



Date: March 25, 2013

File: P26SB 007

Subject: Status Report: Downtown Flood Plain Studies:
Downtown Brampton Special Policy Area Comprehensive Flood Risk and
Management Analysis and Downtown Etobicoke Creek Revitalization
Study

Contact: Janice Given, Manager, Growth Management and Special Policy (905-
874-3459) and Alex Taranu, Manager, Architectural Design Services (905-
874-3454)

COMMITTEE OF COUNCIL

DATE: April 3, 2013

Overview:

- In August, 2011, the City of Brampton submitted the *Downtown Brampton Special Policy Area Comprehensive Flood Risk and Management Analysis* to the Ministry of Municipal Affairs and Housing to modify the existing Special Policy Area (SPA) policies within the Downtown Brampton Special Policy Area (SPA) ;
- Staff has proactively pursued receipt of a response from MNR and MMAH on this submission;
- Late in 2012, TRCA completed its hydrology study and updated floodline mapping for the downtown portion of the Etobicoke Creek as an essential part of the comprehensive analysis;
- Brampton staff provided the Province with an addendum to the Submission in March 2013, containing the 2012 floodline information and final supporting material;
- A written response from the Province on the requested changes to the Special Policy Area is expected before the summer of 2013;
- In 2011 the City of Brampton and TRCA staff also initiated a joint study process to assess the feasibility of permanently eliminating the flooding in the City's downtown in the future: *Downtown Etobicoke Creek Revitalization Study*
- The *Downtown Etobicoke Creek Revitalization Study* consists of 2 related studies
 - TRCA is leading the *Downtown Brampton Flood Protection Feasibility Study* prepared by AMEC; an initial list of potential mitigation options has been submitted for further consideration;
 - The *Urban Design and Land Use Study* led by the City was awarded to The Planning Partnership who has prepared a background report identifying preliminary issues and opportunities;
- A public consultation session will be scheduled for Spring 2013 for the joint *Downtown Etobicoke Creek Revitalization Study*; and,
- The results of the joint *Downtown Etobicoke Creek Revitalization Study* are expected to be brought before Council in the fall of 2013.

Recommendations:

1. **THAT** the Planning Report from Janice Given, Manager, Growth Management and Special Policy dated March 25, 2013 to the Committee of Council meeting of April 3, 2013 re: Status Report: Downtown Flood Plain Studies: Downtown Brampton Special Policy Area Comprehensive Flood Risk and Management Analysis and Downtown Etobicoke Creek Revitalization Study, be received;
2. **THAT** staff report back to Council on the potential flood mitigation options prior to the public consultation taking place in Spring 2013.
3. **THAT** this report be forwarded to TRCA and the Region of Peel for information.

Background:

The historic commercial core of Downtown Brampton lies within the floodplain of the Etobicoke Creek under certain flood events. In 1986, the Ministers of Natural Resources and Municipal Affairs and Housing approved a Special Policy Area (SPA) covering a portion of the floodplain in Brampton's downtown. The Provincial Policy Statement prohibits development within a floodway (of a regional storm event) except where an SPA has been approved by the Province. An SPA is an area within a community that historically existed in the floodplain. The purpose of establishing SPAs is to address the "significant social and economic hardships to the community that would result in strict adherence to the provincial policies". It was under these auspices that Brampton's SPA was first approved and under which the proposed updates to the policies are being sought.

Downtown Secondary Plan (SP 7) has policies in place that govern development within the floodplain (Special Policy Area 3 (SPA 3)). Since 2004, there have been 3 applications for high density residential development within the floodplain of the Etobicoke Creek in Downtown Brampton. These applications were approved in principle by the City of Brampton subject to meeting the technical floodplain requirements of the TRCA under SPA 3. Of these, only the Alterra development proposal on George Street was allowed to proceed by the Province, given the ability of this site to provide a safe means of access to lands above the regional storm elevation. In response to the applications, the Province requested that a comprehensive analysis and Amendment to the SPA policies be undertaken to address all of the growth across the SPA.

One of the applications that have been awaiting the resolution of the comprehensive study is for a 17 storey mixed use development at the northeast corner of Main and Nelson Streets (C01E06.051-Weston Consulting for 404048 Ontario Ltd.) This

application was appealed to the Ontario Municipal Board in September 2012 by the owners for lack of decision. An OMB prehearing conference was held March 22, 2013.

In January, 2011, staff brought forward a report to Council that contained the strategy to provide a clear policy planning framework for development within the Downtown Secondary Plan 7 that would allow development within the Special Policy Area subject to appropriate risk management, mitigation and flood-proofing measures. The report contained the proposed draft Official Plan Amendment and Zoning By-law to amend Special Policy Area 3 to achieve the City's objectives. It also set out the various Technical and Land Use Planning submissions that would have to be provided in accordance with the Province's requirements for modifying a Special Policy Area.

Arising from the January, 2011 report, Brampton Council directed staff to:

- Make a formal submission to the Ministry of Municipal Affairs and Housing to amend the Special Policy Area, including further consultation with TRCA and the Province;
- Complete the required planning process for the proposed Official Plan and Zoning By-law and Main Street North Development Permit System;
- Work with TRCA and the Province on a combined strategy to resolve the flooding for the regional storm event, including the pursuit of a landform feature option;
- Seek funding to implement the multi-government initiative as modeled by the Donlands project;
- Secure the updated floodline mapping from TRCA.

Refer to Appendix 1 for the full resolution arising from the January 31, 2011 meeting.

The purpose of this report is to:

- a) Provide a status update on the submission to the Province for changes to the SPA
- b) Characterize the updated TRCA hydrology and floodlines for the downtown
- c) Outline the objectives and status of a joint TRCA/City feasibility study to address permanent solutions to flooding.

Current Situation:

This section describes the scope and current status of each of three studies underway to address the downtown flooding issue:

- *Downtown Special Policy Area Comprehensive Flood Risk and Management Analysis*

- *Downtown Etobicoke Creek Revitalization Study*, consisting of the following 2 studies:
 - *Downtown Brampton Flood Protection Feasibility Study(TRCA)*
 - *Urban Design and Land Use Study(Brampton)*

Downtown Special Policy Area Comprehensive Flood Risk and Management Analysis

The City of Brampton *Comprehensive Flood Risk and Management Analysis (2011)* provides a comprehensive analysis and broad framework for future development within Brampton's downtown SPA. It was formally submitted to the Province in July 2011 for approval in accordance with the Ministry of Natural Resources' "Procedures for Approval of New Special Policy Areas (SPAs) and Modifications to Existing SPAs under the Provincial Policy Statement, 2005 (PPS, 2005), Policy 3.1.3-Natural Hazards-Special Policy Areas", (January 2009) Appendix 5 to the River and Stream Systems: Flooding Hazard Limit.

The goals of the comprehensive SPA submission are to:

- Update the technical data related to flood risk based on the updated hydrological model;
- Provide clarity within the policy framework and enable appropriate revitalization and redevelopment of the historic downtown to ensure its long term health and vitality.
- Clearly establish the location, nature and extent of development that is permitted and any related requirements with respect to mitigating risk.
- Create a policy framework that provides a common understanding among all stakeholders of development opportunities and requirements in the area.
- Provide greater certainty on planning outcomes as they pertain to the ability to satisfy requirements related to development within the floodplain; remove the need for Provincial approval of rezoning applications.
- Recognize the long term objective of eliminating flood risks in Downtown Brampton to the Regional Storm event.

Since the formal submission to the Province in July 2011, staff has proactively advanced the Official Plan Amendment and review of the submission by explaining and presenting the strategy and Official Plan Amendment to the Provincial staff. In this regard, the following key events have taken place:

November 2011	Held a Statutory Public Meeting on the Official Plan Amendment
January 2012	Brampton staff presentation of SPA submission to MNR and MMAH staff – Aurora MNR offices
March and June 2012	Addenda of Additional Supporting Information
July 2012	Brampton staff hosted meeting of MNR and MMAH and TRCA staff to seek feedback from Provincial staff
December 2012	Receipt of revised floodlines from TRCA
February 2013	TRCA consultation with MNR staff on new technical information
March 2013	Submission of updates to the 2011 Submission to the Ministry of Municipal Affairs, for final review and approval

There were 3 primary reasons for the March 2013 update on the Submission:

1. Updated TRCA hydrology/floodline data
2. Additional risk management technical rationale
3. Clarity on distribution of growth

2012 TRCA Etobicoke Creek Floodlines

In 2006, Aquafor Beech Ltd. undertook a Downtown Drainage Study Flood Risk Assessment on behalf of the City of Brampton. The study included an analysis of flood characteristics (based on draft 2007 hydrology) and flood proofing alternatives. The study also provided flood damage cost estimates and evaluated potential flood relief alternatives.

A fundamental element of the Comprehensive Flood Risk and Management Analysis was to update the boundaries of the SPA based upon current floodplain mapping. In 2012, TRCA completed official updates to the hydrology, hydraulics and regulatory floodline mapping. These products supersede the results of the 2006 Aquafor Beech

study. Significant technical improvements were made to the products, resulting in a more accurate and detailed characterization of flood risk in the SPA. The 2012 flood risk information (including the delineation of a new regulatory floodline) resulted in the following positive impacts to the SPA:

- The updated SPA boundary maintains the original intent of the approved SPA: to maintain the continued viability of the historical downtown core that would otherwise be limited by other flood plain management approach. Appendix 2 shows the comparison between the two SPA areas. Based on the new regulatory floodline, the new SPA would be approximately 5 hectares (12.4 acres) smaller than the existing SPA.

The existing Special Policy Area requires that structures be floodproofed to the Regional storm flood level; however, where it is not feasible to floodproof buildings to the Regional storm, the minimum level of protection is the 1:350 year storm event. Although the Brampton by-pass channel was originally sized to only convey the 100 year storm, current modelling shows that the channel can actually pass flows up to and including the 1:350 year storm. This means that the downtown core is not affected by flooding from the Etobicoke Creek in all events up to and including the 1:350 year storm event and that minimum floodproofing requirements can be met within the SPA.

- The new modelling shows that the majority of the SPA area will experience 1-2 metres depth of flooding during a Regional storm while shallow areas will exist at the outer boundaries. Previous hydraulic models (based on 2007 hydrology) showed much greater depths of flooding (up to the 4-5 metres (13-16.5 feet) range) and the model updates have resulted in a significant decrease in flood depths in the area.

The 2012 floodlines, flood depths and velocities formed a critical part of the March 2013 submission package to the Province, as the basis for the determination of risk to life and property arising from the proposed land use. The 2012 Flood Depth and Flood Velocity maps are shown in Appendices 3 and 4 respectively.

Risk Management

The City was required to compare the impact of flood flows under the permissions of OPA 58 (when the original SPA was approved in 1986), and the proposed Secondary Plan Amendment. The findings of this analysis showed either “no change” or very “minor” changes. The TRCA concluded that increases to flows in subsequent hydrology updates would be negligible.

Also required in the addendum was an assessment of flood damage costs, an estimate of the cost of damage to property in a storm event. This was undertaken using the MNR, "Flood Damage Estimation Guide (2007)" as a basis. This assessment showed that for the full proposed development scenario, there was no substantial increase over the estimates provided by Aquafor Beech (which were calculated on the existing built form only) primarily due to reduced flood depths in the 2012 floodline data.

Growth Distribution

The Province required additional supporting rationale for the projected growth in the SPA given that SPAs are not generally intended for intensification. The Comprehensive Flood Risk and Management Analysis does not increase intensification above what is already permitted by Secondary Plan 7; it introduces policies that more strategically refine the distribution of growth to reduce risk and fulfill the City's vision for residential and job growth contributing to a vibrant downtown.

It focuses on a strategic redistribution of growth along the edge of the floodplain, where safe ingress/egress to flood-free lands is available and establishes maximum massing, gross floor area and residential units in proposed Special Policy Area 3A (refer to Proposed Official Plan Amendment in 2011 Submission) to provide certainty and manage risk.

There are a number of reasons why revitalization within a small portion of Brampton's SPA is appropriate and essential and satisfies the requirements of the Provincial Policy Statement:

- The focus area of growth is in the "heart" of the City's historic core where cultural, civic, commercial and residential uses historically established within the floodplain of the Etobicoke Creek before the Provincial Policies were introduced;
- The Province identified downtown Brampton as an Urban Growth Centre in Places to Grow-Urban Growth Centres are intended to accommodate significant growth. A small but significant area of the Urban Growth Centre is affected by the Special Policy Area. Growth in the SPA portion of the UGC will serve as the catalyst for development in the balance parts of the UGC; it is not feasible to only direct growth outside of the floodplain, which will accommodate significant growth but cannot replace the more valuable role that growth plays in the Downtown, including parts of the SPA. Without growth in the SPA, the balance of the UGC is not likely to succeed in attracting the development needed to achieve the Provincial and municipal Growth Plan targets and objectives for intensification (at least 200 persons plus jobs/hectare);

- Maximizing the return on financial investment within the core;
- Maximizing use of existing infrastructure; and,
- The overall effect of the Submission is to reduce risk.

Brampton staff has worked closely with TRCA staff to ensure the accuracy of the technical information and their support for the proposed planning approach. The *Comprehensive Flood Risk and Management Analysis (2011)*, as amended in March 2013, satisfies the Provincial requirements for modification to a Special Policy Area by incorporating prevention, protection and emergency response measures. It is consistent with the Natural Hazard: Floodplain Management Guidelines, Provincial Policy Statement, Places to Grow, The BIG MOVE and all other applicable Provincial policies and directions. It achieves the City's vision for the revitalization and redevelopment of the historic downtown to ensure its long-term health and vitality while appropriately mitigating flood risks. Appendix 5 includes the updated Executive Summary of the Analysis recently sent to the Province.

Next Steps/Timing

In accordance with the Provincial procedures, approval by both the Ministers of Municipal Affairs and Housing and Natural Resources is required on the submission. MMAH will provide a letter to the City advising of whether the modification has been approved. If the Province supports the modification, the City may then formally adopt the Official Plan Amendment and pass the implementing Zoning under the standard Planning Act procedures.

Based on discussions with the Provincial staff, it is anticipated that the Provincial position on the proposed amendment will be known before the summer of 2013.

Downtown Etobicoke Creek Revitalization Study

Following the direction from Council, City of Brampton and TRCA staff initiated a joint study process to examine the feasibility of a long term, permanent solution to the natural hazard issues in the downtown core. Two concurrent studies were initiated: (i) a TRCA-led study to assess the feasibility of eliminating the flooding in the City's downtown (funded by Peel Region under the Peel Flood Remediation program), and (ii) City led study to examine urban design considerations and land use options related to the technical solutions. A joint study committee (consisting of both project teams) has been a successful collaboration between the City and TRCA and has allowed for the sharing

of data, alignment of study objectives and the integration of technical/design/land use elements.

An overall schedule for this initial joint study, including project integration points was established where the teams will be working together to further refine the potential flood mitigation options to reflect urban design and land use considerations (Spring 2013). The project schedule and integration points are shown conceptually in Appendix 7. This report provides an update on the progress of the two studies to date.

a) Downtown Brampton Flood Protection Feasibility Study (AMEC)

In September 2012, TRCA awarded AMEC Environment and Infrastructure (AMEC) the “Downtown Brampton Flood Protection Feasibility Study”, a technical feasibility study to identify mitigation options to eliminate or reduce the risks due to flooding on the main branch of the Etobicoke Creek through the SPA. The study is focusing on the mitigation of flood risk during the Regulatory Storm (Hurricane Hazel storm), or to the greatest level practical.

The results of the feasibility study will: (1) identify potential flood mitigation options for the Regional Storm event (both “permanent” and “non-permanent” as defined by the Ministry of Natural Resources), and (2) provide a recommendation as to whether or not an Environmental Assessment should be undertaken to advance the flood protection plans toward implementation.

Project objectives are as follows:

1. Consolidate and prepare background analysis of previous efforts to mitigate flood risk on Etobicoke Creek.
2. Identify principles and vision guiding the selection of flood mitigation options
3. Evaluate the potential fiscal impact of flooding on the Urban Growth Centre
4. Select optimal flood mitigation options from a technical perspective.
5. Make recommendations for next steps (i.e., recommend whether or not to proceed with an Environmental Assessment and if so, define the scope of this work)

Flood Risk within the Downtown Brampton SPA

The analyses of flood risk are based on the technical updates for the Etobicoke Creek listed below. These studies were finalized, peer reviewed and approved by Toronto and Region Conservation Authority in 2012. The methodology for preparing hydrologic/hydraulic models and the specifications for regulatory mapping are prescribed by the Ministry of Natural Resources (Technical Guide – River and Stream Systems: Flooding Hazard Limit, 2002).

Technical Studies for Etobicoke Creek:

- Etobicoke Creek Hydrology Study, MMM 2012
- Etobicoke Creek Hydraulic Model, Greck 2012
- Etobicoke Creek Floodline Mapping, Greck 2012

Although the Brampton by-pass channel was originally sized to only convey the 100 year storm, current modelling shows that the channel can actually pass flows up to and including the 1:350 year storm. However, a significant portion of flow will still leave the by-pass channel and find a conveyance route through the historic river valley during a regional storm event; almost an equal amount of water will be conveyed through the historic river valley as will be conveyed down the by-pass channel.

Modelling also shows that flood depths during a regional storm will range from 0-3 metres (up to 10 feet) within the SPA, with the areas of greatest depth just upstream of the CNR tracks and along the western boundary of the SPA north of Queen Street. The majority of the SPA area will experience 1-2 metre (3 -6.5 foot) depth of flooding near the lowest part of the river valley (through the centre of the valley), while shallow areas will exist at the outer boundaries. See Appendices 3 and 4 for an illustration of flood depths and velocities.

Preliminary Findings

The goal of the Flood Protection Feasibility Study is to examine options to reduce and/or eliminate the Regional storm event flood, or in other words, to prevent as much water from spilling out of the by-pass channel as possible. Potential solutions are classified as “permanent” (the mitigation option will not fail) or “non-permanent” (the mitigation option is subject to failure). One of the Conservation Authority’s mandates is to protect the public from loss of life or property due to flooding. Functionally, this can be achieved with either permanent or non-permanent flood mitigation options. However, an important distinction is made whereby only permanent mitigation approaches are acceptable under Provincial Policy to address the land use planning requirements for development. Examples of non-permanent flood protection include: berms, dykes, flood walls, dams, stormwater management facilities etc.

AMEC have completed the first two tasks (of four) in the project workplan which include: Task 1 – characterization of the flood risk; and Task 2 – assessment of flood mitigation options. The study evaluated the following general alternatives to mitigate the flood condition and risk in Downtown Brampton:

Alternative 'A': Conveyance Improvements

1. Church Street Flood Berm
2. Rosalea Park Flood Berm
3. Combined Flood Protection Landform (permanent)
4. Bridge Improvements (permanent)
5. Lower By-pass Channel (permanent)
6. Widen By-pass Channel (permanent)
7. Downstream Channel Improvements (permanent)

Alternative 'B': Flood Control

8. Online Dam(s)
9. Offline Stormwater Management (multiple ponds upstream of Brampton)
10. Offline Stormwater Management (storage tank)

Alternative 'C': Diversion

11. Creating a second by-pass channel (permanent)

Alternative 'D': Floodproofing

12. Floodproofing individual buildings

Alternative 'E': Land Acquisition

Alternative 'F': Combinations of the above

All of the options listed above have undergone a preliminary assessment based on their potential to reduce flood levels (based on hydraulics/technical merit only). Those that were found to provide a reduction in flood levels were selected to be carried forward for further study; those that provided little flood benefit were "screened out" and will not be studied further. The alternatives were assessed independently and in combination. Note, potential mitigation options could be located anywhere upstream of the flooded area within the Etobicoke Creek watershed (i.e. may include land north of the City of Brampton). The analysis of flood reduction potential considered the follow criteria:

Functional flood reduction – reduction of flood risk to existing properties using non-permanent and/or permanent structures;

Regulatory (policy) flood reduction – reduction of flood risk to existing properties, with benefits for future development, using permanent structures;

Relative economic outlay - magnitude of costs associated with the construction of each mitigation option (note: a detailed cost analysis was not performed at this stage however will be conducted for the short-listed options);

Frequency of flood risk - assessment of the protection provided by each mitigation option (e.g., protection to the 350 year storm event, Regional storm event etc.);

Depth of flooding - potential reduction in the depth of flood for each mitigation option within the SPA;

Upstream flood impacts – assessment of the implications of the proposed mitigation options on upstream properties (under Provincial legislation, no flood mitigation may impact the flood risk on other properties, therefore any proposed solutions would need to also mitigate upstream impacts).

Overall results show that improvements to **channel conveyance (A)** will provide the most benefit. An interesting finding of the study is that **flood control (B)** options upstream of Brampton provide very little benefit, and were therefore screened out from further study. Two options, a second **diversion (C)** channel and an offline storage tank, were considered to be not feasible and were therefore screened out from further study.

Flood proofing (D) and **Land Acquisition (E)** provide localized benefits (at individual properties) and have more implications to urban design and land use. They do not contribute significantly to the overall flood reduction potential for the SPA. These options will be explored further during the concurrent study integration process.

A more detailed report on the preliminary findings of the feasibility study showing the potential alternatives will be brought to Committee in May for direction prior to the public workshop.

Next Steps

Task 3 marks the beginning of the integration phase of the concurrent studies. AMEC will work with The Planning Partnership team (along with City and TRCA staff) to modify the configuration of the flood mitigation options based on the urban design and land use requirements identified through the work of the concurrent study. This would include consideration of a pedestrian walkway, and options for integrating flood mitigation schemes that are multi-functional into public spaces.

Task 4 involves the completion of the final report (lead by the City's project team) along with recommendations for future work, which may include an environmental assessment of the short-listed options to determine the preferred alternative.

b) Urban Design and Land Use Study (The Planning Partnership)

This study will analyze and refine the recommendations from the AMEC study for flood mitigation. Based on these technical conclusions, the consultant will develop design options that integrate Etobicoke Creek and the trail system, the identified open space features, and the existing character and vision for downtown Brampton.

K5-13

Ultimately, the land use considerations, urban design best practices, and existing policy at municipal, regional and provincial levels will inform the vision for flood mitigation in Downtown Brampton. This study area primarily encompasses the area of interface between Etobicoke Creek and the Downtown (see Appendix 6).

The Etobicoke Creek and Rosalea Park provide opportunities for the City to enhance public space and connect residents to important natural features. Rosalea Park is one of the only large green spaces in downtown and a cornerstone of the City's vision to host major public events through an enhanced network of public spaces.

This project will be used to:

- (1) refine the potential technical solutions to flooding in Regional Storm events, and
- (2) develop a detailed master plan and preferred options for the creek-side public realm of Rosalea Park and its vicinity that will guide future implementation plans and Environmental Assessments.

The objectives of this project are to:

- Consolidate and prepare background analysis of existing City urban design and planning policies for the Etobicoke Creek area and overland flooding through Downtown;
- Articulate principles and vision guiding urban design and land use around the study area;
- Identify principles for the design of passive creek-side recreational connections (ie, trails, riverwalk) ;
- Identify and evaluate potential urban design solutions that serve flood mitigation and public realm/urban design goals;
- Integrate short-listed flood mitigation strategies provided by TRCA into proposed urban design solutions; and
- Evaluate and select optimal flood mitigation solutions from an urban design perspective as a first step in conducting detailed for further EA and future design work.

Following an RFP process, the Urban Design and Land Use Study was awarded to The Planning Partnership in February 2012. To date, the consultant has completed a site tour and evaluation and has prepared background material identifying preliminary issues and opportunities (see Appendix 7).

K5-14

These photos show some of the urban design features that may be integrated with watercourse treatments, including flood control:



Ljubljana, Slovenia

San Diego, USA

Public engagement opportunities for both the TRCA and City studies will be scheduled in the Spring 2013 (as generally shown in Appendix 8). Following the inter-dependant completion of both studies, the potential alternatives to address the long term solution will be considered by City Council in the fall of 2013. It is important to understand that this is the first of such studies to examine the feasibility of and opportunities created by a permanent solution to the flood hazard. More studies, including an Environmental Assessment would be necessary before any implementation may be considered.

Ken Whillans Environmental Assessment

One of the flooding relief alternatives identified through the 2006 Aquafor Beech study was the construction of a berm at Church Street and Ken Whillans Drive to provide protection for the 350 year storm by containing flood waters within the by-pass channel. This was further tested and modeled and an opportunity through the Ken Whillans Environmental Assessment (EA). The purpose of the EA is to determine the need and road alignment for an extension of Ken Whillans Drive. Because the roadway runs parallel (and adjacent) to Etobicoke Creek within the SPA, and has the potential to be impacted by possible flood mitigation options, the EA was expanded to include an assessment of flood mitigation options for the 350 year storm that could be constructed along with the roadway.

The previous hydraulic model found that the berm would contain the 350 year storm but that the regulatory storm would still overtop the berm. Provincial guidelines state that any flood control structure that is overtopped is subject to structural failure and is therefore not considered to be permanent flood protection. Accordingly, the berm could not be considered as a solution to containing the regulatory flood.

The EA is currently on hold pending the discussion of the short list of options from the TRCA Downtown Brampton Flood Protection Feasibility Study. Although a berm option may or may not provide adequate regional storm flood control, it could provide additional flood mitigation that could be included as part of the Ken Whillans Drive extension if it is determined to be part of the recommended solution from the Flood Mitigation Study.

Corporate Implications:

Resolving the issue of development within the Special Policy Area is of high significance and importance to the City. Realization of the City's vision for accommodating growth in a vibrant and healthy downtown community in accordance with the Provincial Policy direction is a vital component of economic growth and prosperity. The City, the Province and private landowners have all made substantial financial investments in buildings, civic facilities transit and other infrastructure to accommodate growth.

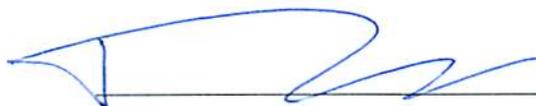
Conclusion:

Brampton has undertaken extensive visioning and planning exercises in preparation for accommodating considerable future growth in the downtown, in recognition of the City's Urban Growth Centre designation. The successful conclusion of the Downtown Brampton Special Policy Area Comprehensive Flood Risk and Management Analysis marked by approval by the Province will signal a new planning regime for downtown Brampton in which economic growth and development will mark the City as a major urban centre with a healthy and vital core.

As Council continues to focus its attention over future years on the opportunities afforded the downtown by the Etobicoke Creek, through the Downtown Etobicoke Creek Revitalization Study and other studies, the full potential of the downtown as a thriving place for people will be realized.



Henrik Zbogor, MCIP, RPP
Acting Director,
Planning Policy and Growth
Management



Dan Kraszewski, MCIP, RPP
Acting Commissioner
Planning, Design and Development

Authored by: Janice Given, MCIP, RPP, Manager, Growth Management and Special Policy and Laurian Farrell, Senior Manager, Flood Risk Management and Infrastructure, TRCA

Appendices:

Appendix 1-Minutes of PDD January 31, 2011

Appendix 2-Comparison Between Existing SPA and Proposed SPA

Appendix 3-2012 TRCA Floodlines-Depth of Flooding

Appendix 4-2012 TRCA Floodlines-Flood Velocity

Appendix 5-Executive Summary-Downtown Brampton Special Policy Area
Comprehensive Flood Risk and Management Analysis

Appendix 6- Downtown Brampton-Urban Design and Land Use-Study Area

Appendix 7-Downtown Brampton-Urban Design and Land Use-Preliminary Background-
The Planning Partnership

Appendix 8- Downtown Etobicoke Creek Revitalization Study -Integration of Component
Studies

K5-17

APPENDIX 1

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MINUTES

Planning, Design and Development Committee

The following motion was considered:

- PDD025-2011
1. That the report from J. Given, Manager, Growth Management and Special Policy, A. Wong, Acting Manager, Urban Design Services, and B. Steiger, Central Area Planner, Planning, Design and Development, dated January 5, 2011, to the Planning, Design and Development Committee Meeting of January 31, 2011, re: **Proposed Amendment to Floodplain Development Policies Downtown Brampton Secondary Plan (SP7) Special Policy Area 3 – Wards 1, 3, 4 and 5 (File P26SP)** be received; and,
 2. That staff be directed to initiate the process for amending Special Policy Area 3, generally based on the draft Official Plan Amendment, draft by-law amendment and draft submission report attached as appendices to the subject report. The submission shall also include a draft amendment to the proposed Main Street North Development Permit By-law;
 3. That staff be directed to undertake further public consultation including any required public meetings in relation to the proposed amendments in accordance with the Planning Act;
 4. That staff be directed to consult further with the Province and the Toronto and Region Conservation Authority, refine the material included in this report and make a formal submission to the Ministry of Municipal Affairs and Housing/Ministry of Natural Resources in accordance with the January 2009 "Procedures for Approval of New Special Policy Areas (SPA's) and Modifications to Existing SPAs under the Provincial Policy Statement 2005 Policy 3.1.3.";
 5. That staff be directed to continue to pursue options for a landform feature to resolve issues of flooding in Downtown Brampton for the 1:350 year storm event as a responsible approach to protecting existing development and facilitating planned intensification in conjunction with the SPA policy framework and Toronto and Region Conservation Authority and Provincial approvals;
 6. That staff be directed to work with the Province and the Toronto and Region Conservation Authority to pursue a Regional combined strategy to resolve the flooding issue in Downtown for the Regional Storm event, including the remediation and upgrading of the drainage/diversion channel;

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MINUTES

Planning, Design and Development Committee

7. That staff be directed to formally communicate with the Province and Federal government to seek funding for the implementation of the Regional combined strategy, in accordance with the multi-governmental initiative as modelled by the Donlands project;
8. That the Toronto and Region Conservation Authority be requested to release to the City of Brampton their most recent floodplain mapping for the SPA 3 area;
9. That staff be directed to take steps to resolve development issues related to the flood impacts of the two watercourses found in the Bramalea City Centre area with the Toronto and Region Conservation Authority/Province and report back to Council with a strategy; and,
10. That the presentation by Adrian Smith, Director, Planning Policy and Growth Management, to the Planning, Design and Development Committee Meeting of January 31, 2011, re: **Proposed Amendment to Floodplain Development Policies Downtown Brampton Secondary Plan (SP7) Special Policy Area 3 – Wards 1, 3, 4 and 5 (File P26SP)** be received.

Carried

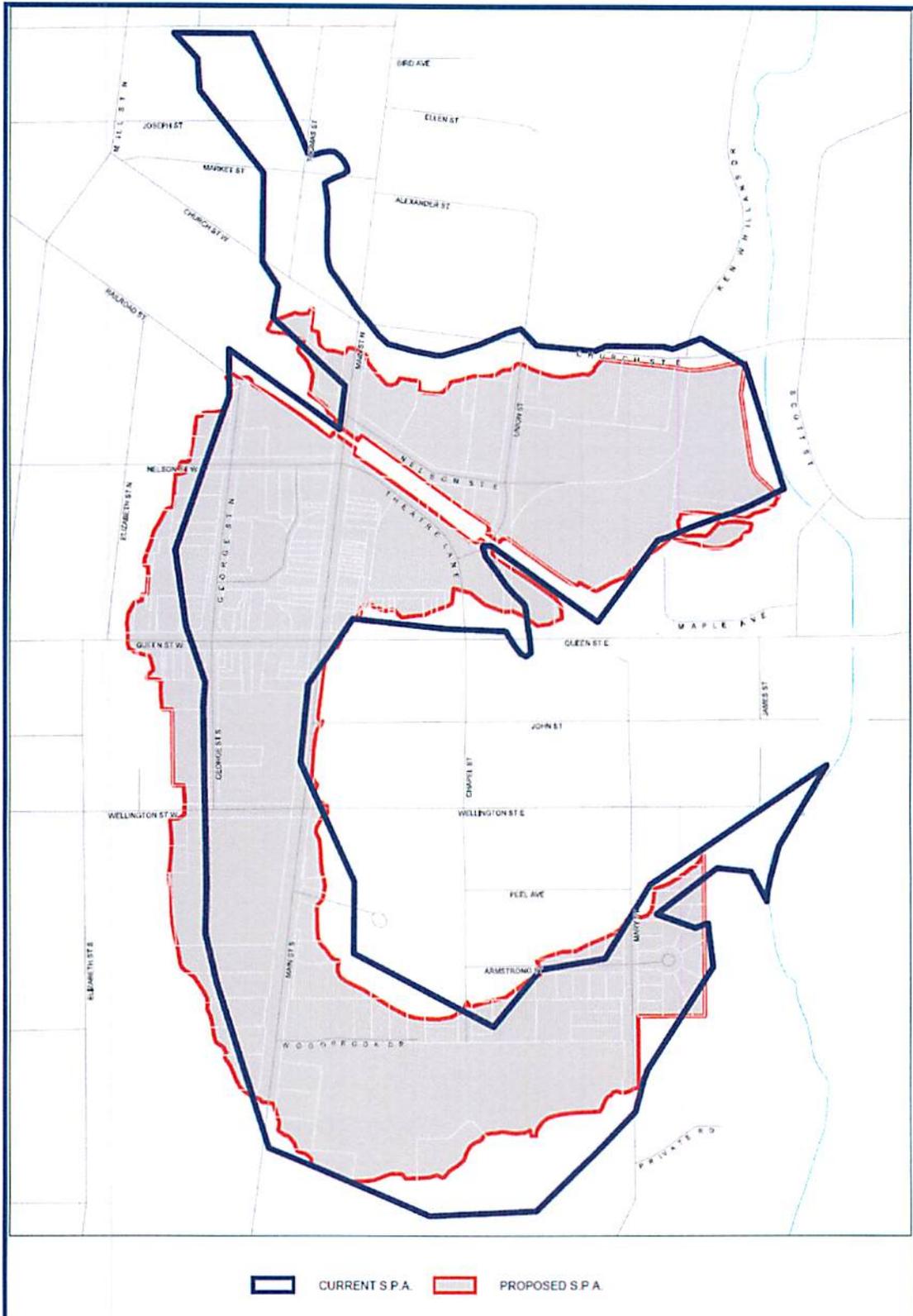
G. Committee of Adjustment Reports - nil

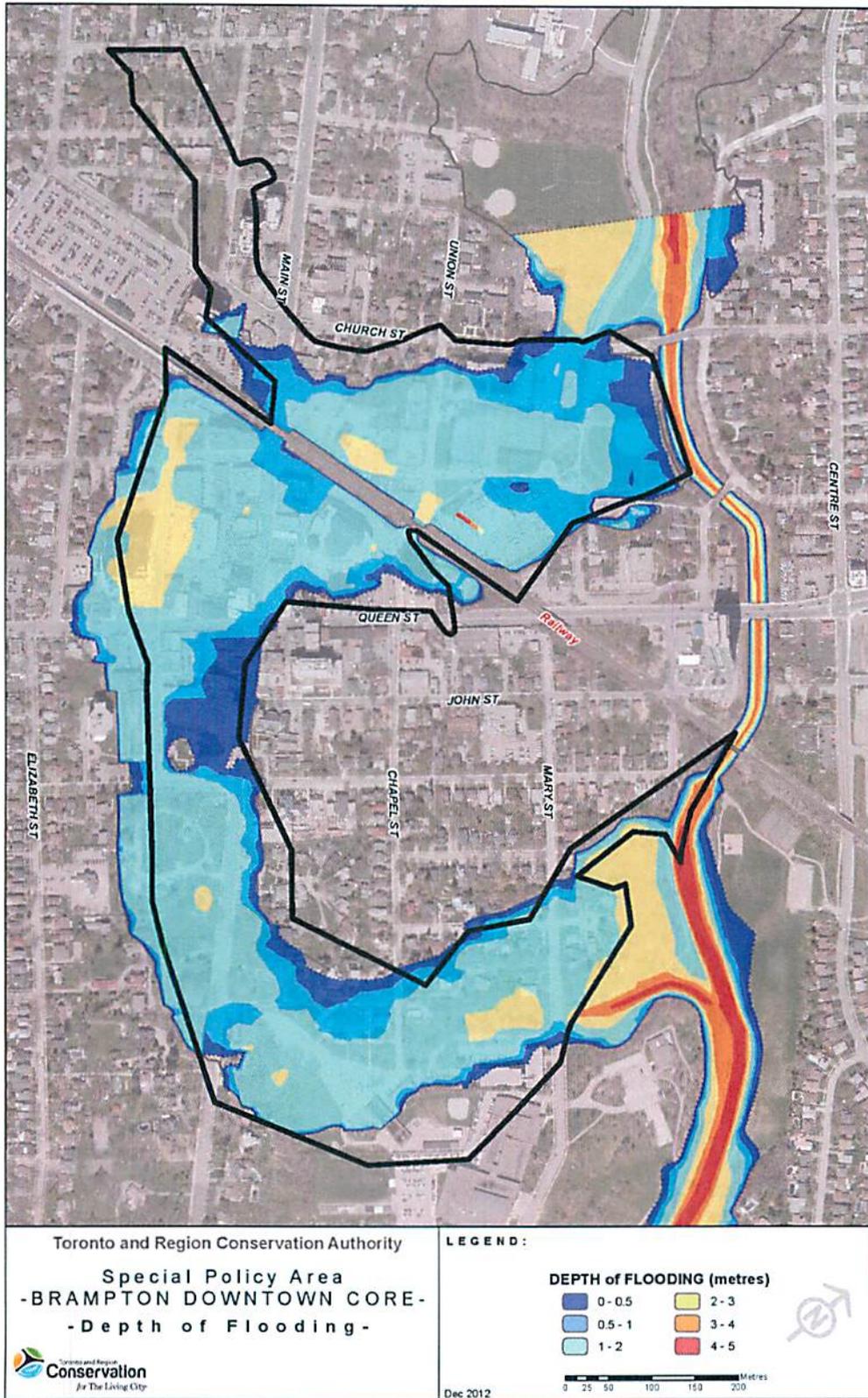
H. Building and Zoning Reports

- H 1. Report from B. Campbell, Director of Building and Chief Building Official, and A. Magnone, Regulatory Coordinator, Planning, Design and Development, dated January 7, 2011, re: **Application for a Permit to Demolish a Residential Property – 11498 Dixie Road – Ward 9 (File G33 LA).**
- PDD026-2011
1. That the report from B. Campbell, Director of Building and Chief Building Official, and A. Magnone, Regulatory Coordinator, Planning, Design and Development, dated January 7, 2011, to the Planning, Design and Development Committee Meeting of January 31, 2011, re: **Application for a Permit to Demolish a Residential Property – 11498 Dixie Road – Ward 9 (File G33 LA)** be received; and,

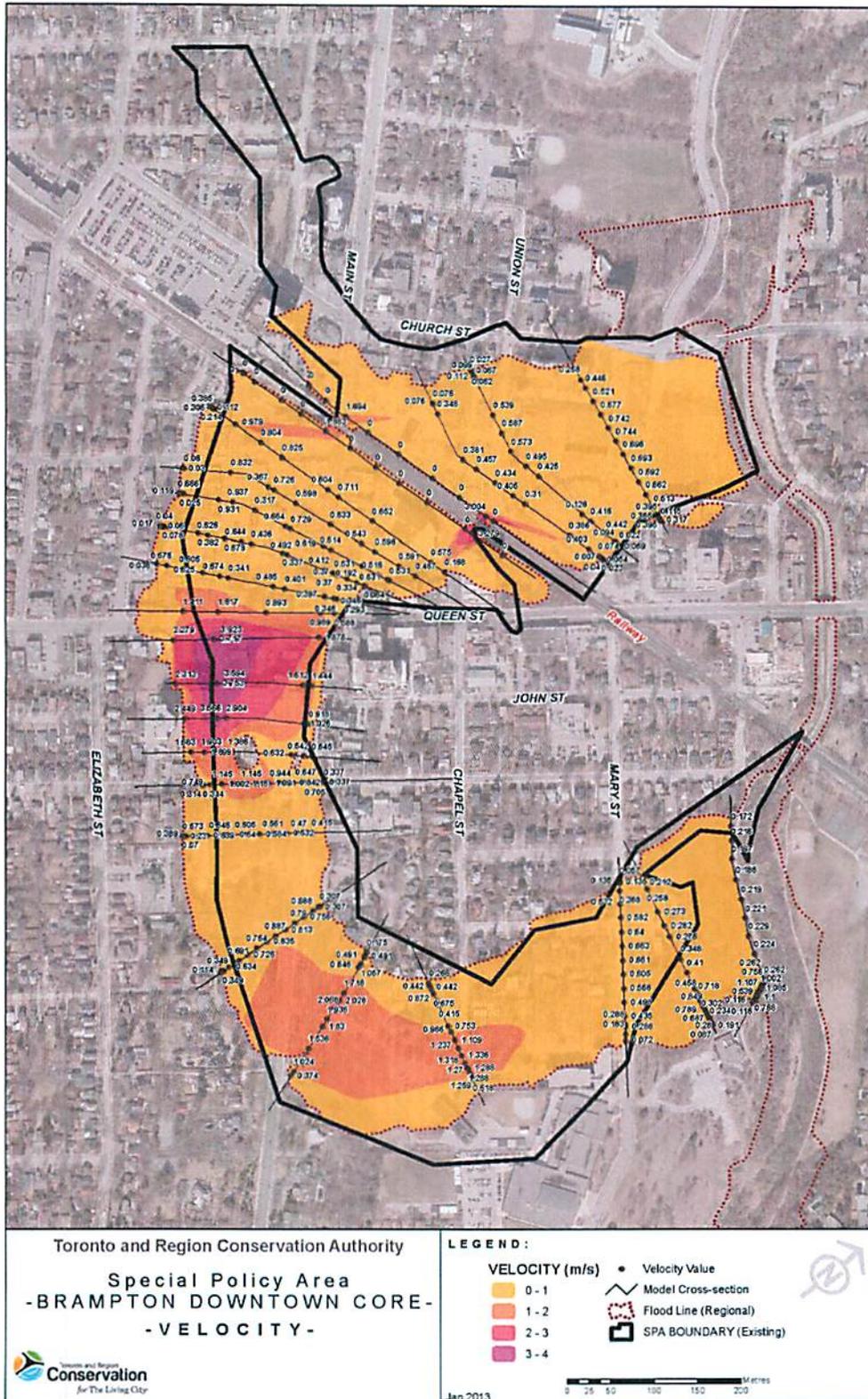
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APPENDIX 2





APPENDIX 4



APPENDIX 5 Downtown Brampton Special Policy Area Comprehensive Flood Risk and Management Analysis-Executive Summary

The DOWNTOWN BRAMPTON SPECIAL POLICY AREA Comprehensive *Flood Risk and Management Analysis* provides:

- ✓ A clear vision for Downtown Brampton rehabilitation and revitalization
- ✓ A reduction in overall risk through strategic planning of new development and strategic redistribution of permitted development
- ✓ Comprehensive set of technical requirements to support flood risk management in conjunction with development approvals
- ✓ No increase in development permissions above what is currently allowed within the SPA
- ✓ No substantial increase to the costs associated with potential flood damages
- ✓ A plan for addressing flood mitigation for the Regulatory Storm
- ✓ An action plan to maintain the historical elements of the area by preserving urban design elements and functions
- ✓ Submission requirements in accordance with the Province's SPA amendment guidelines
- ✓ Clear direction for new development applications
- ✓ A comprehensive analysis of land use and current flood risk characterization (based on 2012 technical updates by TRCA)
- ✓ A summary of previous studies relating to planning and flood mitigation in the downtown

Provincial Objectives Achieved by Comprehensive Analysis

- Provincial Policy

Statement

- Places to Grow

- Ministry of Natural

Resources Technical

Guide – River and

Stream Systems:

Flooding Hazard

Limit (2002)

- The BIG MOVE

- Emergency

Management & Civil

Protection Act

Executive Summary

Brampton's historic downtown core is a defining element of the City Structure, the overall planning framework for the City in the Official Plan. It forms a part of the Central Area for the City of Brampton, the focus of major institutional, residential, commercial, cultural and recreational activity in the City-the "heart" of the City of Brampton. The ongoing rehabilitation and revitalization of the historic downtown core plays an essential role in realizing this vision.



Commercial Core-View North
(Photo: August 2009)

A portion of the Central Area is located in the floodplain of the Etobicoke Creek. To allow for the continued viability of the historic downtown core and address the significant social and economic hardships that would result from strict adherence to provincial one zone flood plain management policies, the Province approved a Special Policy Area in 1986.

As the City grew and matured, Brampton experienced significant growth and development pressures and received a number of applications for development in the SPA. In 2005, Council adopted a Central Area Vision to accommodate significant growth in a vibrant and healthy downtown with a strong urban character.

Around the same time, there was emerging interest from landowners and developers in downtown Brampton to intensify the residential land uses more in character with the downtown cores of urban centres. In response to the applications, the Province requested that a comprehensive analysis and Amendment to the SPA policies be undertaken to address all of the growth across the SPA.

The City of Brampton *Comprehensive Flood Risk and Management Analysis (2011)* (the Submission) and proposed Amendment are intended to provide the comprehensive analysis and broad framework for future development within Brampton's SPA. The Submission addresses all of the planning and technical requirements of the January 2009 Ministry of Natural Resources' "Procedures for Approval of New Special Policy Areas (SPAS) and Modifications to Existing SPAs Under the Provincial Policy Statement, 2005 (PPS, 2005), Policy 3.1.3-Natural Hazards-Special Policy Areas", Appendix 5 to the River and Stream Systems: Flooding Hazard Limit.

The Submission is not seeking approval of a new SPA. A level of growth beyond the existing level of development was permitted when the SPA was approved by the Province in 1986. The intent of the SPA update is twofold. The primary intent is not to change the boundaries of the Special Policy Area or to increase intensification, but to introduce policies that more strategically refine the distribution of growth to reduce risk and fulfill the City's vision for residential and job growth contributing to a vibrant downtown and to reduce overall flood risk.

The second component of this SPA review is to update the boundaries of the SPA based upon current floodplain mapping. This is generally a reconciliation exercise to reflect the current floodplain boundary and to eliminate lands that are no longer flood vulnerable based on new technical information. This boundary reconciliation process inherently involves the addition and deletion of areas from the SPA. The updated SPA boundary maintains the original intent of the approved SPA boundary-that is, to maintain the continued viability of the historical downtown core that would otherwise be limited by the one zone flood plain management approach.

This Submission shows that all of the MNR requirements for policy changes within SPAs as well as minor boundary changes are satisfied while achieving the Provincial objectives for

intensification in Urban Growth Centres and Mobility Hubs and the City's objectives for a healthy and vibrant downtown.

Goals of the Comprehensive Flood Risk and Management Analysis

The goals of this Submission and proposed Official Plan policy amendments are to:

- Update the technical data related to flood risk based on the updated hydrological model;
- Provide clarity within the policy framework and enable appropriate revitalization and redevelopment of the historic downtown to ensure its long term health and vitality.
- Clearly establish the location, nature and extent of development that is permitted and any related requirements with respect to mitigating risk.
- Create a policy framework that provides a common understanding among all stakeholders of development opportunities and requirements in the area.
- Provide greater certainty on planning outcomes as they pertain to the ability to satisfy requirements related to development within the floodplain; remove the need for Provincial approval of rezoning applications.
- Recognize the long term objective of eliminating flood risks in Downtown Brampton to the Regional Storm event.

Existing Secondary Plan and Zoning By-law Permit Significant Growth

Policies governing development within the floodplain that impacts the historic downtown Brampton were put in place as part of the approval of the then new Brampton Central Secondary Plan (OP84-058), approved by the Region in 1986. The intent of the Secondary Plan was to introduce "a policy vehicle for rehabilitation and revitalization of the Downtown Commercial area and its surrounding residential neighbourhoods." Lands designated Downtown Commercial permitted retail, service, entertainment and office commercial uses, and residential apartment uses. Residential apartments or offices were encouraged above retail

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and service shops and mixed use development was encouraged. It also put in place policies governing development within the floodplain, entitled “Damage Centre Policies”.

Secondary Plan 7, Downtown Brampton, approved in 1998 designated lands in the SPA as Office Node and Central Area Mixed Use to permit a full mix of uses with a maximum Floor Space Index for the area of 3.5, with potential increases subject to suitable planning justification reports. The existing Secondary Plan 7 and implementing Zoning allow significant growth beyond that which is currently built. The floodplain policies in Special Policy Area 3 of the Secondary Plan set out the technical requirements for development within the SPA.

Since 1986, no changes have been made to the SPA to address significant changes in the Provincial and municipal planning regime.



View East of Main Street and Queen Street Corridor
(January 2010)

New Regulatory Floodlines Result in Smaller SPA and Significant Decrease in Flood Depths

In 2006, Aquafor Beech limited undertook a Downtown Drainage Study Flood Risk Assessment on behalf of the City of Brampton. The study included an analysis of flood characteristics (based on draft 2007 hydrology) and flood proofing alternatives at a lot level. The study also provided flood damage cost estimates and evaluated potential flood relief alternatives.

TRCA completed official updates to the hydrology, hydraulics and regulatory floodline mapping in 2012. These products supersede the results of the 2006 Aquafor Beech study. Significant technical improvements were made to the products, resulting in a more accurate and detailed characterization of flood risk in the SPA. The 2012 flood risk information (including the delineation of a new regulatory floodline) resulted in the following impacts to the SPA:

- Based on the new regulatory floodline, the new SPA would be approximately 5 hectares smaller than the existing SPA.
- Although the Brampton by-pass channel was originally sized to only convey the 100 year storm, current modelling shows that the channel can actually pass flows up to and including the 1:350 year storm. This means that the downtown core is not affected by riverine flooding in all event up to and including the 1:350 year storm event.
- The new modelling shows that the majority of the SPA area will experience 1-2m depth of flooding during a regional storm while shallow areas will exist at the outer boundaries. Previous hydraulic models (based on 2007 hydrology) showed much greater depths of flooding (up to the 4-5 m range) and that model updates have resulted in a **significant decrease in flood depths in the area.**

Negligible Change in Flood Levels with Full Build-out

A comparison of allowable lot coverage between the original OPA 58 and the proposed Secondary Plan Amendment showed either “no change” or very “minor” changes. Subsequently, TRCA concluded that increases to flows in subsequent hydrology updates would be negligible.

Based on a similar comparison of building footprints within the SPA (existing vs. potential future buildings), TRCA also found the potential for flood level increases to be minor due to the

proposed Secondary Plan Amendment. While it is not possible to predict the exact nature and configuration of future developments, there will be consideration to the citing of buildings, as development applications proceed so that they maximize the conveyance efficiency within the SPA.

It is, therefore, the opinion of TRCA that changes to flood elevations through the SPA would be minimal when the area reaches full build-out.

The Proposed Official Plan Policy Approach Reduces Risk

As part of the preparation of the Submission, the City identified an area near the edge of the floodplain that affords the opportunity for properties to gain access to/from lands outside of the regional flood plain to reduce the risk to life.

This area of focus is strategically located in close proximity to the GO Station and the historic core of the Downtown and is able to provide safe access onto adjacent streets above the regional storm elevation. This replicates the approach that successfully enabled the 11 George Street development (Alterra) to proceed.

By focusing the most intensive development on The Edge Lands and assuming limited growth potential in the balance of the Policy Areas, **opportunity exists for a reduction of approximately 5000 people and jobs across the SPA, from what is currently allowed under the existing policies.**

The strategic redistribution of growth across the SPA allows an overall reduction of risk across the SPA.

Changing Provincial Directions Promote Growth

As part of the Provincial requirements to conform to Places to Grow, the City of Brampton downtown was identified as an Urban Growth Centre, for its capacity to accommodate more growth than other Greater Golden Horseshoe municipalities. Through OPA 43, the City has adopted policies to accommodate significant population and employment growth with a focus on the Urban Growth Centre where the greatest growth and most intense development should be directed. The Official Plan Amendment establishes minimum heights and densities to implement the policies.

A small but significant area of the Urban growth Centre is affected by the Special Policy Area. Without growth in the SPA, the balance of the UGC is not likely to succeed in attracting the development needed to achieve the Provincial and municipal Growth Plan targets and objectives for intensification.

Further, The Metrolinx BIG MOVE identified downtown Brampton as an Anchor Mobility Hub, strategically located at the intersection of Express Rail (the GO Transit service) and two Rapid Transit lines (along Queen Street and Main Streets). As an Anchor Mobility Hub, the land within an 800 metre radius generally defining the mobility hub includes a significant portion of the SPA from which a significant portion of the essential ridership originates. Together with Go Transit, the City's Zum bus rapid transit and the future LRT along Hurontario/Main Street will all contribute to supporting compact urban development.

It is essential that growth be aligned around this existing and planned high order infrastructure, to support the complimentary Provincial and municipal goals of intensification and reduced road congestion.

Primary Policy Direction

The proposed amendment to the planning policy framework is designed to achieve the following:

- Establish three new sub-areas within the SPA (in addition to Special Policy Area 3), each with a particular set of permissions and development requirements in the proposed Official Plan Amendment based on a flood risk assessment.
- Provide for a redistribution of growth along the edge of the floodplain, subject to having safe ingress/egress to flood-free lands and establish maximum massing, gross floor area and residential units to provide certainty and manage risk.
- Set out requirements to obtain ingress/egress to flood-free lands, requirements for building system designs, requirements for cross-easements for access between buildings, and other matters to address technical means of minimizing to risk.
- Permit flexibility in the policy framework with a focus on civic uses to accommodate redevelopment in the southwest quadrant of Main Street and Queen Street in relation to the proposed expansion of City Hall.

- Provide for the protection of the historic relationship of buildings and streets including at-grade entrances in the “Four Corners” area, along Main Street and Queen Street to maintain the integrity of the historic built form.
- Establish the north side of Queen on each side of Main Street as the focus for non-residential, commercial/office/arts and cultural uses and allow residential growth only if flood-free access can be achieved.
- Recognize and support the pursuit of technical solutions to eliminate all flooding risks in Downtown Brampton as identified in the Downtown Drainage Study.

The SPA Update is Needed to Support the Viability of the Downtown

There are a number of reasons why revitalization within a small portion of Brampton’s SPA is appropriate and essential and satisfies the requirements of the Provincial Policy Statement:

- The focus area of growth is in the “heart” of the City’s historic core where cultural, civic, commercial and residential uses historically established within the floodplain of the Etobicoke Creek before the Provincial Policies were introduced.
- Growth in the SPA portion of the UGC will serve as the catalyst for development in the balance parts of the UGC; it is not feasible to only direct growth outside of the floodplain, which will accommodate significant growth but cannot replace the more valuable role that growth plays in the Downtown, including parts of the SPA.
- Provincial policy in Places to Grow directs significant growth to the UGC where it is supported by high order transit; the City’s Growth Plan conformity amendment encourages a balance of residents and jobs in excess of 200 persons plus jobs/hectare.
- As an Anchor Mobility Hub, portions of the SPA within the 800 metre radius generally defining the mobility hub area are expected to generate significant ridership.

- Maximizing the return on financial investment within the core.
- Maximizing use of existing infrastructure.
- The overall effect of the Submission is to reduce risk.

Policy Directions to Manage Risk

The Official Plan Amendment incorporates a number of flood-risk management policies, including:

- New residential development would only be permitted where emergency access is provided above the Regional flood line to an area accessible to emergency vehicles.
- No new residential units would be permitted below the Regional flood line.
- An Emergency Measures Plan for flood events must be developed and approved for each development including warnings and indemnifications clauses on title.
- All new buildings must meet TRCA technical requirements with respect to flood proofing including passive measures and structural ability to withstand flood depths and velocities up the Regional flood.
- Warning clauses would be required on title.

Floodproofing is Required to Minimize Flood Damage

All new buildings must meet TRCA technical requirements with respect to flood proofing including passive measures and structural ability to withstand flood depths and velocities up the Regional flood. The Official Plan Amendment requires the following measures:

- All new buildings shall be dry passively flood proofed to a minimum of the 1:350 storm elevation (historic four corners excepted).
- New buildings are required to demonstrate to the satisfaction of TRCA that they will not be susceptible to major structural damage due to the velocity and / or depth of a flood less than the regional storm.

No Substantial Change in Flood Damage Cost Estimates

An assessment of flood damage costs was undertaken using the MNR, “Flood Damage Estimation Guide (2007)” as a basis. This assessment showed no substantial increase over the original estimates, primarily due to reduced flood depths.

Development scenario reflects the impact of Official Plan policies whether under the current Secondary Plan, proposed SPA revisions or the framework set out in OPA 58. In any of these cases, new additional ground floor area, primarily consisting of commercial uses is permitted.

The accepted level of risk (in terms of flood damage costs) remains unchanged from the original approval in OPA 58.

Brampton Emergency Management Prepared to Activate the Brampton Flood Emergency Response Plan

In June, 2010, the City of Brampton adopted the City of Brampton Emergency Plan in accordance with the *Emergency Management and Civil Protection Act R.S.O. 1990, Chapter E.9* (the Act). The Downtown Brampton Flood Emergency Response Plan for SPA 3, approved in 2013, provides protocols for agency notification/communication, resident notification, evacuation, shelters, street closures, access routes, and emergency responses and recovery. It sets out the major roles and responsibilities for the various agencies involved in an emergency response.

Further, as part of the proposed policy update, an Emergency Measures Plan for flood events must be developed and approved for each new development application including warnings and indemnifications clauses on title.

Flood Mitigation Study Underway to Address Long Term

TRCA has undertaken a technical feasibility study which will identify a “short list” of mitigation options to eliminate or reduce the risks due to flooding on the main branch of Etobicoke Creek through the City of Brampton’s Downtown Special Policy Area (SPA). The options identified in this study will be vetted by the City’s study considering the Urban Design and Land Use components of the alternatives and the joint findings will be considered by City Council to address the long term solution.

Contents of Submission

In accordance with the Ministry of Natural Resources' "Procedures for Approval of New Special Policy Areas (SPAs) and Modifications to Existing SPAs under the Provincial Policy Statement, this Submission includes the following:

- Technical Information, including: new floodplain mapping, flow rates, flood depth, flow velocity (all in GIS), mapping showing old and new SPA, explanation of the changes, an analysis of flood risk, feasibility of floodproofing, appropriateness of other flood plain management measures, status of remedial measures, emergency response plan.
- Land Use Planning Information, including the current SPA and Official Plan approvals, background related to the issues with the existing SPA, details on the forecasted and proposed changes to distribution of population and employment, an explanation of the proposed policy changes, demonstration of consistency with the PPS and other Provincial Plans, overview of historic planning studies, proposed Amendment to the Downtown Brampton Secondary Plan, a proposed Development Permit By-law amendment (Main Street North) and a Zoning By-law amendment (selected "Four Corners" area only).

Conclusion

This Submission and proposed Amendment to the Special Policy Area in the City of Brampton satisfies the Provincial requirements for modification to a Special Policy Area by incorporating prevention, protection and emergency response measures, It is consistent with the Natural Hazard: Floodplain Management Guidelines, Provincial Policy Statement, Places to Grow The BIG MOVE and all other application Provincial interests. It achieves the City's vision for the revitalization and redevelopment of the historic downtown to ensure its long-term health and vitality while appropriately mitigating flood risks.

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APPENDIX 7

Downtown Brampton-Urban Design and Land Use-Preliminary Background

The Planning Partnership

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Downtown Etobicoke Creek Revitalization Study: Urban Design and Land Use Study

draft for discussion

March 15, 2013

The Planning Partnership 



Downtown Etobicoke Creek Revitalization Study: Urban Design & Land Use Study

1 Thematic Overview of Background Materials

- Downtown Development Goals/Areas/Targets (Municipal & Provincial)
- Flood Mitigation
- Operating and Capital Costs to Maintain Existing Channel (with TRCA)
- Urban Design Objectives
- Riverside Trail Development & Rosalea Park Development

2 Summary of Main Urban Design Issues

- Built Form / Streets
- Public Realm / Rosalea Park
- Trail / Creek / Connectivity

3 Group Discussion

Thematic Overview of Background Materials

Draft Table of Contents for Background Report
(documents and *tasks*)

1. Introduction

2. Downtown Development Goals/Areas/Targets (Provincial, Regional & Municipal)

- 2.1. Places to Grow (Urban Growth Centre)
- 2.2. Brampton's Response to the Provincial Growth Plan
- 2.3. City Of Brampton Official Plan (2012 Consolidation)
- 2.4. Community Improvement Plan (2010)

3. Flood Mitigation

- 3.1. *Review of TRCA Options (still to come)*
- 3.2. *Review of City options/documents and peer review reports*
- 3.3. Brampton Central Area Downtown Planning and Design, Flood Work Overview (2013)
- 3.4. Downtown Drainage Study – Part 1 (2006)

4. Operating and Capital Costs to Maintain Existing Channel Structure (with TRCA and SCS)

- 4.1 *To come*

2

Thematic Overview of Background Materials

5. Urban Design Objectives

- 5.1. *Identify risks related to urban design options*
- 5.2. Downtown Brampton Special Policy Area 3: Comprehensive Flood Risk and Management Analysis (2011)
- 5.3. Central Area Vision and Update (2005, 2010)
- 5.4. Brampton Downtown Urban Design Vision Study (2005)

6. Riverside Trail Development and Rosalea Park Development

- 6.1. *Best Practices and Precedents for riverside walks in flood plains*
- 6.2. *Design Principles for passive recreation solutions along Etobicoke Creek*
- 6.3. Channel Walkway Study, EGA Consultants, (1995)
- 6.1.5. Feasibility Assessment of Naturalization of Brampton Diversion Channel Etobicoke Creek (TRCA 2003)
- 6.6. Downtown Drainage Study Part 1: Flood Risk Assessment (2006)
- 6.7. City of Brampton Parks and Recreation Department - Etobicoke Creek Pedestrian and Cycling Trail Conceptual Evaluation (no date)
- 6.8. Etobicoke Creek Diversion Update (copy of PP, no date)
- 6.9. Precedent Studies
- 6.10. Rosalea Park Workshop Summary Report (2010)

7. Synthesis

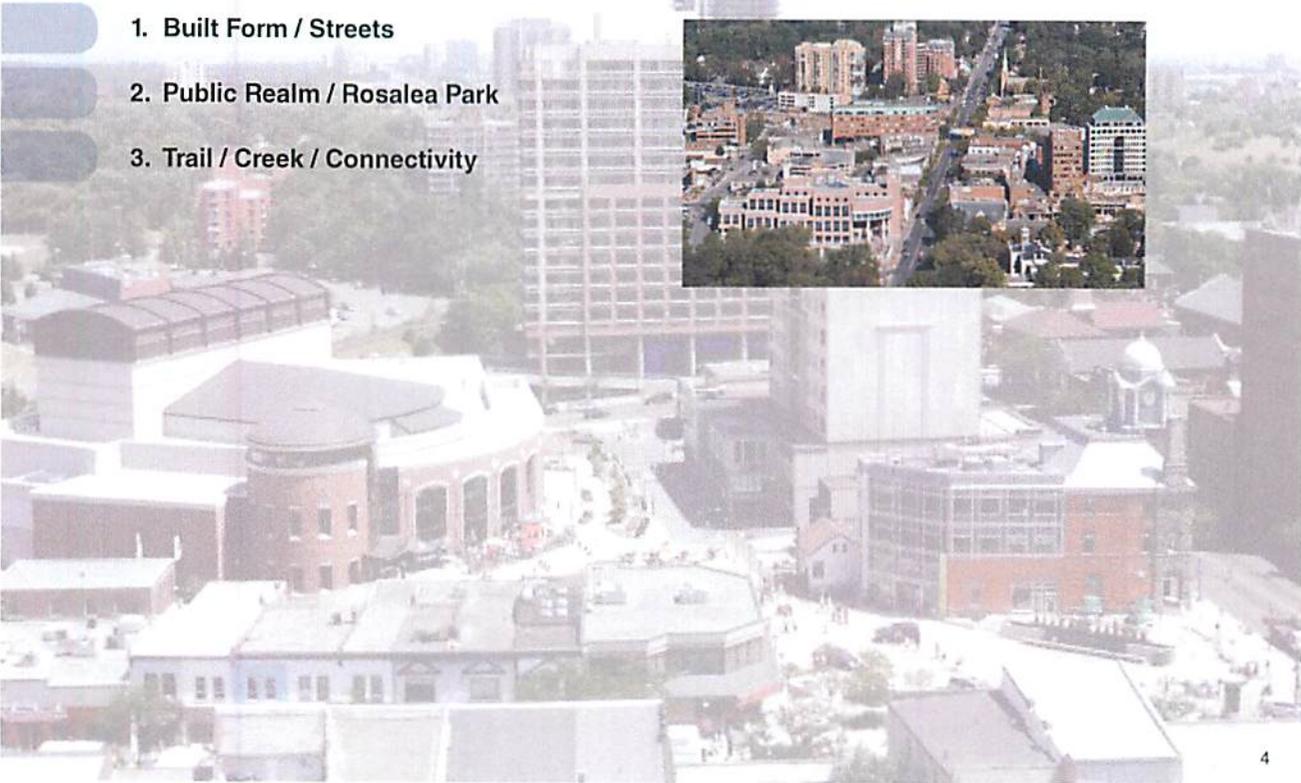
- 7.1. Integrated principles to guide Master Plan for Rosalea Park

3

2 Summary of Main Urban Design Issues

Balance of development goals with flood mitigation measures for:

- 1. Built Form / Streets
- 2. Public Realm / Rosalea Park
- 3. Trail / Creek / Connectivity



2 Summary of Main Urban Design Issues

Built Form / Streets

Opportunities

- 1. Designated as Urban Growth Centre
- 2. Existing historic downtown
- 3. Institutional and cultural precinct
- 4. Walkable downtown
- 5. Transit accessibility
- 6. Proximity to creek and trail network

Constraints

- 1. Some of the most desirable developable lands within worst flood zones
- 2. Special Policy Area designation limits growth
- 3. Province has authority over development approvals
- 4. Some flood mitigation measures do not support urban design
- 5. Condition of channelized creek



2 Summary of Main Urban Design Issues

Built Form / Streets



2 Summary of Main Urban Design Issues

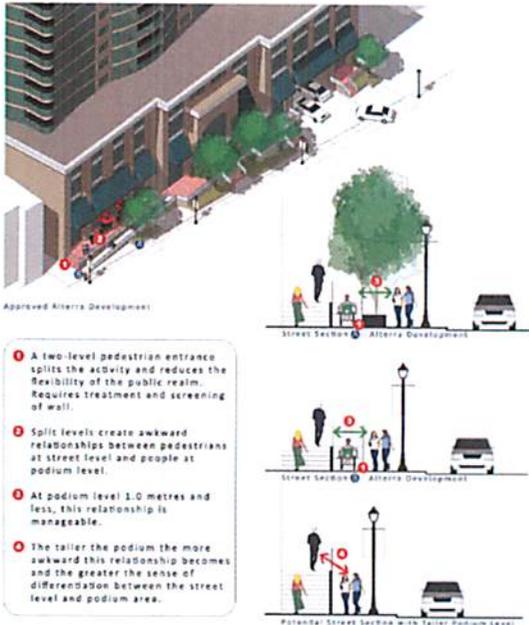
Built Form / Streets



A key development area is in the core between Main and Elizabeth, north of Queen Street to the tracks.

2 Summary of Main Urban Design Issues

Built Form / Streets



2 Summary of Main Urban Design Issues

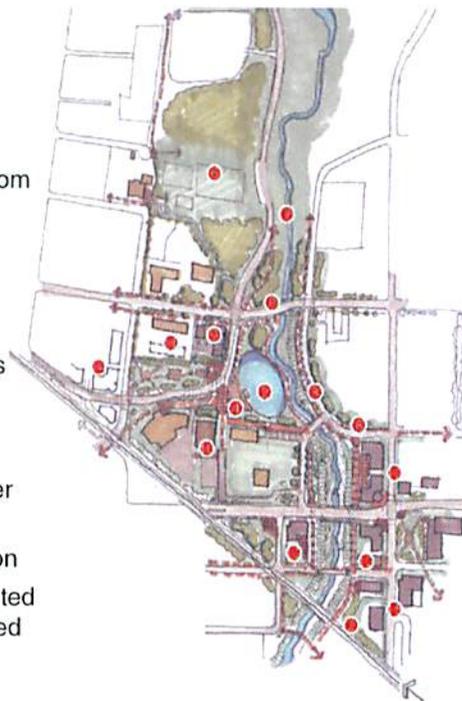
Public Realm / Rosalea Park

Opportunities

1. Ken Whillans Dr extension creates a newly defined parcel of land
2. Opportunity to create a unique open space distinct from existing downtown parks
3. Integration with HACE initiative will redefine park
4. Potential channel changes create opportunity for a riverside relationship
5. Park could act as floodplain, whether temporary or as permanent water feature

Constraints

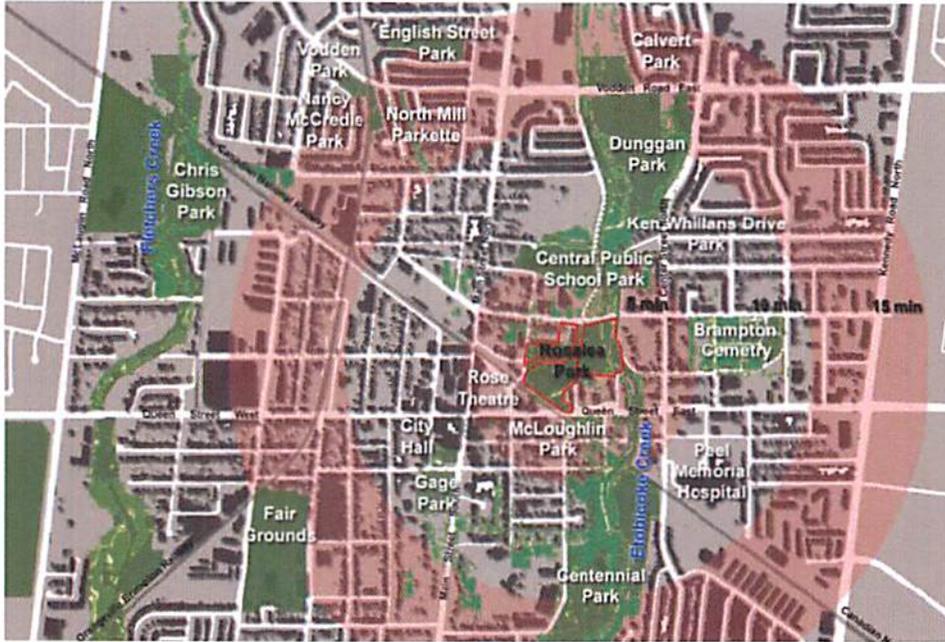
6. Existing condition of diversion channel lacks character and access to the water
7. Etobicoke Creek Trail is not continuous along diversion
8. Earlier studies propose east side of creek as best suited for pedestrian and cycling trail development (separated from Park on the west side)



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2 Summary of Main Urban Design Issues

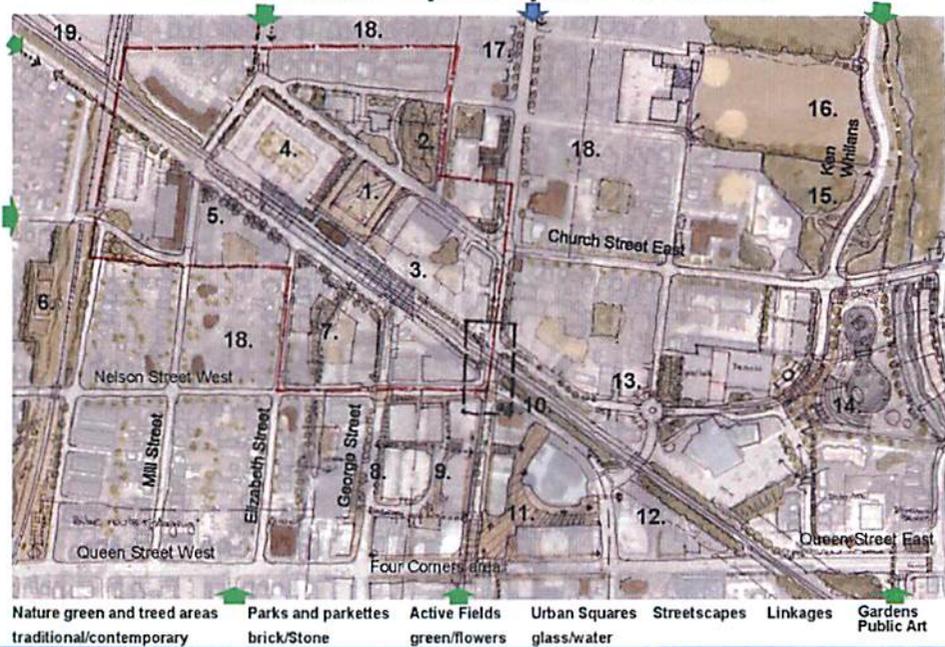
Public Realm / Rosalea Park



2 Summary of Main Urban Design Issues

Public Realm / Rosalea Park

Downtown Open Space Context



2 Summary of Main Urban Design Issues

Trail / Creek / Connectivity

Opportunities

1. Work with existing diversion channel to create top of bank trail linkages
2. Selectively screen views to channel
3. Ken Whillans Drive extension may bring an increase in pedestrian and active transportation traffic to downtown
4. Provide new bridge connections for pedestrian access

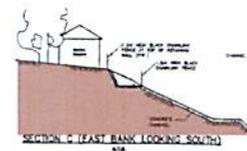
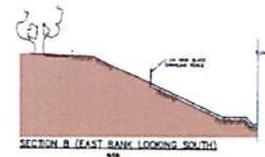
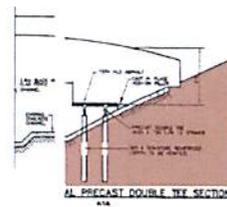
Constraints

1. No trail along the diversion
2. 1995 EGA proposals conflict with TRCA policies
3. If diversion is not redesigned, walkway can only run along top of bank



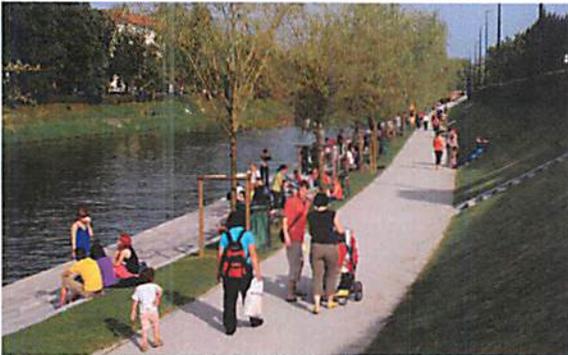
2 Summary of Main Urban Design Issues

Trail / Creek / Connectivity



2 Urban Design Precedents

Ljubljana, Slovenia



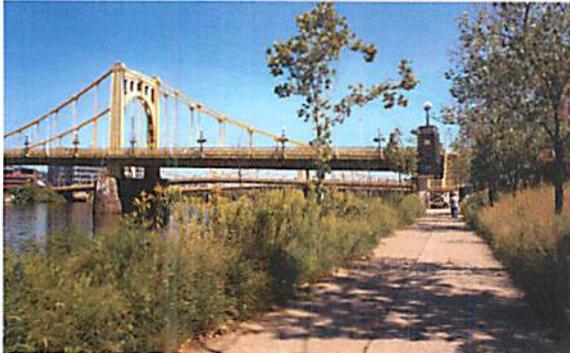
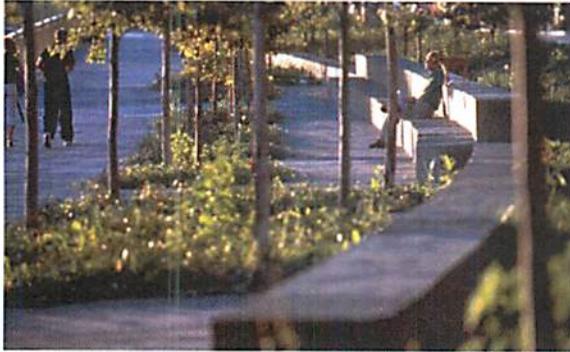
2 Urban Design Precedents

Guadalupe River Park, San Diego, USA



2 Urban Design Precedents

Allegheny River Walk, Pittsburgh, USA



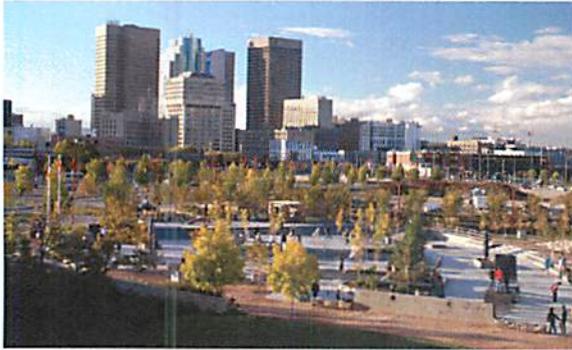
2 Urban Design Precedents

Don River Park, Toronto



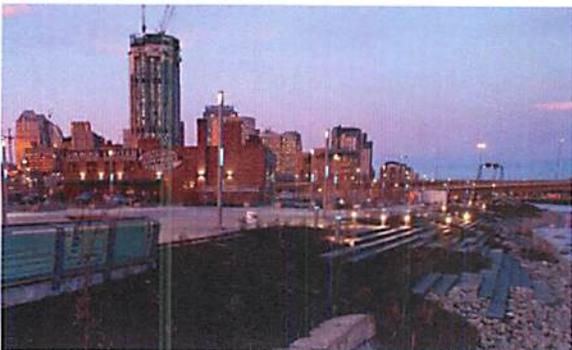
2 Urban Design Precedents

Winnipeg, Manitoba



2 Urban Design Precedents

Calgary River Trail, Alberta



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Group Discussion



Downtown Etobicoke Creek Revitalization Study

