

APPENDIX I: PUBLIC CONSULTATION

Notice of Public Information Center

Date: April 11, 2025

Municipal Class Environmental Assessment Study: Mount Joy Creek Flood Mitigation

Contract: 114-R-24

The City of Markham has initiated a Schedule 'B' Municipal Class Environmental Assessment (EA) study for Mount Joy Creek Flood Mitigation to establish and evaluate options for improving the conveyance system for the section of Mount Joy Creek located between Major Mackenzie Drive and Bur Oak Avenue for the Northern and Southern boundaries, and between Kentland Street and Metrolinx Railway corridor for the Western and Eastern limits. The City has retained Aquafor Beech Limited to provide consulting services for this project.

Why an EA Study?

The City recognizes that this section of Mount Joy Creek with a combination of pipe and open channel segments causes recurrent overland flooding issues.

Objective?

The objective of the EA study is to propose flood mitigation alternatives that reduce frequent overland flooding of the properties adjoining the creek corridor and must be sufficient to facilitate the future development ambition for the area defined in the recently completed Markham Road Mount Joy Secondary Plan.

How?

- The study has examined this section of the Mount Joy Creek to identify existing problems, potential risks, and opportunities for flood mitigation and drainage improvements.
- Through the Class EA process, various alternative solutions are being developed and evaluated by the Study Team and will be refined through public and agency consultation. The Study Team will then select a preferred alternative and develop the conceptual design.
- At the end of the study, a Project File, documenting the study process and results will be available for public review.
- Following completion of the Class EA Study, the City may consider a project where the flood mitigation designs will be developed and implemented in accordance with study recommendations.

Public Consultation

- Consultation is an important part of the EA process. The City would like anyone with an interest in the Study to have an opportunity to provide input and help inform the decision-making process.



Mount Joy Creek – Project Area

Notice of Public Information Center

- An in-person, Public Information Centre has been arranged to allow local residents and interested members of the public an opportunity to review and comment on the project findings to date, the alternative solutions being considered, the evaluation process, the preliminary preferred solution, and the next steps:

Date: Monday May 5th, 2025
Time: 6:00pm: Session opens to public with presentation boards for perusal.
Location: Canada Room, Markham Civic Centre, 101 Town Centre Boulevard,
Markham, ON, L3R 9W3

- For those who are unable to attend in-person, presentation slides will be available for review on the City's webpage: <https://www.markham.ca/economic-development-business/planning-development-services/engineering-services/mount-joy-creek-flood-mitigation>.

We encourage you to participate by reviewing the information materials and providing any comments to the Project Team. Information will be collected in accordance with the Municipal Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.

We understand that this work may cause some inconvenience, and we appreciate your patience as we work to evaluate the impact of the overland inundation and propose a sustainable solution. If you have any questions or comments regarding the study, or wish to be added or removed from the study mailing list, please contact the undersigned Project Managers:

Robert Amos
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Contact the City of Markham for information,
available in many languages

905-477-5530

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Deputy Mayor Michael Chan
Regional Councillor Jim Jones
Regional Councillor Joe Li

Regional Councillor Alan Ho
Councillor Andrew Keyes, Ward 5
Councillor Amanda Yeung Collucci, Ward 6
Frank Clarizio, Director of Engineering, City of Markham



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:

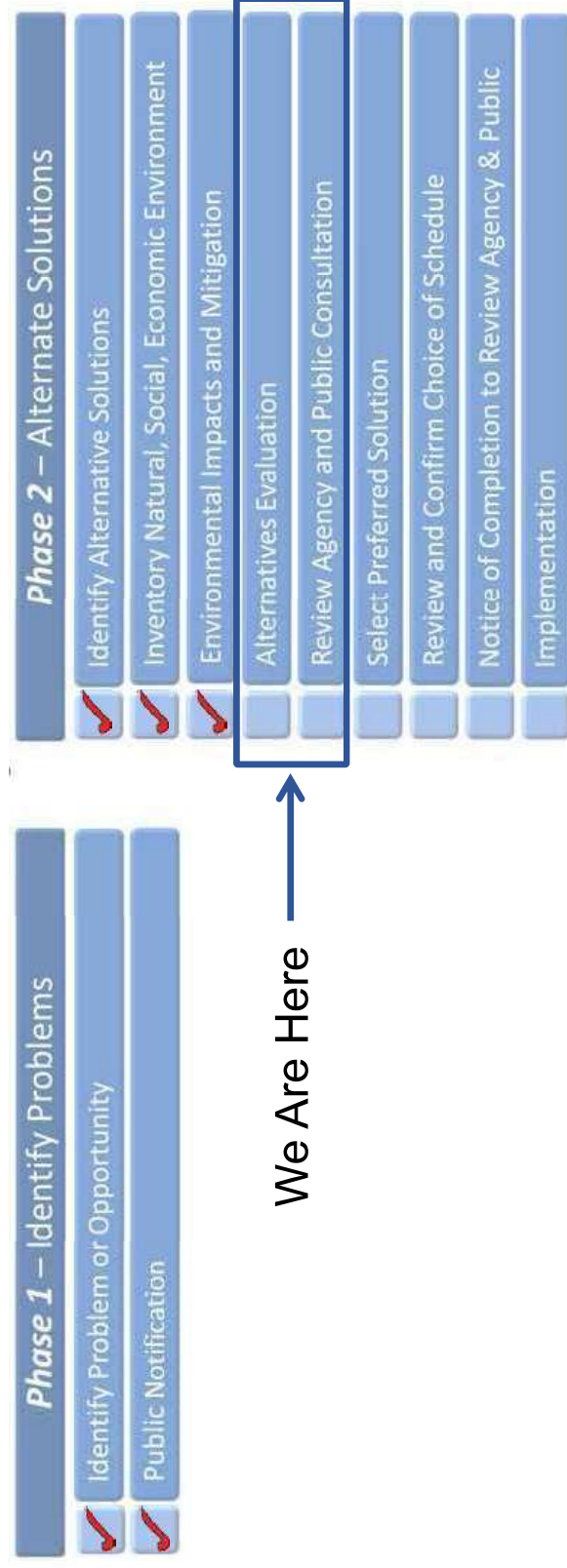
- Present information on existing conditions
- Present alternative approaches to flood mitigation
- Gain community input



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.

Engineering

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* | 11. Eastern Meadowlark – THR |
| 2. Eastern Small-footed Myotis – END | 12. Eastern Wood-pewee – SC |
| 3. Hoary Bat – END* | 13. Wood Thrush – SC |
| 4. Little Brown Myotis – END | 14. Butternut – END |
| 5. Northern Myotis – END | 15. Midland Painted Turtle – SC (federal only) |
| 6. Silver-haired Bat – END* | 16. Snapping Turtle – SC |
| 7. Tri-colored Bat – END | 17. Monarch – SC |
| 8. Bank Swallow – THR | 18. Nine-spotted Lady Beetle – END |
| 9. Barn Swallow – SC | 19. Eastern Pondmussel – SC |
| 10. Bobolink – THR | 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	<i>Lepomis macrochirus</i>
Brook stickleback	<i>Culaea inconstans</i>
Brown bullhead	<i>Ameiurus nebulosus</i>
Common carp	<i>Cyprinus carpio</i>
Fathead minnow	<i>Pimephales promelas</i>
Goldfish	<i>Carassius auratus</i>
Largemouth bass	<i>Micropterus nigricans</i>
Pumpkinseed	<i>Lepomis gibbosus</i>
Redside dace	<i>Clinostomus elongatus</i>

Key Findings:

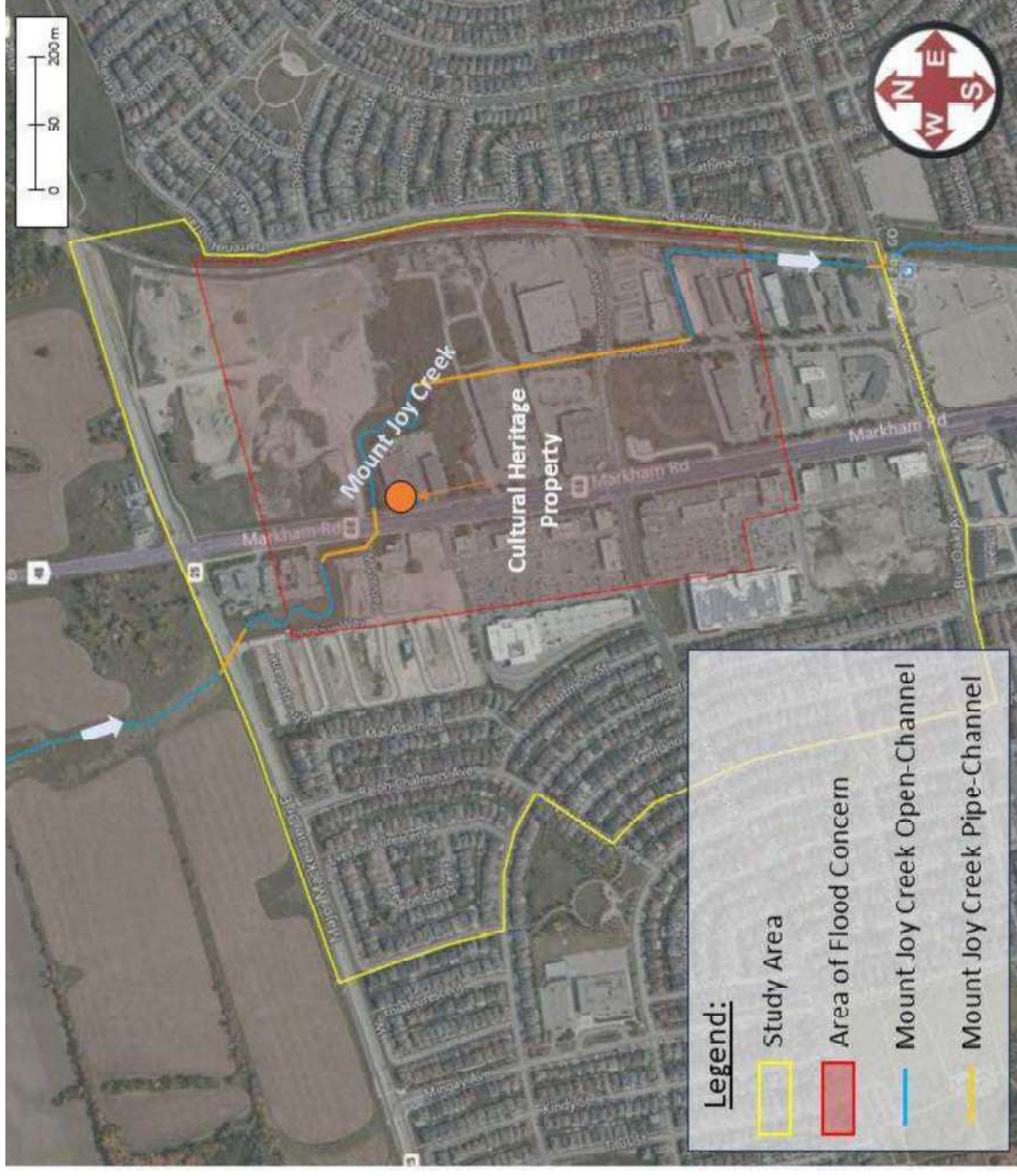
- All species recorded in the study area (with the exception of Redside dace) are common and immediately tolerant to disturbance.
- Fish communities represent spring spawning and majorly warmwater species.
- Although Redside dace, an endangered species under the Endangered Species Act (ESA), have potential 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 & Donald Blomborn

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



Engineering

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

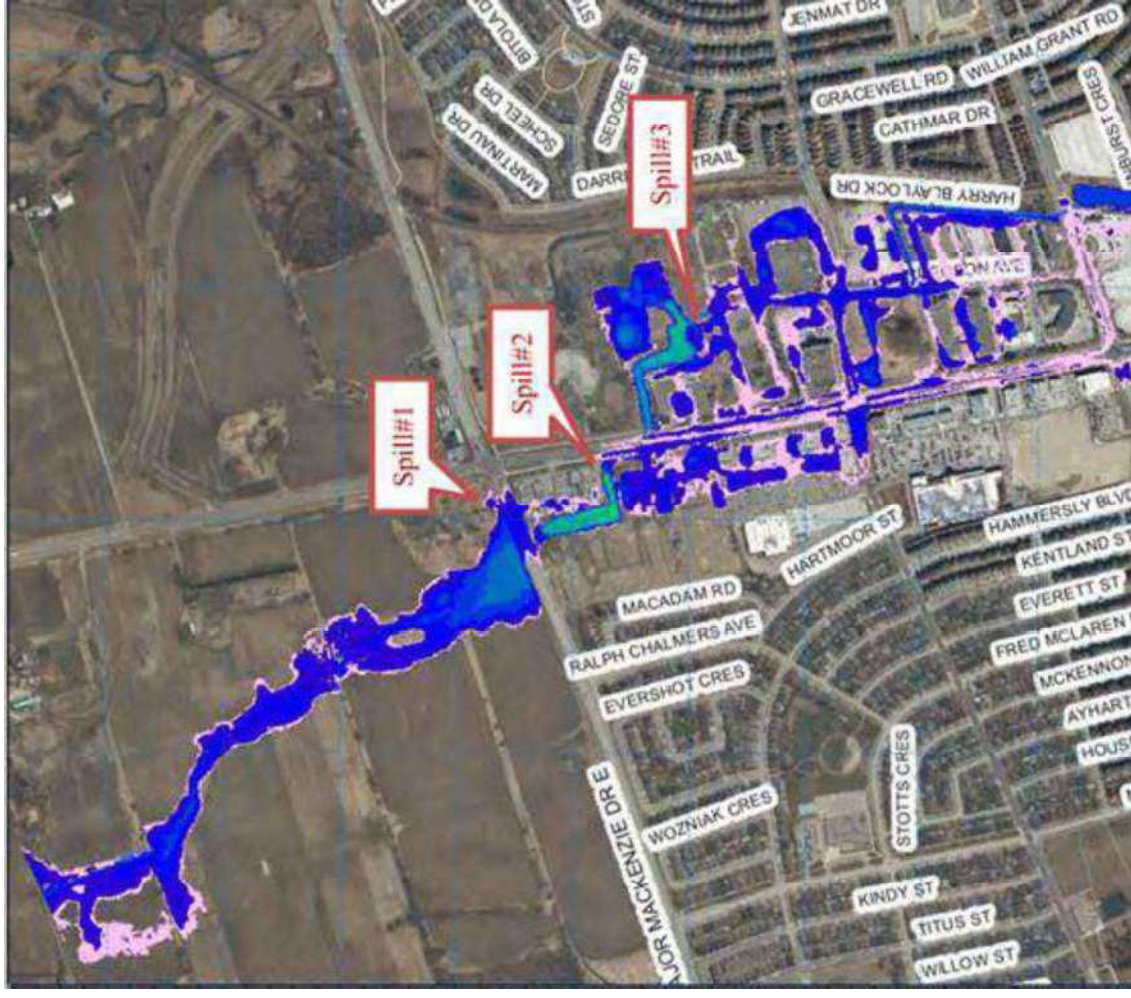
- Mainly caused due to undersized culvert & low point on Major Mackenzie Dr

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

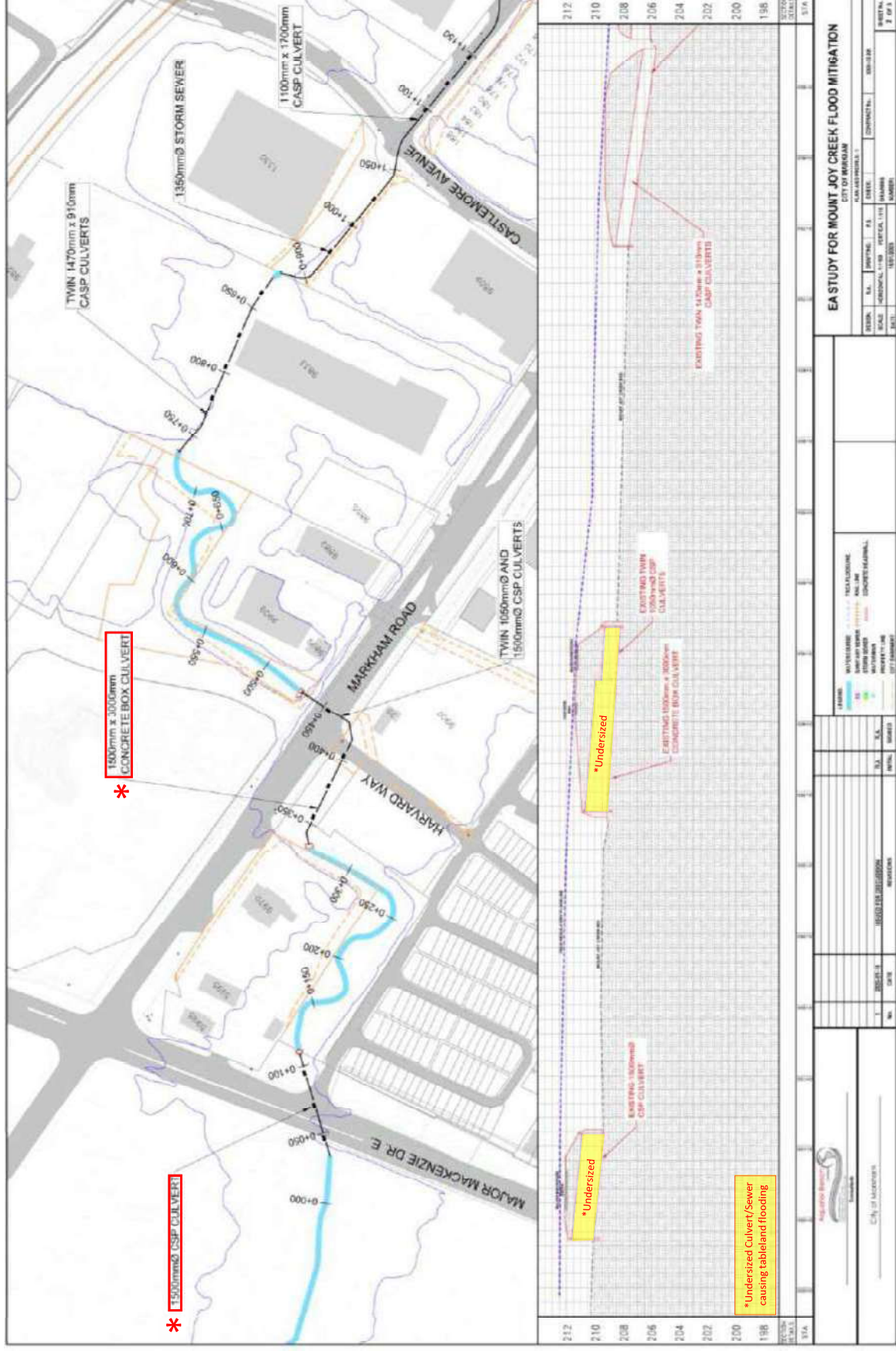
- Mainly caused due to undersized buried long pipes



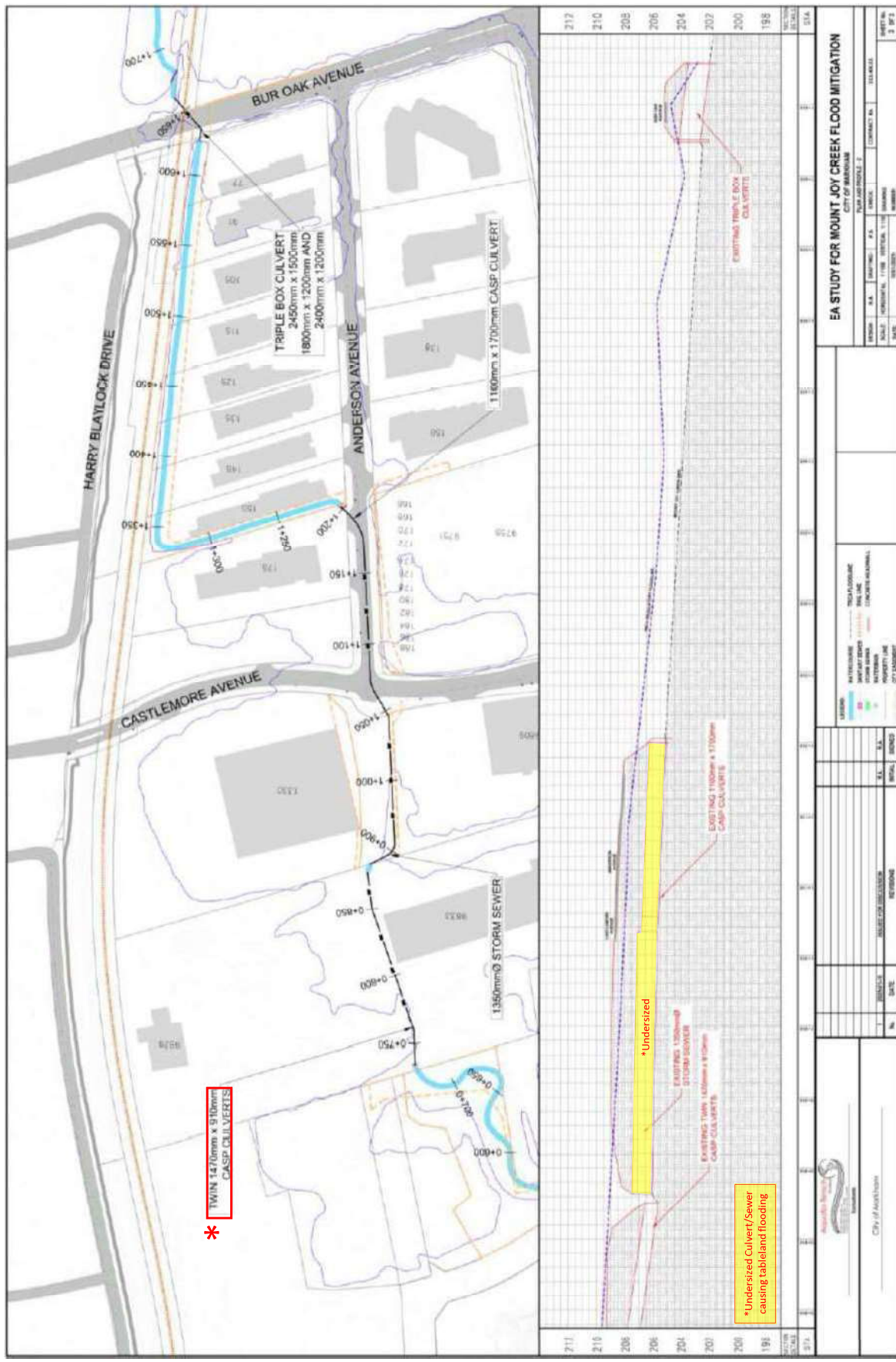


Engineering

Existing Drainage Corridor – Plan and Profile

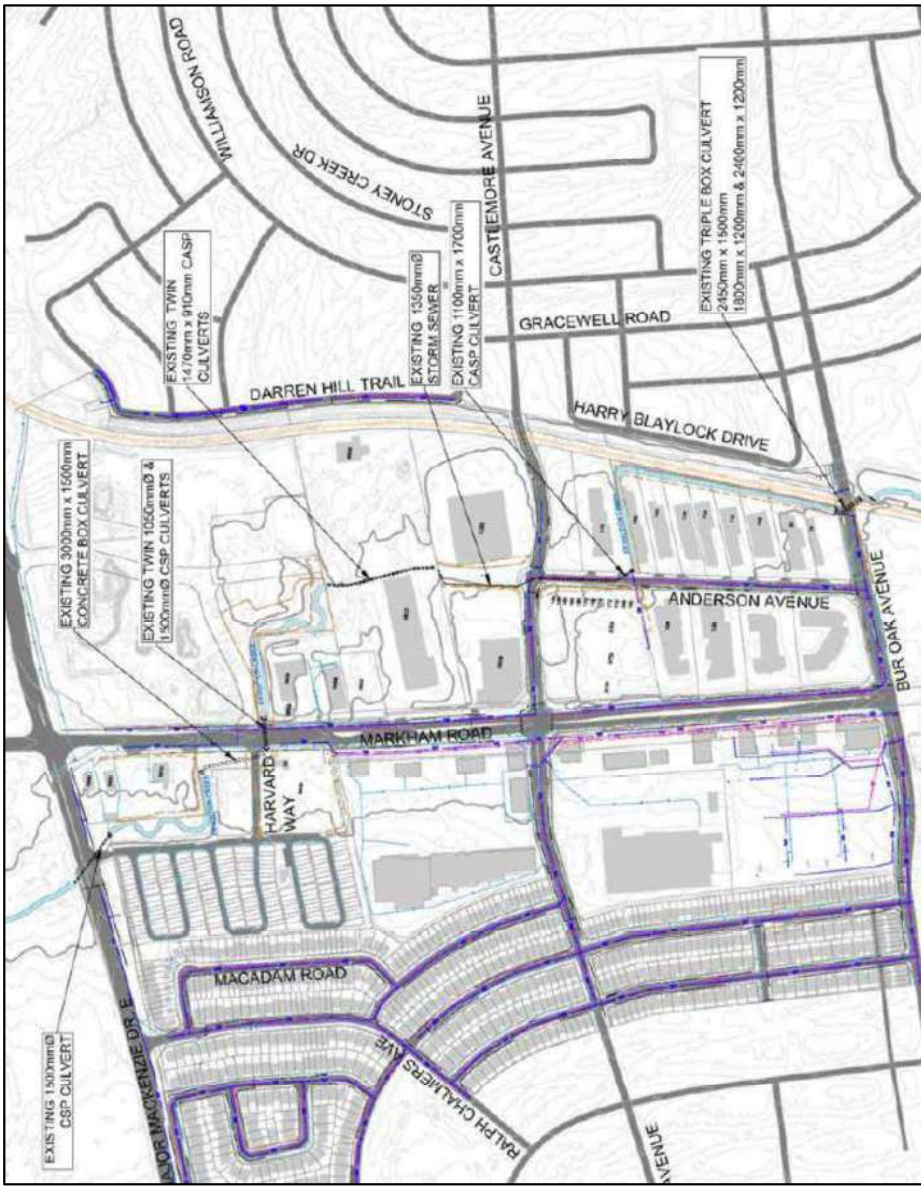


Existing Drainage Corridor – Plan and Profile



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.



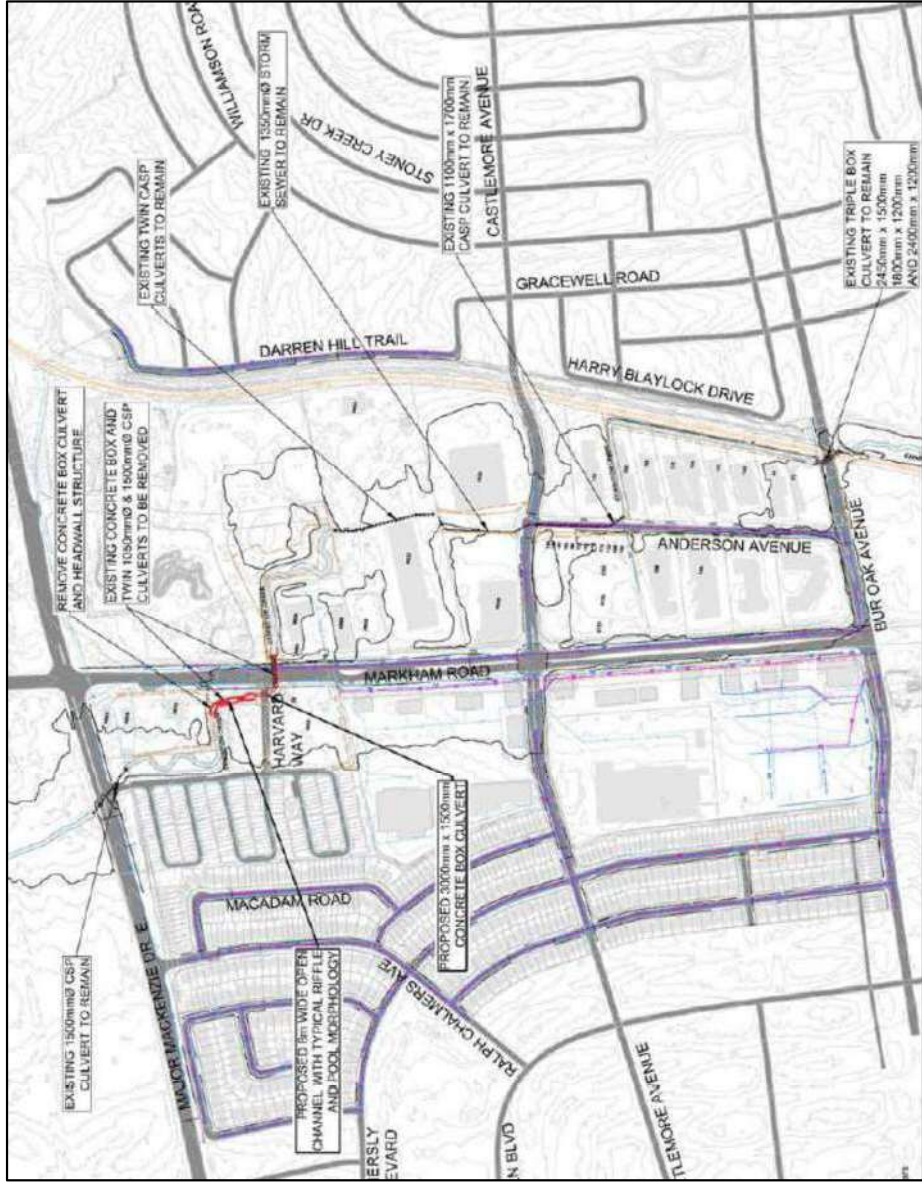
Alternative 2 – Offline Pond

- 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



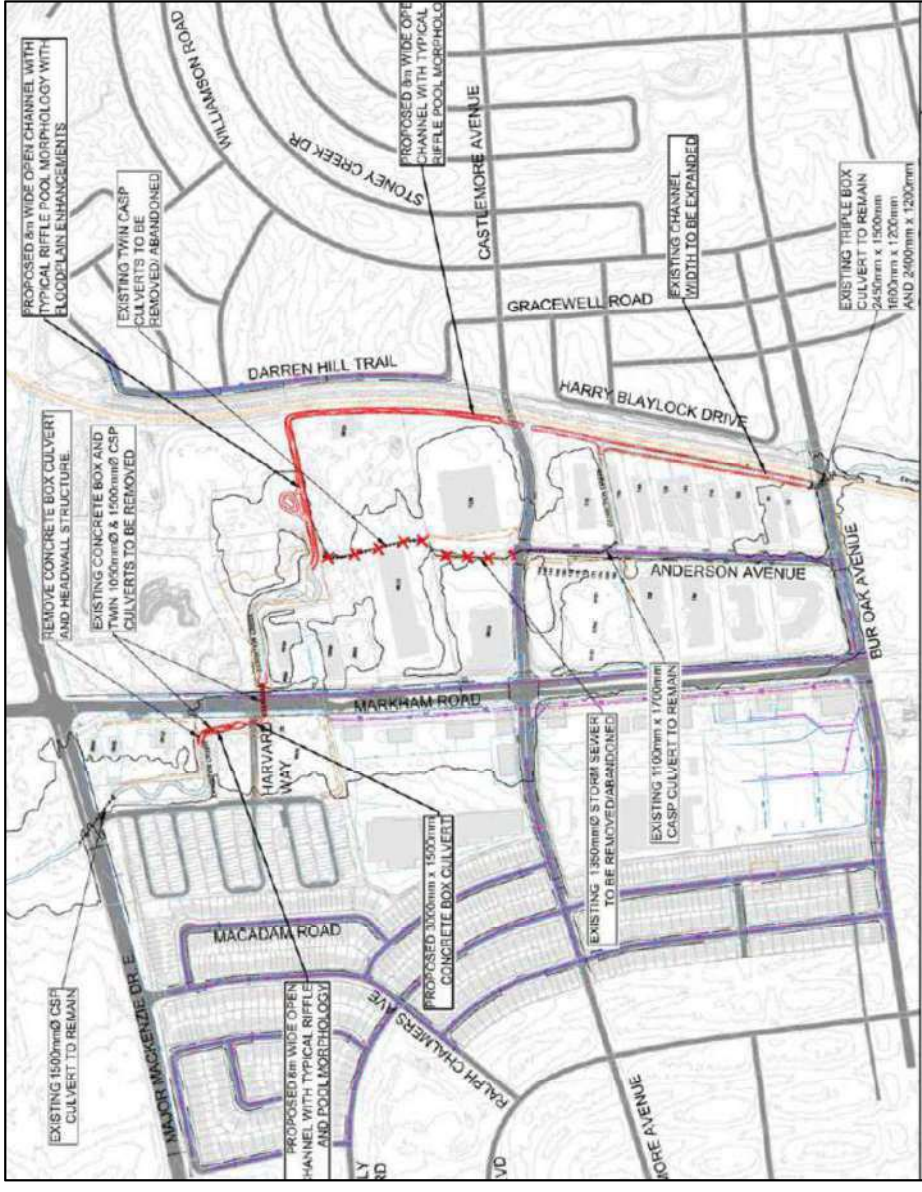
Alternative 3 – Open Channel and Larger Culvert

- 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



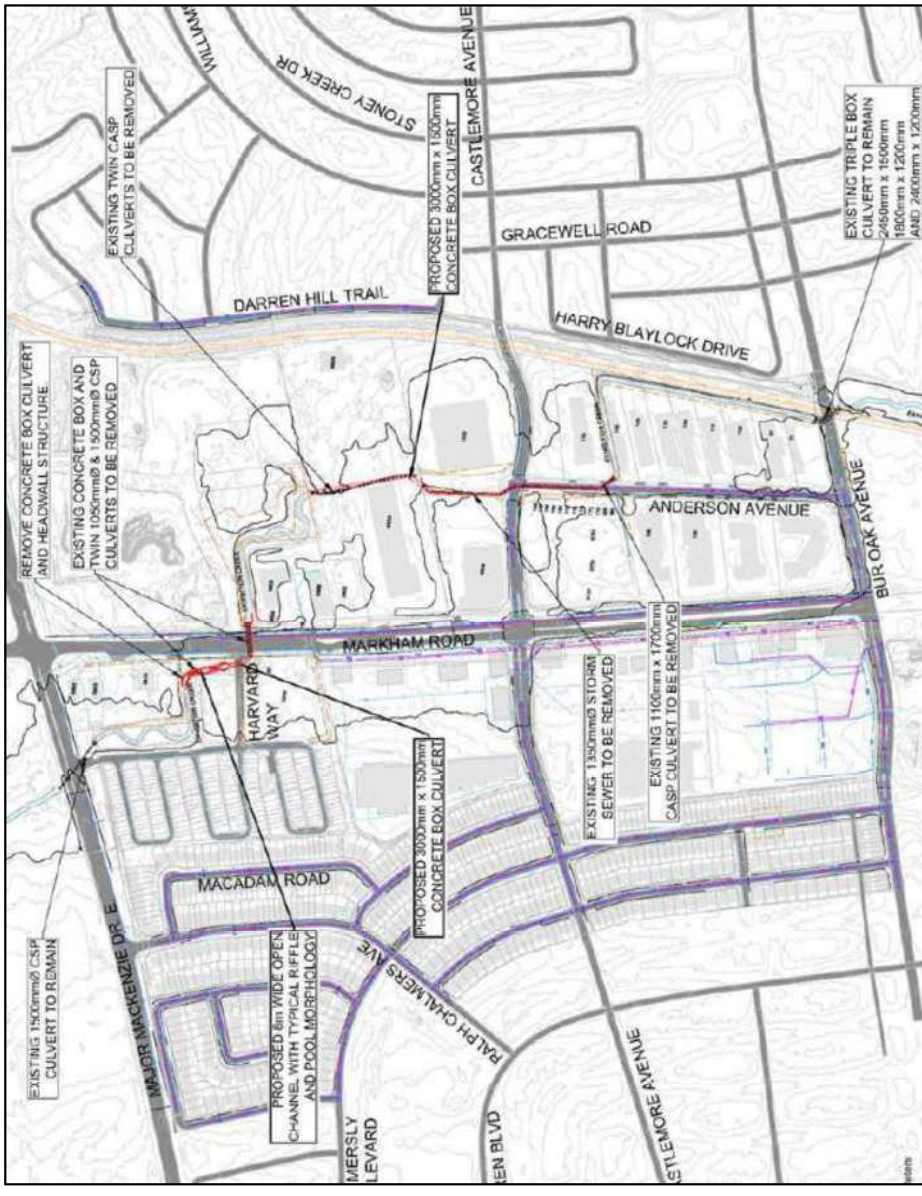
Alternative 4 – Open Channel Expansion and Larger Culvert

- 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



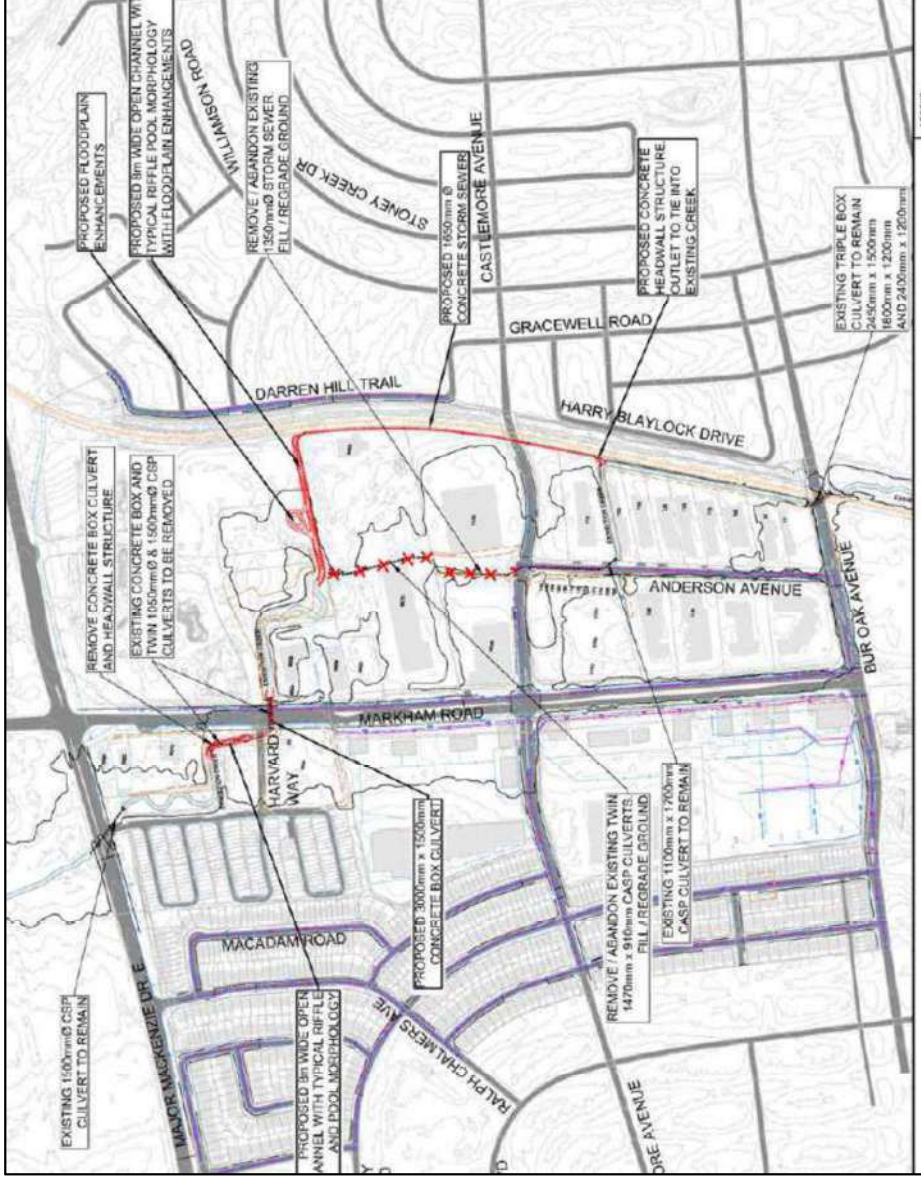
Alternative 5 – Culvert Expansion and Larger Culvert

- 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



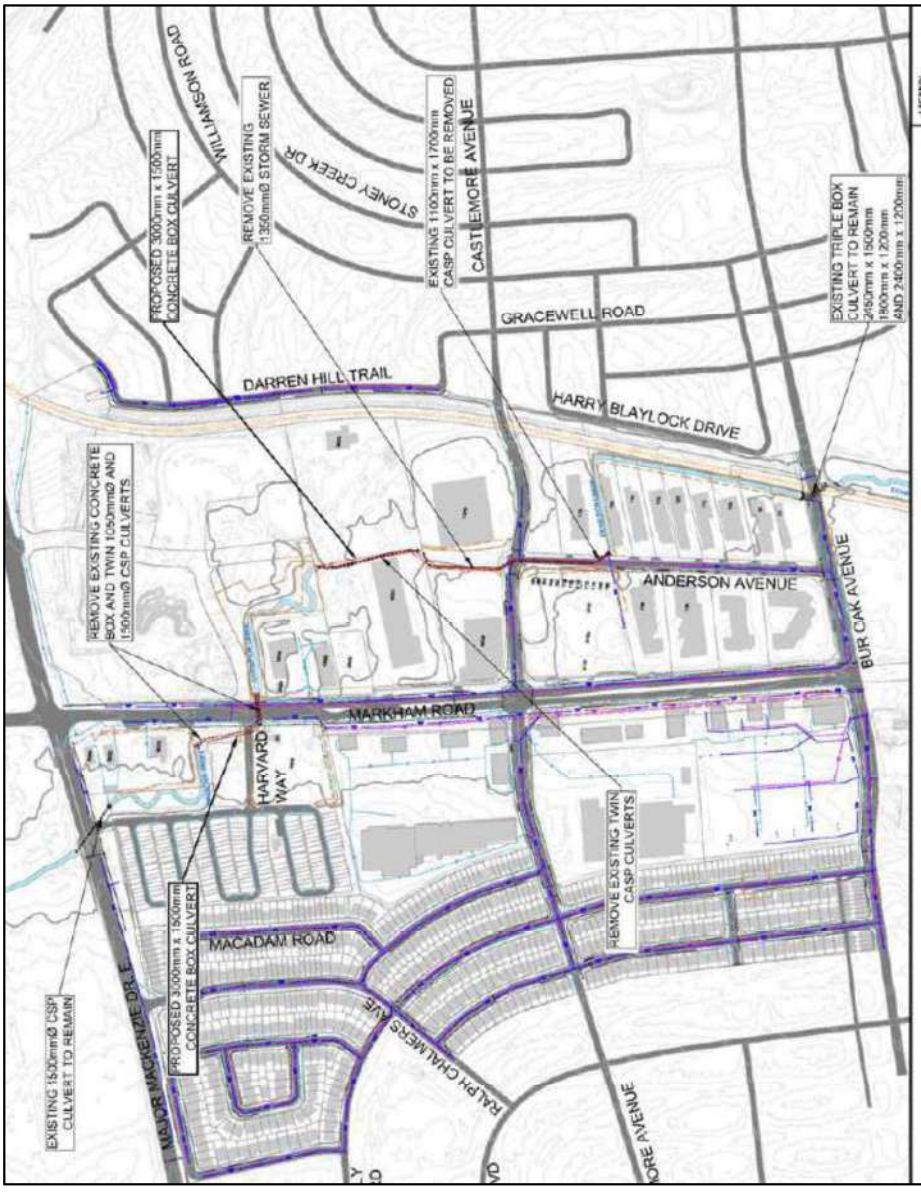
Alternative 6 – Open Channel Extension & Storm Pipe

- 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 concrete headwall structure



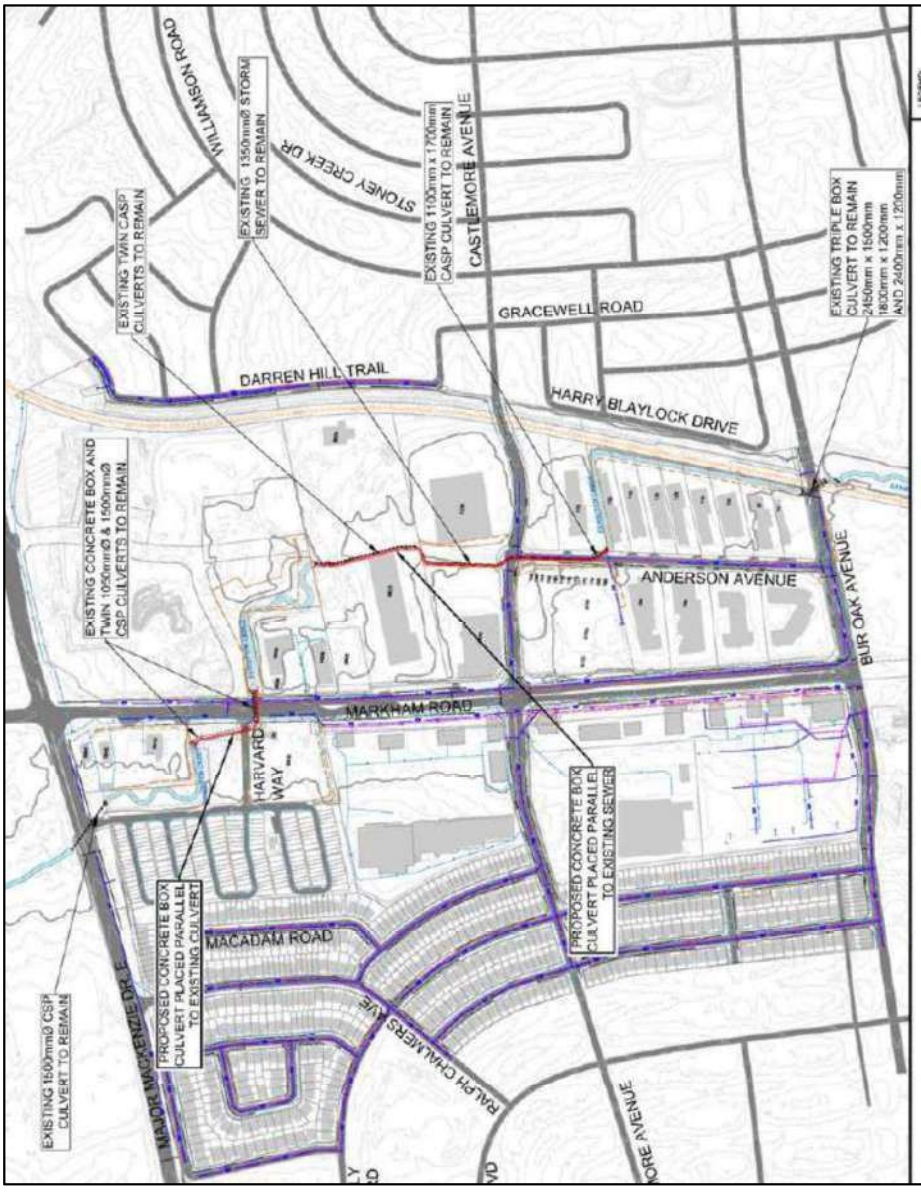
Alternative 7 – Increased Culvert Size Replacement

- 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



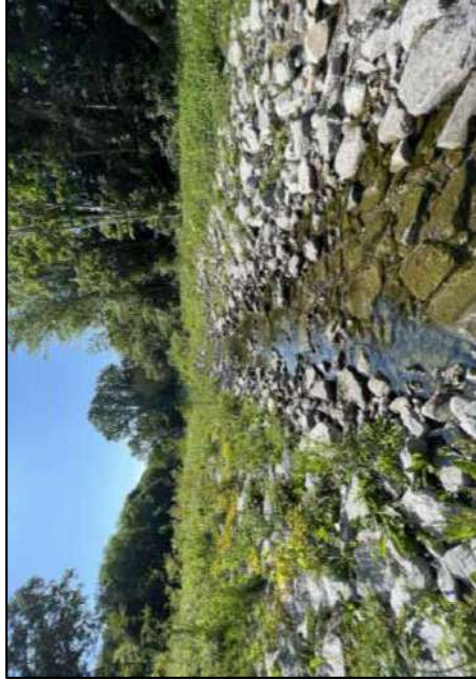
Examples of Restoration Solutions



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 <u>flooding</u> 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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Mississauga, L4W 5B2
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Amos.R@aquaforbeech.com

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Notice of Public Information Center (PIC) #2

Date: July 24, 2025

Municipal Class Environmental Assessment Study: Mount Joy Creek Flood Mitigation

Contract: 114-R-24

The City of Markham has initiated a Schedule 'B' Municipal Class Environmental Assessment (EA) study for Mount Joy Creek Flood Mitigation to establish and evaluate options for mitigating local flooding and improving the conveyance system for the reach of Mount Joy Creek located between Major Mackenzie Drive and Bur Oak Avenue for the Northern and Southern boundaries, and between Kentland Street and Metrolinx Railway corridor for the Western and Eastern limits. The City has retained Aquafor Beech Limited to provide consulting services for this project.

Public Information Center (PIC) #1

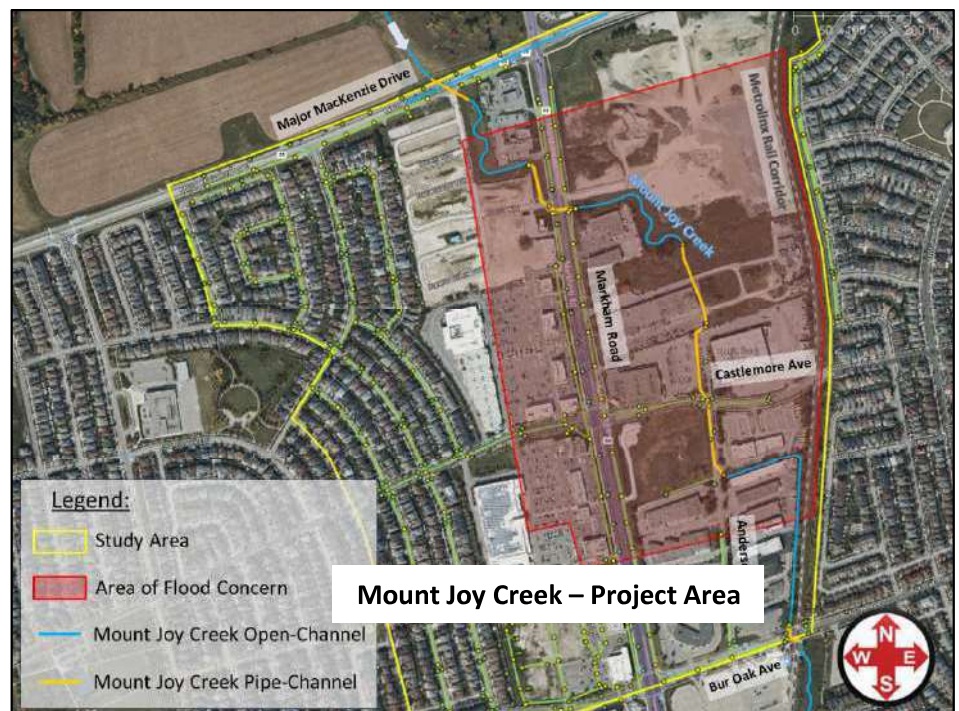
The first PIC for the Mount Joy project was held on May 5th, 2025. This PIC presented the EA process, Study overview, Natural Heritage Assessment, Hydrology and Existing Flood Conditions, Existing Drainage Corridor, Proposed Alternatives for further analysis, Sample Evaluation Criteria and Identification of next Steps.

Assessment of Alternatives

The objective of the EA study is to propose flood mitigation alternatives that reduce frequent overland flooding of the properties adjoining the creek corridor, improve conveyance, and must be sufficient to facilitate the future development ambition for the area defined in the recently completed Markham Road Mount Joy Secondary Plan. A total of eight (8) potential drainage alternatives were developed and presented at PIC #1. These alternatives have now been hydraulically modelled and evaluated based on a total of four (4) Evaluation Criteria including;

- Physical/Natural Environment;
- Social/Cultural Environment;
- Economic Environment;
- Technical and Engineering Considerations;

PIC #2 will focus on the presentation and evaluation of alternatives outlined in PIC #1 and further outline the next steps within the EA process.



Notice of Public Information Center (PIC) #2

Public Consultation

- Consultation is an important part of the EA process. The City would like anyone with an interest in the Study to have an opportunity to provide input and help inform the decision-making process.
- An in-person, Public Information Centre has been arranged to allow local residents and interested members of the public an opportunity to review and comment on the project findings to date, the alternative solutions being considered, the evaluation process, the preliminary preferred solution, and the next steps:

Date: Wednesday September 10th, 2025
Time: 6:00pm: Session opens to public with presentation boards for perusal.
Location: Canada Room, Markham Civic Centre, 101 Town Centre Boulevard,
Markham, ON, L3R 9W3

- For those who are unable to attend in-person, presentation slides will be available for review on the City's webpage: <https://www.markham.ca/economic-development-business/planning-development-services/engineering-services/mount-joy-creek-flood-mitigation>.

We encourage you to participate by reviewing the information materials and providing any comments to the Project Team before October 10th, 2025. Information will be collected in accordance with the Municipal Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.

We understand that this work may cause some inconvenience, and we appreciate your patience as we work to evaluate the impact of the overland inundation and propose a sustainable solution. If you have any questions or comments regarding the study, or wish to be added or removed from the study mailing list, please contact the undersigned Project Managers:

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Consultant Project Manager
Aquafor Beech Limited
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E: amos.r@aquaforbeech.com

Abdullah Hossain
Environmental Engineer
City of Markham
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cc.

Mayor Frank Scarpitti
Deputy Mayor Michael Chan
Regional Councillor Jim Jones
Regional Councillor Joe Li

Regional Councillor Alan Ho
Councillor Andrew Keyes, Ward 5
Councillor Amanda Yeung Collucci, Ward 6
Frank Clarizio, Director of Engineering, City of Markham



Class Environmental Assessment for Mount Joy Creek Flood Mitigation

Second Public Information Centre (PIC)

September 10th, 2025



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.



Engineering

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

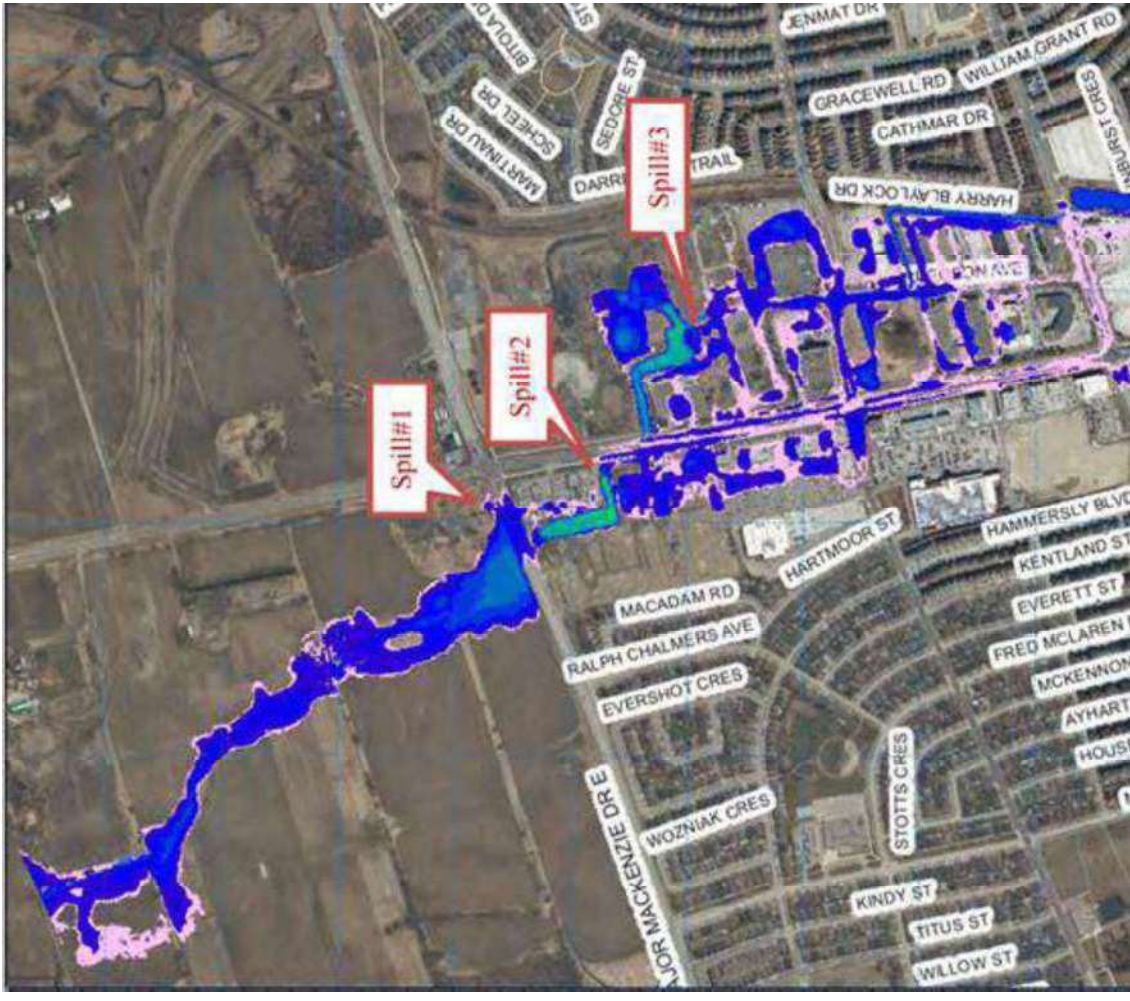
- Mainly caused due to undersized culvert & low point on Major Mackenzie Dr

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

- Mainly caused due to low point of a swale & undersized culvert on Hwy 48

Spill #3 – Inlet of Buried Pipes on Anderson Ave

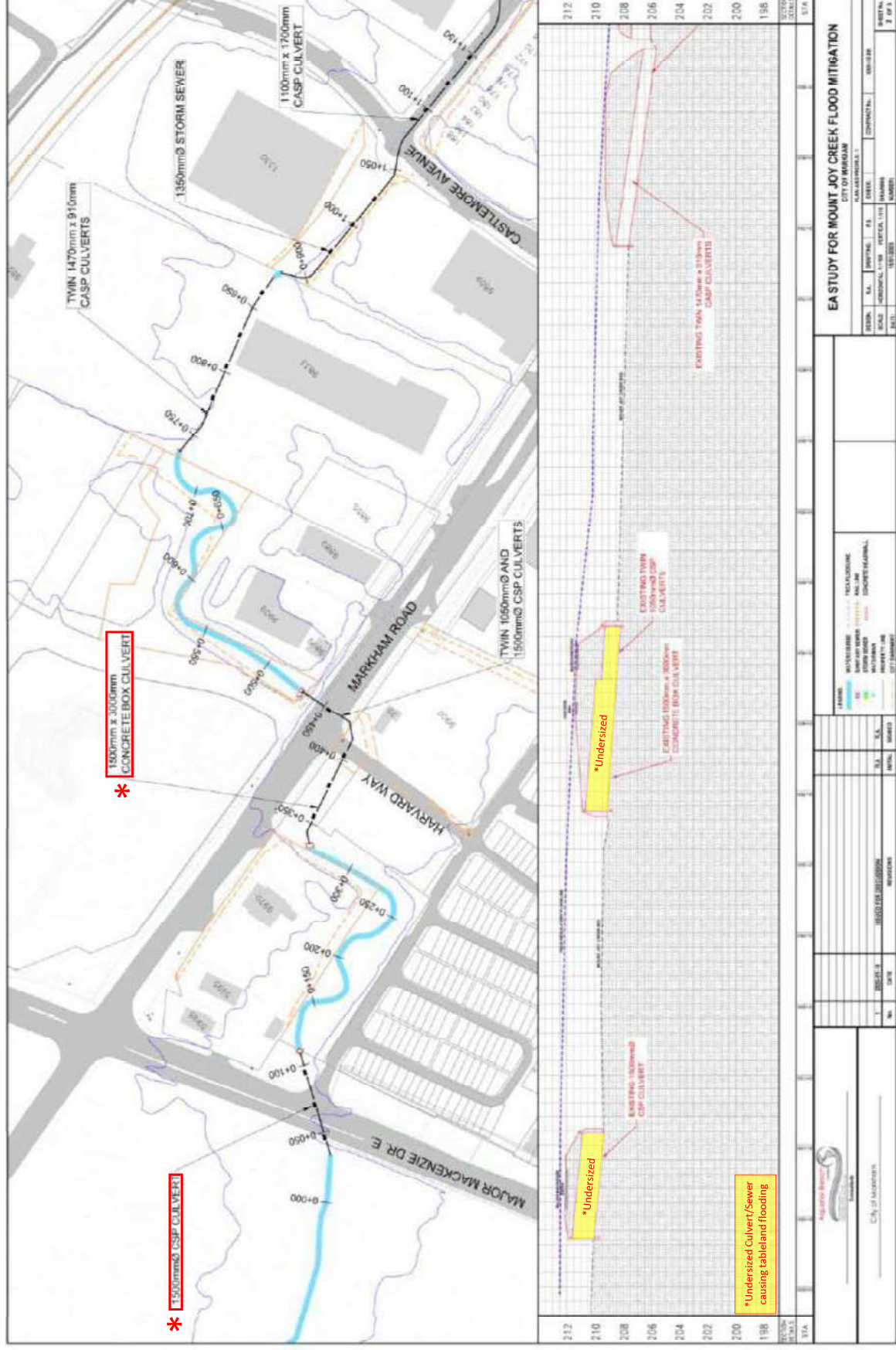
- Mainly caused due to undersized buried long pipes

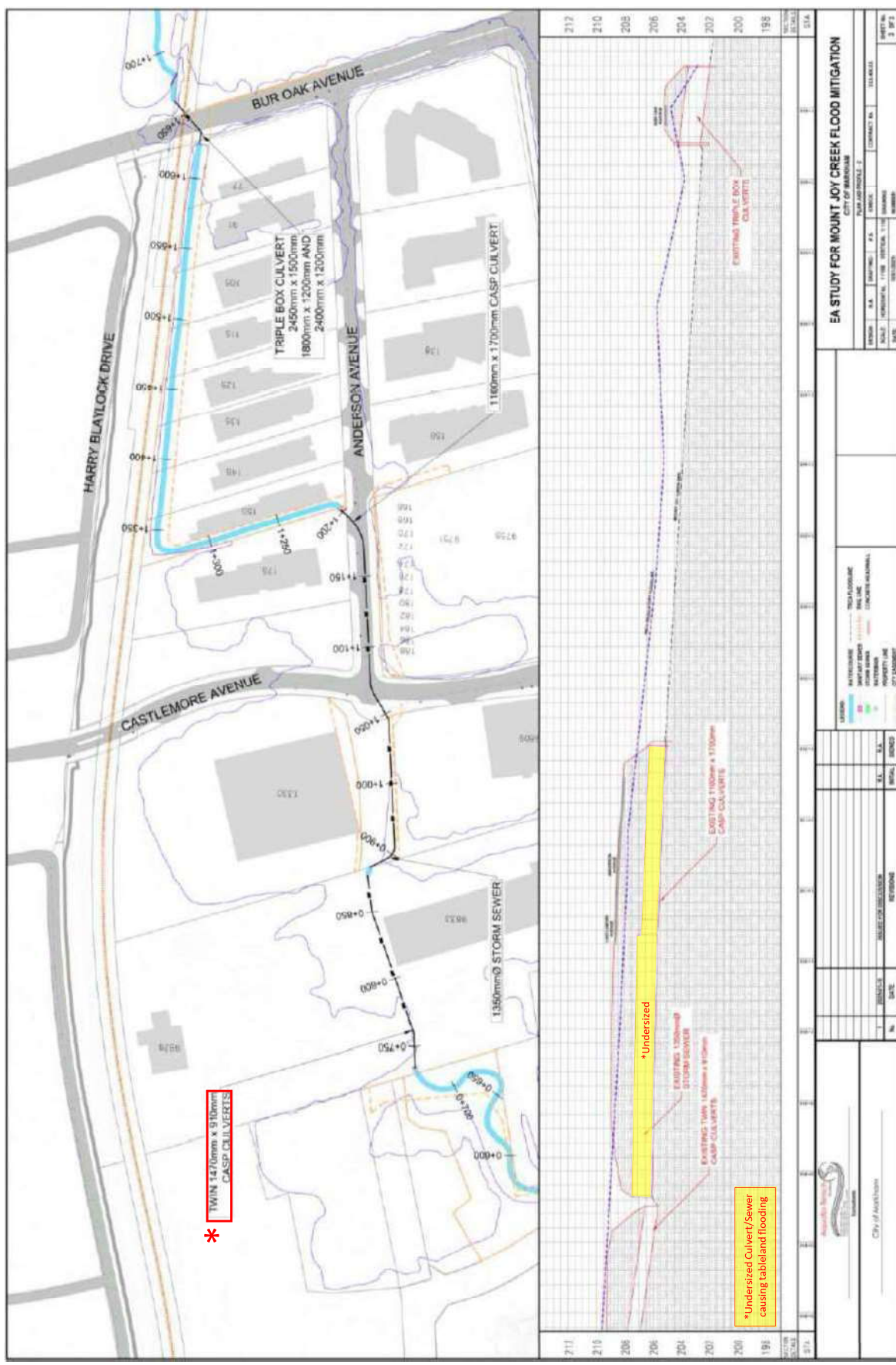




Engineering

Existing Drainage Corridor – Plan and Profile





Alternative Assessment

A series of 8x alternatives were considered at PIC#1. Alternatives were screened for further consideration based upon ability to meet the project objective (flood mitigation) and stakeholder input:

Alt 1 – Do Nothing – Existing Flood Hazard Remains

Alt 2 – Stormwater Reduction Pond – Existing Flood Hazard Remains

Alt 3 – Upstream Only Improvements – Spill #1 & #3 Remain

Alt 4 – Open Channel Realignment – Spill Areas Mitigated, Flood Hazard Relocated into Private Properties & Metrolinx Corridor

Alt 5 – Upstream Improvements & Culvert Enlargement – Flood Hazard Remains Upstream Harvard Way

Alt 6 – Upstream Improvements & Culvert Realignment - Flood Hazard Remains Upstream Harvard Way, Flood Hazard Relocated into Private Properties

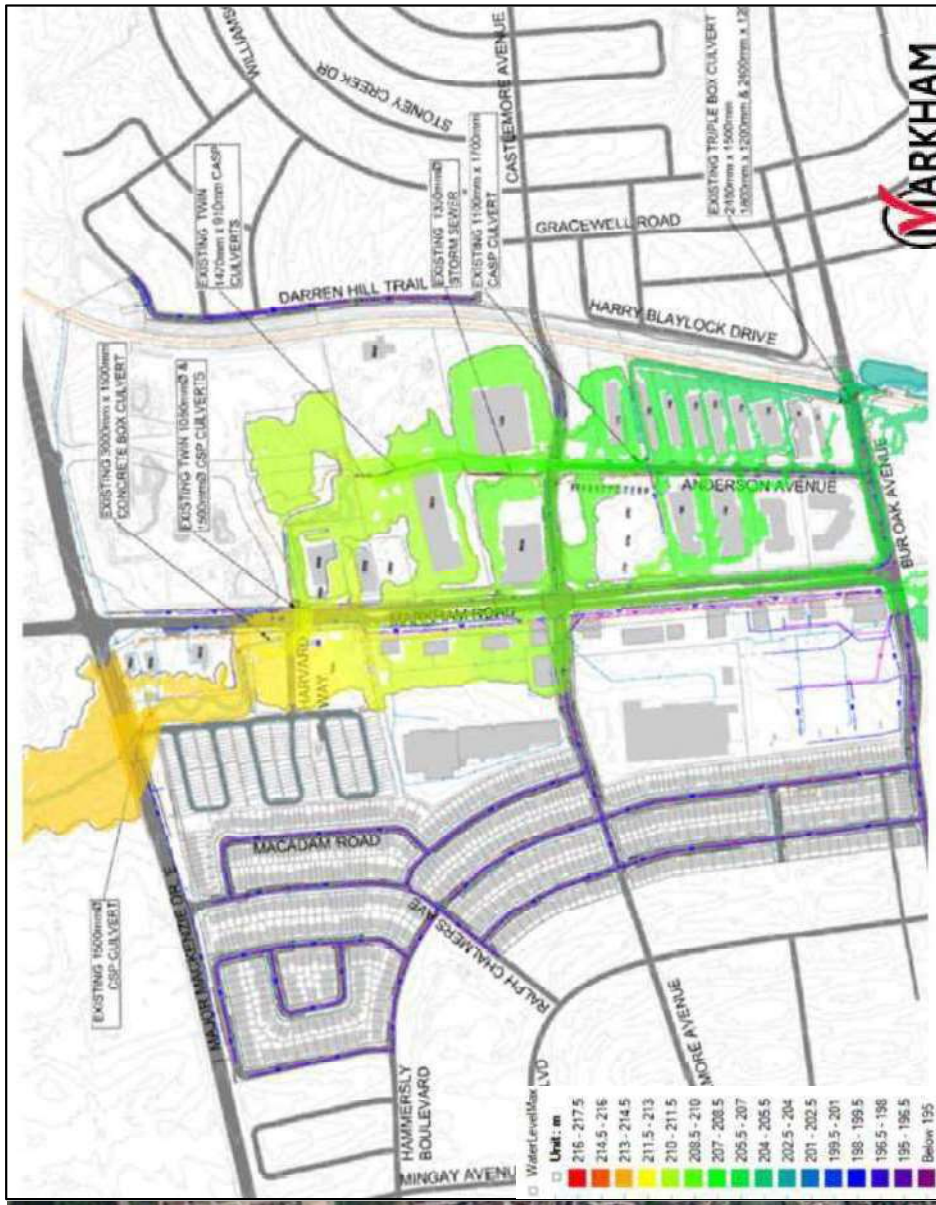
Alt 7 – Culvert Enlargement – Flood Hazard and Spills Mitigated

Alt 8 – Additional Parallel Culverts – Flood Hazard and Spills Mitigated

Alternative 1 – Do Nothing

Engineering

- 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.
- 3x floodplain spill areas remain
- Flooding conditions and depths based upon current TRCA 2D modelling



Alternative 2 – Stormwater Reduction 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
- No other changes will be made to the stormwater infrastructure within the Study Area
- Available area not large enough to offer regulatory floodplain reduction
- Flood hazard remains



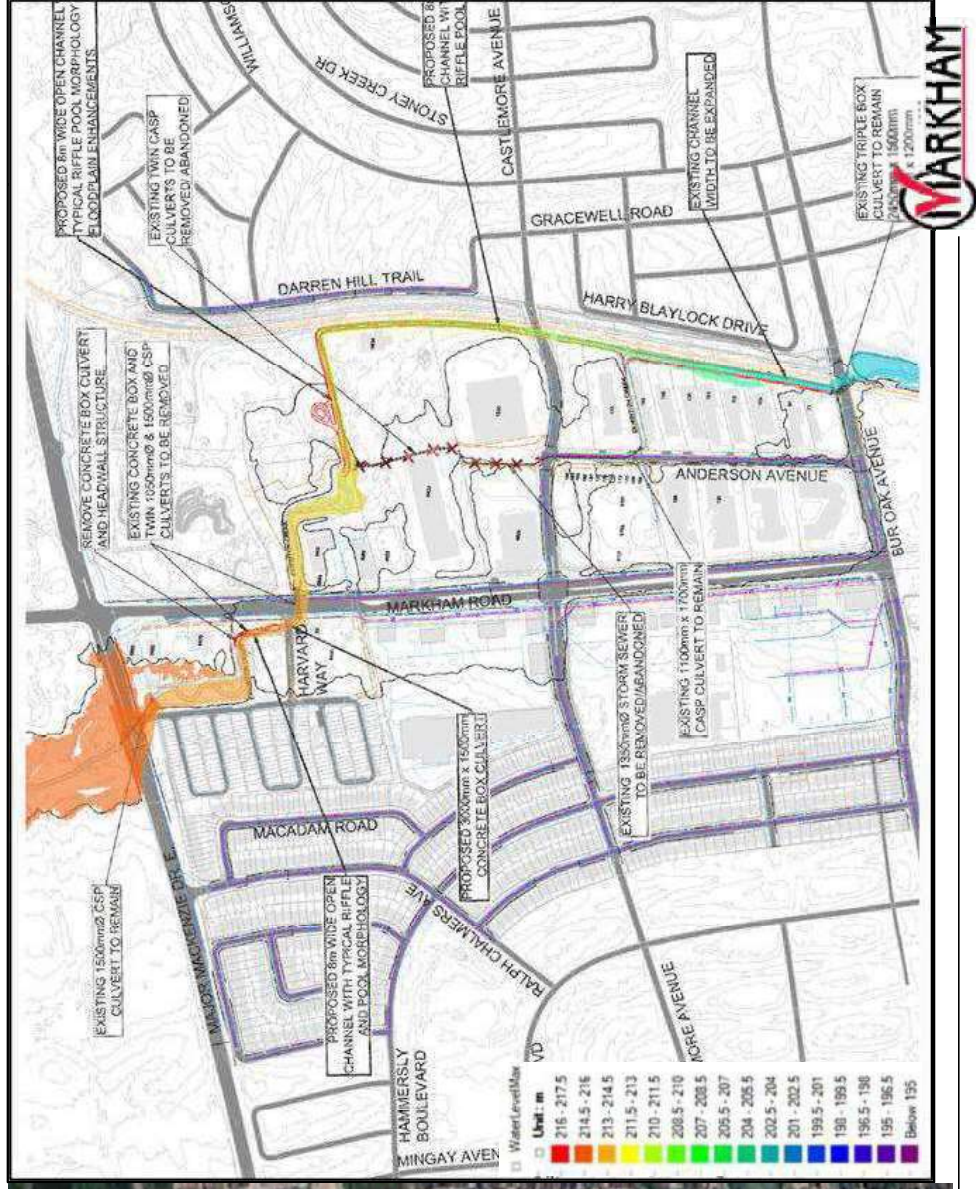
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Alternative 4 – Open Channel Realignment

Engineering

- Replaces the existing culvert near Markham Road and Harvard Way with an extended open channel and larger culvert similar to Alternative 3
- Remove or abandon the existing culverts and storm sewer located east of 9833 and 9809 Markham Road
- Flow from Mount Joy Creek redirected via a proposed open channel along Metrolinx corridor
- Flood hazard relocated along open channel



Alternative 5 – Upstream Improvements & Culvert Enlargement

Engineering

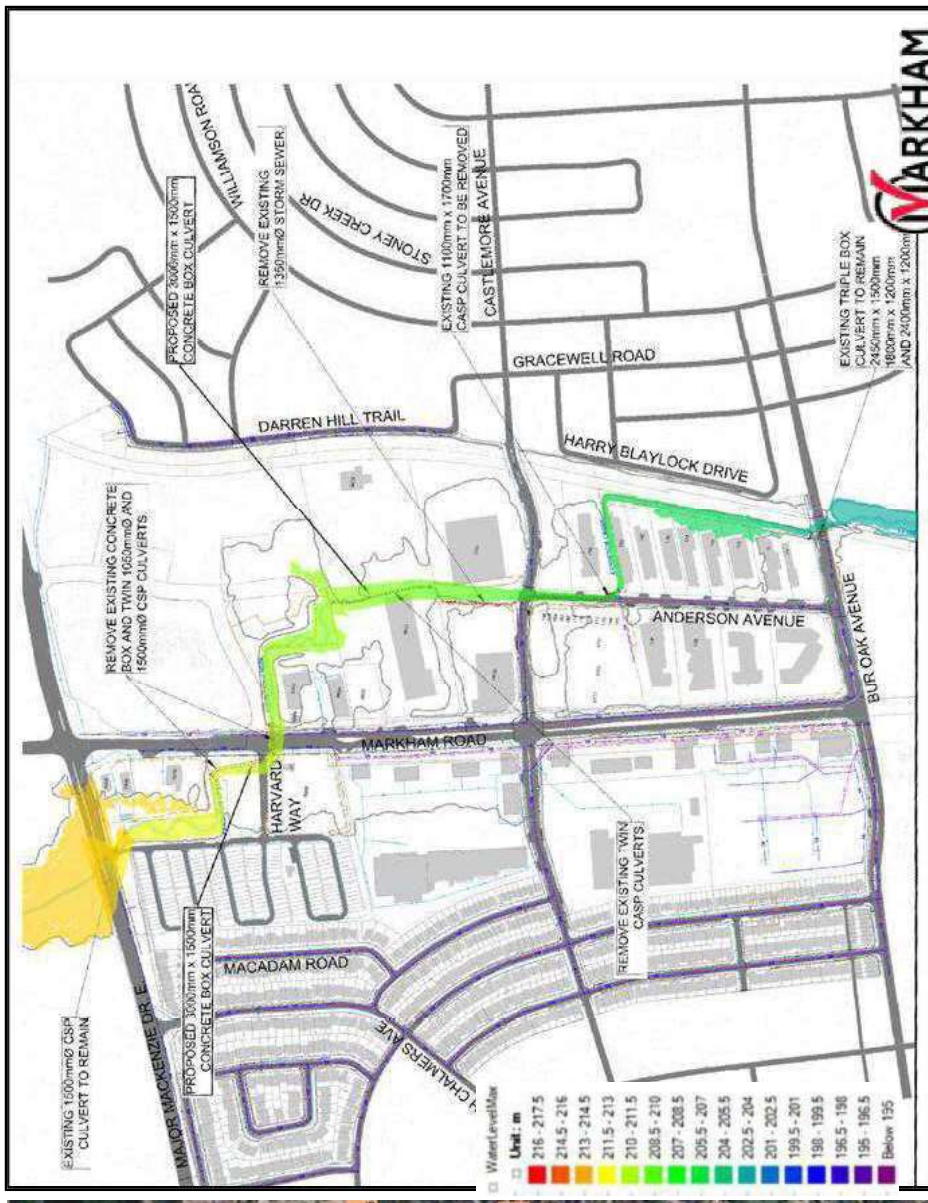
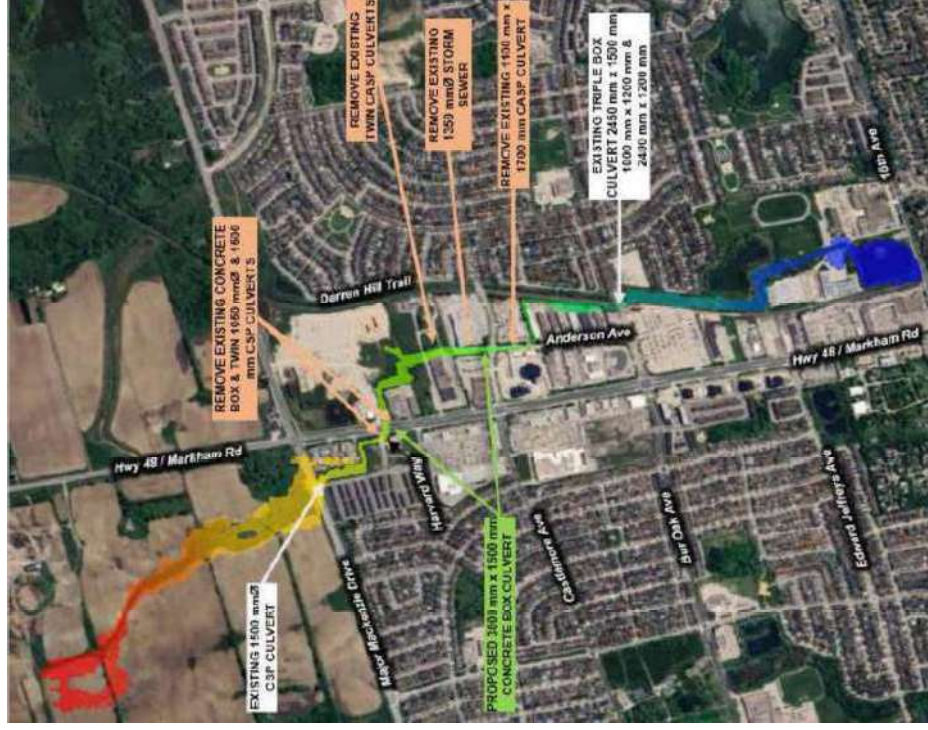
- Replaces the existing culvert near Markham Road and Harvard Way with an extended open channel and larger culvert similar to Alternative 3
- Additionally, will remove the existing culverts and storm sewer east of 9833 and 9809 Markham Road and west of 175 Anderson Avenue
- Larger culvert to replace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



Alternative 7 – Culvert Enlargement

Engineering

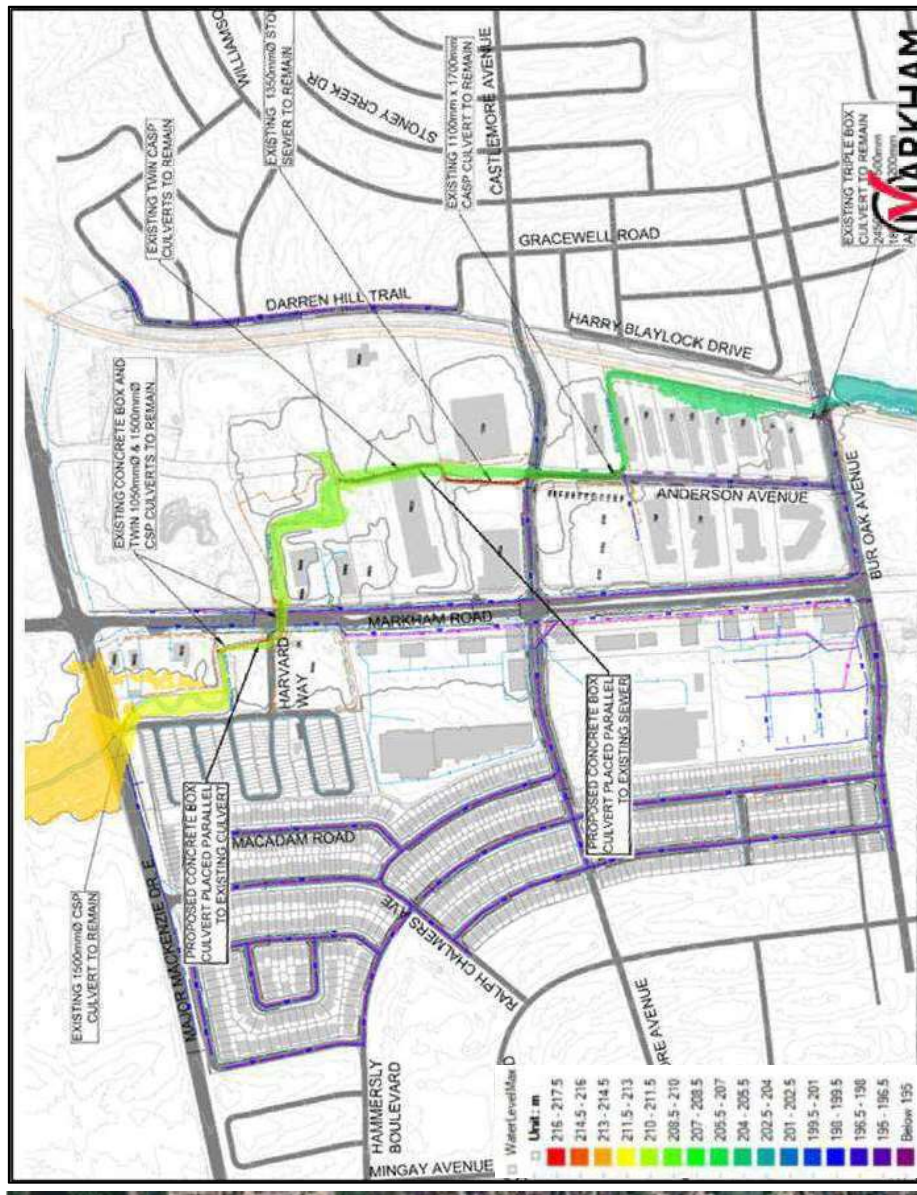
- Existing culverts located south of 9970 Markham Rd and extending to Mount Joy Creek north of 9899 Markham Rd to be removed
- Larger culvert to replace existing culvert near Markham Road and Harvard Way
- Additionally, will remove the existing culverts and storm sewer east of 9833 and 9809 Markham Road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



Alternative 8 – Additional Parallel Culverts

Engineering

- 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



Evaluation Criteria

Engineering

Evaluation Criteria	Description
Physical/Natural Environment	
Potential to Reduce Flooding Risks	Greater reduction of <u>flooding</u> 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



Engineering Alternatives Evaluation Matrix

Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Alternative 8
Do Nothing	Stormwater Reduction Pond	Upstream Only Improvements	Open Channel Realignment	Upstream Improvements & Culvert Enlargement	Upstream Improvements & Culvert Realignment	Culvert Enlargement	Additional Parallel Culverts
Physical/Natural Environment							
Social/Cultural Environment							
Economic Criteria							
Technical/Engineering Considerations							
Total							
PRELIMINARY PREFERRED							

Please sign in



Class EA for Mount Joy Creek Flood Mitigation – Community Engagement Session
September 10th, 2025



Name (please print)	Home Address / Postal Code	Email Address	Phone Number	Affiliation (if applicable)
BILL KIRKA	3601 Hwy 7, Ste 401	William@livelydevelopment.ca	(905) 910 1578	
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Frank Clarizio	City of Markham			
ELLIOT PAI	55 ASPENWOOD DRIVE, TORONTO	epai@egreck.ca EGRECK		
Eric Greck	5770 Highway 7, Woodbridge	egreck@egreck.ca		
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MARSHAL AMIN	Metrolinx Mount Joy GO	Marshall.amin@Metrolinx.com Marshall		Metrolinx

**APPENDIX J: MINUTES – AQUAFOR, TRCA, AND CITY
MEETING (SEPTEMBER 8, 2025 AND FEBRUARY 4, 2026)**

City of Markham

Mount Joy Creek Flood Mitigation EA Study

Alternative Review Meeting

Aquafor Project No.: 67657
Meeting No.: Meeting 7
Date/Time: September 08th, 2025 – 1pm – 3pm
Location: Microsoft Teams
Procurement No. PD 24259
Consultant: Aquafor Beech Limited
Prepared by: Aquafor Beech Limited (Tim Koen)

Invitees

Name	Company	Telephone	Email
Abdullah Hossain (AH)	City	905.477.7000 ext.2628	AHossain2@markham.ca
Imitiaz Shah (IS)	City	905.477.5530	IShah@markham.ca
Rob Amos (RA)	Aquafor Beech	416.705.2367	Amos.R@aquaforbeech.com
Tim Koen (TK)	Aquafor Beech	416.797.6570	koen.t@aquaforbeech.com
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Elyse Dickson (ED)	TRCA	416.661.6600	Elyse.Dickson@trca.ca
Harsha Gammipila (HG)	TRCA	416.661.6600	Harsha.Gammanpila@trca.ca
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Harsimrat Truthi (HT)	TRCA	416.661.6600	Harsimrat.Pruthi@trca.ca
Michelle Howorth (MH)	TRCA	416.661.6600	Michelle.Bates@trca.ca
Don Ford	TRCA	416.661.6600	Don.Ford@trca.ca
Suzanne Bevan	TRCA	416.661.6600	Suzanne.Bevan@trca.ca

Objective of Meeting: Hydraulic Modelling Review of Flood Mitigation Options

Items of Discussion

1. Introductions
2. MIKE Model – TRCA MIKE Hydro vs MIKE+
3. Existing Conditions – MIKE 21 vs MIKE +
4. EA Alternatives Review

Minutes / Notes			
	Topic/Comments	Action By:	Deliverable Date
1	Introduction and Objectives: (TK) Mount Joy Creek Flood Mitigation study is a Municipal class EA schedule B study. The objective of the EA study is to propose flood mitigation alternatives that reduce frequent tableland flooding of the properties adjoining the creek corridor and must be sufficient to facilitate the future development ambition for the area.		
2	MIKE Model – TRCA MIKE Hydro vs MIKE+ (TK) - addresses that the TRCA completed a floodplain report in July 2022 (Slide 13 – Hydrology & Existing Flooding Conditions). New software is available from DHI (MIKE+), discussed advantages and disadvantages of software		
3	Existing Conditions – MIKE 21 vs MIKE+ (TK) – described limits of model and existing drainage corridor (TK) – Aquafor has been able to successfully import 2022 TRCA MIKE model into MIKE+. Ran model in MIKE+, only noted minor differences between the two software.		
4	4. EA Alternatives Review/Status of EA (TK) – provided an overview of the proposed alternatives. (TK) – Described issues with Alternative #4. (IS) brings up that an ex-councilor has expressed at the PIC that this alternative is not wanted for safety concerns and other reasons. Relocated a flood hazard is not preferred, especially near a railway corridor (TK) continues with Alt 6 as it is similar to Alt 4. Explains that it can convey flows, though did not score well socially. (TK) – Alternative #7 identified as the preferred alternative. (TK) – Alternatives Evaluation Matrix presented and reviewed (SB) - what is the status of this file? What is the status of the EA? (IS) – 2nd PIC is September 10 th ; (EW) - brought to everyone's attention at the time that there was approval from Metrolinx that the channel could be moved closer to the Metrolinx property. (IS) yes it was discussed with Metrolinx, the 2nd consultation process found that there were additional issues and obstructions that it was not feasible and it was political and social pressure to not progress this method. (AH) EW is correct, Metrolinx		

will allow this, though we would have to meet a standards and criteria which was found as an additional difficulty.

(MH) was involved with the secondary plan process and can confirm that, this alternative was set as the preferred alignment, though understands that this is no longer the case. Will have to take note of this so that more planning is done to assure the next secondary plan will help progress the design. This is an area that needs to progress with development. (IS) – just how the planning process unfolds, understand that this is an area that needs to move forward with development

(EW) – not too certain on the differences between alternatives, all information is very technical. (TK) provided additional overview on specific differences.

(ED) – question – note of upgrading to a newer version of MIKE, TRCA will have to review and see if the results match before accepting the results.

(TK) – there is a small area at the D/S end that has about a cm or 2 of difference

(ED) – will review velocity and depth results, will need these comparisons in figures too. (TK) Aquafor to provide

(ED) – have seen some success in modeling these culvert systems, though modeling as closed sections instead of culverts. Don't know if TK has looked at this or not. ED addressed that this model is overly conservative. (TK) mentioned that there will be another technical discussion to discuss the advantages and disadvantages of this methodology, willing to have a more in-depth discussion with ED offline

(SB) – Wondering if all of the other stakeholders are supportive of this preferred? (TK) – as of right now yes, City is yes, TRCA is first external agency to be informed of this

(SB) – are landowners supportive? (TK) – will get landowners feedback following the PIC September 10th

(SB) – if the TRCA can't support this preferred, would Aquafor go back to public and stakeholders (TK) – depend on what specifically the issues were, though if had to change alternatives for whatever reasons would require additional discussion. (IS) – agree with TK, majority of the stakeholders agree on the preferred alt. Also aligns with another class EA for Anderson Rd

(SB) – would be important to have the issues clearly stated from the stakeholders for the other alternatives. (EW) – preferred solution that

we're seeing now is very different than the previous one, need a strong justification to why things have changed. (TK) – make sure that the justification is there

(TK) – any comments before going into PIC? (EW) – will provide more technical discussion at a later day, no further comments at this time

(IS) – is anyone from TRCA to attend in person for the PIC#2? (EW) TRCA typically does not attend PIC's

(TK) – thanks for attending

(TK)– to forward presentation. Modelling files will still get worked on but will be sent to the TRCA along with the report on a later date

Next Meeting: To be determined

Date: to be determined

If you notice any errors or omissions in this document,
please advise Tim Koen within seven days of the issuance of these minutes.

City of Markham

Mount Joy Creek Flood Mitigation EA Study

TRCA Comments Review Meeting

Aquafor Project No.: 67657
Meeting No.: Meeting 9
Date/Time: February 4th, 2026 – 10am – 11am
Location: Microsoft Teams
Procurement No. PD 24259
Consultant: Aquafor Beech Limited
Prepared by: Aquafor Beech Limited (Michael Baldaro)

Invitees

Name	Company	Telephone	Email
Abdullah Hossain (AH)	City	905.477.7000 ext.2628	ahossain2@markham.ca
Imitiaz Shah (IS)	City	905.477.5530	IShah@markham.ca
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Jamie Milnes (JM)	TRCA	416.661.6600	Jamie.Milnes@trca.ca

Objective of Meeting: Project File TRCA Comments Review

Items of Discussion

1. Introductions
2. MIKE Software version
3. Public Information Centre Feedback
4. TRCA Comments – Evaluation Scoring
5. TRCA Comments – Status of Secondary Plan
6. TRCA Comments – Additional Flow Scenario
7. Closing Remarks

1. Introductions and Meeting Overview

- All meeting attendees provided a brief introduction that described what organization they were with and their role in the Mount Joy Creek Flood Mitigation Environmental Assessment (EA).
- (RA) – summarized Aquafor Beech Limited (Aquafor) received comments on the November 24th, 2025 Project File (the Project File) from the Toronto and Region Conservation Authority (TRCA) and that the purpose of this meeting is to review some of these comment with the TRCA and City of Markham (the City).
- (RA) – stated that Aquafor will be taking meeting minutes and will share these minutes with both the City and the TRCA.

2. MIKE Software Version

- (TK) – began to share PowerPoint slides from the project's second Public Information Centre (PIC) held on September 10th, 2025 (the second PIC).
- (TK) – provided a general summary for all eight (8) alternatives and stated that Aquafor's intentions are to improve conveyance for the Regional storm event and overall reduce the floodplain with the Study Area.
- (TK) – also addressed that the completed modelling was done using the MIKE+ software, though states that the software consulting company, DHI no longer supports the older versions of the MIKE modeling platforms.
- (TK) – continued to explain that the original modeling work that the TRCA completed for this area and provided to Aquafor to use for their modeling base was completed using the older version of the MIKE software.
- (TK) – noted that when a conversion from the old software to the new software was completed there can be some notable differences in flood elevations. However, Aquafor found that for this Study Area results were found to be similar.

3. Public Information Centre Feedback

- (TK) – then shared that two (2) PICs have been held for this project which allowed for Aquafor and the City to receive valuable feedback from project stakeholders that included the Islamic Centre of Markham located at 1330 Castlemore Avenue in the City (the Islamic Centre) and Metrolinx.
- (TK) – shared that the Islamic Centre has expressed at both PICs that they do not want an open channel adjacent to their property as they believe that it will pose as a safety concern for the children that play on their lot. As well, the Islamic Centre was very supportive of Alternative 7 – Culvert Enlargement.
- (TK) – then shared that Metrolinx only attended the second PIC and expressed that they are not supportive of moving the floodplain towards the railway corridor.
- (TK) – explained that using this feedback received from both PICs, the alternatives' evaluation matrix was further revised.

4. TRCA Comments – Evaluation Scoring

- (TK) – addressed a TRCA comment that stated that there is a flow difference between the provided Valdor Engineering Inc (Valdor) report and the TRCA general comment.
- (TK) – continued to explain that this is considered to be a low flow value that can be contained through a storm sewer or channel and would allow for all alternatives to be able to provide peak flow conveyance. Therefore, from a flood risk perspective, factors such as erosion and the ability for infrastructure to be clogged would provide a difference in scoring for their respective categories.
- (ED) – expressed that the TRCA understands that the alternatives will convey regional flow, though through the TRCA's perspective, the flood risk for all of the alternatives are similar. No difference is seen between the enclosed and open channel and the TRCA does not understand why some alternatives are shown to score higher in this category.
- (JM) – added that the flood risk is best managed with the open channel alternative, reasoning for stating otherwise needs to be clearly stated.
- (IS) – Aquafor can change the scoring though the final outcome of what the preferred alternative is will likely not change as the open channel scored lower due to it requiring land acquisition and public safety concern.
- (RA) – Also added that some of the reasons why the open channel received a lower score as it was altering the flood hazard towards the Metrolinx corridor. Though Aquafor will clearly provide additional explanation on their reasonings for these weightings in the updated report.

5. TRCA Comments – Status of Secondary Plan

- (HR) – questioned if the Secondary Plan referenced in the project file was interpreted as an approved document?
- (IS) – shared that this EA process and the Secondary Plan for this area are being completed in a parallel process. This project can reference the Secondary Plan, though cannot go into details discussing its contents as they are not yet finalized.
- (AH) – added that the Secondary Plan and EA will both provide the same recommendations for this Study Area.
- (IS) – shared that the report can be updated to reflect the current status of the Secondary Plan.

6. TRCA Comments – Additional Flow Scenario

- (TK) – addressed the TRCA comment that discusses the Valdor modeling completed for this Study Area.
- (TK) – explained that the Valdor model provided was used a base model for Aquafor's alternative assessment.
- (ED) – expressed that the TRCA does not have concerns with Aquafor using the Valdor model as their base model and that the TRCA's comment mainly was a request for Aquafor to use a more conservative set of flows using SCS storms.
- (ED) – added that this should not affect the pipe sizing of alternatives and that the Valdor model is a model that the TRCA has accepted in the past, though it is not listed as a TRCA approved model.
- (IS) – asked what are the watershed criteria for this study?
- (RA) – responded that the regulatory flow is the governing flow and is what is currently used for the alternative assessment and added that Aquafor can run an additional flow scenario using SCS storms. The additional flow scenario is referred as the "City Design Storm"
- (RA) – added that the conveyance of the preferred alternative will also be confirmed with this new flow scenario.
- (JM) – the TRCA can support the proposed recommendations of the EA based on the revised evaluation scoring and demonstration of safe Regulatory and City Design Storm conveyance.

7. Closing Remarks

- (TK) – addressed that Aquafor does not have any concerns with the remaining comments and that Aquafor will address them in the updated Project File.
- (RA) – added that Aquafor is **also** currently working with the City through First Nation consultation.
- (HG) – added that at this stage the TRCA is okay with land authorization.
- (IS) – thanked everyone for their input and asked if the TRCA can stay to answer a question.

Action Items:

- **Aquafor:** Aquafor will provide the City and the TRCA with the Meeting Minutes for the February 4th, 2026 meeting.
- **Aquafor:** Aquafor will **clearly** provide additional **explanation** on the reasonings for their scorings in the Project File's evaluation of alternatives section.
- **Aquafor & City:** Aquafor to work with the City to **clearly** state the status of the Secondary Plan and its relations to this EA study in the Project File report.
- **Aquafor:** Run an additional **flow** scenario for the hydraulic assessment using SCS storms. Confirm that the preferred alternative can convey this new **flow** SCS **flow** scenario.

Next Meeting: To be determined

Date: to be determined

If you notice any errors or omissions in this document,
please advise Michael Baldaro within seven days of the issuance of these minutes.