood Mitigation Project.

The objective of the project is to propose flood mitigation alternatives that reduce frequent tableland flooding of the properties adjoining the creek corridor, which to facilitate the future development ambition for the area defined in the recently completed Markham Road Mount Joy Secondary Plan.

Public Information Center Purpose

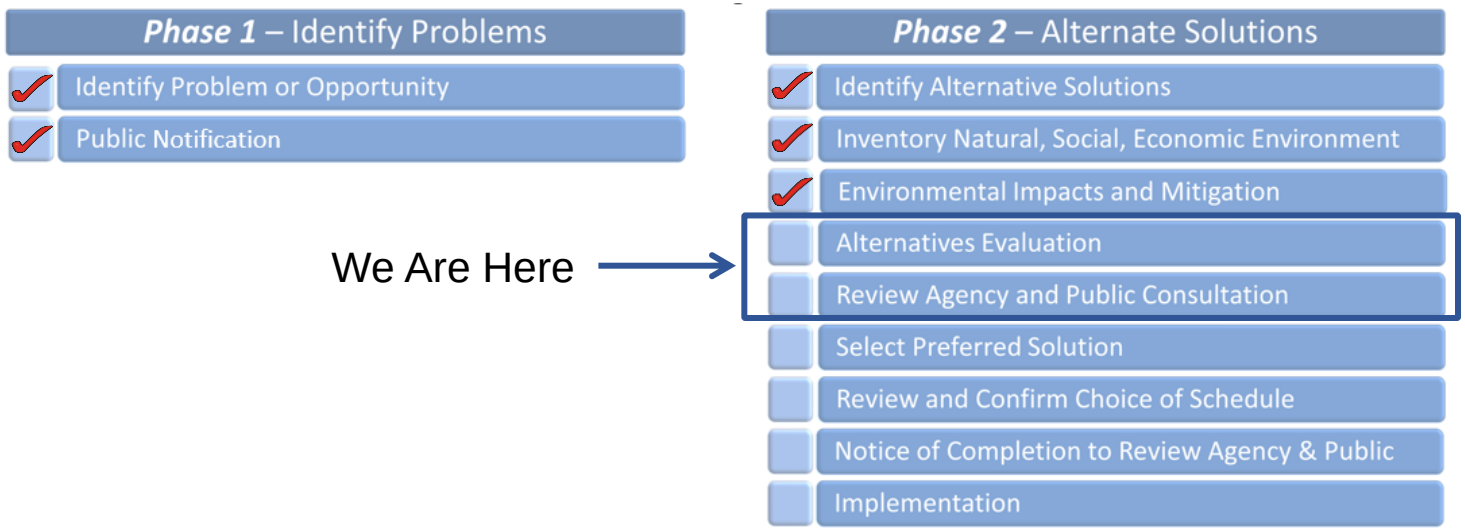
The Public Information Center (PIC) is designed to:

- Present information on existing conditions
- Present alternative approaches to flood mitigation
- Gain community input

Municipal Class EA Process

Many projects related to municipal systems that are similar in nature, are carried out routinely, and have predictable and mitigatable environmental effects which are addressed in accordance with the Municipal Engineers Association “Municipal Class Environmental Assessment” (October 2000, as amended in 2007, 2011, 2015 & 2023).

This study is being undertaken as a “Schedule B” project under the Municipal Class Environmental Assessment process. The flow chart below illustrates the key steps to be undertaken as part of the EA process.



Natural Heritage Assessment

Natural heritage conditions in the study area were characterized using existing information to identify ecological features and functions that could be affected by the proposed alternatives. The current scope of work included:

- Review and confirmation of prior vegetation community classification;
- Terrestrial wildlife and habitat assessment;
- Aquatic habitat and fish community characterization;
- Species at Risk (SAR) screening and habitat assessment;
- Significant wildlife habitat (SWH) screening and assessment

More detailed field assessments are scheduled to be undertaken within the proposed mitigation project areas.

Vegetation Community Classification

Vegetation communities within the study area were identified in the 2022 Natural Environment Report by SLR in accordance with the Ecological Land Classification (ELC) protocol.

The overall study area is highly developed with few remaining patches of natural or regenerating habitat. The eastern half of the study area included only cultural vegetation communities (Cultural Meadow; Cultural Thicket) and landscaped areas associated with anthropogenic features (e.g., houses, roads, parking lots). West of Markham Road, air photo interpretation suggests similar conditions.

Cultural Thicket - Upstream of Anderson Drive

Cultural Thicket - Downstream of Harvard Way

Cultural Meadow - Downstream of Major MacKenzie Drive

Terrestrial Wildlife and Habitat Assessment

Targeted wildlife surveys, including breeding bird inventories, were completed in 2019 by a qualified biologist according to the 2022 SLR Consulting Report. A total of 18 species were recorded during surveys, with results as follows:

- Confirmed breeding: 1
- Probable breeding: 6
- Possible breeding: 4
- No breeding evidence: 7

Species at Risk (SAR)

For the purpose of this study, SAR listed as endangered (END) or threatened (THR) may have regulatory considerations should any impacts to habitat be proposed. Species listed as special concern (SC) do not have regulatory protection, but important habitat features or areas for those species may qualify as Significant Wildlife Habitat and have requirements under municipal policy.

1. Eastern Red Bat – END*
2. Eastern Small-footed Myotis – END
3. Hoary Bat – END*
4. Little Brown Myotis – END
5. Northern Myotis – END
6. Silver-haired Bat – END*
7. Tri-colored Bat – END
8. Bank Swallow – THR
9. Barn Swallow – SC
10. Bobolink – THR
11. Eastern Meadowlark – THR
12. Eastern Wood-pewee – SC
13. Wood Thrush – SC
14. Butternut – END
15. Midland Painted Turtle – SC (federal only)
16. Snapping Turtle – SC
17. Monarch – SC
18. Nine-spotted Lady Beetle – END
19. Eastern Pondmussel – SC
20. Redside Dace – END

**not yet listed, but recommended to be designated END*

Aquatic Ecosystems

To assess the existing aquatic habitat within the study area, the following studies were undertaken:

- Aquatic assessments of historic data;
- SAR screening and potential habitat identification; and,
- Field confirmation of site conditions.

Summary of Fish Community Assessment:

Common Name	Scientific Name
Bluegill	*Lepomis macrochirus*
Brook stickleback	*Culaea inconstans*
Brown bullhead	*Ameiurus nebulosus*
Common carp	*Cyprinus carpio*
Fathead minnow	*Pimephales promelas*
Goldfish	*Carassius auratus*
Largemouth bass	*Micropterus nigricans*
Pumpkinseed	*Lepmois gibbosus*
Redside dace	*Clinostomus elongatus*

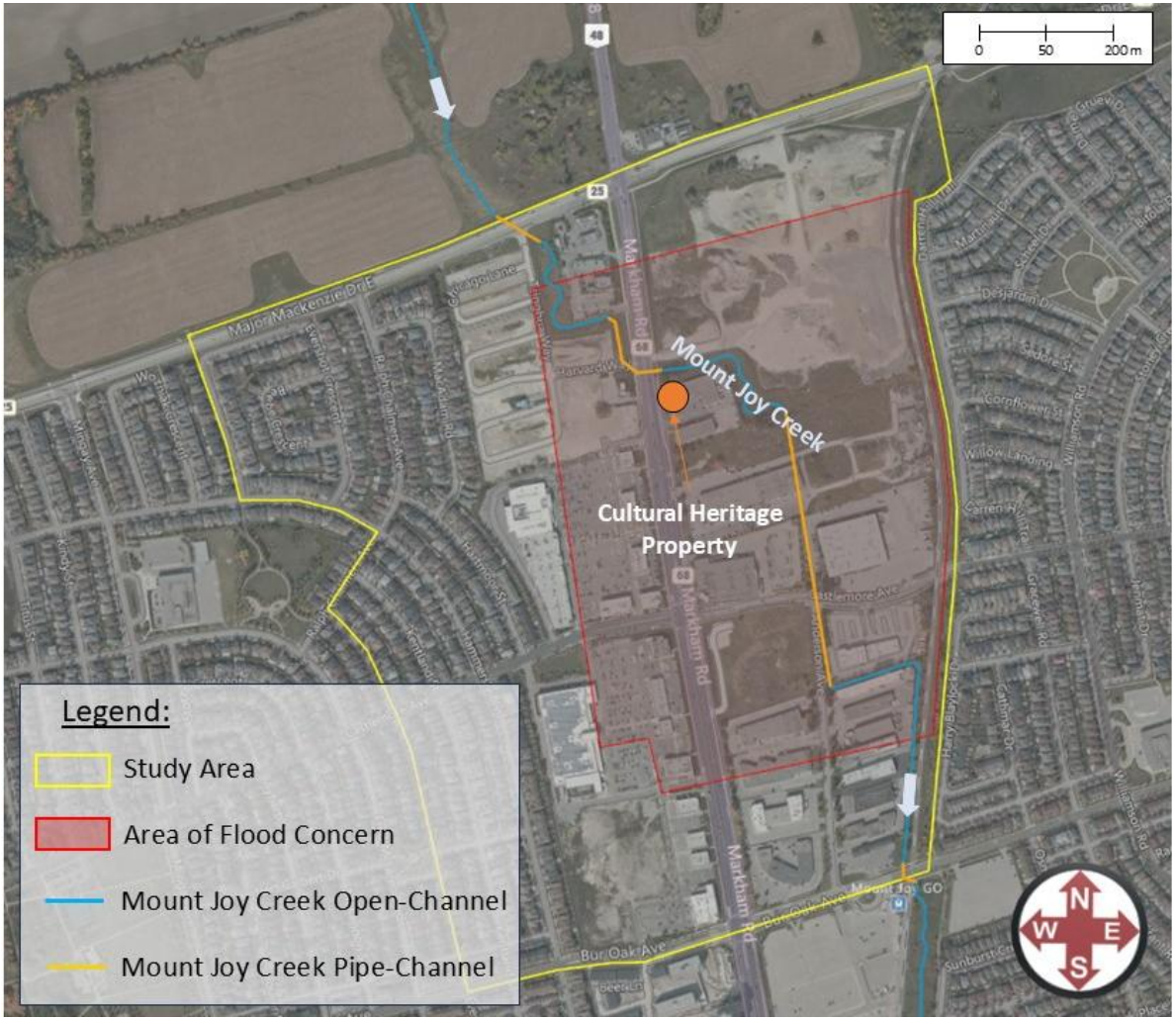
Key Findings:

- All species recorded in the study area (with the exception of Redside dace) are common and intermediately tolerant to disturbance.
- Fish communities represent spring spawning and majorly warmwater species.
- Although Redside dace, an endangered species under the Endangered Species Act (ESA), have potential to be found within the study area, habitat does not appear to support the requirements for Redside dace.
- The natural habitat conditions in Mount Joy were observed through the watercourse, with the Fish IBI rating measured as “poor”.

Fathead Minnow, *Pimephales promelas*
Photo Credit: Konrad P. Schmidt & Donals Biemborn

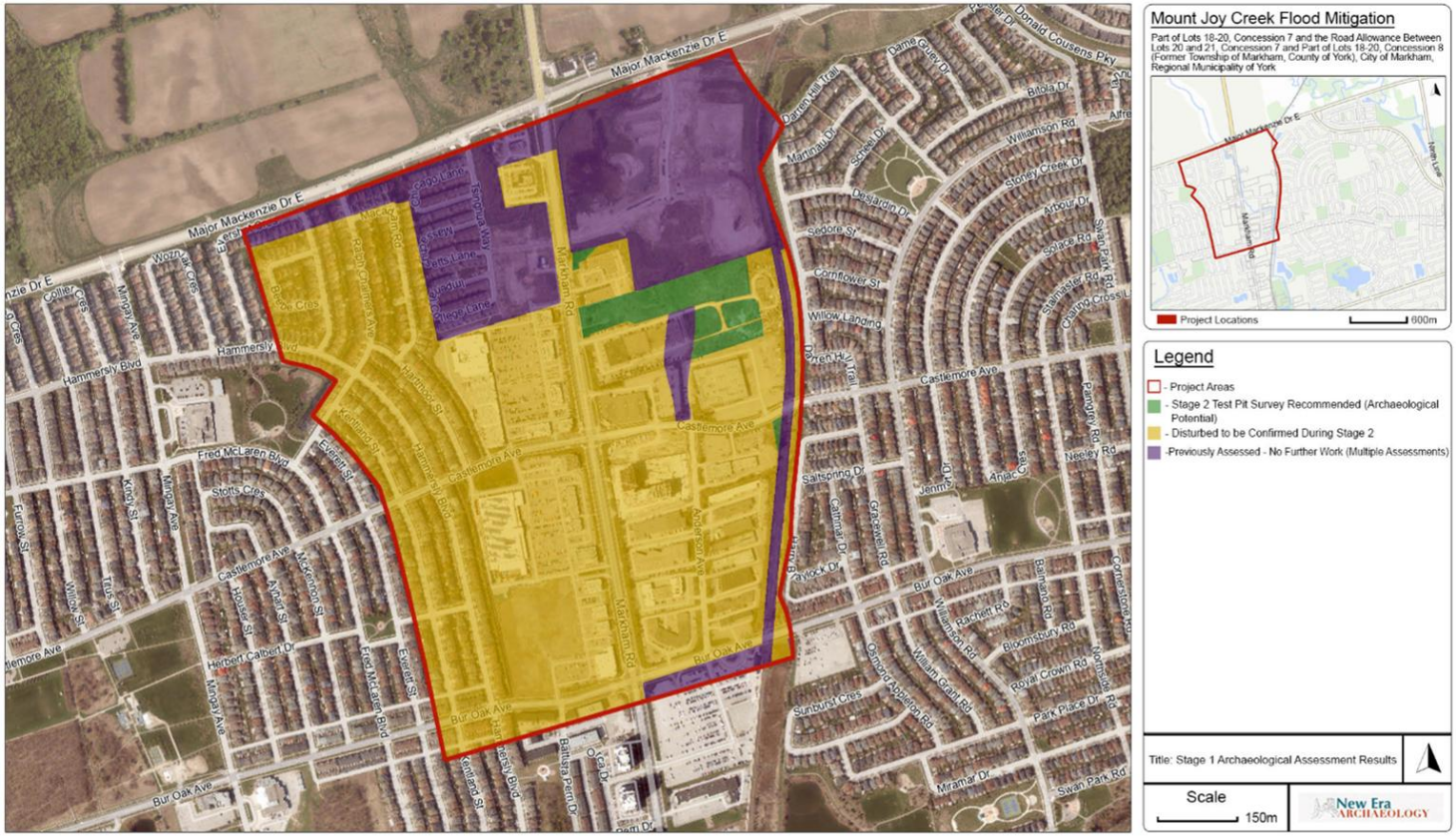
Cultural Heritage

- A screening for Cultural Heritage properties within the Study Area was completed and one property was found
- The William Read House (9899 Markham Road) currently has a Heritage Status of, “Part IV (Individual)”
- The Cultural Heritage property will not be impacted by any of the proposed alternatives



Archaeology

- A Stage 1 Archaeological Assessment was completed for the Study Area, to determine areas of Archaeological potential
- The locations within the study area which contain archaeological potential will have a Stage 2 assessment completed prior to any proposed construction



Hydrology & Existing Flooding Conditions

Existing floodplain mapping for Mount Joy Creek was completed by the TRCA in July 2022 and found occurrences of spills at three major locations:

Spill #1 – Major Mackenzie Dr

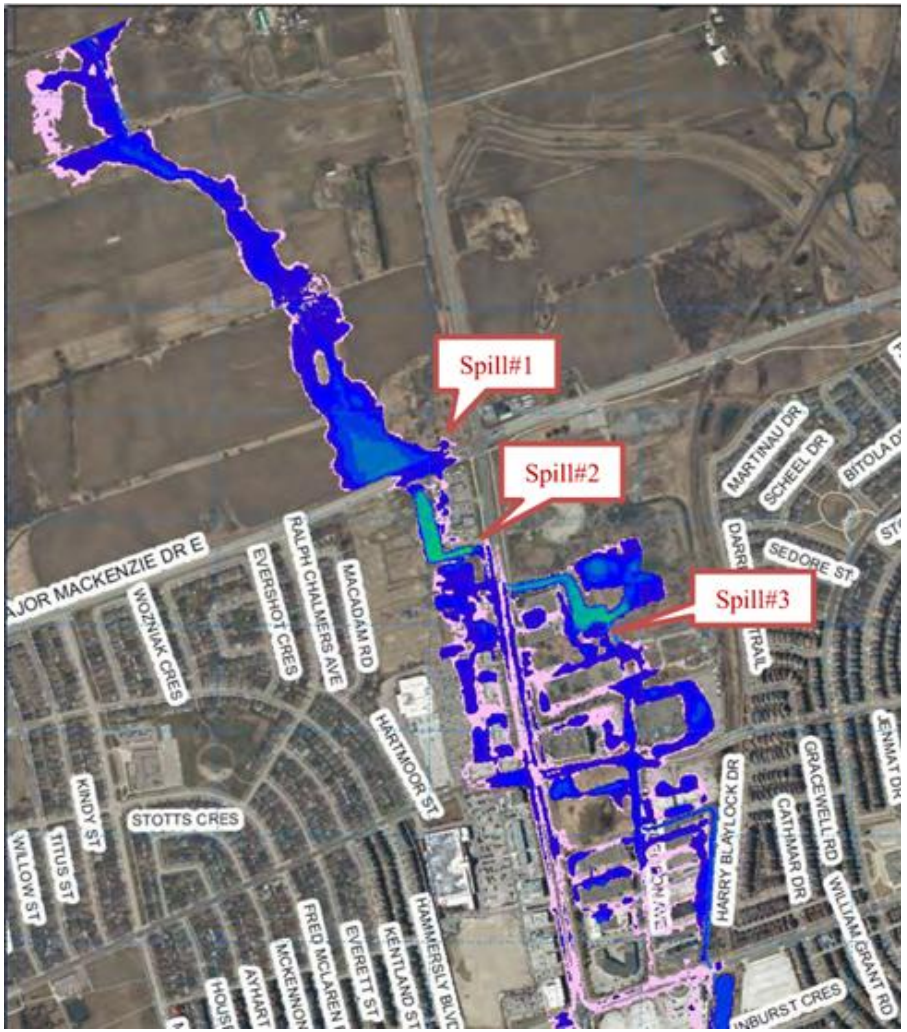
- Mainly caused due to undersized culvert & low point on Major Mackenzie Dr

Spill #2 – West Side of Hwy 48 near 9900 Markham Rd

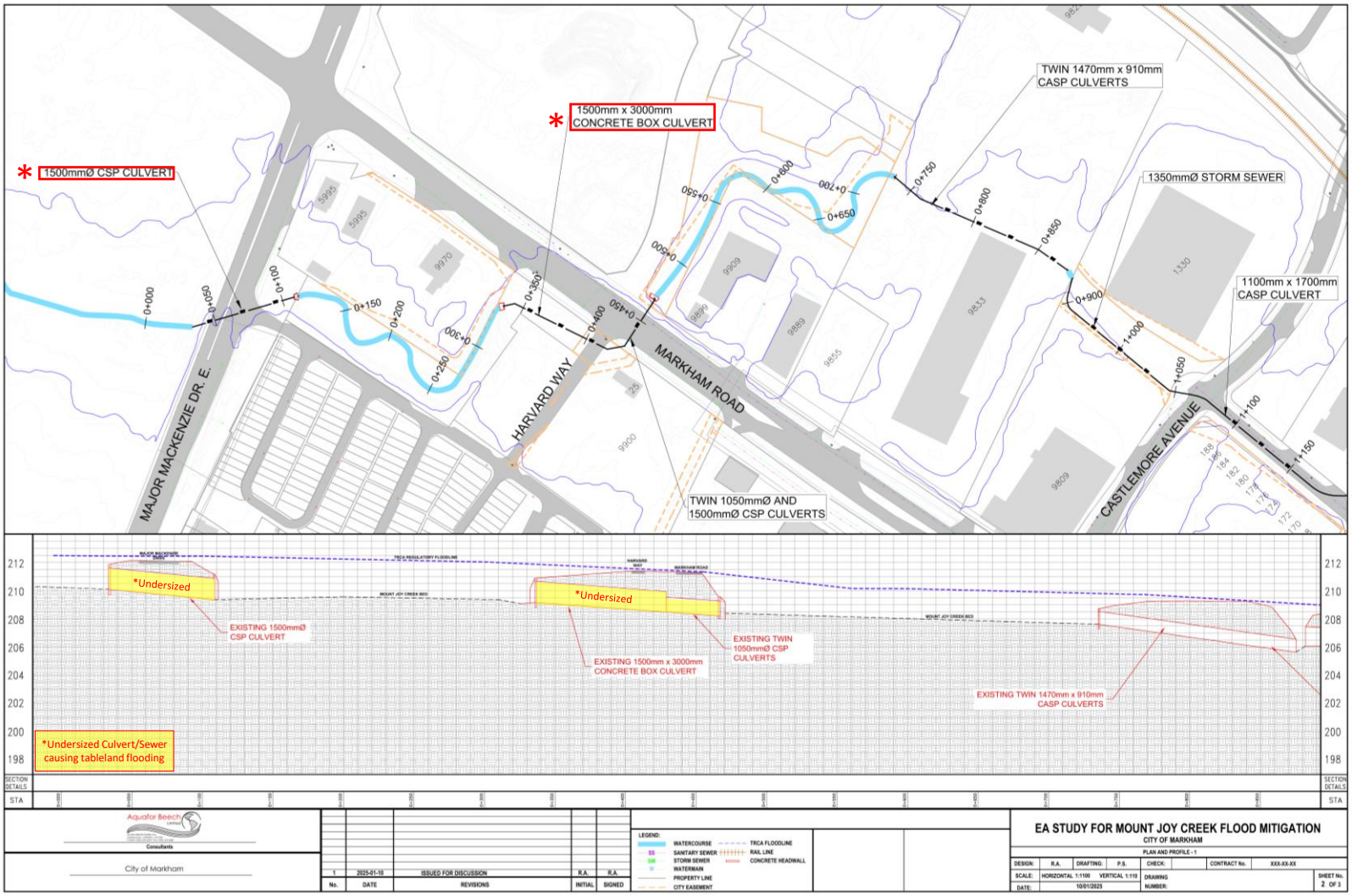
- Mainly caused due to low point of a swale

Spill #3 – Inlet of Buried Pipes on Anderson Ave

- Mainly caused due to undersized buried long pipes



Existing Drainage Corridor – Plan and Profile



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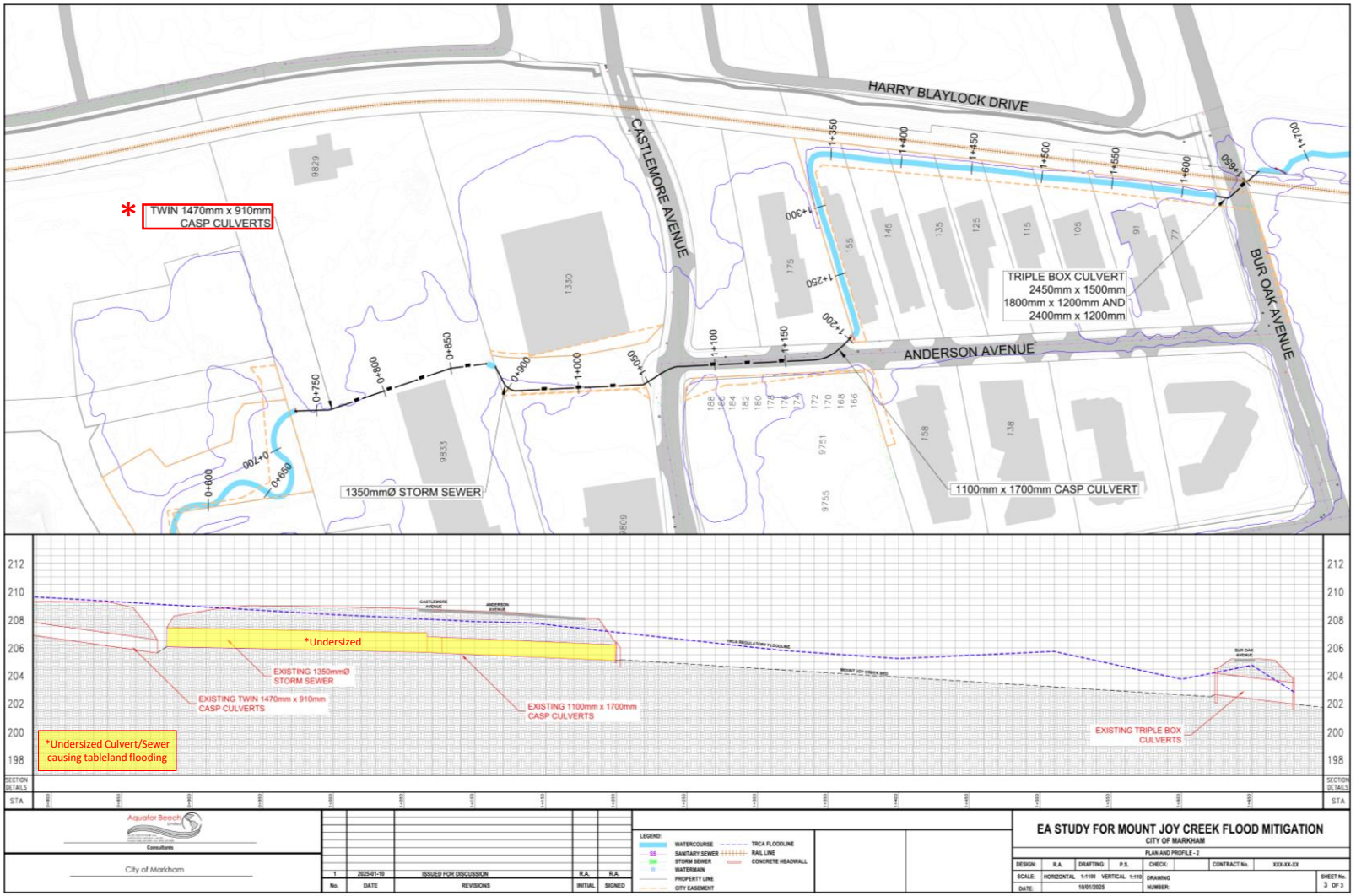
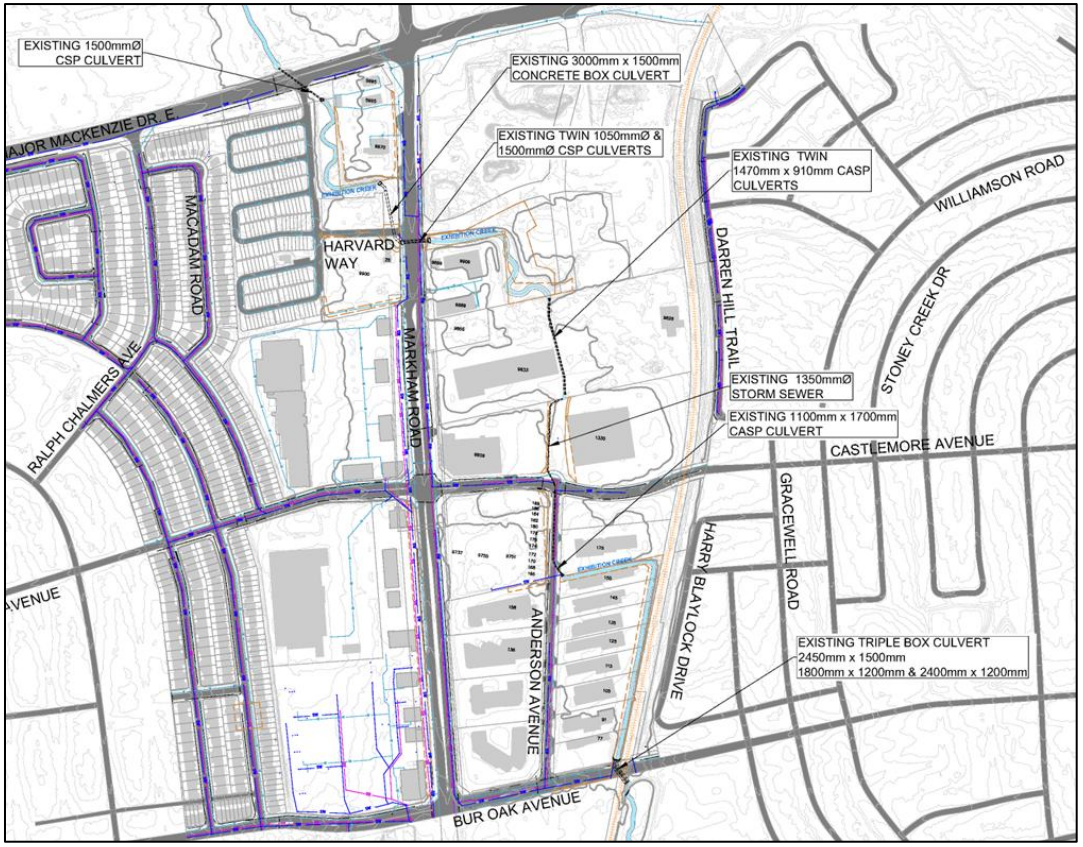


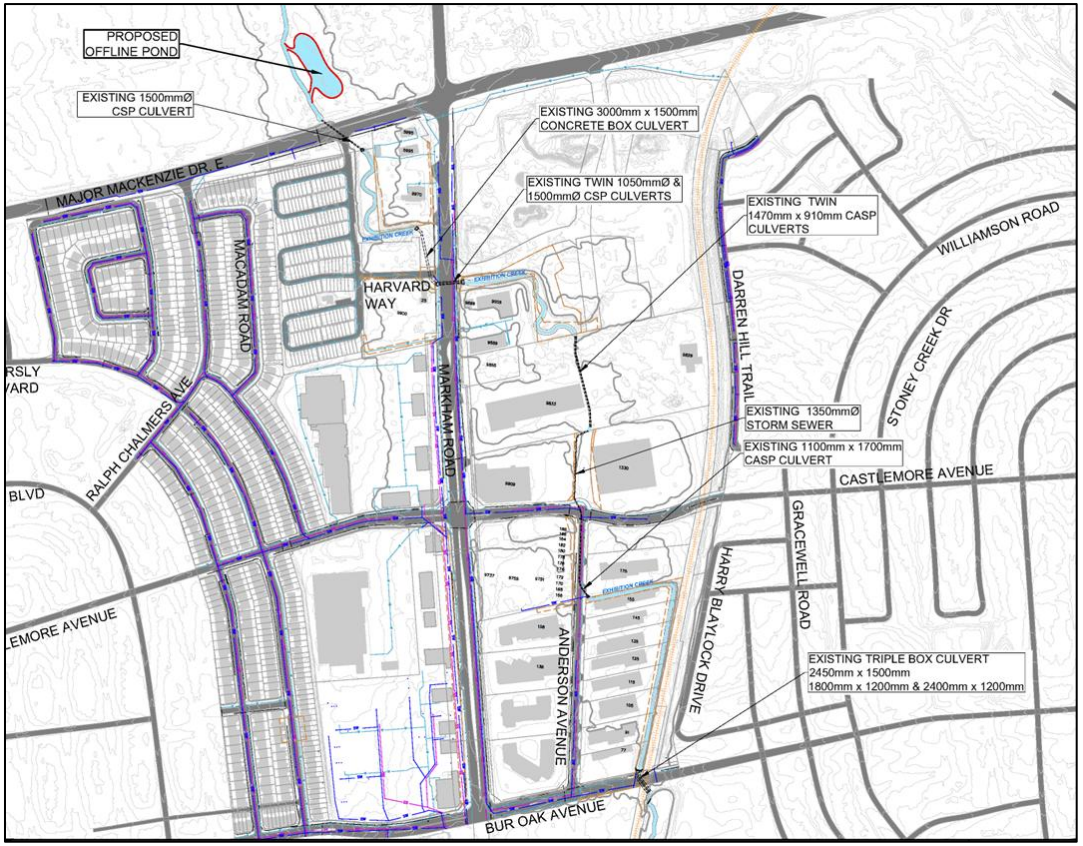
Alternative 1 – Do Nothing

- Leaving the subject area as is, and undertaking continued monitoring to see if flooding issues continue to persist or worsen overtime.
- Continued tableland flooding issues as a result of undersized drainage infrastructure within the Mount Joy Creek corridor.
- Continued maintenance activities will be required, including pumping standing water out of the residential backyards.
- Please note that Mount Joy Creek is also referred to as Exhibition Creek as shown in the following Alternative Drawings.



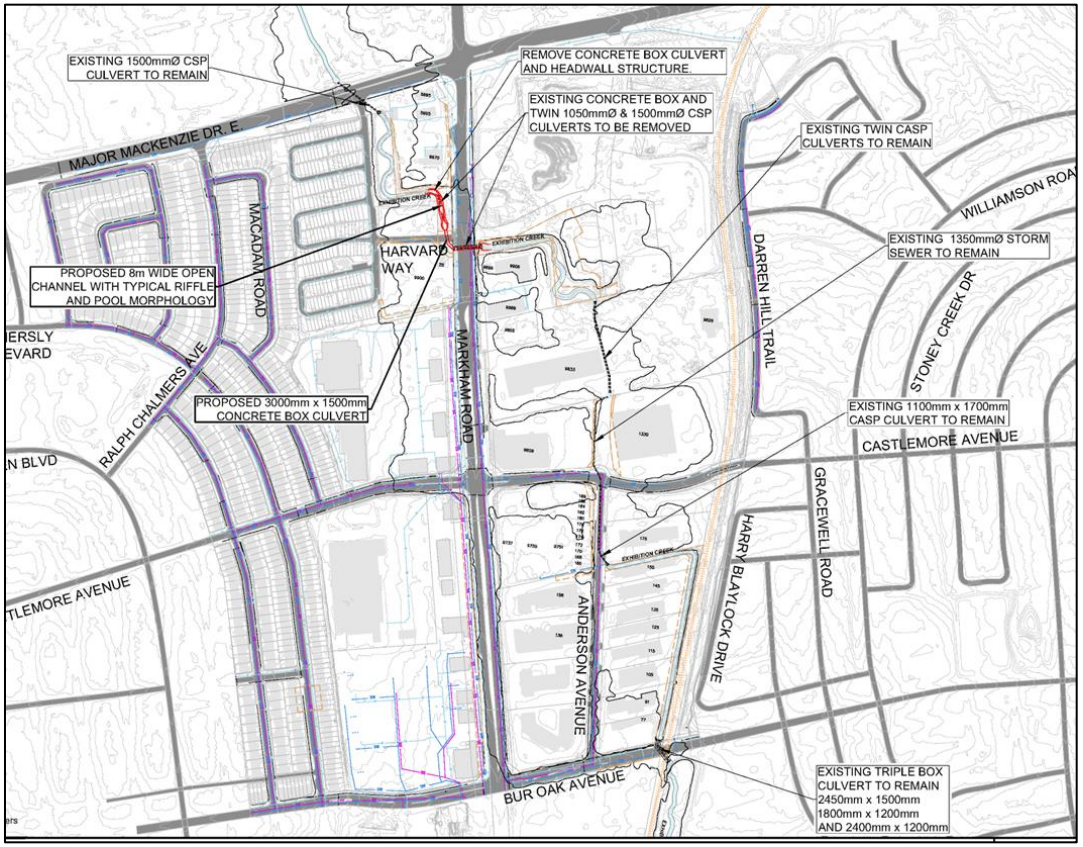
Alternative 2 – Offline Pond

- Stormwater management (SWM) pond proposed to be constructed upstream of the study area north of Major Mackenzie Drive
- The pond will be an offline SWM pond, meaning that it will run in parallel with Mount Joy Creek
- The pond will provide tableland control to reduce downstream flows
- No other changes will be made to the stormwater infrastructure within the Study Area



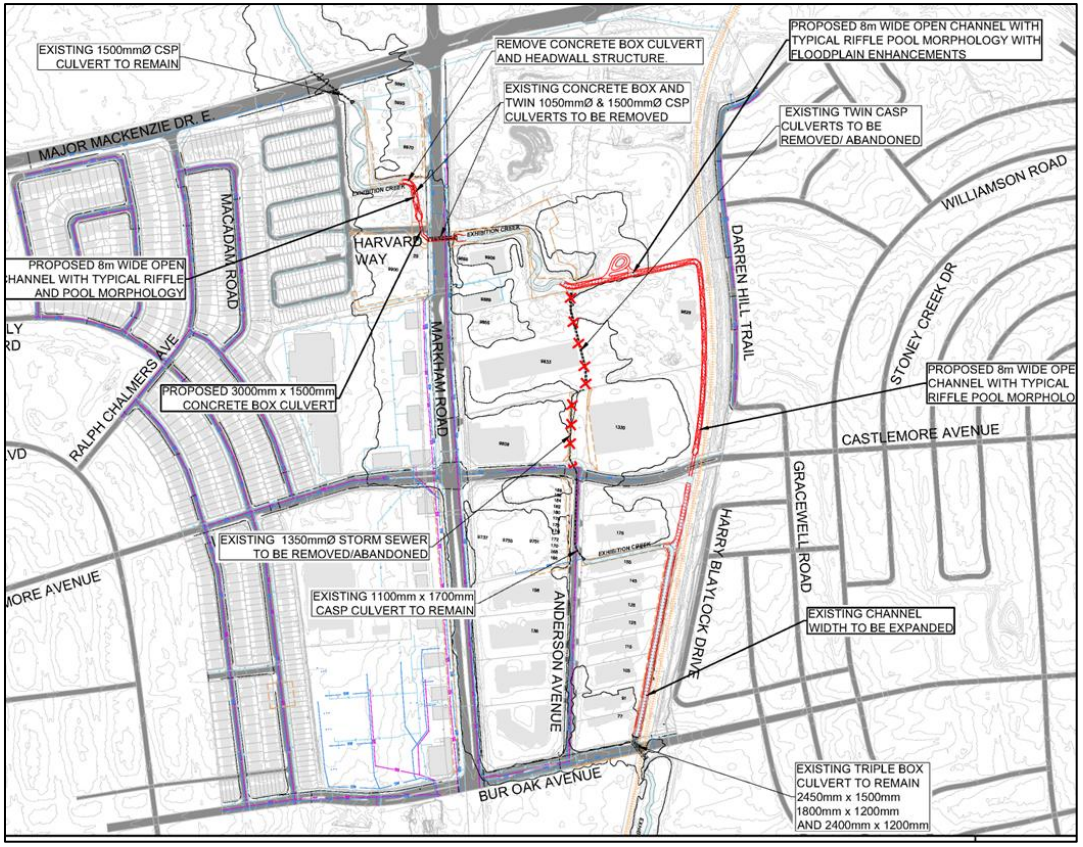
Alternative 3 – Open Channel and Larger Culvert

- Existing culverts located south of 9970 Markham Rd and extending to Mount Joy Creek north of 9899 Markham Rd to be removed
- Mount Joy Creek channel to be extended to the north side of Harvard Way
- Existing Culvert from the north side of Harvard Way to Mount Joy Creek north of 9899 to be replaced with a larger culvert



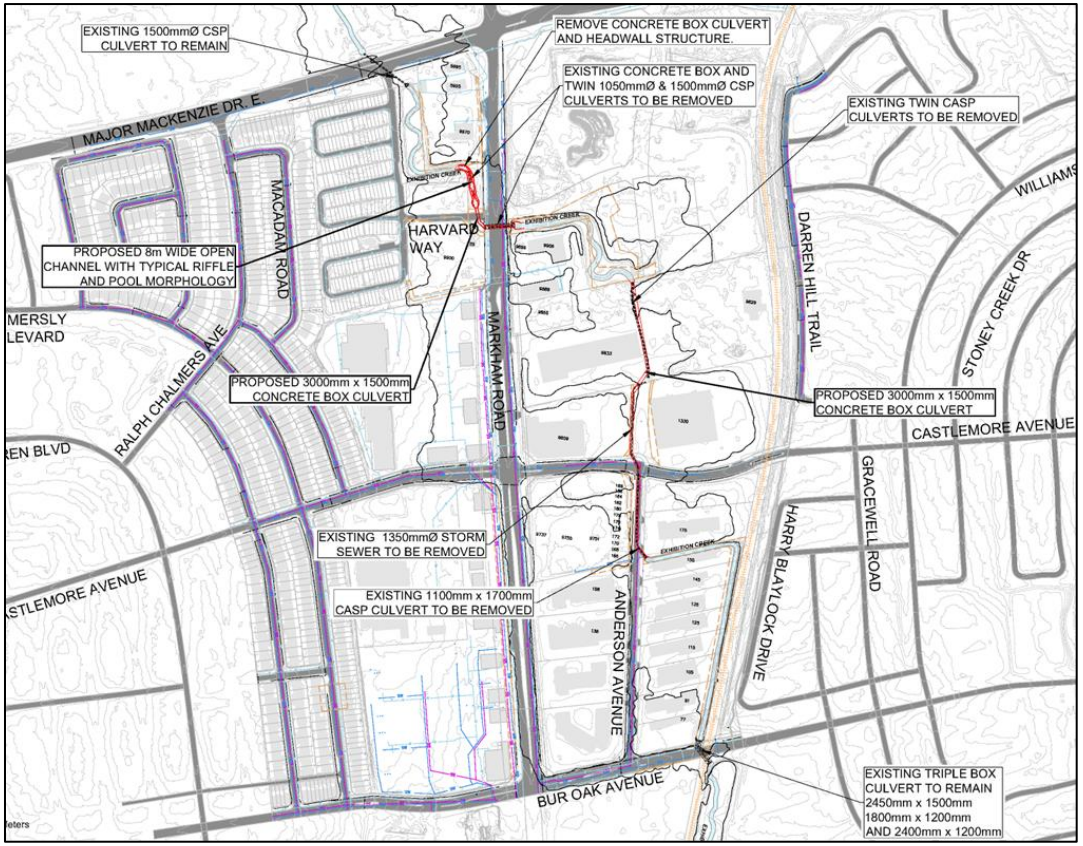
Alternative 4 – Open Channel Expansion and Larger Culvert

- Replaces the existing culvert near Markham Road and Harvard Way with an extended open channel and larger culvert similar to Alternative 3
- Additionally, will remove or abandon the existing culverts and storm sewer located east of 9833 and 9809 Markham Road
- Flow from Mount Joy Creek will instead be redirected east towards Darren Hill Trail and then south towards the existing channel south of Castlemore Avenue via a proposed open channel with floodplain enhancements
- The existing channel south of Castlemore Avenue is also proposed to be expanded until Bur Oak Avenue



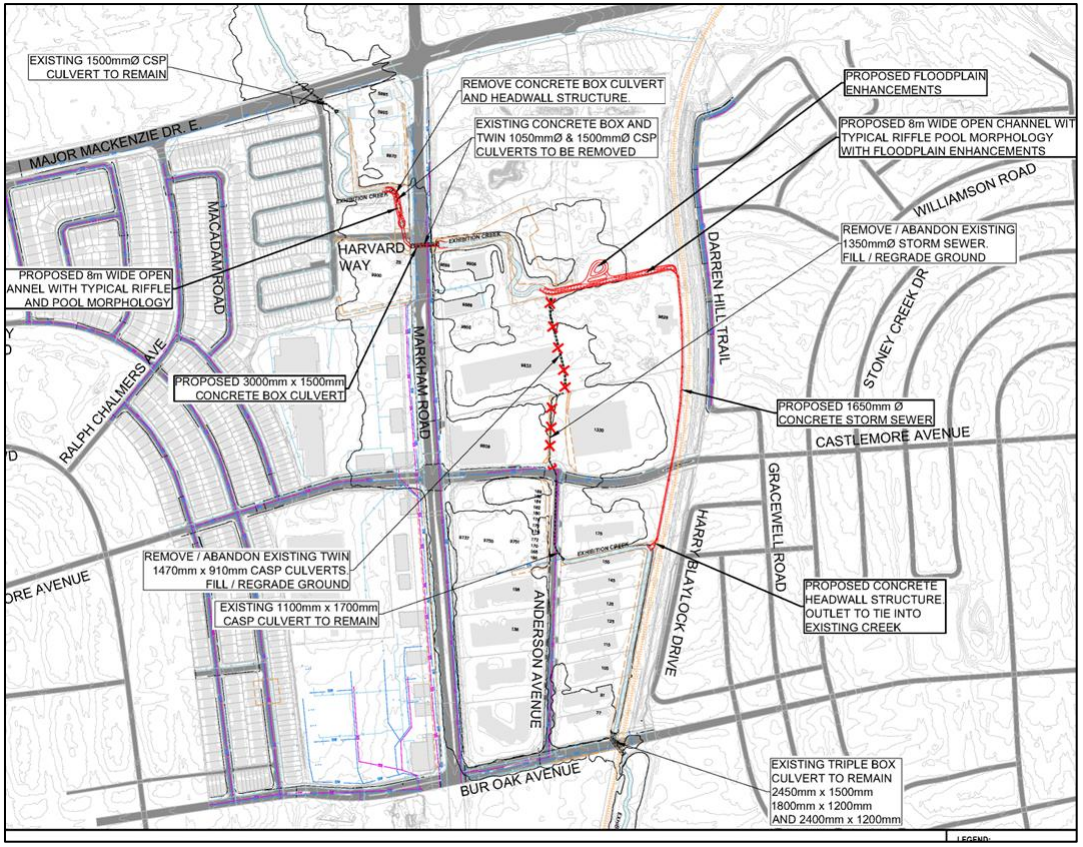
Alternative 5 – Culvert Expansion and Larger Culvert

- Replaces the existing culvert near Markham Road and Harvard Way with an extended open channel and larger culvert similar to Alternative 3
- Additionally, will remove the existing culverts and storm sewer east of 9833 and 9809 Markham Road and west of 175 Anderson Avenue
- Larger culvert to replace existing culverts and storm sewer near Castlemore Avenue and Anderson Avenue



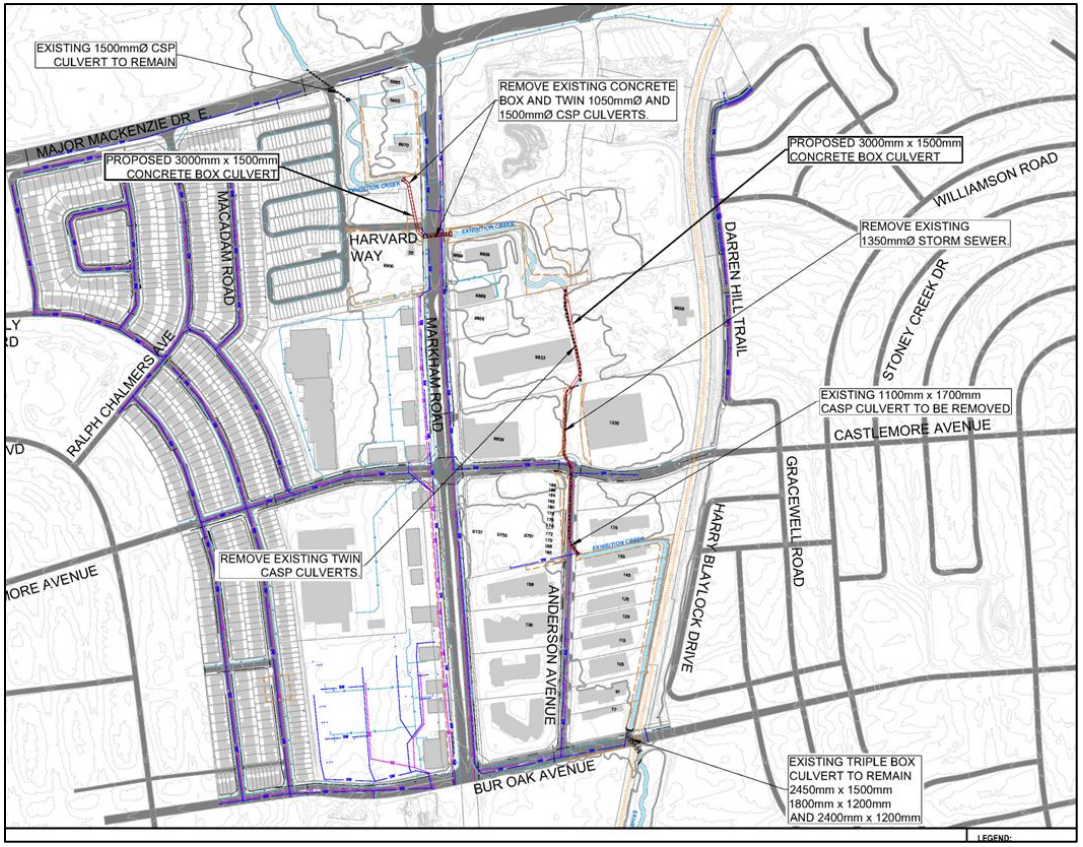
Alternative 6 – Open Channel Extension & Storm Pipe

- Replaces the existing culvert near Markham Road and Harvard Way with an extended open channel and larger culvert similar to Alternative 3
- Additionally, will remove or abandon the existing culverts and storm sewer located east of 9833 and 9809 Markham Road
- Flow from Mount Joy Creek will instead be redirected east towards Darren Hill Trail via a proposed open channel with floodplain enhancements
- Flow will then be directed south via a proposed storm sewer and outlet at the existing Mount Joy Creek channel south of Castlemore Avenue via a proposed concreate headwall structure



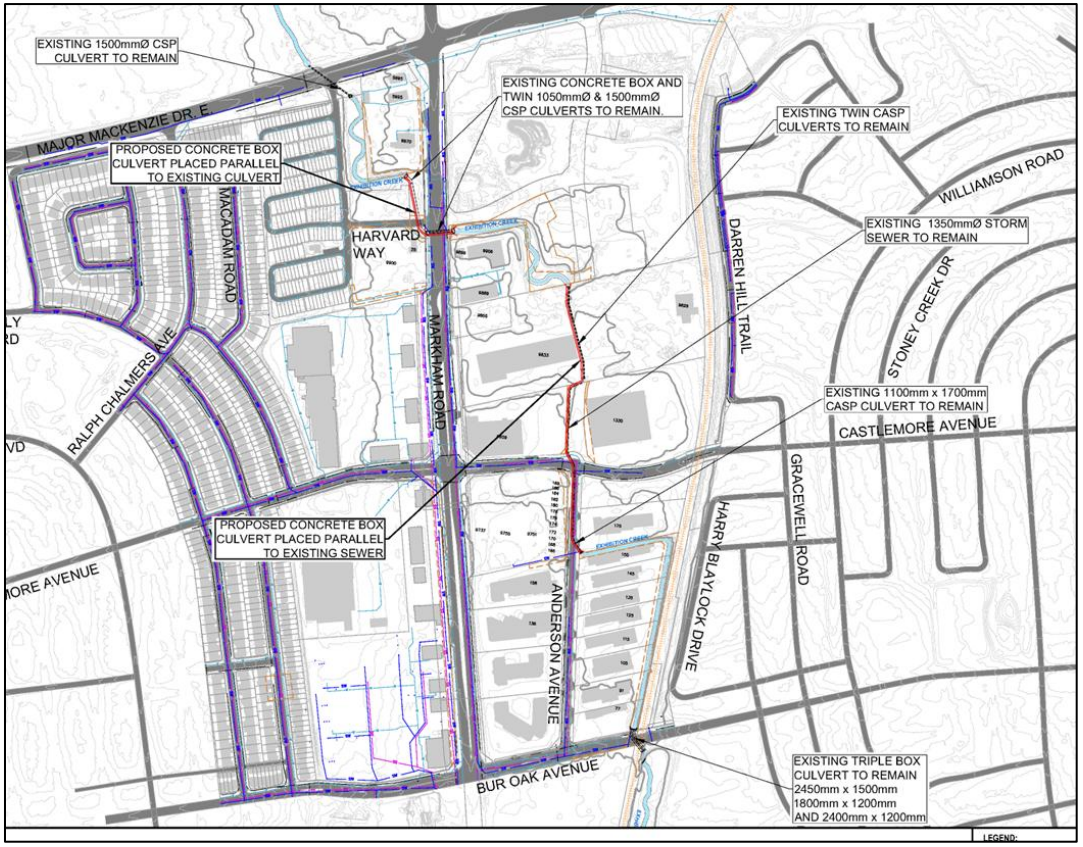
Alternative 7 – Increased Culvert Size Replacement

- Existing culverts located south of 9970 Markham Rd and extending to Mount Joy Creek north of 9899 Markham Rd to be removed
- Larger culvert to replace existing culvert near Markham Road and Harvard Way
- Additionally, will remove the existing culverts and storm sewer east of 9833 and 9809 Markham Road and west of 175 Anderson Avenue
- Larger culvert to replace existing culverts and storm sewer near Castlemore Avenue and Anderson Avenue



Alternative 8 – Double Culvert Size – Increased Conveyance

- Existing culverts located south of 9970 Markham Rd and extending to Mount Joy Creek north of 9899 Markham Rd to remain
- Proposed culvert to be installed parallel to existing culvert near Markham Road and Harvard Way
- Additionally, existing culverts and storm sewer east of 9833 and 9809 Markham Road and west of 175 Anderson Avenue will remain as well
- Proposed culvert to be installed parallel to existing culverts and storm sewer near Castlemore Avenue and Anderson Avenue



Examples of Restoration Solutions

Increased Culvert Size – Box Culvert

Stormwater Management Pond

Restored Open Channel

Restored Culvert

Next Steps

- First Nations Consultation – May 2025
- Hydraulic Modelling of Alternatives – May/June 2025
- PIC #2 – Presentation of Hydraulic Results and Evaluation of Alternatives – July 2025
- Draft Conceptual Design – June 2025
- Final Conceptual Design – July 2025
- Draft Class EA Report – August 2025
- **Final Class EA Report – August/September 2025**

Sample Evaluation Criteria

Evaluation Criteria	Description
Physical/Natural Environment	
Potential to Reduce Flooding Risks	Greater reduction of flooding risks to public and/or private lands for longer time scores higher
Potential to Improve Aquatic Habitat	Greater improvements to fish and aquatic habitat scores higher, including substrate, overhanging vegetation, turbidity, and passage/connectivity
Potential to Improve Terrestrial Habitat	Greater improvements to terrestrial habitat scores higher, including loss and replacement of vegetation and natural corridor connectivity
Integration with Existing Environment and Infrastructure	Greater integration and compatibility with existing environment and infrastructure scores higher
Social/Cultural Environment	
Aesthetics / Recreation	Greater improvements to the aesthetics of the creek corridor and how the alternative impacts recreational use of the corridor score higher
Compatibility with Adjacent Land Use	Greater compatibility with the land use of adjacent properties scores higher
Community Disruption	Less disruption of the surrounding community and residents scores higher
Public Health and Safety	Greater protection of public health and safety for a longer time scores higher
Economic Environment	
Construction Costs	Lower construction cost relative to other alternatives scores higher
Operation and Maintenance Costs	Lower operations and maintenance costs relative to other alternatives scores higher
Life Cycle Costs	Lower life cycle costs relative to the other alternatives scores higher
Land Requirement Costs	Lower Land Requirement costs relative to other alternatives scores higher
Infrastructure Protection	Greater protection of existing infrastructure for a longer time scores higher
Technical and Engineering Considerations	
Ease of Implementation	Greater ease of implementing scores higher
Agency Acceptance	Greater likelihood that TRCA will support the alternative scores higher
City Acceptance	Greater compliance with existing City plans, policies, and bylaw requirements scores higher
Technical Feasibility	Greater technical feasibility relative to other alternatives scores higher

Thank You

To provide comment, please contact:

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