

**COMMITTEE OF THE WHOLE (WS) – JUNE 5, 2024**

**COMMUNICATIONS**

**Distributed May 31, 2024**

**Item No.**

- |   |   |
|---|---|
| C1. Sabrina Sgotto, Vice President, Weston Consulting, Millway Avenue, Vaughan, dated May 30, 2024. | 2 |
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**Distributed June 3, 2024**

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| C2. Weston 7 Secondary Plan Draft 3 for Discussion | 2 |
| C3. Presentation material                          | 2 |

**Distributed June 4, 2024**

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| C4. Michael A. Vani, Senior Associate, Weston Consulting, Millway Avenue, Vaughan, dated June 4, 2024.     | 2     |
| C5. Sabrina Sgotto, Vice President, Weston Consulting, Millway Avenue, Vaughan, dated June 4, 2024.        | 2     |
| C6. Melissa Bruzzese, AVP, Development, RioCan Management Inc., Yonge Street, Toronto, dated June 4, 2024. | 2     |
| C7. Presentation material.   | 3     |
| C8. Memorandum from the Deputy City Manager, Infrastructure Development, dated June 4, 2024.               | 1     |
| C9. Myron Pestaluky, presentation material   | 2     |
| C10. Christopher J. Tanzola, Partner, Overland LLP, Yonge Street, Toronto, dated June 4, 2024.             | 2 & 3 |

**Distributed June 5, 2024**

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| C11. Presentation material. | 1 |
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Please note there may be further Communications.

Policy Planning and Environmental Sustainability Department  
City of Vaughan  
2141 Major Mackenzie Drive  
Vaughan, Ontario L6A 1T1

May 30, 2024  
File: 6300-3

**Attn: Office of the City Clerk**

**RE: Weston Road and Highway 7 Secondary Plan  
3883 Highway 7**

Weston Consulting is the planning consultant for Marino on 7 Inc., the registered owner of the lands municipally known as 3883 Highway 7 in the City of Vaughan (herein referred to as the 'Subject Property'). We have been engaged to provide assistance to the landowner during the Weston Road and Highway 7 Secondary Plan (the 'Secondary Plan') process. As the Weston 7 Secondary Plan is nearing its final stages, we are pleased to provide the following comments on behalf of our client for consideration by Staff and Committee prior to finalization of the Secondary Plan.

### Description of the Subject Property

The Subject Property is currently occupied by two, 2-storey commercial buildings on the south side of Highway 7, west of Weston Road and directly north of Wings Road, within the Southwest Quadrant of the Weston 7 Secondary Plan. The Subject Property is surrounded by commercial uses in all directions and has a total area of 0.77 hectares (1.90 acres) with frontages of 71.25 metres along Highway 7 and 71.67 metres along Wings Road.



Figure 1 – Aerial Photo of the Subject Property

The City of Vaughan Official Plan (2020 Office Consolidation) designates the Subject Property as *High-Rise Mixed-Use* which does not prescribe a maximum height but is generally permissive of heights above 12 storeys. The City of Vaughan Zoning By-law 001-2021 zones the Subject Property *GMU – General Mixed Use (x. 278)*.

## Description of the Proposed Amendment to Schedule 1 Weston 7 Land Use Designations

The draft land use scenario as shown on Schedule 1 of the Secondary Plan indicates that the majority of the Subject Property be used for an extension of Nova Star Drive. The remaining portion of the Subject Property is designated *Mixed-Use I*. We do not support the use of the Subject Property for an extension of Nova Star Drive and have identified that the remaining lands with the extension would be unusable for the purpose of any meaningful development.

The Weston 7 Background Report revised on April 21, 2021, identifies the existing Nova Star Drive right of way is a Private Road. Based on our research, Nova Star Drive is currently owned by Calloway REIT (Westridge) Inc. The extension of Nova Star Drive would be subject to private landowners.

The Weston 7 Secondary Plan Draft 2 prepared in October 2023 does not provide rationale or justification in support of the extension of Nova Star Drive south to Wings Road. Extending Nova Star Drive further south is referenced within the Phase 1 Background Report, Appendix 1: Transportation Needs Assessment dated October 29, 2018 wherein the Transportation Needs Assessment briefly mentions the need for additional road improvements, including the extension of Nova Star Drive from Highway 7 to Wings Road as per the 7777 Weston Road Area Wide Transportation Study prepared in 2012. Overall, little justification is available as to the proposed extension of Nova Star Drive and the purpose and function of the proposed connection. The Vaughan Transportation Master Plan dated July 28, 2023 also does not include the proposed extension of Nova Star Drive as per Figure 8-2: 2051 Recommended Transportation Network, nor is this extension contemplated in the 2010 Vaughan Official Plan. Additionally, we note that based on the Weston 7 Background Report revised on April 21, 2021, the existing Nova Star Drive right of way is identified as a Private Road. Based on our research, Nova Star Drive is currently owned by Calloway REIT (Westridge) Inc.

It is our opinion that through the development of the lands within the Secondary Plan area, there will be ample opportunities for north-south mid-block connections that would provide connectivity through Local Roads and Active Transportation Links, eliminating the need for a midblock major-arterial road connection to Wings Road.

## Recommendation and Request

An amended Schedule has been attached to this letter for your review and consideration as part of a further update to the Secondary Plan. The attached Schedule designates the Subject Property as *Mixed-Use* and does not include the extension of Nova Star Drive through the Subject Property. The proposed *Mixed-Use* designation for the Subject Property is consistent with the City of Vaughan Official Plan existing permissions that would allow for the fulsome full development of the lands through the future transformation of this area. We have submitted this schedule to Staff for their review and consideration as part of the Secondary Plan process and as part of our participation in ongoing meetings with Staff as a participating member of the Weston 7 Landowners Group.

It is our opinion that the extension of Nova Star Drive is not required to implement the goals and objectives of the Secondary Plan and should instead be designated as *Mixed-Use* as identified in Schedule 1 attached herein. Schedule 1 has been submitted to Staff and is proposed to be amended as indicated on the attached, which would provide maximum flexibility for the development of the lands including the request for removal of the maximum heights and densities. The proposed modifications are part of ongoing discussions and negotiations with Staff and the landowners group and part of the Secondary Plan updates.

We are actively engaged in the Weston 7 Secondary Plan process including discussions with the Weston 7 Landowners Group with City Staff. We kindly request to continue to be notified of any future reports and/or meetings regarding the Secondary Plan process and request to be notified of any decisions regarding this matter. We intend to continue to monitor and engage in the Secondary Plan process on behalf of our client on an ongoing basis. We reserve the right to appeal any planning decisions and approvals that directly involve or affect the Subject Property.

We have separately submitted a request for deputation regarding the June 5, 2024 Committee of the Whole (Working Session) Agenda Item 5.2 to further communicate the above commentary to the Committee.

Thank you for the opportunity to provide these comments. Please contact the undersigned at [ssgotto@westonconsulting.com](mailto:ssgotto@westonconsulting.com) or Michael Pizzimenti at [mpizzimenti@westonconsulting.com](mailto:mpizzimenti@westonconsulting.com) should you have any questions regarding this submission.

Yours truly,

**Weston Consulting**

**Per:**




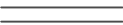
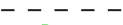

Sabrina Sgotto, HBA, MCIP, RPP  
Vice President

c. Marino on 7 Inc.  
Parente Borean LLP


Encl. Proposed Secondary Plan Modified Schedule

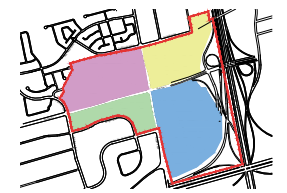
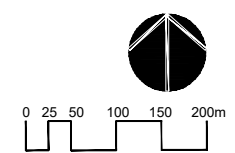
# Schedule 1 Weston 7

## Legend

-  Existing Road Network
-  Proposed Road Network
-  Ownership Boundaries
-  Mixed Use

## Notes

-  Marino ON 7 Inc.
- Proposed Designation: Mixed-Use
- Nova Star Drive Extension Removed





inclusive • connected • future-friendly

# Secondary Plan

## Draft 3 for Discussion

May 2024



**Weston 7: inclusive • connected • future-friendly**

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**SCHEDULES**

- Schedule 1 – Land Use Designations
- Schedule 2 – Building Height
- Schedule 3 – Pedestrian Realm Network
- Schedule 4 – Transportation System

# **PART A: The Preamble**

## **1.0 CONTEXT**

The WESTON 7 Secondary Plan (this Plan) is designed to provide a planning framework that will guide the future development of the Weston Road and Highway 7 Area (WESTON 7) which is a strategic location and a Primary Centre in the City’s Urban Structure. WESTON 7 is also subject to two Protected Major Transit Station Areas including the Ansley Grove BRT Station Area and the Weston BRT Station Area.

This Plan, through a focus on mixed-use development, supports the continued evolution of the area as a Primary Centre which is transit-supportive, vibrant, inclusive, healthy, sustainable and diverse. It is expected that this Plan will transform the existing retail commercial node into a new mixed-use district.

It is the intent of this Plan to provide for a range and mix of housing types and tenures, and will have Low-Rise, Mid-Rise and High-Rise Buildings, with an intensity of development that is supportive of public transit, Active Transportation and Complete Streets. In addition, this Plan provides opportunities for non-residential uses including all forms of retail and service commercial uses, restaurants, entertainment uses, offices and public service facilities to serve the community. WESTON 7 will be developed based on a fine-grained street network that incorporates sidewalks and bicycle facilities, and an urban built form that creates active and attractive streets for all seasons. This Plan will ensure high quality development that is compatible with surrounding land uses.

## **2.0 PURPOSE**

The purpose of this Plan is to establish a comprehensive land use planning, urban design, transportation and infrastructure policy framework to guide new development in WESTON 7 to the year 2051. It is recognized that development within WESTON 7 will happen incrementally over the long-term - including beyond the planning horizon of this Plan. New development will take many forms and will respond to the adjacent existing and planned built form context, market forces, financial feasibility and political directions over many years. This Plan provides a clear policy framework that is about making strategic choices and shaping the future evolution of WESTON 7. This Plan:

- Sets out the vision for where and how WESTON 7 is expected to grow to the year 2051. Principles and policies move the City towards achieving its vision for the future of this Primary Centre;
- Is about getting the fundamentals right. Building a successful mixed-use urban community means making sustainable choices about how growth will be accommodated; and
- Provides a strategy for phasing that is directly linked to the development of the required municipal service infrastructure and transportation system capacity improvements over time.

There are 3 key elements to this Plan including:

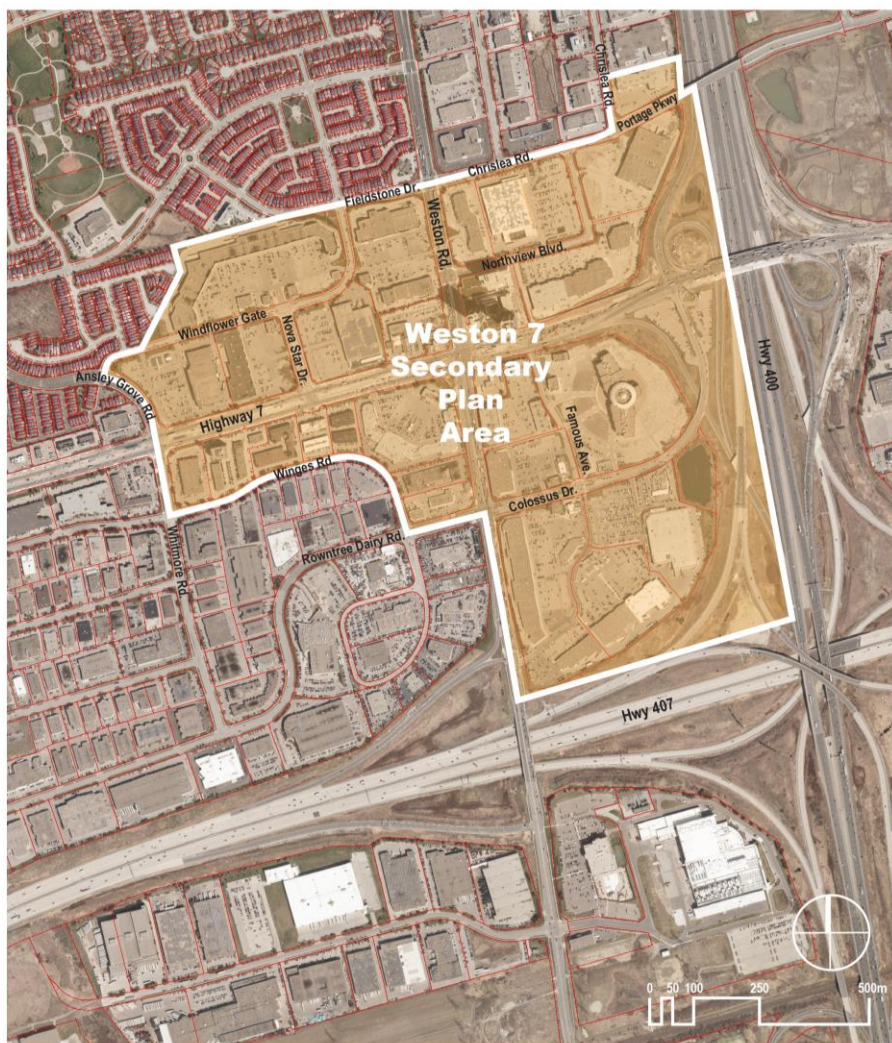
- The articulation of the array of land uses that are permitted within the various land use designations, and the establishment of the requirements to ensure that the evolution of WESTON 7 is truly mixed-use;
  - Each of the four Quadrants that comprise WESTON 7 should include a relatively substantial element of the Pedestrian Realm Network to act as a focal point and to provide open space elements to serve what is expected to become a high density residential/mixed-use community;
  - The distribution and requirement for active, non-residential land uses should focus on key locations within WESTON 7 where those uses will be required at-grade, other locations within WESTON 7 will permit those uses at-grade, but not require them; and

- The management of the pattern of development through regulation of the built form in terms of minimum and maximum building heights and the identification of maximum permitted densities is crucial. The regulatory regime that affects built form needs to be clear and explicit to ensure the appropriate evolution of WESTON 7, and the accommodation of Low-Rise, Mid-Rise and High-Rise Buildings over time; and
- The recognition that the capacity of existing municipal service infrastructure and transportation systems is severely restricted, and will require significant improvements to facilitate development.

**3.0 LOCATION**

WESTON 7 is located in the City of Vaughan, as identified on **Map 1**. Generally, WESTON 7 is:

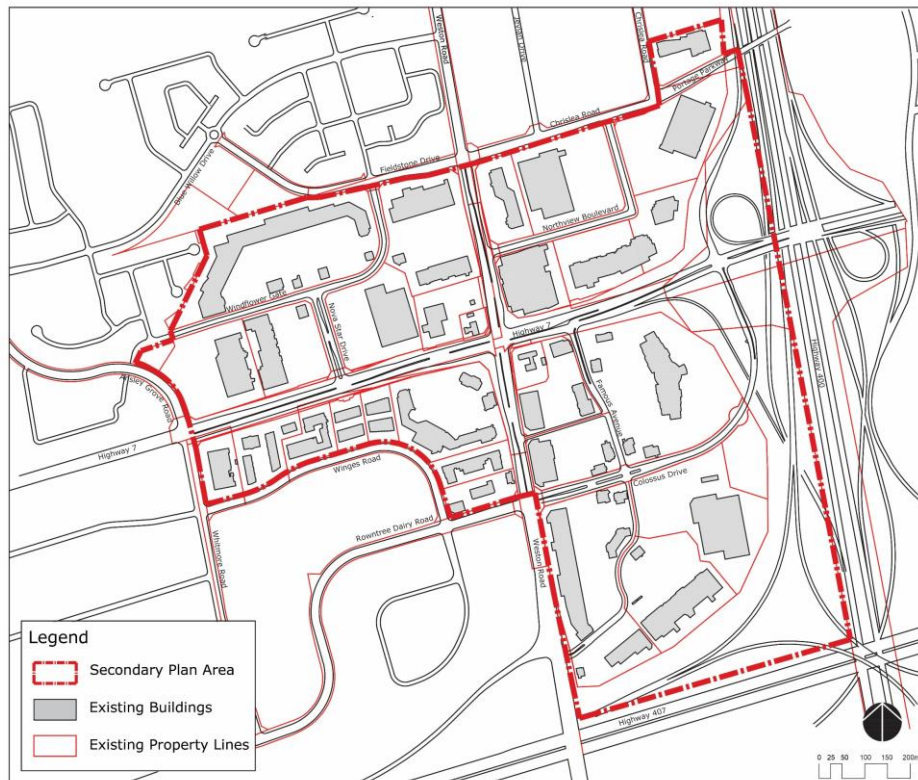
- Bounded on its eastern boundary by Highway 400, which separates WESTON 7 from the Vaughan Metropolitan Centre (VMC);
- The southern boundary is defined primarily by Wings Road and Highway 407. Abutting WESTON 7 to the south are existing commercial and industrial uses;
- To the north, WESTON 7 is bounded by Fieldstone Drive, Chrislea Road and Portage Parkway. Abutting WESTON 7 to the northwest are established neighbourhoods, and to the northeast are commercial and employment uses;
- Ansley Grove Road and Whitmore Road form the western boundary of WESTON 7 and are adjacent to low density employment uses;



**Map 1 - WESTON 7 Secondary Plan - Location Map**

- Highway 7 divides WESTON 7 in an east-west direction. The road right-of-way accommodates higher order transit (the VivaNext Bus Rapid Transit Route), dedicated cycle lanes, an enhanced pedestrian environment and 6 lanes of vehicular traffic;

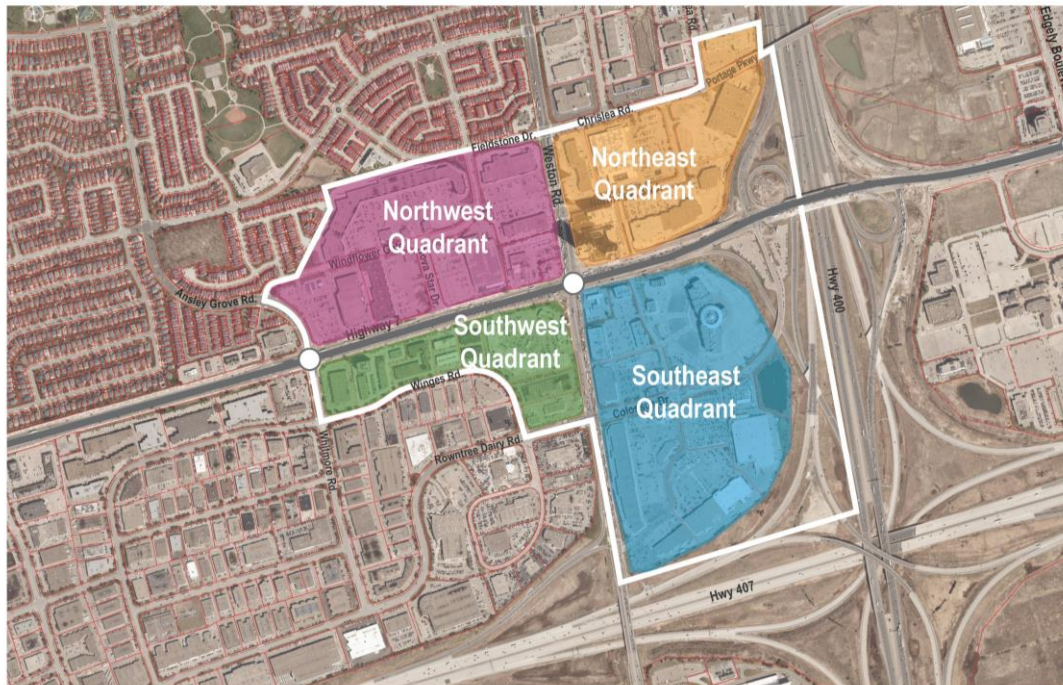
- WESTON 7 incorporates a total of approximately 123 hectares of land, of which approximately 104 hectares in gross land area (all lands within the WESTON 7 boundary, including roads and stormwater management facilities, but excluding the lands that are part of Highways 400 and 407; and
- WESTON 7 is comprised of 31 properties that are largely characterized by large footprint commercial buildings and associated large surface parking lots. As it exists today, as identified on Map 2, the core function of WESTON 7 is a commercial and entertainment destination for the City of Vaughan and the broader region. WESTON 7 also includes a range of smaller scale service commercial uses and restaurants and a number of light industrial uses.



**Map 2 - WESTON 7 Secondary Plan - Existing Building Footprints**

Highway 7 bisects WESTON 7 on an east-west axis and Weston Road forms the north-south axis. Together these roads functionally divide WESTON 7 into four distinct quadrants as identified on **Map 3**:

- **Northwest Quadrant** - The Northwest Quadrant incorporates approximately 30 hectares of land that is suitable for moderate to high density, mixed-use development. A key consideration is the interface with, and transition to a low-rise residential community located adjacent and to the west of this Quadrant;
- **Southwest Quadrant** - The Southwest Quadrant incorporates approximately 15 hectares of land that is suitable for high density, mixed-use development. A key consideration is the interface with an existing employment area located adjacent and to the south of this Quadrant;
- **Northeast Quadrant** - The Northeast Quadrant incorporates approximately 24 hectares of land that is suitable for high density, mixed-use development. A key consideration is the interface and compatibility with an existing employment area located adjacent and to the north of this Quadrant; and
- **Southeast Quadrant** - The Southeast Quadrant incorporates approximately 35 hectares of land that is suitable for high density, mixed-use development. This Quadrant is defined by, and is abutting major road and highway facilities.



Map 3 – Weston 7 Secondary Plan - Quadrants

## 4.0 POLICY CONTEXT / APPROACH

WESTON 7 is identified as a Primary Centre on Schedule 1 - Urban Structure of the Vaughan Official Plan 2010 (VOP). Primary Centres accommodate mixed-use intensification and require the preparation of a Secondary Plan. This Plan is also subject to the policy frameworks affecting two Protected Major Transit Station Areas including the Annsley Grove BRT Station Area and the Weston BRT Station Area, as delineated on Schedule 1C - Protected Major Transit Station Areas of the VOP.

As defined in VOP, WESTON 7 is to be a mixed-use area that supports a range of housing types, retail uses, institutional uses, office uses, public service facilities, and human services and are expected to serve the local community and the City as a whole. WESTON 7 is also to be developed at densities supportive of transit and as pedestrian friendly areas with a fine grain network of streets to support walking and cycling, and public spaces such as parks and plazas.

This Plan builds on the policy framework established at the Provincial, Regional and local levels. In conformity with those policy directions, this Plan provides a planning framework that will guide the development of WESTON 7 as a transit supportive, mixed-use community over the long-term. The policies in this Plan are designed to facilitate the development of high quality, mixed-use development that is compatible with surrounding land uses and is transit supportive. New development will contribute to the evolution of WESTON 7 as a complete community which is vibrant, inclusive, healthy, sustainable and diverse.

It is understood that WESTON 7 will evolve at higher densities and in taller buildings than exist today. This ongoing evolution is expected to take time to fully achieve. As a result, the long-term vision established in this Plan, the phasing of development, and particularly the harmonious accommodation of new development within the existing and planned context, will be a key consideration.

The key drivers that will facilitate the orderly development of WESTON 7 over time is the availability of capacity to accommodate growth through the establishment of required infrastructure - including public service facilities, municipal service infrastructure, including the sewage collection and treatment system, the water distribution system and the transportation network. It is a fundamental requirement of this Plan to ensure that development decisions are directly linked to the provision of all appropriate infrastructure in support of the evolving WESTON 7 community.

**5.0 APPLICATION**

- The lands affected by this Plan are identified on Schedule 1. The vision, principles, policies and schedules contained in this Plan constitute the WESTON 7 Secondary Plan.
- The City shall ensure that this Plan is in conformity with the Planning Act. Further, the City shall ensure that this Plan is consistent with the Provincial Planning Statement. Where there is a conflict between this Plan and any Provincial legislation or policy, the Provincial policies, or the more restrictive policies shall prevail.
- This Plan is to be read in conjunction with the relevant policies of Volume 1 of the VOP. Where there is a conflict between the designations and policies of this Plan and any policy of the VOP, the policies of this Plan shall prevail.
- This Plan is purposefully written to celebrate inclusivity and diversity, and therefore avoids the identification of any person, or group of people, in the vision, principles and subsequent land use policy frameworks.
- This Plan establishes a framework for growth and development to the year 2051. It is the City's primary tool for implementing the desired development within WESTON 7. The detailed policies of this Plan build upon the vision for the future and a number of supportive principles. Together, the vision, principles and policies of this Plan are inextricably linked to provide the City with a comprehensive framework to guide decision making about future growth.
- This Plan shall be read and interpreted as a fully integrated and comprehensive whole. The vision, principles and policies of this Plan must be considered together to guide its interpretation and determine conformity. Individual policies should not be read or interpreted in isolation from other relevant policies. Decision making will be based on conformity with all the relevant policies of this Plan, supported by the following Schedules:
  - Schedule '1' - Land Use Designations;
  - Schedule '2' - Building Height;
  - Schedule '3' - Pedestrian Realm Network; and
  - Schedule '4' - Transportation System.
- It is intended that this Plan will form the basis of implementing zoning regulations, either on a site or area specific basis. All implementing Zoning By-laws shall conform to the intent and the specific policies of this Plan.
- The VOP, this Plan and any applicable Council adopted Manuals, Master Plans, Guidelines and Strategies all work together to establish the planning and development framework for WESTON 7. It is required that City Council, and all the Committees of Council make decisions in conformity with the vision, principles and policy framework of the VOP and this Plan. Further, all development applications shall be consistent with all relevant and Council adopted Manuals, Master Plans, Guidelines and Strategies. Where there is a conflict between the policies of this Plan and the policies of the VOP, the policies of this Plan shall prevail. Where there is a conflict between the policies of this Plan and the concepts and directives of any relevant Council adopted Manual, Master Plan, Guideline, or Strategy, the policies of this Plan shall prevail.

## PART B: The Secondary Plan

### 1.0 VISION + PRINCIPLES

#### 1.1 Vision

---

WESTON 7 will be a vibrant and inclusive place for all people from Vaughan and surrounding cities to gather, shop, live, work and enjoy. As one of the City's Primary Centres, it will be a distinct urban place with a variety of commercial, cultural and entertainment destinations, providing housing options and jobs within walking distance to the Highway 7 Rapidway.

WESTON 7 will evolve into a place that is universally accessible; providing convenient options for everyone to comfortably and safely get around by walking, biking, taking transit or driving.

WESTON 7 will strive to be a low-carbon, healthy community defined by a network of pedestrian oriented, well-connected streets, parks and gathering places that becomes a distinguished, landmark destination of choice in Vaughan.

#### 1.2 Principles

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- a) To achieve the vision, the policies of this Plan build upon the following principles:

**Principle 1 Recognize WESTON 7 as a Vibrant Urban Community** - WESTON 7 will be recognized as a highly urban, vibrant mixed-use community with a distinct, definable identity and a balanced mixture of places to live, work, learn and play - all served by a multi-modal transportation network that is connected to the entire Region. WESTON 7 will be planned to fulfill its defined role as a Primary Centre within the City's hierarchy of urban centres and corridors, in recognition that the VMC is the identified strategic location for the tallest buildings, the highest densities and the widest mix of uses in the City,

**Principle 2 Support Intensification** - New development in WESTON 7 will support the ongoing evolution of the City's urban structure of diverse mixed-use centres and corridors. New development will support an evolution to a higher density, more compact, walkable and transit-supportive development pattern. New development will be efficient, and will be provided with municipal infrastructure systems and public service facilities in a cost-effective and fiscally responsible manner.

**Principle 3 Ensure WESTON 7 is a Complete Community** - WESTON 7 will be a complete community. It will be welcoming and inclusive, providing a full range of opportunities for public service facilities and Pedestrian Realm and Active Transportation Networks that will be accessible to everyone, for all to enjoy. WESTON 7 will be an important location for investment in higher density forms of residential, commercial, institutional, cultural, entertainment development, while permitting existing commercial uses to continue to thrive, and potentially expand over time.

**Principle 4 Provide a Full Range of Housing Options** - WESTON 7 will provide a range of housing options that meet the social, health, economic and well-being requirements of future residents, including Additional Needs Housing. The range and mixture of housing options will accommodate a full spectrum of households, including housing options that are attainable or assisted to meet the economic and affordability requirements of a growing and diverse population.

**Principle 5 Promote High Quality Design** - High quality urban design will support the importance of this highly urban, vibrant and mixed-use community within the structure of the City. New development will demonstrate high quality urban design that contributes to the recognition of WESTON 7 as a sustainable, beautiful and successful mixed-use and highly urban community. Adjacent low-rise residential communities will be protected from the impacts of high-rise development by appropriate transitions and compatible development forms. Public parks, public buildings and municipal service infrastructure and streetscapes will set the standard for quality design and will define the quality of development that is expected.

**Principle 6 Be a Healthy and Diverse Community** - WESTON 7 will be a healthy community that is accessible, connected and inclusive with a diversity of mobility options and a range of housing options. Amenities and services, including the Pedestrian Realm and Active Transportation Networks, will be close to where people live and will be connected through a comprehensive Active Transportation Network. WESTON 7 will be a community where diversity is celebrated, residents are engaged, socially connected, and have equitable access to housing, support services and cultural activities.

**Principle 7 Respond to a Changing Climate** - WESTON 7 will respond to a changing climate by promoting intensified and higher density development in support of an evolving transit system and robust Active Transportation Network. Policies will identify a host of opportunities to promote green building technologies and green infrastructure emplacement.

**Principle 8 Establish Integrated Pedestrian Realm + Active Transportation Networks** - Active Transportation planning will be integrated with the Pedestrian Realm Network to ensure development includes a robust system of publicly accessible open spaces and supports an enhanced level of Active Transportation modes, including walking, cycling and other micro-mobility options. The integrated Pedestrian Realm and Active Transportation Networks will be recognized as highly interconnected, safe and conveniently located.

**Principle 9 Support Public Transit** - Transit planning in WESTON 7 will be integrated with land use planning to ensure that new development supports an enhanced level of transit service over time. The transit network will grow to connect core user groups and key destinations within WESTON 7 and throughout the City and beyond, with direct routes and street-side amenities that make taking public transit an attractive and practical travel option for everyone. The key requirements for transit supportive development must be achieved.

**Principle 10 Focus the Funds Generated into WESTON 7** - The array of funds and required land contributions that are generated over time by the development activity within WESTON 7 through various instruments under the Planning Act and the Development Charges Act need to be spent by the City and the Region on appropriate public improvement projects or community benefits within WESTON 7. This focus will ensure that there is a clear recognition, and response to the link between growth and the requirements for a full array of public service and cultural facilities, as well as the municipal service infrastructure requirements, transportation and transit investments and the integrated Pedestrian Realm and Active Transportation Network improvements required to properly accommodate anticipated growth.



**2.0 GROWTH MANAGEMENT**

**2.1 Role of WESTON 7 in Vaughan's Urban Structure**

*Growth within the Planned Urban Structure*

- a) Future growth in Vaughan will be directed and informed by the planned urban structure, as it is identified in the VOP. Within the defined urban structure, WESTON 7 is identified as a Primary Centre and it is also subject to the policy frameworks of two Protected Major Transit Station Areas including the Ansley Grove BRT Station Area and the Weston BRT Station Area.

*A Mixed-use Urban Centre*

- b) WESTON 7 is specifically identified as an area where substantial growth and intensification is to be directed. As defined in VOP, WESTON 7 is expected to be a mixed-use area that supports a range of housing types, retail and service commercial uses, institutional uses, office uses and public service facilities to serve the local community and the City as a whole. WESTON 7 is to be developed at densities supportive of planned transit and as a pedestrian friendly area with a fine grain network of streets to support the integrated Pedestrian Realm and Active Transportation Networks.

**2.2 Population and Employment Estimates**

*A 2051 Planning Horizon*

- a) This Plan is premised on development in WESTON 7 to the year 2051. It is recognized that the evolution of a mixed-use urban centre like WESTON 7 will continue well beyond the planning horizon of this Plan.

*Minimum Density Targets*

- b) It is expected that WESTON 7 will accommodate substantial population and employment growth in a primarily mid to high-rise built form and mixed-use format. Some components of the Plan include low-rise built forms. WESTON 7 is also affected by the policy frameworks affecting two Protected Major Transit Station Areas including the Ansley Grove BRT Station Area and the Weston BRT Station Area. Minimum density targets are prescribed in the VOP for those Protected Major Transit Station Areas as follows:
  - i. For PMTSA 52 - Ansley Grove BRT Station - 200 people and jobs per gross hectare; and
  - ii. For PTMSA 68 - Weston BRT Station - 250 people and jobs per gross hectare.

This Plan provides population and employment projections that are expected to exceed the prescribed minimum density targets for both of the Protected Major Transit Station Areas.

*Significant Estimated Growth*

- c) Notwithstanding the minimum density targets identified within the VOP, the amount of growth anticipated by the height, density and land use mix policies included within this Plan result in approximately 54,500 people and jobs combined to the 2051 time horizon established by this Plan.
- d) In consideration of the height, density and land use mix policies included within this Plan, the distribution of growth within WESTON 7 will be considered in the four Quadrants as identified on **Schedule 1**, and generally in accordance with **Table 1**:

**Table 1 - Estimated Growth by Quadrant - to 2051**

Quadrant	Gross Land Area (hectares)	Population (people)	Employment (jobs)	Combined (people+jobs)	Density (people+jobs/hectare)
Northwest Quadrant	30	11,210	3,610	14,820	494
Southwest Quadrant	15	5,995	1,935	7,930	529
Northeast Quadrant	24	9,640	3,740	13,380	557
Southeast Quadrant	35	13,905	4,465	18,370	525
<b>TOTALS</b>	<b>104</b>	<b>40,750</b>	<b>13,750</b>	<b>54,500</b>	<b>524</b>

- e) The City may consider minor adjustments to the growth estimates among the various Quadrants included in **Table 1** without an Amendment to this Plan, in consultation with affected landowners. However, the total population and employment growth estimates provided in **Table 1** are to be considered as maximums for the purposes of considering future applications for development to the year 2051, and may only be exceeded through an Amendment to this Plan, supported by appropriate studies, to the satisfaction of the City.

## **2.3 Block Plans/Development Concept Reports**

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### ***Block Plans***

- a) Prior to any application for development being approved within any Quadrant, as defined on **Schedule X**, within WESTON 7, the City may require as part of a Complete Application, the preparation of a Block Plan that addresses the complexities of comprehensive planning within the affected Quadrant, scoped as required in accordance with the policies of the VOP. Block Plans are to:
  - i. Consider the long-term development potential of all of the lands within the Quadrant, in conformity with the vision, principles and policies of this Plan;
  - ii. Be supported by appropriate technical studies that include the cumulative impact of the long-term development potential of all of the lands within the Quadrant; and
  - iii. Be undertaken by affected landowners and approved by Council.
- b) Block Plans shall be encouraged to:
  - i. Create a pedestrian-oriented and highly interconnected street and block pattern, that integrates the Pedestrian Realm and Active Transportation Networks, with connections to adjacent communities and to public service facilities and the transit network;
  - ii. Limit development blocks to generally no more than 180 metres in length. Blocks that are longer than this in length shall include mid-block landscaped pedestrian links and may also include other design features that break up the visual impact of long development blocks/facades; and
  - iii. Back lotting of any element of the Pedestrian Realm Network shall be avoided.

### ***Development Concept Report***

- c) In addition to the requirements for a complete application for development established in the VOP, the City may require that each individual, site specific application for development within WESTON 7 shall be supported by a Development Concept Report, to be prepared by the applicant prior to the approval of development applications for Draft Plan of Subdivision/Condominium, or Zoning By-law Amendment, or Site Plan Approval, in accordance with the policies of the VOP. The Development Concept Report shall be based on the findings of the Block Plan, and shall conform to the vision, principles and policies of this Plan.

## **2.4 Phasing**

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### ***Capacity to Accommodate Growth is Crucial***

- a) The population and employment estimates to the year 2051 included in this Plan shall be subject to the availability of capacity to accommodate growth within the available public service facilities, municipal service infrastructure systems, the transportation system, and the integrated Pedestrian Realm and Active Transportation Networks, to the satisfaction of the City and the Region.
- b) The capacity of existing and identified future improvements to City and Regional municipal service infrastructure systems (water and wastewater) and the transportation system is a fundamental issue within WESTON 7. As such, this Plan establishes a phased approach to accommodating growth. The following provides an understanding of the requirements for the appropriate phasing of development:

- i. **The Transportation System** - There is currently no residual capacity in the City/Region transportation system to accommodate any future growth. The capacity constraint of the transportation system defines the growth limitations for Phase 1 of the evolution of WESTON 7. The Transportation Master Plan identifies a host of improvements to the road network, the transit system and the Active Transportation Network that are all required to facilitate growth to include up to approximately 15,000 new residents and up to approximately 10,000 new jobs, which is well below the estimated growth forecast by this Plan for WESTON 7. The Transportation Master Plan indicates that the anticipated horizon year for this limitation on growth is a horizon year of 2041. Additional improvements and strategies that improve transportation system capacity will be required to facilitate growth beyond Phase 1; and
  - ii. **The Municipal Service Infrastructure Systems** - There is currently some limited residual capacity in the City/Region water and wastewater systems to accommodate future growth. The City's Functional Servicing Strategy Report identifies a list of water and wastewater system improvements that are required to accommodate up to 62,865 people (including employment equivalent), which is in excess of the estimated growth forecast by this Plan for WESTON 7. The Functional Servicing Strategy Report identifies that water and wastewater system improvements can be identified and developed incrementally to facilitate a phased approach to long-term development within WESTON 7.
- c) The limitations on growth and development due to capacity constraints will require that all development proposals be evaluated partly on the ability of the City and the Region to ensure that capacity to accommodate growth is available. As such, development approvals (Draft Plan of Subdivision/Condominium, Zoning and/or Site Plan Approval) within WESTON 7 shall be conditional upon commitments to the timing, funding and construction of any required element of this Plan, including public service facilities, municipal service infrastructure systems, the transportation system, and the integrated Pedestrian Realm and Active Transportation Networks, to the satisfaction of the City and the Region.

The City may approve an implementing Zoning By-laws, with a holding (H) provision, pending the execution of all agreements including financial agreements and development agreements to provide for the identified and required elements of this Plan including public service facilities, municipal service infrastructure systems, the transportation system, and the integrated Pedestrian Realm and Active Transportation Networks, to the satisfaction of the City and the Region.

**Landowner's Group Agreement**

- d) To assist the City in addressing capacity constraints, landowners within WESTON 7 shall enter into a WESTON 7-wide Landowner's Group Agreement to implement the financial requirements for the growth related elements of this Plan (the public service facilities, municipal service infrastructure systems, the transportation system, and the integrated Pedestrian Realm and Active Transportation Networks) to ensure their timely provision without adverse financial impact to the City's or the Region's financial capability. This may require front-end financial agreements to advance the timing for the required elements of this Plan, to address any acceleration in associated costs, and to implement a fair and equitable sharing of the costs of providing the required elements of this Plan.

**Capacity Allocation Program**

- e) In collaboration with the City and the Region, the WESTON 7-wide Landowner's Group Agreement may include provisions related to the allocation of the capacity created through the development of the various required elements of this Plan. Where a capacity allocation program is established, either by the Landowner's Group in collaboration with the City and the Region, or by the City and the Region on their own, the program will prioritize projects that provide the greatest benefit to the community and that are most likely to proceed in the immediate future. The following are capacity allocation criteria to be considered on a site-by-site basis:
  - i. Delivers attainable and/or assisted housing;

- ii. Delivers public service facilities, including the key elements of the integrated Pedestrian Realm and Active Transportation Networks;
  - iii. Achieves defined non-residential floor area requirements;
  - iv. Considers compatibility, community impacts and community benefits; and
  - v. Integrates green building technologies.
- f) Where a capacity allocation program is established, either by the Landowner's Group in collaboration with the City and the Region, or by the City and the Region on their own, the program:
- i. May include a clause that time-limits a capacity allocation, such that capacity not utilized in a timely manner may be reallocated to another project; and
  - ii. Will be periodically reviewed. Where changes to the program are considered significant, such changes shall be subject to an Amendment to this Plan.

**Monitoring**

- g) To track the effectiveness of the approach to phasing and the capacity allocation program, the City, in partnership with the Region of York, will establish a biennial program to monitor and report on the level of development in WESTON 7. The monitoring program will address matters such as:
- i. Population and employment generated by existing and approved development, including an understanding of the pace of development;
  - ii. Implementation of required municipal service infrastructure system and transportation system enhancements;
  - iii. An understanding of changes in modal split, travel behavior and parking requirements; and
  - iv. The delivery of public service facilities, and the integrated Pedestrian Realm and Active Transportation Networks.

The City may also track the delivery of community benefits, the type and amount of non-residential floor area and affordable housing (defined in this Plan as either attainable or assisted housing).

**3.0 BUILDING A SUCCESSFUL COMMUNITY**

- a) This Plan promotes WESTON 7 as a Successful Community. As WESTON 7 evolves over the coming years, success will be measured through a host of elements that will continue to define WESTON 7 as a great place to live, to work, to play and to invest in.
- b) Being a Successful Community means making informed choices that take into consideration a number of interrelated principles and policies. Every decision has implications for infrastructure, for quality of life, for growth management, for economic development and for social cohesion. Decision making must be interdisciplinary, integrated, and strategic to ensure economic, cultural, environmental, and social rewards. Building a Successful Community requires a focus on the Vision and Principles, as articulated in this Plan.

**3.1 Providing Housing Options**

- a) The City shall encourage a range and mix of higher density housing types, styles, tenures and affordability characteristics to meet the economic requirements and affordability needs of a growing and diverse population. All development that includes a residential component shall demonstrate the approach to the delivery of a range and mix of higher density housing

types, styles, tenures and affordability characteristics through the preparation of a Housing Options Statement.

- b) The policies of the VOP establish a target of 35% of all dwelling units in WESTON 7 be affordable housing (defined in this Plan as either attainable or assisted housing), and a portion of those dwelling units should be accessible to people with disabilities.
- c) The following definitions of attainable and assisted housing apply in WESTON 7:
  - i. **Attainable housing** - Attainable housing is defined as housing that is at 80% of the average resale purchase price, or average market rent by housing type within the Vaughan Market Area. Attainable housing is a form of affordable housing typically delivered by the private sector, and can be achieved by building dwellings at higher than typical densities, and/or smaller dwelling units. The City may affect the cost of housing through reductions in Development Charges, parkland dedication requirements, parking requirements or other financial incentives.
  - ii. **Assisted housing** - Assisted housing is defined as housing that is built by, or is directly subsidized by the public sector, and provides dwelling units that are substantially below the identified value/rent of the housing supply by housing type. Assisted housing is a form of affordable housing that may be provided by the public or private sector, and may be in conjunction with senior government programs.
- d) To achieve the City's target for attainable/assisted housing, the City may implement Inclusionary Zoning throughout WESTON 7, as provided for under the Planning Act.
- e) The following strategies may be considered by the City in an effort to incentivize the development community to assist in achievement the attainable/assisted housing target:
  - i. Permit a range of innovative housing types and tenure models, including, for example, cohousing, communal housing, and life-lease housing;
  - ii. Consider assisted housing as a priority use for surplus City-owned and Region-owned land, and work with all levels of government and institutional landowners to make surplus land available to providers of assisted housing at little or no cost;
  - iii. Provide targeted relief from planning, permit and other fees normally charged for projects that provide permanent attainable/assisted housing, including relief from City and Region-wide Development Charges;
  - iv. Apply for government grants and/or subsidies, including land dedication;
  - v. Explore the eligibility of attainable/assisted housing for grant programs established under a Community Benefits By-law;
  - vi. Provide priority allocation of municipal service infrastructure and transportation system capacity for projects that provide appropriately secured attainable/assisted housing;
  - vii. Provide financial incentive programs established through a Community Improvement Plan;
  - viii. Pre-approve zoning for projects that provide attainable/assisted housing; and
  - ix. Establish reduced parkland and/or parking requirements for projects that provide attainable/assisted housing.
- f) To promote the City's commitment to the achievement of the attainable/assisted housing target in WESTON 7, the following agreements/partnerships and associated implementation tools may be considered by the City:
  - i. Enact a Municipal Housing Capital Facilities By-Law under the *Municipal Act* to enable the City to enter into agreements with private and non-profit partners for the provision of attainable/assisted housing;

- ii. Coordinate and collaborate with local housing advocacy groups, community partners, government agencies and the private sector to support the attainable/assisted housing policies of this Plan and to promote innovative housing forms, development techniques and incentives that will facilitate the provision of attainable/assisted housing;
- iii. The City may become directly involved in the supply of attainable/assisted housing through land acquisitions, use of surplus land, development partnerships, the provision of financial incentives and/or establishment of a not-for-profit housing corporation; and
- iv. The City may provide planning support services to local housing advocacy groups and community service agencies who are interested in pursuing the provision of attainable/assisted housing, as well as a full range of Additional Needs Housing.

### **3.2 Promoting a Strong Economy**

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- a) This Plan supports a diverse range of employment generating uses to be located throughout WESTON 7. The City will continue to diversify the economic base of WESTON 7 by supporting its evolving urban development forms, which includes a full range of commercial uses, including large and small scale office development, institutional uses and a variety of restaurants, retail, entertainment and service commercial businesses. Collectively, the lands designated for mixed-use development will provide requirements and opportunities to accommodate a complete range of commercial goods and services to foster competition and choice for the residents of WESTON 7, as well as residents of the City and the broader region.
- b) To help attract diverse opportunities for employment generating land uses, the City will support a strong and healthy economy within WESTON 7 by:
  - i. Constructing, upgrading and maintaining high quality, universally accessible municipal service infrastructure systems and public service facilities;
  - ii. Facilitating efficient and convenient transportation options for the movement of people and goods; and
  - iii. Planning for an appropriate range of housing to support the local labour force, home occupations, and home-based businesses, including artist studio/maker spaces and live/work units.
- c) The City recognizes the important contribution of post-secondary institutions, libraries and education service providers to the life-long learning opportunities for residents and the enhancement of the creative culture in Vaughan. The City will support the growth and expansion of creative and cultural industries and institutions throughout WESTON 7 as an important sector of the economy.

### **3.3 Supporting a Healthy Community**

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- a) Physical, social, and mental well-being are the necessary components of public health, including opportunities for physical activity. Objectives are to:
  - i. Ensure that public health considerations are a crucial part of decision-making and are fully integrated with requirements for equitable access to a range and mix of housing opportunities, healthy food, clean air and water, safe environments and opportunities for social interaction and physical activity;
  - ii. Commit to an enhanced level of community engagement, where equity, inclusion, information and participation are identified as key building blocks in accountable and transparent decision-making;
  - iii. Be well-connected through a comprehensive transit system enabling the City to provide all communities with equal access to recreation and leisure amenities, including for sports, arts and cultural activities; and

- iv. Enhance the Active Transportation Network, designing communities around pedestrian activity with a substantial number of destinations, including urban parks, cultural and public service facilities, shopping, and restaurant opportunities within walking distance to promote walking and cycling to encourage daily physical activity.
- b) A fundamental element of a healthy community within WESTON 7 is the inclusion of Active Transportation - walking, cycling, using a wheelchair, scooters, inline skating, or skateboarding. As such, this Plan includes an Active Transportation Network which is highly integrated and connected throughout the community and to transportation systems that serve the broader region. This Plan requires that all development contribute to the creation of a walkable and connected community with multiple destinations within walking distance of all residents.
- c) Active Transportation linkages throughout WESTON 7 shall be identified, created and enhanced in tandem with the Pedestrian Realm Network to foster pedestrian and cycling activity, and include:
  - i. Sidewalks, protected cycling facilities and multi-use paths will connect to the street network and to the Pedestrian Realm Network and public service facilities and will ensure that there are corridors between key destinations; and
  - ii. Key Active Transportation routes will include streetscaping elements that promote pedestrian and cyclist comfort and safety, are designed to enhance accessibility for all residents, and will comply with the Accessibility for Ontarians with Disabilities Act.

### 3.4 Providing Public Service Facilities

- a) New development and the projected population in WESTON 7 will require new public service facilities to meet the needs of new and existing residents. Public service facilities include facilities designed to meet the recreational, health, social, educational, self-directed learning and cultural needs of residents including elementary and secondary schools, post-secondary educational facilities, public libraries, museums, cultural centres, community centres and other similar uses.
- b) Public service facilities will be encouraged to provide multi-functional and shared-use facilities and services to better serve residents and achieve capital and operating cost efficiencies. It shall ultimately be the responsibility of the City, and/or other service providers to work with the development industry to secure space for public service facilities within mixed-use buildings. More specifically, it shall ultimately be the responsibility of the School Boards to acquire/secure sites, and/or work with the development industry to secure space for Elementary Schools within mixed-use buildings.
- c) It is the intent of this Plan that public service facilities be incorporated into development plans in all quadrants to ensure equitable access across WESTON 7 and fair distribution across landholdings, on the basis of population yield. **Table 2** identifies the estimated Gross Floor Area to be assigned to public service facilities within each quadrant:

**Table 2 - GFA Estimates for Public Service Facilities to 2051**

	Gross Land Area (hectares)	Estimated Population	GFA for Public Service Facilities
Northwest Quadrant	30	11,210 people	10,900 m <sup>2</sup>
Southwest Quadrant	15	5,995 people	5,800 m <sup>2</sup>
Northeast Quadrant	24	9,640 people	8,200 m <sup>2</sup>
Southeast Quadrant	35	13,905 people	13,500 m <sup>2</sup>
<b>TOTAL</b>	<b>104</b>	<b>40,750 people</b>	<b>38,400 m<sup>2</sup></b>

- d) The GFA estimates are on the basis of between approximately 0.85 and 0.97 square metres per person, and it is important that each Quadrant achieve a reasonable amount of public service facility space, in consideration of the access barriers provided by both Weston Road and Highway 7. The City may consider minor adjustments to the gross floor area estimates among the various Quadrants included in **Table 2** without an Amendment to this Plan, in consultation with affected landowners.

- e) A Community Hub is to be considered in WESTON 7, which may consist of a public library and/or a community centre co-located within an Urban Park Space. The Southeast Quadrant, identified on **Schedule 1**, is the preferred location for the WESTON 7 Community Hub. The need for a Community Hub within WESTON 7 will be subject to additional evaluation in accordance with the City's Active Together Master Plan.

### **3.5 Ensuring High Quality Urban Design**

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- a) All development within WESTON 7 shall be compatible with the existing and planned community context, including the existing context of lands adjacent to WESTON 7. Built form will be the key determining factor for the types of development permitted. The concept and definition of compatible development is intended to ensure that all new development enhances the image, livability and character of WESTON 7 as it evolves over time. Compatible development shall be considered in the evaluation of all development proposals throughout WESTON 7. The following shall be considered when evaluating the compatibility of development proposals:
  - i. The use, height, massing, orientation and landscape characteristics of nearby properties outside of, and adjacent to WESTON 7 are properly considered and appropriate transitions between various built forms and uses shall be ensured;
  - ii. Appropriately scaled and designed on-site publicly accessible amenity space is provided and, where appropriate, connected to the broader Pedestrian Realm and Active Transportation Networks; and
  - iii. Appropriate streetscape patterns, including block lengths, setbacks and building separations are implemented.
- b) The interaction between different building types, both within WESTON 7 and adjacent to it, will be a key consideration in determining compatible development. This Plan will provide guidance on the various planning and design tools to be implemented to ensure compatible development, including appropriate transitions between different building types, heights and land uses, taking in to account both existing and planned context.
- c) All development applications shall be consistent with the Vaughan City-Wide Urban Design Guidelines, and any other relevant Council adopted Manuals, Master Plans, Guidelines and Strategies, to the satisfaction of the City. To demonstrate consistency, the City may require the submission of an Urban Design Report in support of any development application.
- d) The policies of this Plan shall be further implemented through the Zoning By-law and through the Plans of Subdivision/Condominium and/or Site Plan Approval process, where applicable. In addition, the City will continue to utilize the Design Review Panel in its evaluation of proposals for development. Exemptions from the Design Review Panel process may be considered, to the satisfaction of the City.
- e) All development, with a focus on the integrated Pedestrian Realm and Active Transportation Networks, parking lots and other publicly accessible areas, shall be evaluated for consistency/adequacy of achieving the principles and directions of Crime Prevention Through Environmental Design (CPTED).
- f) The City shall pursue the installation of public art throughout WESTON 7. Further, in accordance with any enacted Community Benefits Charge By-law, and the applicable policies of this Plan, the City may identify public art as a defined community benefit, in accordance with the Vaughan City-Wide Public Art Program.
- g) The City supports the ongoing investment in public transit service in WESTON 7. Urban design has an impact on ridership and modal choices by enhancing mobility and comfort at transit stops and along pedestrian routes to get to and from the transit stops. Special design attention is essential for all buildings, open spaces and movement networks adjacent to a transit stop.
- h) Transit Supportive Development must consider issues such as activity at street level, streetscape elements to create attractive, safe, and accessible surroundings, as well as



convenient connections to destination points. The design must contribute positively to the quality of the Pedestrian Realm Network year-round. All development shall be consistent with the York Region Transit Oriented Development Guidelines and the Provincial Transit Supportive Land Use Guidelines, as may be amended, through the development approvals process.

### **3.6 Promoting Sustainability + Adapting to Climate Change**

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- a) This Plan promotes the development of WESTON 7 based on a conceptual design which inherently maximizes the potential for the creation of a complete community, sustainable development and healthy environments through the efficient use of land and infrastructure. This includes the distribution of height and density pattern, the integrated Pedestrian Realm and Active Transportation Networks and multi-modal transportation system. As such, it is expected that WESTON 7 will grow as an environmentally sustainable community over the long term. The City will utilize planning and capital investment tools, as well as urban design approaches, and the Region's Inflow and Infiltration Reductions Standard for Sewers Servicing New Development in its strategic planning for infrastructure and the approval of new development. In addition, the City will encourage and provide policy direction on:
  - i. Initiatives related to water conservation, energy conservation, air quality protection and integrated waste management opportunities;
  - ii. Opportunities for energy efficiency and alternative energy strategies, such as district energy generation, renewable/alternative energy systems and distribution and demand management plans;
  - iii. Innovative green residential and public building designs that contribute to low carbon design, energy use reduction and natural resource conservation, as well as synergies between buildings and site management practices;
  - iv. Green infrastructure to complement existing infrastructure, including the requirement for innovative low impact development opportunities and best practices that minimize the risks associated with natural hazards; and
  - v. Consider the use of tools such as the Community Benefits By-law, Community Improvement Plans, and associated incentive programs to assist with the implementation of development standards that promote environmentally sustainable design and resiliency and that respond to a changing climate.
- b) The City will encourage and support alternative energy systems, renewable energy systems, and district energy systems to accommodate current and projected needs of the community.
- c) The City in implementing the goals and objectives of Green Directions Vaughan, will evaluate the contribution to sustainability of each development application in accordance with the sustainable development policies of the VOP, as well as the Council approved Sustainability Performance Metrics. In addition to the objectives of Green Directions Vaughan, the City shall support and encourage strategies to reduce energy use and carbon neutrality for buildings and infrastructure to reduce its greenhouse gas emissions and increase its climate resiliency.
- d) To support reducing emissions in the transportation sector, the City shall encourage the installation of a publicly accessible electric vehicle charging network throughout WESTON 7.

## **4.0 LAND USE + BUILT FORM POLICIES**

### **4.1 Land Use Specific Policies**

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#### **4.1.1 Land Uses Permitted in All Land Use Designations**

- a) Within all of the land use designations the following uses are permitted, subject to the relevant policies of this Plan:
  - i. Any element of the Pedestrian Realm and Active Transportation Networks;
  - ii. Emergency services facilities, generally having convenient access to Arterial Roads and appropriately integrated with the surrounding development, including appropriate architectural design, landscaping and buffering from residential buildings;
  - iii. Renewable energy systems, subject to relevant Provincial legislation and regulations;
  - iv. Municipal service infrastructure (sewer, water, stormwater management) and public and private roads; and
  - v. Public and private utilities, including electricity transmission and distribution systems, as well as telecommunication facilities subject to any regulatory requirements, such as the provisions of the Environmental Assessment Act.
- b) The location of such uses and facilities shall be justified and compatible with surrounding land uses.

#### **4.1.2 Land Uses Prohibited in All Land Use Designations**

- a) The following uses are prohibited in all land use designations in this Plan:
  - i. Uses that are noxious, polluting, or produce or store hazardous substances;
  - ii. Uses that involve waste management, recycling and/or the storage of contaminated materials;
  - iii. Uses that are prohibited pursuant to the provisions of the *Environmental Protection Act*;
  - iv. Drive-through commercial and/or restaurant facilities;
  - v. Commercial uses requiring extensive outdoor storage areas; and
  - vi. Auto-oriented land uses including motor vehicle sales, gas stations and car washes.
- b) The Zoning By-law shall incorporate general provisions setting out those uses which are prohibited in all zone categories.

#### **4.1.3 Existing Land Uses**

- a) Nothing in this Plan shall prevent the use of land, buildings or structures which lawfully existed prior to the date of the approval of this Plan. Replacement, extension, or enlargement of a lawfully existing use is permitted.
- b) Where a Zoning By-law Amendment and/or a Site Plan Approval are required to facilitate the replacement, extension, or enlargement of a lawfully existing use that is not a permitted use identified in the applicable land use designation of this Plan, such development applications shall achieve the following:
  - i. The use is supported from a land use compatibility perspective and will not create or expand any noxious emissions or adverse nuisance;

- ii. The application is supported by an Urban Design Report that identifies that the proposal is consistent with the applicable the City-wide Urban Design Guidelines and the urban design framework identified in this Plan; and
- iii. The proposal will not compromise the achievement of the vision and principles for WESTON 7 from developing into a vibrant, mixed-use urban community.

**4.1.4 Sensitive Land Uses**

- a) Proposals for the development of residential development and/or other sensitive land uses within WESTON 7 shall have regard for any potential adverse impacts from existing industry and other existing non-residential uses, major streets and transportation infrastructure - particularly proximity to Highways 400 and 407.

Proposals for residential development and/or other sensitive land uses in proximity to existing industry and other existing non-residential uses, major streets and transportation infrastructure - particularly proximity to Highways 400 and 407, shall demonstrate compatibility through the preparation of a Land Use Compatibility Study and/or impact Feasibility Study to identify appropriate measures to mitigate adverse impacts. Such a study shall be completed in accordance with the Ministry of Environment, Conservation and Parks Land Use and Compatibility Guidelines, to the satisfaction of the City and in consultation with other agencies, as required.

- b) With specific reference to the impacts of noise and vibration, proposals for the development of residential and/or other noise sensitive land uses shall have regard for potential noise and vibration impacts from existing industry and other existing non-residential uses, major streets and transportation infrastructure within and in proximity to WESTON 7. Such proposals shall include a noise and vibration study to the satisfaction of the City and in accordance with the Ministry of Environment, Conservation and Parks Land Use and Compatibility Guidelines in order to:
  - i. Identify any appropriate measures to mitigate adverse impacts from the source of noise and/or vibration; and
  - ii. Ensure noise compliance for adjacent regulated industries is maintained.

Should the findings of the noise and vibration study indicate difficulties in meeting the applicable sound level limits for the relevant acoustic Class environment, and upon recommendation by a qualified acoustic professional retained by the City, Vaughan Council may, at their discretion and by resolution, grant a Class 4 designation for a site or area which will be implemented by way of the Zoning By-law, condition of Draft Plan of Subdivision/Condominium and/or through Site Plan Approval, in accordance with the Ministry of Environment, Conservation and Parks Land Use and Compatibility Guidelines and applicable City policy.

**4.1.5 Additional Needs Housing**

- a) Additional Needs Housing is a permitted use within the Residential I designation, the Mixed-Use I designation and the Mixed-Use II designation. Additional Needs Housing includes all types of residences licensed or funded under a Federal or Provincial statute for the accommodation of persons living under supervision and who, by reason of their age, emotional, mental, social, or physical condition, require a group living arrangement for their well-being.
- b) Additional Needs Housing shall conform to the associated criteria for Low-Rise, Mid-Rise, or High-Rise Buildings that are also identified as permitted within the designation, subject to the Zoning By-law.
- c) Additional Needs Housing shall be subject to the provisions of the applicable Zoning By-law, and the satisfaction of the following criteria:
  - i. The site is adjacent to and has direct access to an Arterial or Collector Road;
  - ii. The site is located with convenient access to public service facilities;

- iii. The lot size and configuration are sufficient to accommodate the building, required parking and adequately sized amenity areas;
- iv. Any changes to a building resulting from the conversion to Additional Needs Housing shall be in keeping with the physical form and character of the surrounding neighbourhood;
- v. Municipal property maintenance standards and all other relevant municipal regulations and standards shall apply to the Additional Needs Housing;
- vi. Additional Needs Housing Facility operators shall obtain a license in accordance with the requirements of the applicable authority; and
- vii. The proposed site is within 250 metres of an existing or planned public transit route and is in proximity to parks, public service facilities and retail and service commercial facilities.

#### **4.1.6 Live-Work Units**

- a) Live-work Units may be permitted at-grade within the Residential I designation, the Mixed-Use I designation and the Mixed-Use II designation. Live-work Units are subject to the associated development policies identified in this Plan, and shall provide:
  - i. Amenity areas and buffering with planting and/or fencing from adjacent residential dwellings; and
  - ii. Adequate parking and drop-off/pick-up facilities, to the satisfaction of the City.

#### **4.1.7 Home-Based Businesses**

- a) Home-based Businesses may be permitted within the Residential I designation, the Mixed-Use I designation and the Mixed-Use II designation. Home-based Businesses may be permitted in accordance with the following provisions:
  - i. The use does not substantially alter the character of the property, and the use is compatible with the adjacent community;
  - ii. The use is primarily carried out within the dwelling unit;
  - iii. The use is clearly secondary to the primary use of the property as a residence in terms of floor space utilization;
  - iv. The property is the principal residence of the person carrying on the home occupation use;
  - v. Outside storage of goods, materials, or equipment related to the home occupation use shall not be permitted; and
  - vi. Compliance with on-site parking requirements, including parking for service vehicles such as trailers and commercially licensed vehicles and other provisions regulating home occupations in the Zoning By-law.
- b) The Zoning By-law may include additional provisions regulating Home-based Businesses. The City may implement a Licensing By-law.

#### **4.1.8 Short-Term Accommodations**

- a) Short-Term Accommodations may be permitted within the Residential I designation, the Mixed-Use I designation and the Mixed-Use II designation. Where Short-Term Accommodations, including bed and breakfast establishments, are permitted, they shall only be permitted in the principal residence of the Short-Term Accommodation owner, and shall be subject to the provisions of the Zoning By-law to ensure that the City is satisfied that:

- i. The use does not substantially alter the character of the property, and the use is compatible with the adjacent community; and
  - ii. The unit or part of the unit shall only be made available for Short-Term Accommodations if it conforms with the Ontario Building Code, Fire Code and any other applicable legislation, regulation, or standard.
- b) The City may include additional provisions regulating Short-Term Accommodations and may implement a Licensing By-law.

**4.1.9 Day Care Facilities**

- a) Day Care facilities may be permitted within the Residential I designation, the Mixed-Use I designation and the Mixed-Use II designation. Where Day Care facilities are permitted, they shall be subject to specific regulations in the Zoning By-law and in accordance with the following policies:
- i. The use is intended to serve and support the surrounding community; and,
  - ii. The site is large enough to accommodate the building, on-site play areas, parking and pick-up/drop-off facilities and appropriate buffering, where required.
- b) Where possible, Day Care facilities should be provided in the early phases of the development of WESTON 7 and integrated with public service facilities, mixed-use developments and residential developments.
- c) The Zoning By-law may include additional provisions regulating Day Care facilities and may implement a Licensing By-law.

**4.1.10 Institutional Uses, Entertainment Uses, and Places of Worship**

- a) Institutional uses (that are not specifically identified as a public service facility), entertainment uses and places of worship will be located in buildings designed to reflect their role as focal points for the community. Such buildings should be oriented to the street and designed to maximize accessibility for pedestrians and bicyclists as well as for transit. Buildings accommodating any of these uses should establish an inviting public entrance on the main façade facing the public street.
- b) Institutional uses (that are not identified as a public service facility), entertainment uses and places of worship will be encouraged to locate in multi-storey buildings and to provide for joint use of parking lots/structures and Pedestrian Realm Network elements to reduce land requirements, where multiple users are located on the same site or in the same building.
- c) A key consideration in the design of institutional uses (that are not identified as a public service facility), entertainment uses and places of worship and any adjacent element of the Pedestrian Realm and Active Transportation Networks is to ensure the efficient and effective use of land and to encourage residents to walk, cycle or use transit to access the facilities. To achieve this objective, consideration will be given to the establishment of maximum on-site vehicular parking requirements and minimum on-site bicycle parking requirements. In addition, wider sidewalks and bike lanes on key access routes and locations on transit routes may be pursued.
- d) Where an institutional use (that is not identified as a public service facility), an entertainment use or a place of worship is specifically identified as a permitted use in a designation in this Plan, it shall be permitted only where the use will not cause any traffic hazards, or an unacceptable level of congestion on surrounding roads, as demonstrated by a Traffic Impact Study, to the satisfaction of the City.

**4.1.11 Public Service Facilities, including Elementary Schools**

- a) The relevant policies of the VOP will guide the provision of public service facilities. The City shall ensure that the public service facilities required for development are planned for in accordance with the City's Active Together Master Plan (ATMP) and secured as a part of the development approvals process and appropriately phased in accordance with the proposed development. The City shall work with relevant agencies to monitor population growth and to ensure the provision of appropriate public service facilities are provided to serve the needs of a growing population.
- b) In determining appropriate locations for public service facilities, the City shall have regard for the type of service provided by the facility, recognizing that some uses will serve a localized population, while others will serve the whole or large portions of the City. Where appropriate, public service facilities are encouraged to be incorporated within both public and private development.
- c) It is desirable that public service facilities be clustered together to promote cost-effectiveness and facilitate service integration. The development of public service facilities shall be provided adjacent to elements of the Pedestrian Realm and Active Transportation Networks, and with direct connections to transit facilities. Where public service facilities are specifically permitted within a designation in this Plan, they will be subject to the specific regulations in the Zoning By-law.
- d) **Schedule 1** identifies symbolically conceptual locations for 3 Elementary Schools to serve the future population of WESTON 7. The number and location of future Elementary Schools will be dependent on the actual level of population growth, as WESTON 7 continues to evolve. The following policies shall inform the location and securement of Elementary Schools:
  - i. The precise location, size, configuration and phasing of any Elementary School shall be determined in consultation with the School Boards through the required Block Plan process prior to any planning approvals on sites that include a conceptual location for an Elementary School, as identified on **Schedule 1**. Prior to final approval of such an application for development, satisfactory arrangements shall be made with the appropriate School Board for the securement of lands or floor space to accommodate an Elementary School;
  - ii. Where an Elementary School location identified on **Schedule 1** is not required by a School Board, the lands may be developed in accordance with the underlying land use designation without an Amendment to this Plan;
  - iii. Elementary Schools are a permitted land use within both the Mixed-Use I and Mixed-Use II designations. No Amendment to this Plan shall be required should an Elementary School be located anywhere in a designation where they are specifically identified as a permitted use. Schools should be located adjacent to an Urban Park Space, where feasible; and
  - iv. The City will work with the School Boards to develop Urban Format Elementary Schools that are appropriate within a highly urban context, with a reduced land area, a multi-storey building and/or the opportunity to locate within a mixed-use building.

**4.2 Built Form Specific Policies**

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**4.2.1 General Policies**

- a) The intent of the built form policies is to define principles and policy directions that will help manage the physical form and character of new development as part of the intensification of WESTON 7. There are three key definitions that will inform the physical form of new development, including:
  - i. **Floor Space Index (FSI):** Means the quotient obtained by dividing the total gross floor area of all buildings on the lot, by the lot area.

- ii. **Gross Floor Area (GFA):** Means the aggregate of the floor areas of all storeys of a building measured from the outside of the exterior walls, but excluding any basement, attic, mechanical room, electrical room, elevator shaft, refuse chute, escalators, vehicle and bicycle parking areas, loading areas located above or below grade.
- iii. **Height:** Means in reference to a building or structure, the vertical distance measured from established grade to:
  - In the case of a flat roof, including any roof where more than half of the roof area has a slope of 15 degrees or less above the horizontal, the highest point of the roof surface or parapet, whichever is the greater;
  - In the case of a sloped roof, the mean height between the eaves and the ridge; or,
  - In the case of any structure with no roof, the highest point of the structure.
- b) The location, massing and design of buildings should include a varied skyline (i.e. a variety of roof forms and building heights), and be integrated in an appropriate manner which transitions to the existing and planned context. Further, a variety of building types is encouraged including Low-Rise, Mid-Rise and High-Rise Buildings. The perceived mass of Mid-Rise and High-Rise Buildings should be reduced through design measures such as the vertical articulation of the facades, building step-backs at the upper floors, and the use of a podium and tower built form.
- c) Overall, as WESTON 7 evolves, it will establish an image of well-designed buildings, with high quality architectural detailing. The design of individual buildings and elements of the Pedestrian Realm and Active Transportation Networks will vary throughout WESTON 7, without making impositions of a particular aesthetic. With respect to architectural design, it is the objective of this Plan to:
  - i. Promote and achieve outstanding architecture with a visually harmonious aesthetic; and
  - ii. Provide sufficient flexibility in considering architectural design proposals to support and accommodate variety, without any strict imposition on building 'style'.
- d) The intent of the policies of this Plan is to achieve a balance between a consistency of design as well as individual expression in new developments. This Plan promotes innovation. Rather than requiring a strict level of conformity, the design and architectural quality of development shall be measured according to its level of consistency with the following directions:
  - i. **Identity** - Development shall achieve a unique expressive identity respectful of existing and planned context. Where applicable, the ground floor of buildings shall be designed to express the individuality of the commercial, residential, or public service uses through architectural expression and the inclusion of entrance doors and windows addressing the street;
  - ii. **Green Building** - All development is encouraged to implement the goals and objectives of Green Directions Vaughan, and shall conform to the sustainable development policies of the VOP. New buildings are encouraged to implement strategies to reduce energy use, to reduce its greenhouse gas emissions and increase climate resiliency. All development is required to achieve the appropriate level of sustainability as defined in the City's Sustainability Performance Metrics;
  - iii. **Design Excellence** - All development shall demonstrate design excellence and compatibility with its surrounding existing and planned context. Architectural detailing, landscape treatments and building materials are encouraged to be of the highest quality possible;
  - iv. **Public Art** - Public art may be considered in all significant public or private developments, or on the adjacent streetscape or key element of the Pedestrian Realm Network, in accordance with the City-Wide Public Art Program;

- v. **Building Entrances** - The sense of arrival to a building shall be celebrated through the design, detailing and visibility of its entrance. Where appropriate, canopies extending towards the street providing weather protection may be provided;
- vi. **Mechanical Penthouses** - Vents, mechanical equipment rooms and elevator penthouses shall generally be integrated with the architectural treatment of roofs and screened from view and excessive noise shall be appropriately mitigated. To create greater interest in the skyline, taller buildings are encouraged to introduce articulation in the upper floors to be achieved through the use of terracing and/or architectural appurtenances like projecting roof lines, trellises or other vertical elements;
- vii. **Building Services** - All development shall generally locate and screen service areas, ramps and garbage storage to minimize the impact on the Pedestrian Realm Network and adjacent residences. These facilities shall be located internally within new Mid-Rise and High-Rise buildings. The locations for parking, driveways and service entrances and loading areas are to be carefully considered and coordinated with surrounding developments as well as with the locations for pedestrian entrances. The sharing of building services, service entrances and electrical services among buildings, and among development complexes is encouraged, and should be located below grade where possible;
- viii. **Site Access** - Good site access is generally to be provided from major traffic routes in a safe traffic movement manner on flanking streets or laneways, where available. Any entrances that are placed along said major traffic routes must promote convenient pedestrian access as well as maintain the surrounding streetscape;
- ix. **Parking** - Vehicular parking for residents, visitors and employees must be provided, while also considering strategies to reduce auto dependence. Bicycle parking facilities must also be provided. Overall, vehicular and bicycle parking should be coordinated with surrounding sites to accommodate shared parking facilities. Underground structured parking facilities are preferred;
- x. **Roof Top Amenities** - Where appropriate, roofs and terraces may be used for private and communal outdoor patios, decks and gardens. Roof top amenities may also offer opportunities as dog stations;
- xi. **Privacy** - For residential units with direct access from the street, privacy may be achieved through private outdoor amenity spaces, landscaping, and changes in grade; and
- xii. **Exterior Materials** - Cladding materials are encouraged to be high quality and appropriate for the building type proposed and in recognition of the development context in proximity.

#### **4.2.2 Low-Rise Buildings**

- a) **Schedule 2** identifies where Low-Rise Buildings are the permitted built form within WESTON 7. For Low-Rise Buildings, on any site or block:
  - i. The maximum height shall be 3 storeys; and
  - ii. The maximum density shall be a Floor Space Index of 1.5.
- b) The City may consider Low-Rise Buildings up to a maximum of 5 storeys, subject to the confirmation that an appropriate transition to adjacent existing and potential built forms and uses is achieved, and that there are no undue, adverse impacts on any adjacent property. In considering applications for additional height on a site specific basis, the City may:
  - i. Identify and require enhanced contributions for public service facilities, elements of the Pedestrian Realm and Active Transportations Networks and/or attainable/assisted housing; and
  - ii. Implement special measures in the Zoning By-law, such as angular planes, step backs, increased building setbacks, or enhanced landscape buffers.



Notwithstanding the potential for additional height, there shall be no permitted increase in the maximum permitted density (FSI).

- c) Low-Rise Buildings shall generally be located on Local Roads. New Low-Rise Buildings that are located adjacent to Arterial Roads, or Collector Roads will be required, wherever possible, to develop in a manner that will minimize direct access to such roads.
- d) The following design policies shall form the basis of an evaluation of Low-Rise Building proposals:
  - i. **Orientation** - Buildings shall be orientated to address the street with setbacks that are compatible with the immediate neighbours;
  - ii. **Front Door/Porches** - The main front door to the building shall be clearly visible from the street. Front porches are encouraged as features that increase the prominence of the front entrance;
  - iii. **Private Amenity Space** - Provide outdoor amenity space for dwelling units either individually or in a shared space; and
  - iv. **Parking** - Driveways and/or garage doors must not dominate the front façade of the primary building or the view from the street.

#### 4.2.3 Mid-Rise Buildings

- a) **Schedule 2** identifies where Mid-Rise Buildings are a permitted built form within WESTON 7. For Mid-Rise Buildings, on any site or block:
  - i. The minimum height shall be above 3 storeys;
  - ii. The maximum height shall be up to and including 8 storeys; and
  - iii. The maximum density shall be a Floor Space Index of 3.75.
- b) The City may consider Mid-Rise Buildings up to a maximum of 12 storeys, subject to the confirmation that an appropriate transition to adjacent built forms and uses is achieved, and that there are no undue, adverse impacts on any adjacent property. In considering applications for additional height on a site specific basis, the City may identify and require enhanced contributions for public service facilities, elements of the Pedestrian Realm and Active Transportations Networks and/or attainable/assisted housing.

Notwithstanding the potential for additional height, there shall be no permitted increase in the maximum permitted density (FSI).

- c) For a Mid-Rise Building to achieve the identified maximum height or density on any development site, the City shall be satisfied that that the building is compatible with, and can be sensitively integrated with, or transitioned to residential uses in Low-Rise built forms. In these circumstances, the City shall require supporting studies, such as shadow, wind and privacy assessments, and may implement special measures in the Zoning By-law, such as reduced building heights, angular planes, step backs, increased building setbacks, or enhanced landscape buffers to ensure sensitive integration.
- d) The following design policies shall form the basis of an evaluation of Mid-Rise Building proposals:
  - i. **Suitable Site** - Mid-Rise Buildings should be on a site of suitable size for the proposed development, and provide adequate landscaping, amenity features, buffering, on-site parking and garbage pickup and recycling services. Mid-Rise Buildings shall have frontage onto a Collector or Arterial Road;
  - ii. **Proximity to Amenities** - Mid-Rise Buildings should be located in proximity to the Pedestrian Realm and Active Transportation Networks, public service facilities and other amenities;

- iii. **Parking** - For all Mid-Rise Buildings, the City shall require the use of structured parking facilities to accommodate the majority of the required vehicular and bicycle parking. Underground parking structures are preferred;
- iv. **Floor Plate** - Mid-Rise Buildings shall maintain a floor plate size and massing configuration that permits adequate sky view and minimizes shadow impacts;
- v. **Podium/Base** - Mid-Rise Buildings should be placed on a podium building which is within 3 to 6 storeys in height, setting the scale of the appropriate street wall; and
- vi. **Placement and Orientation** - Mid-Rise Buildings shall be sited to align to streets and open spaces to frame these areas. The minimum separation between Mid-Rise Buildings and Mid-Rise/High-Rise Buildings is a minimum of 15 metres.

#### 4.2.4 High-Rise Buildings

- a) The location of lands designated for High-Rise Buildings within WESTON 7 are identified on **Schedule 2**. For High-Rise Buildings on any site or block:
  - i. The minimum height shall be above 8 storeys;
  - ii. **High-Rise I** - The maximum height for High-Rise Buildings identified as High-Rise I on **Schedule 2** shall be 18 storeys. High-Rise I Buildings shall have a maximum Floor Space Index of 6.0; and
  - iii. **High-Rise II** - The maximum height for High-Rise Buildings identified as High-Rise II on **Schedule 2** shall be 32 storeys. High-Rise II Buildings shall have a maximum Floor Space Index of 7.5.
- b) The City may consider taller buildings within the High-Rise I designation up to a maximum of 25 storeys, and within the High-Rise II designation up to a maximum of 45 storeys, subject to the confirmation that there are no undue, adverse impacts on any adjacent property. In considering applications for additional height on a site specific basis, the City may identify and require enhanced contributions for public service facilities, elements of the Pedestrian Realm and Active Transportations Networks and/or attainable/assisted housing; and

Notwithstanding the potential for additional height, there shall be no permitted increase in the maximum permitted density.

- c) Point Towers are the preferred form for High-Rise Buildings because they have a reduced negative impact on the Pedestrian Realm Network. High-Rise Point Towers are compact, slim buildings with small floor plates often organized around a central elevator core. This form of building minimizes shadowing and visual impacts from the perspective of the pedestrian, and with appropriate separation, can maximize views between buildings and reduce privacy and over-look impacts. The following design policies shall form the basis of an evaluation of High-Rise Building proposals:
  - i. **Suitable Site** - High-Rise Buildings should be on a site of suitable size for the proposed development, and provide adequate landscaping, amenity features, buffering, on-site parking and garbage pickup and recycling services. High-Rise Buildings shall have frontage on a Collector or Arterial Road;
  - ii. **Expressive Forms** - High-Rise Buildings shall clearly express a base at the street level, the main body of the building, and a roof form. This will be achieved through various means including setbacks and step backs;
  - iii. **Proximity to Amenities** - High-Rise Buildings should be located in proximity to the Pedestrian Realm and Active Transportation Networks, public service facilities and other amenities;
  - iv. **Parking** - For all High-Rise Buildings, the City shall require the use of structured parking facilities to accommodate the majority of the required vehicular and bicycle parking. Underground parking structures are preferred;

- v. **Podium/Base** - High-Rise Buildings should be placed on a podium building which is within 3 to 6 storeys in height, setting the scale of the appropriate street wall;
  - vi. **Stepbacks** - The tower portion of the building above the podium structure of any High-Rise Building is required to step back a minimum of 3 metres from the podium façade that forms the street wall;
  - vii. **Massing/Floor Plate** - The tower (the portion of the High-Rise Building above the podium) shall maintain an average gross floor plate size that is no greater than 800 square metres;
  - viii. **Placement and Orientation** - Where possible and appropriate, the placement of a High-Rise Building should be focused on the corner of two intersecting streets and staggered from adjacent towers; and
  - ix. **Minimum Separation** - The minimum separation between residential towers shall be a minimum of 30 metres.
- d) Where a High-Rise building satisfies all other policies, but is intended to accommodate office uses, or other non-residential uses, the building may have a floor plate greater than 800 square metres. Non-residential High-Rise Building proposals shall be evaluated based on all of the relevant design criteria for a High-Rise Building, as modified by the following criteria:
- i. **Massing/Floor Plate** - The average gross floor plate size for an office, or other non-residential building tower shall not exceed 1,800 square metres; and
  - ii. **Minimum Separation** - The minimum separation between High-Rise office, or other non-residential building towers shall be 15 metres. Where a proposed office, or non-residential tower cannot provide an on-site setback of 7.5 metres from any interior side lot line, or rear lot line, legal agreements with abutting, affected landowners shall be required to ensure compliance with required tower separation distances.

## **5.0 LAND USE DESIGNATIONS**

### **5.1 The Residential I Designation**

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#### **5.1.1 Intent**

- a) Within the Residential I designation, it is the intent of the City to promote well-designed and attractive low-rise residential dwellings that acts as a transition to the established residential communities that are adjacent to the boundary of WESTON 7.

#### **5.1.2 Permitted Built Form/Uses**

- a) All development within the Residential I designation, as shown on **Schedule 1**, shall be within a Low-Rise Building. In addition to the land uses permitted by the policies of this Plan, the Residential I designation shall support residential dwelling units, including apartments and all forms of townhouses.
- b) In addition to the identified permitted uses, uses accessory to any of the identified permitted uses are also permitted.
- c) The uses permitted within the Residential I designation may be further refined through the Zoning By-law to ensure that new development is appropriate in the context of the adjacent and surrounding community.

**5.1.3 General Development Policies**

- a) All development within the Residential I designation shall be in conformity with the relevant policies of the VOP and this Plan, and shall be consistent with the Vaughan City-Wide Urban Design Guidelines and any other relevant and Council adopted Manuals, Master Plans, Guidelines and Strategies. Further, and where applicable, Site Plan Approval shall apply to development applications in the Residential I designation.

**5.2 The Mixed-Use I Designation**

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**5.2.1 Intent**

- a) It is envisioned that the Mixed-Use I designation, as identified on **Schedule 1**, will develop at transit supportive intensities, where new businesses and residents will have access to nearby jobs and services and will be connected to the Pedestrian Realm and Active Transportation Networks.
- b) It is the intent of this Plan to promote within the Mixed-Use I designation the development of Mid to High-Rise buildings that include opportunities for retail and service commercial uses, as well as a full range of residential, office, recreational, cultural, entertainment and public service uses and facilities.

**5.2.2 Permitted Built Form/Uses**

- a) All permitted uses within the Mixed-Use I designation, as identified on **Schedule 1**, shall be developed within Mid-Rise and High-Rise Buildings. In addition to the uses permitted by the policies of this Plan, uses on lands within the Mixed-Use I designation, may also include, subject to the relevant policies of this Plan:
  - i. Residential apartments;
  - ii. Retail and service commercial uses and restaurants;
  - iii. Office uses;
  - iv. Institutional uses, entertainment uses and places of worship;
  - v. Hotels, including ancillary uses;
  - vi. Convention/conference facilities;
  - vii. Public service facilities, including elementary schools;
  - viii. Artisan studios and maker spaces;
  - ix. Private clubs; and
  - x. Commercial and/or accessory parking facilities at-grade and/or in structures.
- b) In addition to the identified list of permitted uses within the Mixed-Use I designation, the following uses may also be permitted, subject to the Zoning By-law:
  - i. Uses accessory to any of the identified permitted uses; and
  - ii. Pop-up uses and activities.
- c) The list of permitted uses may be further refined in the Zoning By-law to ensure that new development is appropriate in the context of the adjacent and surrounding community in terms of the size, type, and/or phasing of uses.

**5.2.3 General Development Policies**

- a) Buildings and sites within the Mixed-Use I designation may develop as individual sites or as comprehensively planned complexes. Comprehensive planning will promote a unified

approach to common issues such as urban design, traffic impact and access, the provision of sewage treatment and water supply infrastructure and stormwater management.

- b) Stand-alone, non-residential buildings are permitted within the Mixed-Use I designation. Stand-alone residential buildings are prohibited. All development applications within the Mixed-Use I designation shall include a minimum of 15% of its Gross Floor Area as non-residential land uses. For the purposes of this Plan, uses that support the residential use, as well as Live-Work Units are to be considered as non-residential uses.
- c) The design of buildings within the Mixed-Use I designation shall enhance the quality of the Pedestrian Realm and Active Transportation Networks by including transparent frontages, the articulation of facades and the use of quality materials at the street level.
- d) Where a property within the Mixed-Use I designation abuts the Residential I designation, appropriate mechanisms shall be established in the Zoning By-law to ensure compatibility, considering the existing and planned context.
- e) The City shall encourage compatible development throughout the Mixed-Use I designation by supporting development applications that conform to all the relevant policies of the VOP and this Plan, and are consistent with the Vaughan City-Wide Urban Design Guidelines and any other relevant and Council adopted Manuals, Master Plans, Guidelines and Strategies. Further, Site Plan Approval shall apply to all development applications in the Mixed-Use I designation.

### **5.3 The Mixed-Use II Designation**

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#### **5.3.1 Intent**

- a) The Mixed-Use II designation as identified on **Schedule 1**, is expected to be a focus for a range of commercial uses as well as for residential intensification. Development within the Mixed-Use II designation will be transit supportive and incorporate the Pedestrian Realm and Active Transportation Networks.
- b) It is the intent of this Plan to promote within the Mixed-Use II designation the development of Mid to High-Rise buildings that include opportunities for retail and service commercial uses, as well as a full range of residential, office, recreational, cultural, entertainment and public service uses and facilities.

#### **5.2.2 Permitted Built Form/Uses**

- a) All permitted uses within the Mixed-Use II designation, as identified on **Schedule 1**, shall be developed within Mid-Rise and High-Rise Buildings. In addition to the uses permitted by the policies of this Plan, uses on lands within the Mixed-Use II designation, may also include, subject to the relevant policies of this Plan:
  - i. Residential apartments;
  - ii. Retail and service commercial uses and restaurants;
  - iii. Office uses;
  - iv. Institutional uses, entertainment uses and places of worship;
  - v. Hotels, including ancillary uses;
  - vi. Convention/conference facilities;
  - vii. Public service facilities, including elementary schools;
  - viii. Artisan studios and maker spaces;
  - ix. Private clubs; and
  - x. Commercial and/or accessory parking facilities at-grade and/or in structures.

- b) In addition to the identified list of permitted uses within the Mixed-Use II designation, the following uses may also be permitted, subject to the Zoning By-law:
  - i. Uses accessory to any of the identified permitted uses; and,
  - ii. Pop-up uses and activities.
- c) The list of permitted uses may be further refined in the Zoning By-law to ensure that new development is appropriate in the context of the adjacent and surrounding community in terms of the size, type, and/or phasing of uses.

### **5.2.3 General Development Policies**

- a) Buildings and sites within the Mixed-Use II designation may develop as individual sites or as comprehensively planned complexes. Comprehensive planning will promote a unified approach to common issues such as urban design, traffic impact and access, the provision of sewage treatment and water supply infrastructure and stormwater management.
- b) Stand-alone, non-residential buildings are permitted within the Mixed-Use II designation. Stand-alone residential buildings are prohibited. All development applications within the Mixed-Use II designation shall include a minimum of 20% of its Gross Floor Area as non-residential land uses. For the purposes of this Plan, uses that support the residential use, as well as Live-Work Units are to be considered as non-residential uses.
- c) Where residential development is proposed within the Mixed-Use II designation, it is a requirement of this Plan that no dwelling units be permitted at-grade and a minimum of 75% of the ground floor Gross Floor Area be occupied by non-residential uses, to the satisfaction of the City. For the purposes of this Plan, Live-Work units are to be considered as non-residential uses. All development shall incorporate a minimum floor to ceiling height of the ground floor of at least 4.25 metres.
- d) All development within the Mixed-Use II designation shall be designed in a manner that activates street and sidewalk frontages, particularly along Enhanced Urban Streetscapes identified on **Schedule 3**. The design of buildings shall enhance the quality and safety of the Pedestrian Realm and Active Transportation Networks by including transparent frontages and the articulation of facades at street level. Retail, service commercial and restaurant uses are desirable and preferred, however it is recognized that other non-residential uses, including institutional uses, entertainment uses and public service facilities are permitted at-grade in the Mixed-Use II designation.
- e) The City shall encourage compatible development throughout the Mixed-Use II designation by supporting development applications that conform to all the relevant policies of the VOP and this Plan, and are consistent with the Vaughan City-Wide Urban Design Guidelines and any other relevant and Council adopted Manuals, Master Plans, Guidelines and Strategies. Further, Site Plan Approval shall apply to all development applications in the Mixed-Use II designation.

## **5.4 The Flood Spill Area Overlay**

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- a) The Flood Plain Spill Area Overlay is depicted on **Schedule 1**. Prior to any development in conformity with the underlying land use designation, for all properties that are located within the Flood Plain Spill Area Overlay, it shall be a requirement that a site-specific hydraulic analysis be prepared to assess the characteristics of the flood water and develop an appropriate strategy that demonstrates how the flood plain spill condition can be permanently remediated in such a way that there will be no increased flood impacts on adjacent lands upstream or downstream, and that any proposed development is appropriate. The required site-specific hydraulic analysis shall be carried out to the satisfaction of the Conservation Authority.
- b) Where updates to the flood plain spill area mapping are provided by the Conservation Authority, or by development proponents through technical studies completed to the satisfaction of the Conservation Authority, the limits of the spill area depicted on **Schedule 1** may be modified and updated without Amendment to this Plan.

**5.5 The Colossus Drive Corridor Protection Area Overlay**

- a) **Schedule 4** identifies the Colossus Drive Corridor Protection Area Overlay. The intent of this delineation is to preclude the approval of development applications within the Colossus Drive Corridor Protection Area Overlay until such time as a future Environmental Assessment has identified and defined an appropriate corridor for the required Colossus Drive Extension that connects WESTON 7 with the VMC, over Highway 400.
- b) Notwithstanding a) above, where a development application includes lands both within and outside of the Colossus Drive Corridor Protection Area Overlay, such applications may be considered for approval on the portion of the lands located outside of the Colossus Drive Corridor Protection Area Overlay prior to the identification and definition of the Colossus Drive Extension corridor.
- c) Notwithstanding a) above, where a development application includes lands both within and outside of the Colossus Drive Corridor Protection Area Overlay, Zoning By-law Amendments and/or changes to existing Site Plan Agreements to permit minor expansions of existing commercial uses may be permitted on the portion of the lands located outside of the Colossus Drive Corridor Protection Area Overlay prior to the identification and definition of the Colossus Drive Extension corridor.

**6.0 THE PEDESTRIAN REALM NETWORK**

**6.1 Defining the Pedestrian Realm Network**

- a) The Pedestrian Realm Network, identified on **Schedule 3**, in WESTON 7 shall be comprised of various and diverse components, including Urban Park Spaces and Streetscapes. All of the components play vital roles in connecting and animating WESTON 7. The components included within the Pedestrian Realm Network are significant contributions to the provision of recreational opportunities and for social activity. Specific planning, design and maintenance considerations are required to ensure the vitality and longevity of these spaces.
- b) The key elements of the Pedestrian Realm Network include:
  - i. Urban Park Spaces; and
  - ii. Streetscapes.

Each element of the Pedestrian Realm Network must be considered in concert with one another and within the context of the evolving WESTON 7 community. A comprehensive understanding of how these spaces work together and complement each other, and their adjacent uses, will lead to well-connected, universally accessible Pedestrian Realm and Active Transportation Networks throughout WESTON 7. Moving people in to, out of and through the community easily and safely, and providing a variety of spaces for socializing, special events and recreation, is a priority of this Plan. The Pedestrian Realm Network works seamlessly with the Active Transportation Network.

- c) A healthy and sustainable tree canopy is a fundamental element of the character of WESTON 7. On public lands and the lands within the public elements of the Pedestrian Realm Network, the planting and maintenance of the tree canopy shall be in accordance with the City's Urban Forestry Management Strategy.
- d) Enhanced maintenance protocols will be established by the City to ensure the ongoing success of these key Pedestrian Realm Network assets. All Urban Park Spaces will be maintained to meet or exceed the City's standard level of service.

## 6.2 Urban Park Spaces

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### 6.2.1 Intent

- a) A key component of the Pedestrian Realm Network is the Urban Park System. The key components of the Urban Park System are identified on **Schedule 3**. It is the intent of this Plan to create a desirable, high quality and unique Urban Park Space network within WESTON 7. This Plan will be used by the City to assemble a full range of Urban Park Spaces, including larger parcels of land acceptable for a range of recreational programming within WESTON 7.
- b) A comprehensive understanding of how these Urban Park Spaces work together and complement each other, and integrate with adjacent buildings, will lead to a well-connected, and universally accessible Pedestrian Realm Network and associated Active Transportation Network. Moving people through WESTON 7 easily and safely, and providing a variety of spaces for socializing, special events and recreation is a priority.
- c) The Urban Park Space hierarchy appropriate for WESTON 7 is comprised of the following components:
  - i. **Urban Squares** - The locations for the Urban Squares are identified symbolically on **Schedule 1**. On **Schedule 3** the locations, their configuration and sizes of the network of Urban Squares are articulated conceptually. **Schedule 3** also identifies that the vast majority of the future population of WESTON 7 is within a 2-minute walk (200 metres) of a planned Urban Square;
  - ii. **Promenades** - Promenades are identified conceptually on **Schedule 3**; and
  - iii. **Pocket Parks** - Pocket Parks are not identified on the Schedules to this Plan to provide the flexibility to consider these important elements of the Pedestrian Realm Network on a site specific basis.
- d) All of these Urban Park Space elements will play vital roles in animating WESTON 7. Specific planning, design and maintenance considerations are required to ensure the long-term vitality and longevity of these Urban Park Spaces. Adjustments to the location, configuration and sizes of the elements identified on **Schedule 3** can be made through the development application process without an Amendment to this Plan, subject to the City being satisfied that the Pedestrian Realm Network is being achieved.

### 6.2.2 Policies for Urban Park Spaces

- a) It is the intent of this Plan that between 8 and 10 hectares of land be dedicated/secured for Urban Park Spaces within WESTON 7. All Urban Parks Spaces will:
  - i. **Be safe, secure and accessible** - Be safe, secure and accessible to the public for a minimum of 17 hours per day, unless otherwise established through required legal agreements. Urban Park Spaces will include adequate signage that indicates when they are open and accessible to the public;
  - ii. **Be well maintained** - Comprehensive maintenance schedules will be developed for all Park Spaces, including existing and new, to ensure safe, accessible and healthy landscapes;
  - iii. **Prioritize pedestrian comfort** - Access to sunlight and protection from wind and other elements will be considered to support year-round use of the Urban Park Space. Pedestrian amenities, such as backed seating, tables, washrooms, water fountains and waste receptacles shall be of a high quality and readily available within all Urban Park Spaces, where appropriate;
  - iv. **Be designed to the highest standards** - Top quality and resilient building materials that can withstand high usage levels, green infrastructure, environmentally sustainable planting choices and opportunities for Public Art are priorities in the design of all Urban Park Spaces; and



- v. **Promote connectivity** - Urban Park Spaces shall be appropriately linked with other elements of the Pedestrian Realm Network, the Active Transportation Network and, where appropriate, public service facilities, including elementary schools.

**Urban Squares**

- b) Urban Squares are the largest element of the Urban Park Space hierarchy anticipated within WESTON 7, and are to be distributed within each of the four Quadrants. Preferred locations for Urban Squares are identified symbolically on **Schedule 1** and conceptually on **Schedule 3**.
- c) Urban Squares, which are the largest element of the Urban Park Spaces anticipated within WESTON 7, are to be distributed within each of the four Quadrants, as conceptually identified on **Schedule 3**, and generally in accordance with **Table 3** below:

**Table 3: Urban Squares - Distribution by Quadrant**

Quadrant	Gross Land Area (ha)	Dedicated Urban Squares (ha)	Percent of Gross Land Area	Minimum Size of an Urban Square (ha)	Minimum Number of Urban Squares
Northwest Quadrant	30	1.7	5.7%	0.5	3
Southwest Quadrant	15	1.6	10.7%	0.8	2
Northeast Quadrant	24	1.9	7.9%	0.5	3
Southeast Quadrant	35	2.3	6.6%	0.6	3
<b>TOTALS</b>	<b>104</b>	<b>7.5</b>	<b>7.2%</b>		<b>11</b>

No Amendment to this Plan will be required to make changes to the number, size and/or location of the Urban Squares identified in **Table 3** and on **Schedule 1** and **Schedule 3**, however, the number, size and location of the identified Urban Squares shall be confirmed through the required Block Plan process on a Quadrant-by-Quadrant basis, to the satisfaction of the City.

- d) The development of Urban Squares shall be generally consistent with the following policies, in addition to the policies for all Urban Park Spaces:
  - i. Urban Squares are pedestrian spaces include both hardscape and softscape elements, intended to accommodate socializing in a dense urban area. An Urban Square in WESTON 7 is defined as a park space that is a minimum of 0.5 hectares in size (5,000 square metres);
  - ii. Avoid visible garbage storage facilities, loading docks or utilities in or directly adjacent to Urban Squares;
  - iii. Urban Squares shall be designed in a manner that is generally consistent with the following additional criteria:
    - Include a minimum frontage on a public street of at least 40 percent of its depth. It is encouraged to have multiple public street frontages;
    - Include high quality, barrier free programmable space that can facilitate socializing, special events and recreation;
    - Include appropriate landscaping;
    - Adjacent built form shall have abutting active frontages; and
    - Facilities to include seating and a furniture program, including lighting.

**Promenades**

- e) Promenades are conceptually identified on **Schedule 3**. The development of Promenades shall be generally consistent with the following policies, in addition to the policies for all Urban Park Spaces:
  - i. Promenades are elements of the Pedestrian Realm Network that enhance and add to the width of the public sidewalk system. Promenades are defined as additions to the required sidewalk space that create opportunities for plazas or forecourts between the face of the adjacent building and the street;
  - ii. Promenades shall be designed to be a minimum width of 6.0 metres and in a manner that is generally consistent with the following additional criteria:
    - Adjacent built form shall have primary and active frontages facing the Promenade; and
    - Facilities may include opportunities to enhance the street tree canopy, seating and a furniture program, including lighting.
- f) No Amendment to this Plan will be required to make changes to the location of the Promenades identified on **Schedule 3**, however, the location of the identified Promenades shall be confirmed through the required Block Plan process on a Quadrant-by-Quadrant basis, to the satisfaction of the City.

**Pocket Parks**

- g) Pocket Parks are not identified on **Schedule 3**. The development of Pocket Parks shall be generally consistent with the following policies, in addition to the policies for all Urban Park Spaces:
  - i. Pocket Parks are small-scaled components of the Pedestrian Realm Network that are intended to augment, on a site-by-site basis, the network of Urban Park Spaces within WESTON 7. They are expected to be less than 5,000 square metres, but generally greater than 75 square metres in size;
  - ii. Pocket Parks shall be designed in a manner that is generally consistent with the following additional criteria:
    - Include frontage on a public street of a minimum of 7.5 metres;
    - Promote adjacent built form have primary and active frontages facing the Pocket Park, where appropriate; and
    - Provide appropriate facilities that may include seating and a furniture program, lighting, water features and other facilities that promote a passive, relaxing atmosphere. Where appropriate, opportunities for outdoor cafés and restaurants may be considered.

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## **6.3 Streetscapes**

### **6.3.1 Intent**

- a) WESTON 7 is expected to incorporate both existing and new roads to serve new developments with varying functional purposes, with varying pavement widths and rights-of-way. The City will implement a flexible approach to streetscape design, including expanded Pedestrian Realm Network and Active Transportation Network elements, green infrastructure and environmentally sustainable trees/planting programs, street furniture and lighting. Inherent to this design flexibility, the principles for Complete Streets are to be implemented. Streetscape development shall be consistent with the City-wide Urban Design Guidelines and any other applicable Council adopted Manuals, Master Plans, Guidelines and Strategies.

- b) On **Schedule 3**, two Street Character Types are defined according to existing or anticipated levels of pedestrian and vehicular traffic and adjacent land uses and built form:
  - i. Enhanced Urban Streetscape; and
  - ii. Standard Urban Streetscape.

Streetscapes in WESTON 7 comprise a significant element of the Pedestrian Realm Network and associated Active Transportation Network - which solidifies their importance as a defining feature of WESTON 7. Streets can be engaging and safe outdoor places with beautiful trees and plants, seating, shade and Public Art for everyone to enjoy. Streetscape design shall consider programming strategies that are a key element of street life activation.

- c) How built form interfaces with the Streetscape is important to animating the street and creating a safe, welcoming environment for pedestrians and cyclists. This crucial interface of Streetscape and built form is dependent upon the scale of the buildings, the width and function of the street and the size of the building setbacks. Active frontages correspond to at-grade uses, and the level of animation also define the type of Streetscape that is appropriate. It is the intent of this Plan:
  - i. That the design and maintenance of the range of Streetscapes in WESTON 7 must reflect its high quality character; and
  - ii. To create an enhanced Pedestrian Realm Network and support pedestrian movement and other forms of Active Transportation by expanding the sidewalk width, and employing mid-block access and well designed promenades and intersections.

**6.3.2 Policies for Streetscapes**

- a) Streets within WESTON 7 are to be defined by their attractive character and by their emphasis on environmental quality. Streetscape design will place an emphasis on creating comfortable and convenient facilities for pedestrians and cyclists, and they may also incorporate transit routes. The development of the various Street Character Types shall be generally consistent with the following design policies:
  - i. Street furnishings, trees and under story plantings and paving materials must be of the highest quality, and are intended to establish a consistent and recognizable sense of place within WESTON 7;
  - ii. The design of streetscapes shall create defined and continuous zones for planting, street furnishings, utilities and pedestrian, cyclist and vehicular traffic and, where appropriate, opportunities for cycle tracks; and
  - iii. The City-Wide Streetscape Implementation Manual shall guide the design of all new streets in WESTON 7. In addition, Streetscapes shall be designed in a manner that is generally consistent with the following additional criteria:
    - Be designed on the basis of the principles for Complete Streets, using sustainable infrastructure innovations;
    - Incorporate appropriately scaled space for cyclists and pedestrians; and
    - Create opportunities for environmental cover in addition to street trees to enhance the Pedestrian Realm Network.

***Enhanced Urban Streetscapes***

- b) Enhanced Urban Streetscapes are identified on **Schedule 3** where non-residential land uses are required at-grade. The elements of the Pedestrian Realm and Active Transportation Networks and adjacent uses and built forms shall actively engage with pedestrian traffic.

**Standard Urban Streetscapes**

- c) On Standard Urban Streetscapes, also identified on **Schedule 3**, active, non-residential land uses are permitted and encouraged at-grade. Where active, non-residential land uses are provided at-grade, a positive pedestrian experience will rely on the effectiveness of the streetscaping treatment.

**7.0 TRANSPORTATION, SERVICE INFRASTRUCTURE + UTILITIES**

**7.1 A Multi-Modal Transportation System**

**7.1.1 Intent**

- a) This Plan has been developed concurrent to a comprehensive Transportation Master Plan. It is the intent of this Plan to:
  - i. Maintain a safe, multi-modal, and integrated Transportation System, comprised of an Active Transportation Network, a Transit Network and a Road Network that permits the safe and efficient movement of people and goods within WESTON 7 and beyond;
  - ii. Enhance the Region’s transit system by ensuring that transit routes are connected to the Pedestrian Realm and Active Transportation Networks, public service facilities, and that transit is frequent and reliable enough to serve the needs of WESTON 7 and beyond; and
  - iii. Create and enhance a connected Active Transportation Network that is fully integrated with the Pedestrian Realm Network that serves WESTON 7’s anticipated population and business community, and fosters a seamless, multi-modal community where daily travel does not rely primarily on the use of a private automobile.
- b) Planned Transportation System improvements shall be implemented through the development process as set out in the VOP, including the conveyance of streets through the Plan of Subdivision, Rezoning and/or Site Plan Approval processes. The City, at its discretion, in exceptional circumstances, may also directly purchase lands for planned Transportation System improvements.
- c) The multi-modal Transportation System in WESTON 7, as depicted on **Schedule 4**, consists of three equally important elements: the Road Network, the Transit Network and the Active Transportation Network. The Transportation System serves as the framework on which to provide for travel by all modes, with a focus on, but not limited to, walking, cycling, emerging mobility opportunities and transit.
- d) The Transportation System is premised on the pattern of development and increases in traffic volumes anticipated within WESTON 7 over time. All development, including all public works related to the Transportation System, shall conform with the relevant policies of the VOP and this Plan. This Plan provides a broad based policy framework with respect to:
  - i. The Active Transportation Network;
  - ii. The Road Network;
  - iii. Public Transit; and
  - iv. Park Access and Service Facilities.

**7.1.2 The Active Transportation Network**

- a) The intent of the Active Transportation Network is to provide enhanced connectivity to maximize access to, from and within WESTON 7. The Active Transportation Network is planned to provide a fine-grained and highly connected network, intended to allow Active Transportation options and to have the same or shorter travel times than automobiles.
- b) The Active Transportation Network is fundamentally connected to the Pedestrian Realm Network identified on **Schedule 3** and includes sidewalks and cycle tracks (vertically-separated cycling facilities), as well as the Active Transportation Links identified conceptually on **Schedule 4**.
- c) The Active Transportation Network must be safe and comfortable for all users, consistent with the facility selection guidance of the City's Pedestrian and Bicycle Master Plan. This will ensure the greatest amount of encouragement for travelers in WESTON 7 to travel by means other than the private automobile. The Active Transportation Network shall be designed to:
  - i. Provide comfortable, pedestrian-friendly and cycling-friendly environments which may include shade trees and other vegetation, street furniture, parking for bicycles, lighting and signed and safe street crossings and other traffic controls;
  - ii. Where possible and applicable, connect to Active Transportation Networks in communities adjacent to WESTON 7 to create a continuous network;
  - iii. Minimize road crossings and, where viable, provide pedestrian overpasses/underpasses constructed where the Active Transportation Network intersects with major roads;
  - iv. Minimize hazard and conflict exposures through the provision of adequate lighting, signage and wayfinding, as well as the management of vehicle speeds where on-road facilities are provided; and
  - v. Incorporate changes in elevation and direction. Where possible, steep grades should be avoided.

***Active Transportation Links***

- d) The Active Transportation Network includes a number of Active Transportation Links which are identified conceptually on **Schedule 4**. Active Transportation Links shall have a minimum right-of-way width of 6.0 metres. However, the actual location and design of the identified Active Transportation Links will be determined by the City through the development approval process. The development of the various Active Transportation Links shall be generally consistent with the following policies:
  - i. May be publicly owned, or privately owned and publicly accessible.
  - ii. Can be outdoor or indoor;
  - iii. Will be safe, secure and accessible and shall include appropriate lighting;
  - iv. Shall be provided in high pedestrian volume areas, for ease of movement as well as the creation of unique urban spaces;
  - v. Shall include several egress opportunities to the public sidewalk system;
  - vi. Will be located between pedestrian destinations and may become destinations themselves;
  - vii. Shall include opportunities for retail along their length, or alternately a green soft landscape treatment with plantings, furnishings and lighting;
  - viii. Shall be designed to the highest standards. Top quality building materials, informed planting choices and environmental sustainability are priorities;

- ix. Facilities shall include seating and a full furniture program, including lighting, facilities that promote a passive, relaxing atmosphere, water features and Public Art. Where appropriate, opportunities for outdoor cafés and restaurants shall be considered;
  - x. Shall include comprehensive maintenance schedules to ensure safe, accessible and healthy spaces; and
  - xi. Shall be open to the public for a minimum of 17 hours per day.
- e) The City may adjust the location and/or alignment of the Active Transportation Links identified on **Schedule 4** to accommodate the actual on-ground route, and to respond to new opportunities and/or constraints that arise from time-to-time, without the need for an Amendment to this Plan.

### 7.1.3 The Road Network

- a) The planned Road Network in WESTON 7, identified conceptually on **Schedule 4** has been established and supported through the associated Transportation Master Plan. The planned Road Network is expected to be fine-grained and is intended to establish the pattern of development sites and blocks. Development sites and blocks are required to have frontage on a public road.
- b) Modifications to the location and alignment for the planned Major and Minor Collector Roads identified on **Schedule 4** are permitted without Amendment to this Plan. The alignments shall be determined by the City, in consultation with the Region through a Municipal Class Environmental Assessment, a suitable equivalent study and/or through the development approval process.
- c) Modifications to the location, alignment and requirement for planned Local Roads identified on **Schedule 4** are permitted without Amendment to this Plan, provided that:
  - i. Modified Local Roads connect to Minor Collector Roads; and
  - ii. The spacing between Local Roads which connect to Minor Collector Roads is accepted by the City through the development approval process.
- d) The planned Road Network identified on **Schedule 4** shall have minimum rights-of-way as follows:
  - i. **Highway 7** - A Regional Rapid Transit Corridor - The right-of-way width and design of Highway 7 shall comply with the requirements of the Region;
  - ii. **Weston Road** - A Regional Arterial Road - The right-of-way width and design of Weston Road shall comply with the requirements of the Region;
  - iii. **Major Collector Roads** - Major Collector Roads shall have a minimum right-of-way width of 30 metres. Major Collector Roads shall have sidewalks and cycle tracks on both sides of the Road. They shall include up to 4 vehicle travel lanes. Where necessary, the right-of-way may increase to accommodate additional turn lane(s) at intersections;
  - iv. **Minor Collector Roads** - Minor Collector Roads shall have a minimum right-of-way width of 24 metres. Minor Collector Roads shall have sidewalks and cycle tracks on both sides of the Road. They shall include a minimum of 2 vehicle travel lanes. Where necessary, the right-of-way may increase to accommodate additional turn lane(s) at intersections; and
  - v. **Local Roads** - Local Roads shall have a minimum right-of-way width of 23 metres. Local Roads shall accommodate 2 vehicle travel lanes and on-street parking, as well as sidewalks on both sides of the Road and cycle-tracks. The City may consider reduced right-of-way requirements if it is demonstrated that parking and/or cycle-tracks are not required based on the appropriate justification, to the satisfaction of the City.

In addition, the City may consider privately owned Local Roads, subject to meeting appropriate design criteria as well as legal agreements registered on title to ensure full public access and public infrastructure emplacement, to the satisfaction of the City.

- e) The Road Network provides connectivity within, as well as to and from WESTON 7. Major and Minor Collector Roads and Local Roads form the internal road network, with Local Roads primarily connecting to development and Major and Minor Collector Roads primarily connecting to Highway 7 and Weston Road.
- f) The Road Network within WESTON 7 should be designed to an appropriate speed limit to minimize the potential for motorist speeding. Speed limits should be reviewed in the context of the City's Speed Limit Policy to encourage lower speed limits on streets, wherever technically justified, to increase safety for vulnerable road users.
- g) Priority will be placed on providing safe and comfortably designed spaces for pedestrians and cyclists, with streetscapes that encourage users to walk or bicycle.
- h) The number, type, and design of permitted entrances shall protect the existing, or planned function of the road. Development abutting Collector and Local Roads shall consolidate vehicular accesses wherever possible to minimize conflicts with the Pedestrian Realm and Active Transportation Networks and to limit impacts on traffic flow.
- i) Vehicular access to development for parking, servicing and pick-up/drop-off shall be provided from Local Roads unless technically unfeasible. Shared private driveways will provide vehicular and servicing access to development blocks and shall be coordinated within the blocks to give access to multiple buildings. Shared private driveways will be designed to meet technical standards of the City and enhance pedestrian safety through providing adequate lighting, connecting with a street at both ends, and providing sufficient landscaping to buffer from outdoor amenity areas.
- j) Entrances on to the Road Network shall comply with the standards established by the City, the Region, or the Province. All new entrances on to the Road Network shall require the approval of the agency having jurisdiction. Changes in land use, or the density of development may also require the approval of the agency having jurisdiction.
- k) Private, mid-block mews or laneways connecting to Local Roads may be considered by the City where they serve development and support the establishment of the interconnected, fine grained planned Road Network identified on **Schedule 4**. Mews and laneways may be considered through the development approval process, and shall be fully publicly accessible, as established through legal agreements registered on title, to the satisfaction of the City.

#### **7.1.4 Public Transit**

- a) WESTON 7 is well served by public transit. **Schedule 4** identifies a number of existing and potential transit opportunities to serve WESTON 7, including a potential enhanced public transit link to the subway facility to the east in the VMC, as well as to the planned 407 Transitway.
- b) This Plan encourages the use of public transit by connecting patrons and residents with transit services through the accommodation of local transit service and the Pedestrian Realm and Active Transportation Networks. The provision of high-quality walking and cycling facilities is encouraged to further increase the potential catchment area of public transit services within WESTON 7.
- c) Vaughan is committed to working with the relevant transit agencies to support public transit service improvements required to ensure the success of WESTON 7. In addition, as part of the development approval process, the City will ensure that lands are secured where appropriate for public transit facilities.
- d) The City shall assist relevant transit agencies in protecting and obtaining lands required for rights-of-way, street widening and other facilities for the provision of public transit services including parking, services and utilities through the development process.

**7.1.5 Parking, Access and Service Facilities**

- a) It is the intent of this Plan to minimize the amount of surface automobile parking in WESTON 7 in order to realize the intensity of built-form anticipated by this Plan. In accordance with the relevant policies of the VOP, vehicle parking will be managed to minimize adverse impacts including environmental and visual impacts.
- b) Parking, loading and garbage collection/storage facilities for all permitted land uses shall be provided on-site. Parking facilities for Low-Rise Buildings are encouraged to be in structure. Parking facilities for Mid-Rise and High-Rise Buildings shall be primarily accommodated in structure and, where possible, so should loading and garbage collection areas.
- c) Within WESTON 7, above-grade parking structures are permitted. Where above-grade parking structures front onto a public or private road, or any element of the Pedestrian Realm Network, active ground floor uses are encouraged to animate the streetscape and enhance pedestrian and cyclist safety. Where active ground-floor uses are not provided, an above-grade parking structure shall include facades finished with high quality materials to minimize the visual impact of the structure on the Pedestrian Realm Network. In all circumstances, an above-ground parking structure shall screen parking facilities from view at the sidewalk level. The street frontage wall, where an active use is not provided, shall be enhanced by architectural detailing.
- d) It is recognized that surface parking may be provided for development in the Residential I designation, or on an interim basis in the early phases of new development in other designations. It is a requirement of this Plan that all applications for development demonstrate the transition to an end state scenario where buildings, rather than parking, become the predominant feature of the streetscape.

Where surface parking currently exists or is proposed as part of an initial phase of development, a phasing plan shall demonstrate how such parking will be eventually minimized. Surface automobile parking facilities shall be designed in a manner which does not impede the Active Transportation components of the Transportation System. Where provided, the design of surface parking shall consider:

- i. Planting strips and landscaped traffic islands, medians, or bump-outs shall be provided within lots to screen these facilities from adjacent streets and to break up the expanse of hard surface; and
  - ii. Pedestrian-scaled lighting, walkways, landscaping, and signage to enhance pedestrian safety, movement and comfort through parking lots to the adjacent sidewalks.
- e) Parking, other than short-term surface parking (taxi, delivery, pick-up and drop-off), for any Mid-Rise or High-Rise Building shall be primarily provided in underground, or in above-ground parking structures. Parking structures shall:
    - i. Have well designed facades which appear as a fenestrated building, with well-articulated openings and high-quality materials above grade;
    - ii. Have entrances off of public or private roads and be integrated with the design of the building; and
    - iii. Have pedestrian entrances to integrated parking structures which are easily identified, well-lit and designed with consideration for CPTED principles.
  - f) Service and loading facilities, including garbage storage, shall generally be enclosed within a building for all Mid-Rise and High-Rise Buildings and be accessed from a Local Road. Where loading and servicing is visible at the rear or side of a building, it shall be screened by the main building, landscape treatment or other screening. Underground loading and service areas shall be encouraged.
  - g) Access to loading facilities that are within buildings shall be designed to accommodate trade vehicles, moving vans, garbage trucks and delivery vehicles. In general, loading, garbage collection and parking areas should not be located where they are perceived from



the Streetscape and should be hidden from view. Where possible, access to parking, loading and garbage collection areas should be located on the road with the least pedestrian traffic.

- h) Bicycle parking, carpool and carshare parking should be prioritized and located in convenient and accessible locations in proximity to main entrance points or destinations.
- i) The City may consider permitting parking, including access to parking, under the elements of the Pedestrian Realm and Active Transportation Networks provided the purpose, function and character of these facilities is not materially or qualitatively compromised, and subject to the City's design and construction requirements and a strata title agreement with conditions established to the satisfaction of the City.
- j) The provision of automobile parking shall be encouraged to include the establishment of maximum parking standards as a mechanism to support transit use and to reduce traffic congestion within WESTON 7.
- k) The City shall monitor the need for public parking in WESTON 7 and may prepare a public parking strategy that addresses, among other matters, the role of a Municipal Parking Authority, in accordance with the relevant policies of the VOP.
- l) Both short-term street-level bike parking, as well as long-term sheltered bike parking shall be provided. Bicycle parking facilities shall be designed to maximize user convenience in terms of physical location, weather protection, security and ease of use, including but not limited to meeting the provisions of the City's Zoning By-law. Bicycle parking requirements will be identified through the development approval process.

#### **7.1.6 Implementation of the Transportation System**

- a) The implementation of the Transportation System for WESTON 7 will be planned and designed to accommodate all modes of travel and for universal accessibility, prioritizing walking, cycling and transit, in accordance with the principles of the Vaughan Complete Streets Guide. The planned Road Network will balance the needs of all users while recognizing the importance of encouraging a range of active street life during both day and night.
- b) The Road Network identified on **Schedule 4** shall be conveyed to the municipality as a condition of the approval of development. The Road Network will be developed in conformity with the relevant policies of the VOP and the recommendations of the comprehensive Transportation Master Plan. The intent is to ultimately develop a connected and continuous Road Network, while recognizing constraints that create barriers which limit the achievement of a completely connected network.
- c) The Implementing Zoning By-laws for each development within a Quadrant will include the Holding (H) provision. One of the requirements for the removal of the (H) symbol shall be the securement of all the lands necessary for the establishment of the Major and Minor Collector Road Network within the affected Quadrant as identified on **Schedule 4**.

## **7.2 Service Infrastructure + Utilities**

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### **7.2.1 General Policies**

- a) Municipal service infrastructure includes water, wastewater and stormwater facilities that are a critical element in the development of WESTON 7. The objectives of this Plan with respect to municipal service infrastructure are to:
  - i. Provide adequate and sufficient systems of water supply, sanitary sewage disposal and storm drainage to all areas of development in WESTON 7 in accordance with the phasing policies this Plan and based on sound financial planning; and
  - ii. Develop necessary municipal service infrastructure enhancements and undertake improvements to existing servicing infrastructure bearing in mind the ultimate servicing requirements of the municipality, and the municipality's ability to finance such projects.

- b) Municipal service infrastructure in WESTON 7 shall be planned in recognition of the two tier municipal water and wastewater services model and in an integrated and financially sustainable manner, having regard for the long-term development potential for WESTON 7 and including evaluations of long-range scenario-based land use planning and financial planning supported by infrastructure master plans, asset management plans, environmental assessments and other relevant studies and should involve:
  - i. Leveraging investments in municipal service infrastructure enhancements to direct growth and development in accordance with the policies of this Plan;
  - ii. Providing sufficient municipal service infrastructure capacity for the ultimate intensification of WESTON 7;
  - iii. Identifying the full life cycle costs of municipal service infrastructure and developing options to pay for these costs over the long-term, as determined by the City and the Region; and
  - iv. Considering the impacts of a changing climate.
- c) All development within WESTON 7 shall be provided with full municipal service infrastructure.
- d) In planning for the expansion of existing municipal service infrastructure corridors, the City will encourage the co-location of linear water, wastewater and stormwater service infrastructure, wherever possible, subject to any more detailed policies of this Plan;
- e) Planned municipal service infrastructure enhancements shall be implemented through the development approval process as set out in the VOP. The City, at its discretion, in exceptional circumstances, may also directly purchase lands for planned infrastructure improvements.
- f) The processing and approval of development applications shall fully consider the availability of water and wastewater capacity within the local municipal systems, in addition to capacity identified by the Region. Where adequate municipal service infrastructure does not exist, the City may not approve the application, or may use Holding (H) provisions in the Zoning By-law to regulate the timing of development. Where adequate servicing capacity does not exist to support a proposed development, neither the City nor the Region will not be obligated to provide such servicing in advance of development.

#### **7.2.2 Municipal Water and Wastewater Servicing Infrastructure**

- a) Servicing infrastructure for water and wastewater shall be planned in a comprehensive manner and shall be guided by the recommendations contained in the City-Wide Integrated Urban Water Plan Class Environmental Assessment. Phasing of development shall be coordinated with the phasing of municipal water and wastewater services.

#### **7.2.3 Stormwater Management Infrastructure**

- a) Stormwater management in WESTON 7 shall be in accordance with the relevant policies of the VOP and shall be guided by the recommendations contained in the City-Wide Integrated Urban Water Plan Class Environmental Assessment.
- b) Both public and private sector development in WESTON 7 is required to incorporate Low Impact Development measures, wherever feasible, to minimize runoff, reduce water pollution and enhance groundwater. These measures may include porous pavements, bioretention basins, enhanced swales, green roofs and rain gardens among others.

#### **7.2.4 Utilities and Communications/Telecommunications Facilities**

- a) Public and private utilities will be permitted in all land use designations and will be installed, where possible, within public road allowances. Where facilities cannot be located in a public road allowance, the provision of easements shall be permitted provided that their location does not detract from the function, amenity or safety of adjacent land uses.

- b) In planning for the expansion of existing and planned transportation and/or infrastructure corridors, the City will encourage the co-location of linear utilities and communication/telecommunication facilities.
- c) All utilities and communication/telecommunication facilities shall be located underground and be grouped into a single utility conduit, where feasible, in a road right-of-way or appropriate easement. Where these facilities are required to be located above grade, the City shall require appropriate locations are identified in consideration of City policies or procedures and that may take into consideration the location requirements for larger infrastructure elements, whether within public rights-of-way, or on private property.

## **8.0 IMPLEMENTATION + INTERPRETATION**

### **8.1 Implementation**

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#### **8.1.1 This Plan**

##### ***Plan Review***

- a) The City will review the policies of this Plan to identify planning issues and trends affecting the ongoing evolution of WESTON 7, to analyze the effectiveness of the policies of this Plan and to allow for adjustments and updating. It is critical to review, update, and consolidate this Plan to ensure its continued relevance and usefulness.
- b) The City will review existing and future legislation contained in the Planning Act, the Municipal Act, the Development Charges Act and other relevant Provincial statutes that apply to areas of municipal jurisdiction. The City will, where appropriate, amend existing policy and/or By-laws or pass new By-laws to ensure land uses are properly regulated in accordance with the policies of this Plan, relevant legislation and associated regulations.

##### ***Monitoring***

- c) In order to evaluate the effectiveness of this Plan, the City will monitor development activity and changes in land use and may develop key performance indicators for this Plan. Where it is deemed necessary due to changes in the physical, social or economic makeup of the municipality, or as a result of new Provincial and/or municipal planning policy priorities/directions, this Plan shall be appropriately updated. Monitoring and measuring the performance of this Plan is critical to determine if:
  - i. The assumptions inherent to this Plan remain valid;
  - ii. The implementation of the policies fulfills the overall Vision, Principles and intent of the policies of this Plan;
  - iii. That development is being carried out in conformity with the policies of this Plan and consistent with the associated plans, guidelines and manuals adopted by the City; and
  - iv. The priorities identified in this Plan remain constant or require change.

##### ***Amendments to this Plan***

- d) An Amendment to this Plan shall be required where the Vision or Principle, a policy, designation, or Schedule is added, deleted or significantly altered. The City will consider applications for Amendments to this Plan within the context of the policies and criteria set out throughout this Plan. All Amendments to this Plan shall proceed in accordance with the Planning Act approval requirements set out in the VOP. The responsible approval authority may be assisted in their review of a proposed Amendment by any agency having jurisdiction.

- e) An applicant of an Amendment to this Plan shall be required to submit a Planning Justification Report to demonstrate the rationale for such an Amendment, and shall be required to evaluate and address such matters, including but not limited to:
  - i. Conformity/consistency with relevant Provincial legislation, policies and plans;
  - ii. Conformity to the relevant policies of the VOP, and other City adopted By-laws, and consistency with any applicable Design Guidelines, Master Plans, or any sustainable development standards adopted by the City;
  - iii. The need for the proposed Amendment;
  - iv. Suitability of the lands for the proposal;
  - v. Land use compatibility with the existing and future uses and built forms on surrounding lands; and
  - vi. Adequacy of municipal servicing infrastructure, the transportation system and public service facilities to support the proposed use.

***Technical Revisions to this Plan***

- f) Technical revisions to this Plan will not require an Official Plan Amendment provided they do not change the intent of the Plan. Technical revisions include:
  - i. Changing the numbering, cross-referencing and arrangement of the text, tables, Schedules and maps;
  - ii. Altering punctuation or language for consistency;
  - iii. Correcting grammatical, dimensional and boundary, mathematical or typographical errors; and/or
  - iv. Changing format or presentation.

**8.1.2 Consideration of Development Applications**

- a) All applications for development within WESTON 7 shall be evaluated in the context of:
  - i. The availability of capacity within the municipal service infrastructure systems and the transportation system;
  - ii. Conformity with this Plan and the relevant policies of the VOP; and
  - iii. Consistency with the Vaughan City-Wide Urban Design Guidelines and any other relevant and Council adopted Manuals, Master Plans, Guidelines and Strategies.
- b) To ensure orderly development of WESTON 7, and the most efficient and economical use of existing infrastructure, justification shall be required with a development application, to the satisfaction of the City that:
  - i. Transportation System requirements, including transit, the Road Network and the Active Transportation Network are in place and/or available within a timeframe deemed acceptable to the City and the Region. The capital costs for any Transportation System requirement necessary to facilitate the proposed development shall not adversely affect the City's or the Region's budget;
  - ii. Municipal service infrastructure requirements are in place and/or available within a timeframe deemed acceptable to the City and the Region. The capital costs for any municipal service infrastructure requirement necessary to facilitate the proposed development shall not adversely affect the City's or the Region's budget;
  - iii. The requirements for the Pedestrian Realm and Active Transportation Networks and the delivery of public service facilities are in place and/or available within a

timeframe deemed acceptable to the City, and the associated capital costs associated with the Pedestrian Realm and Active Transportation Networks, as well as the public service facilities required for the development shall not adversely affect the City's budget; and

- iv. Adequate school capacity has been confirmed by the school boards including provision of school sites, as required, or such other alternative solution has been agreed upon by the school boards.
- c) As a condition of approval of development in WESTON 7, the City shall require the implementation of appropriate development agreements and other appropriate measures/agreements to ensure that new development in WESTON 7 is coordinated and that the required commitments of funds, lands and services are secured and/or in place.

These agreements and other measures shall ensure that the reasonable costs of the identified municipal service infrastructure enhancements, transportation system improvements and the delivery of the Pedestrian Realm and Active Transportation Networks and public service facilities are fairly and equitably shared without adverse impact on the City's financial capability. The agreements and measures permitted by this policy shall be only those permitted by law and otherwise agreed to by the landowner(s) and the City.

### **8.1.3 Implementing Zoning By-laws**

- a) It is anticipated that this Plan will be implemented through a number of Implementing Zoning By-laws that are development site or block specific. Implementing Zoning By-laws shall implement the policies of this Plan by regulating the use of land, buildings or structures in accordance with the provisions of the Planning Act and, where appropriate, may be more restrictive than this Plan. Implementing Zoning By-laws shall:
  - i. Include and refine the lists of permitted uses identified in this Plan. It is not the intent of this Plan that every permitted use within each designation necessarily be permitted on every site within the designation;
  - ii. Include regulations for development to ensure compatibility between different uses and built forms, taking into account existing and planned context. Development standards within the Zoning By-law may include, among other matters, building setbacks, build-within zones, step backs, angular planes, lot area, lot coverage, lot frontage, height and gross floor area restrictions;
  - iii. Be approved by the City where the City is satisfied that:
    - The proposed use and/or building/structure will be compatible with adjacent development;
    - The proposed use does not pose a danger to adjacent uses by virtue of any defined hazardous nature;
    - The proposed use will not pollute any water, groundwater and/or soil or otherwise threaten the environment, including any endangered species or species at risk;
    - The proposed use conforms to the policies and designations of this Plan, the VOP and the provision of the Planning Act; and
    - Municipal service infrastructure, including municipal water and wastewater capacity and the transportation system is sufficient and available to support the proposed use.

### **8.1.4 Site Plan Approval**

- a) Site Plan Approval will be used by the City in accordance with the provisions of the Planning Act and the City's Site Plan Control By-law as a means of achieving well-designed, functional, accessible, safe, sustainable built form and public space. Site Plan Approval is

one of the key tools for implementing the City's policies on urban design in accordance with this Plan.

- b) All development within WESTON 7, including public buildings shall be subject to Site Plan Approval, with the specific exemption of residential development that includes 10 dwelling units or less.
- c) As part of the City's design review process, any development application may be subject to review by the City's Design Review Panel, prior to the submission of formal development applications, as necessary.
- d) Notwithstanding b) above, the City may exempt forms of development which would otherwise be subject to Site Plan Approval where it considers such approval to be unnecessary due to the type or scale of development proposed.
- e) Site Plan Approvals shall be consistent with the Vaughan City-Wide Urban Design Guidelines and any other relevant and Council adopted Manuals, Master Plans, Guidelines and Strategies. However, where Site Plan Approval is required, or an Amendment to an existing Site Plan Agreement is required to facilitate modifications to an existing use, these Site Plan Approvals/Amendments shall be evaluated on their ability to generally improve existing on-site conditions to the satisfaction of the City, in general consideration of the Vaughan City-Wide Urban Design Guidelines and any other relevant and Council adopted Manuals, Master Plans, Guidelines and Strategies.

**8.1.5 Existing Uses**

- a) Land uses which legally existed as of the date of adoption of this Plan may be recognized by an appropriate zoning category in the Zoning By-law. Additions to existing uses/buildings and/or the construction of new accessory buildings may be permitted, including:
  - i. Drive-through commercial and/or restaurant facilities;
  - ii. Commercial uses requiring extensive outdoor storage areas; and
  - iii. Auto-oriented land uses including motor vehicle sales, gas stations and car washes.
- b) It is recognized that extensions to existing uses/buildings and/or the construction of new accessory buildings are expected to be comprehensively redeveloped over time, in conformity with the policies of this Plan.

**8.1.6 Existing Development Approvals**

- a) Where there is a conflict between this Plan and any existing development approval, the existing development approval shall prevail.

**8.1.7 Other Planning Tools**

- a) The City shall utilize the planning tools available to them, as they are empowered by the VOP, and as they are refined through this Plan.

***Inclusionary Zoning***

- b) Pursuant to the Planning Act, Inclusionary Zoning may be implemented by the City within WESTON 7. Inclusionary Zoning would authorize the inclusion of attainable/assisted housing units within buildings or projects containing other residential units, and for ensuring that those attainable/assisted housing units are maintained as such over time.

***Parkland Dedication***

- c) The City has the authority to require parkland dedication, or cash-in-lieu of parkland dedication under the Planning Act. That authority shall be utilized to acquire the Urban Park Space elements of the identified Pedestrian Realm Network. Parkland dedication, and/or the payment of cash-in-lieu of land shall be required in accordance with the Planning Act and the relevant policies of this Plan and the City's Parkland Dedication By-law, as a condition of all development approvals.

- d) In accordance with the Planning Act, residential developments and mixed-use developments with development sites or blocks greater than 5 hectares shall make a maximum parkland dedication, or cash-in-lieu equivalent contribution of 15% of the gross development site area. Residential developments and mixed-use developments on development sites of 5 hectares or less shall make a maximum parkland dedication/cash-in-lieu equivalent contribution of 10% of the gross development site area.
- e) Within WESTON 7, all cash-in-lieu of parkland dedication funds resulting from development within WESTON 7, shall be spent by the City to enhance the supply of public parkland, or to fund parkland improvement projects within WESTON 7.
- f) All development that includes a residential component shall be required to make an appropriate contributions to the Pedestrian Realm Network, including a land contribution on-site of at least 5% of the area of the development site/block, where the development site or block is greater than 1,500 square metres in size. The required on-site land contribution shall generally have a minimum frontage on a private or public road of 7.5 metres, and a minimum size of 75 square metres.

Where a development site/block includes an Urban Square or smaller scale Urban Park Space element identified on **Schedule 3**, the requirement identified in this policy may be waived, to the satisfaction of the City.

- g) It is the objective of the City to utilize its parkland dedication authority to secure the Urban Park Space elements as they are articulated on **Schedule 3** to this Plan. In addition to f), above, residual land dedication requirements and/or cash-in-lieu of land shall be utilized in accordance with the following priorities:
  - i. The first priority is the securement of the Urban Squares identified symbolically on **Schedule 3** as a first priority; and
  - ii. The second priority is the securement of the smaller scale Urban Park Space elements identified on **Schedule 3**.
- h) If there is an element of the Pedestrian Realm Network identified on any property, as shown on **Schedule 3**, the applicable parkland dedication shall be dedicated to the City as a condition of approval, subject to appropriate legal agreement respecting interim use of the lands for parking for existing uses, construction access and staging operations.
- i) The City may accept Strata Parks as contributions to the required parkland dedication on a site by site basis, by way of legal agreements where the following have been demonstrated, to the satisfaction of the City:
  - i. The park space is provided at-grade, is publicly accessible and meets all other requirements of its respective Urban Park Space classification;
  - ii. The park space, together with the air rights above it, shall be in public ownership;
  - iii. The City will retain sole and unencumbered control of the surface lands above the strata title and operate the park space as part of the public Pedestrian Realm Network;
  - iv. All surface strata to be conveyed to the City for use as public parkland shall be free of any surface easements, structures and systems that would have a negative impact on the design, construction and use of the proposed public park facilities; and
  - v. The Strata Park will be designed in a manner commensurate with the planned function of the space in consideration its respective Urban Park Space classification, and be structurally designed to accommodate the required facilities and landscaping. Such matters will be addressed the Site Plan Approval process.

It is the City's first priority to secure unencumbered, fee simple parkland dedication. Strata Park arrangements are not preferred. Where Strata Parks are proposed, they shall be evaluated on a case-by-case basis, subject to the approval of the City.

Where a Strata Park arrangement is deemed acceptable to the City, parkland dedication credits will be based on a partial parkland credit formula which takes into account the potential additional costs of the development and maintenance of a Strata Park, liabilities and the limited uses that are inherent to this type of land development/ownership model.

- j) The City may accept Privately Owned Public Spaces (POPS) as contributions to the required parkland dedication on a site by site basis, by way of easements/legal agreements where the following have been demonstrated, to the satisfaction of the City:
  - i. Design, programming and maintenance of the POPS area to the City's satisfaction and, if necessary, secured through appropriate easements/agreements with the City;
  - ii. POPS shall be provided at-grade and shall be universally accessible to the public and shall be visually and physically accessible from public roads;
  - iii. POPS shall have proper signage identifying them as publicly accessible places; and
  - iv. Developments are discouraged from having vehicular access, servicing and loading facilities directly abutting or facing a POPS.

It is the City's first priority to secure unencumbered, fee simple parkland dedication. POPS are not preferred. Where POPS are proposed, they shall be evaluated on a case-by-case basis, subject to the approval of the City.

Where a POPS arrangement is deemed acceptable to the City, parkland dedication credits will be based on a partial parkland credit formula which takes into account the potential programming limitations and the limited uses that are inherent to this type of land development/ownership model.

***Development Charges By-law***

- k) To implement specifically the required growth related costs anticipated for the long-term development of WESTON 7 in accordance with the policies of this Plan, the City may prepare a background study and enact an Area Specific By-law under the Development Charges Act, to ensure that the capital costs of growth related services does not place a financial burden upon the City's existing taxpayers, and to ensure that new taxpayers bear no more than the growth-related net capital cost attributable to providing the current level of services.
- l) The City may exempt all components of any development that fulfills the attainable/assisted housing target within WESTON 7. Further, the City may exempt some or all of the Development Charge, or exempt certain development or redevelopment from the Development Charge as a means to promote specific development, redevelopment, or revitalization objectives in accordance with this Plan.

***Community Planning Permit System***

- m) The City may prepare a background study and enact a By-law under the provisions of the Planning Act, to establish a Community Planning Permit System within WESTON 7.

**8.1.8 Conveyance/Acquisition of Lands**

- a) Where lands have been identified as required for the construction of the street network or for parkland, or for municipal service infrastructure, and where such lands are the subject of a development application, the dedication of such lands shall be required as a condition of development approval, in accordance with the Planning Act.
- b) It is the intent of the City to work cooperatively with the Region, the Province, the Government of Canada, Land Trusts and private property owners to increase the supply of attainable/assisted housing in accordance with the policies of this Plan.
- c) The City may establish a Land Securement Fund to be used to contribute to the costs of land acquisitions for the purposes of implementing this Plan in accordance with the provisions of the Planning Act. Mechanisms to secure lands within WESTON 7 for the



purposes of implementing this Plan in accordance with the provisions of the Planning Act may include, but are not limited to, the following property acquisition tools:

- i. Land dedications/conveyance;
  - ii. Voluntary sale and public purchase through funds allocated in the City's budget;
  - iii. Land swaps/exchanges;
  - iv. Donations, gifts, bequests from individuals and/or corporations;
  - v. Density transfers; and/or
  - vi. Other appropriate land acquisition methods.
- d) The City may provide an annual budget allocation for a Land Securement Fund and may authorize staff to pursue funding partners and other funding opportunities for the purposes of implementing this Plan.

### **8.1.9 Municipal Finance**

- a) The implementation of this Plan must be fiscally responsible, by ensuring that the required capital expenditures to provide required municipal service infrastructure enhancements and transportation system improvements are paid for in an equitable and appropriate manner.
- b) Development will be monitored to ensure that a balance is maintained between demands for municipal service infrastructure enhancements and transportation system improvements and the overall fiscal capacity of the City.
- c) Where possible, the City will use financial mechanisms available to it under any legislative authority, including the Municipal Act, Development Charges Act, Planning Act and any other applicable legislation, for the purposes of land use planning and the provision of municipal service infrastructure enhancements, transportation system improvements, the Pedestrian Realm and Active Transportation Networks, public service facilities and any identified community benefits.
- d) It is the intent of this Plan that, wherever possible, the City, on the basis of the policies contained within this Plan, establish a staged program for the implementation of municipal service infrastructure enhancements, transportation system improvements, public works and/or any other municipally-assisted projects within WESTON 7. A five-year capital improvement program should be developed to systematically implement necessary capital improvements. This program should be reviewed annually as part of the capital budget procedure.
- e) The City will undertake capital works programs, in accordance with the approved capital budget, to provide the municipal service infrastructure enhancements and the transportation system improvements that are necessary to facilitate the ongoing development of WESTON 7.

## **8.2 Interpretation**

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### **8.2.1 Land Use Boundaries and Roads**

- a) The location of boundaries and symbols, including land use designations shown on the Schedules to this Plan, are intended to indicate the general location, except where they coincide with highways, roads, railways, watercourses or other bodies of water, or other clearly recognizable or defined physical features. Future road and Active Transportation Networks shown on the Schedules to this Plan are illustrated in approximate locations only. As such, Amendments to this Plan will not be required in order to make minor adjustments to the approximate land use boundaries, location of roads, or service area boundaries, provided that the general intent of this Plan is preserved. Such minor deviations will not necessarily be reflected on the attached Schedules to this Plan.

- b) Where a parcel of land is subject to two or more land use designations, the policies of each designation shall apply to the portion of the lands so designated.

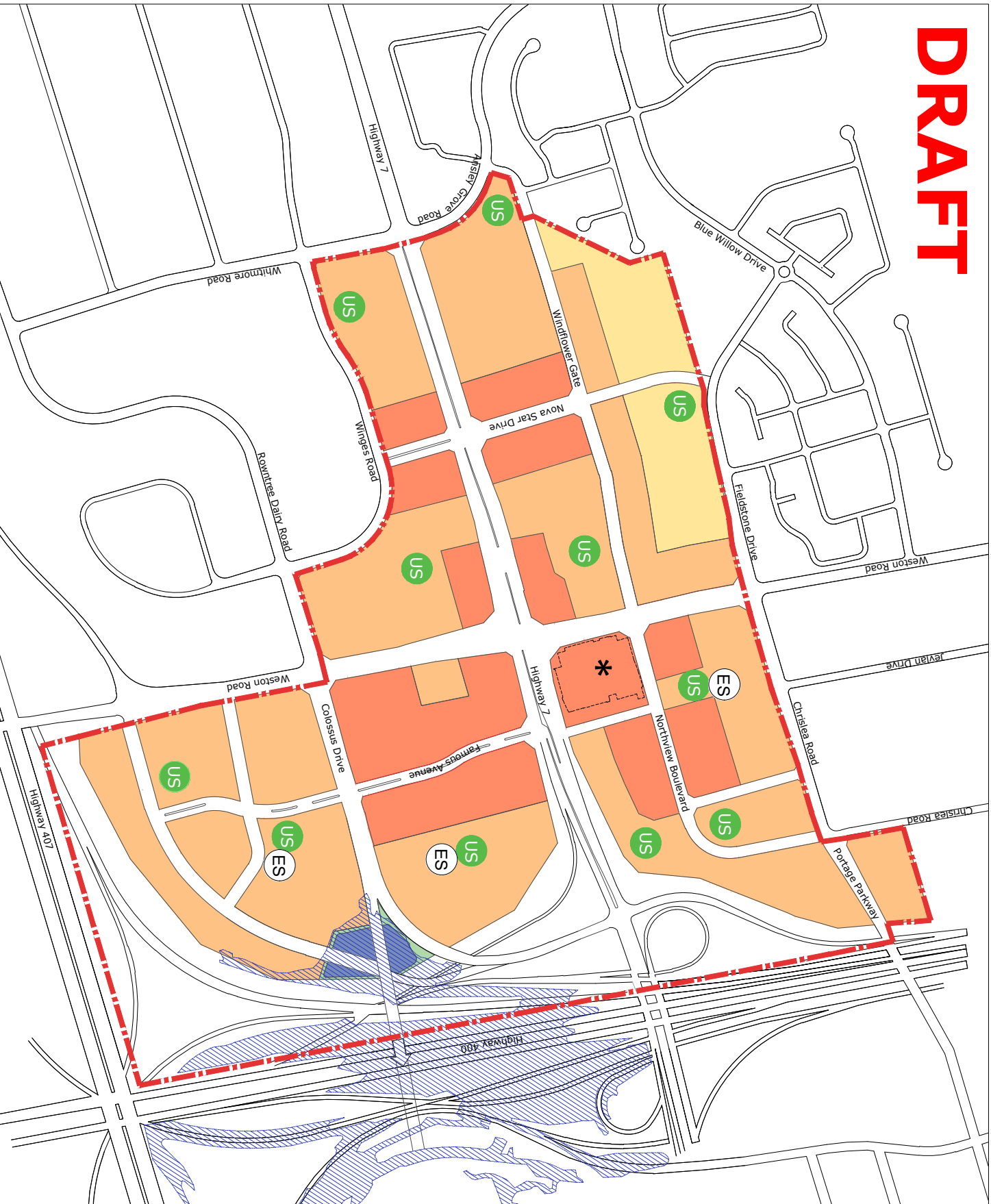
**8.2.2 Numeric Standards**

- a) With the specific exception of identified building height and density (FSI) limitations, it is intended that all other numeric standards identified in this Plan be considered approximate and not absolute. Amendments to this Plan shall not be required for minor variations from the criteria providing the general intent of this Plan is maintained.

**8.2.3 Subsequent Legislation/Companion Documents**










- a) Where a Provincial or Federal Act, regulation or guideline is referred to in this Plan, it is intended that such reference be interpreted to include any subsequent legislation, regulation or guideline that may replace the specified Act. Similarly, where reference is made to Region or Provincial Ministries or agencies, it is intended that such reference be intended to include any Ministry, agency or government branch who may assume responsibility for a particular policy/regulation currently administered by the referenced organization.
- b) Where reference is made to the VOP, it is intended that such reference be interpreted to include any subsequently approved Official Plan Amendment, or any approved revised or updated Official Plan.
- c) Where reference is made to any Council adopted Master Plan, Strategy, Guidelines Manual, or municipal By-law, or any Appendix to this Plan, it is intended that such reference be interpreted to include any subsequently revised or updated version, policy, regulation or guideline that may replace the specified companion document, or municipal By-law.

# DRAFT

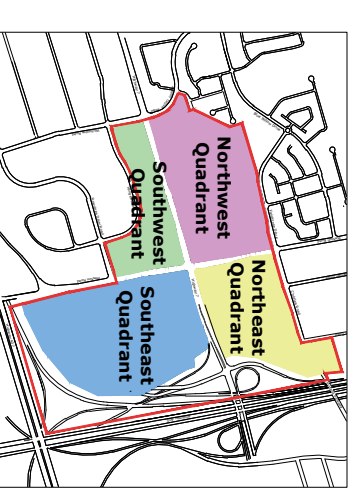


## Schedule 1 Weston 7 Land Use Designations

### Legend

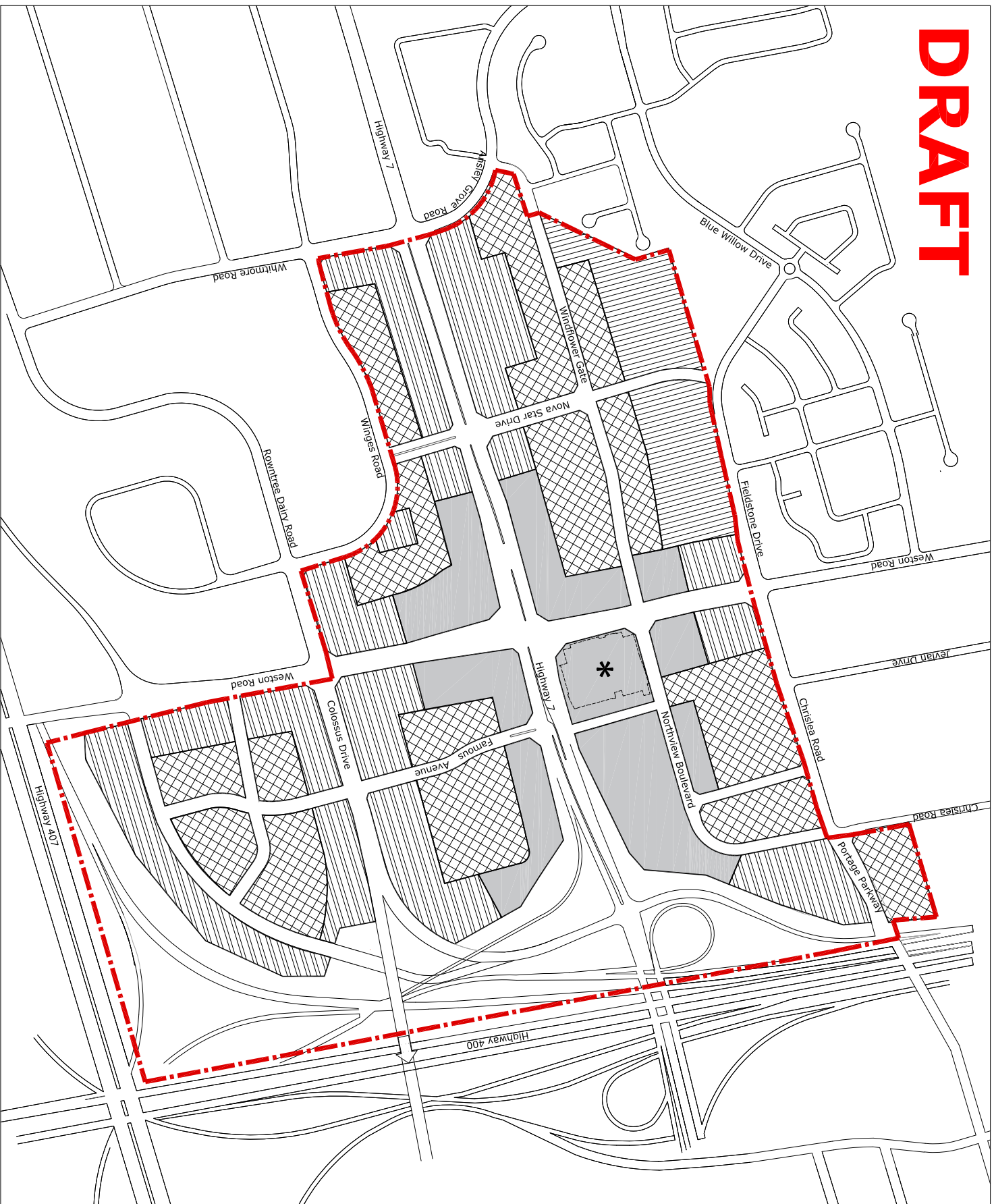
-  Secondary Plan Area
-  Residential I
-  Mixed-Use I
-  Mixed-Use II
-  Urban Squares
-  Elementary School
-  Existing Stormwater Management Pond
-  Flood Plain Spill Area Overlay
-  \* Existing Development (Centro Square)

### Quadrants









May 2024

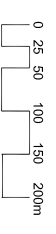
# DRAFT



## Schedule 2 Weston 7 Building Height

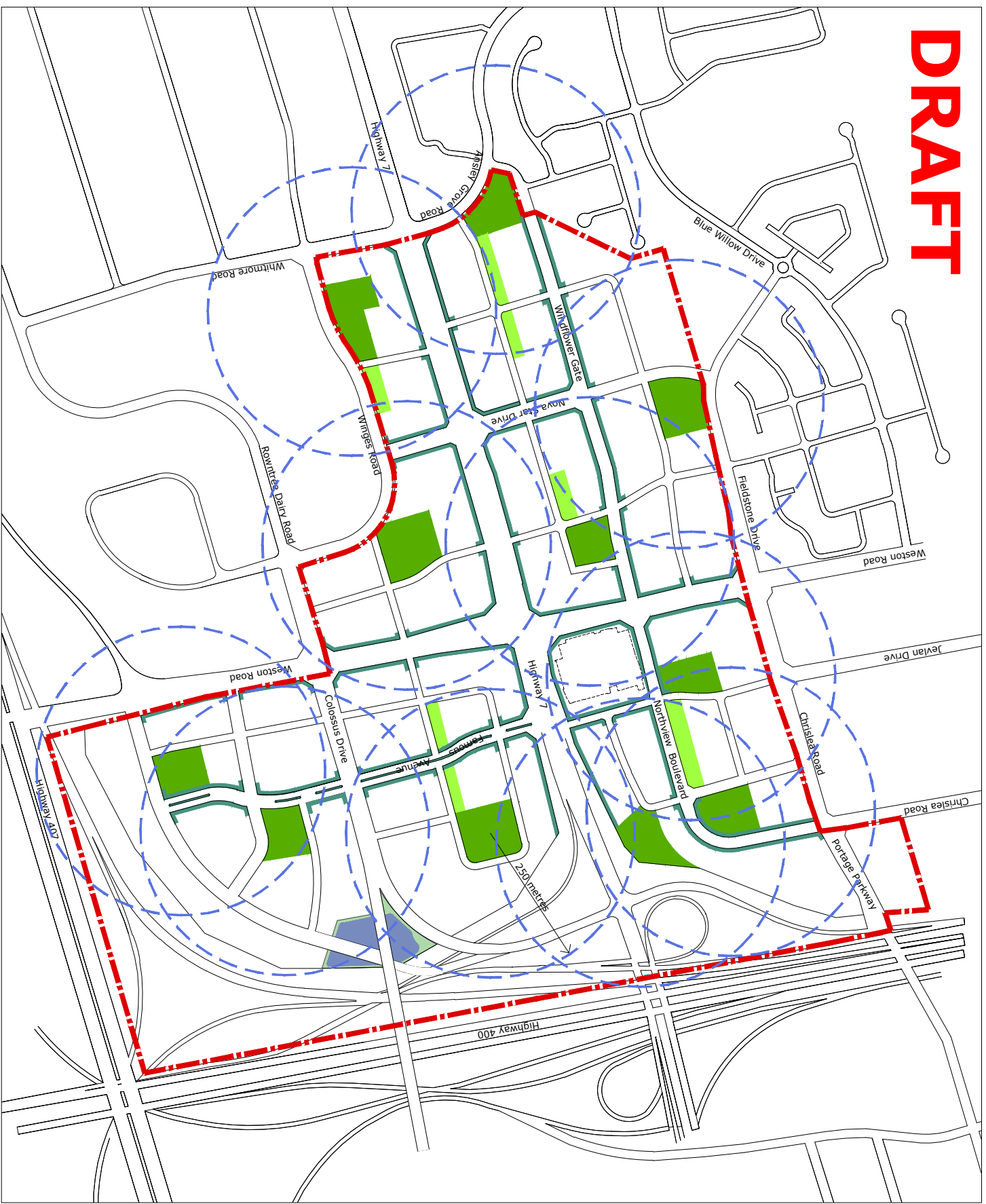
### Legend

-  Secondary Plan Area
-  Low-Rise
-  Mid-Rise
-  High-Rise I
-  High-Rise II
-  Existing Development (Centro Square)



May 2024

**DRAFT**

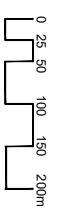


# Schedule 3 Weston 7 Pedestrian Realm Network

## Legend

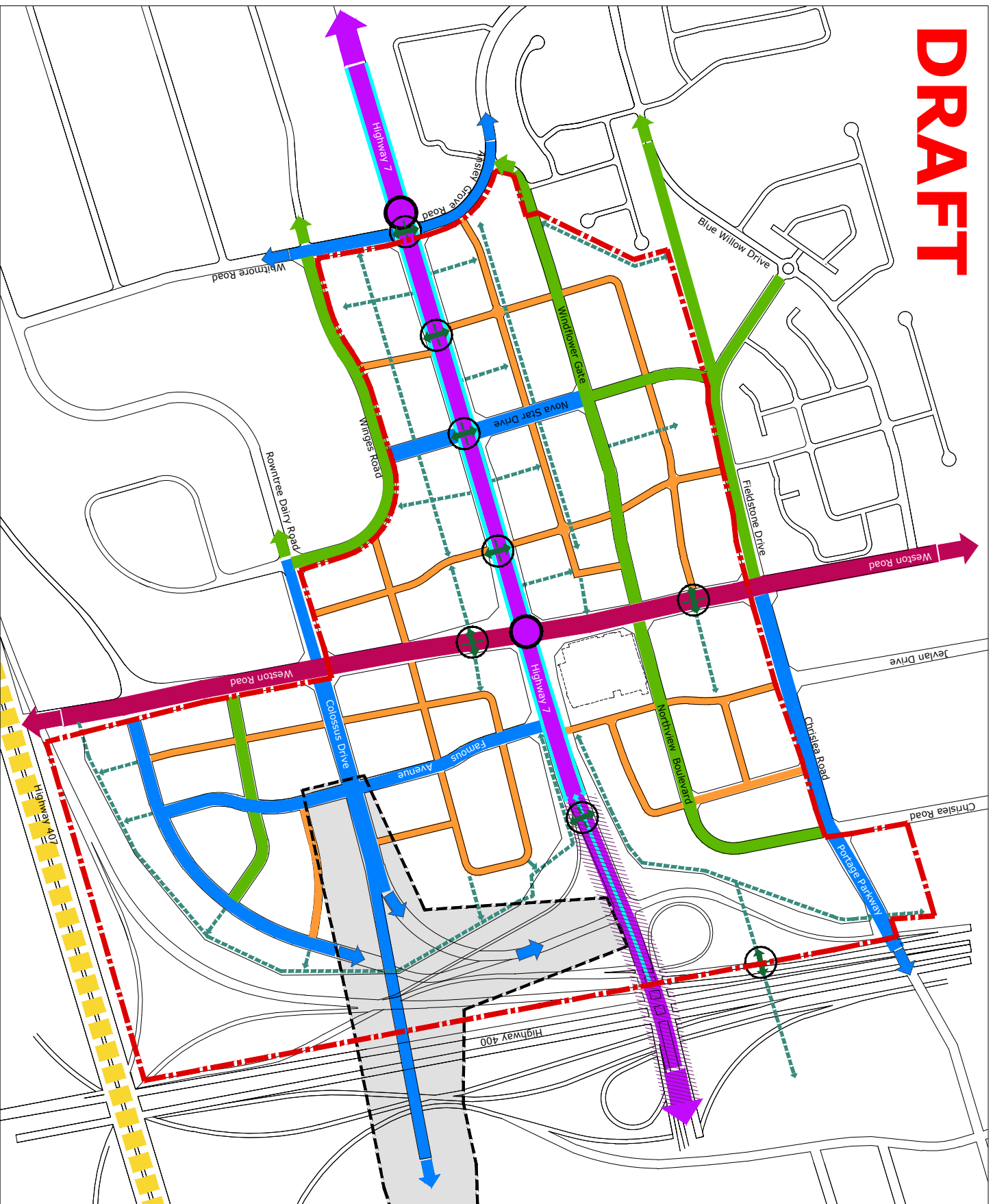
- Secondary Plan Area
- Urban Squares
- Promenades
- Enhanced Urban Streetscape
- Standard Urban Streetscape
- Existing Stormwater Management Pond
- 250m Radius, 2-3 Minute Walking Distance

Note: Park Locations are Conceptual



May 2024

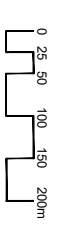
# DRAFT



## Schedule 4 Weston 7 Transportation System

- Legend**
- Secondary Plan Area
  - Street and Transit Network**
    - Existing Roads
    - Highway 7 - Regional Bus Rapid Transitway
    - Bus Rapid Transit (BRT) Stop
    - Regional Arterial Road
    - Major Collector
    - Minor Collector
    - Local Road
  - Colossus Drive Corridor Protection Area
  - Potential Enhancement Link to VMC
  - Potential 407 Transitway
  - Active Transportation Network**
    - Existing Cycle Track
    - Active Transportation (AT) Link
    - AT Grade Separated Pedestrian Connection

Note: Alignments are Conceptual



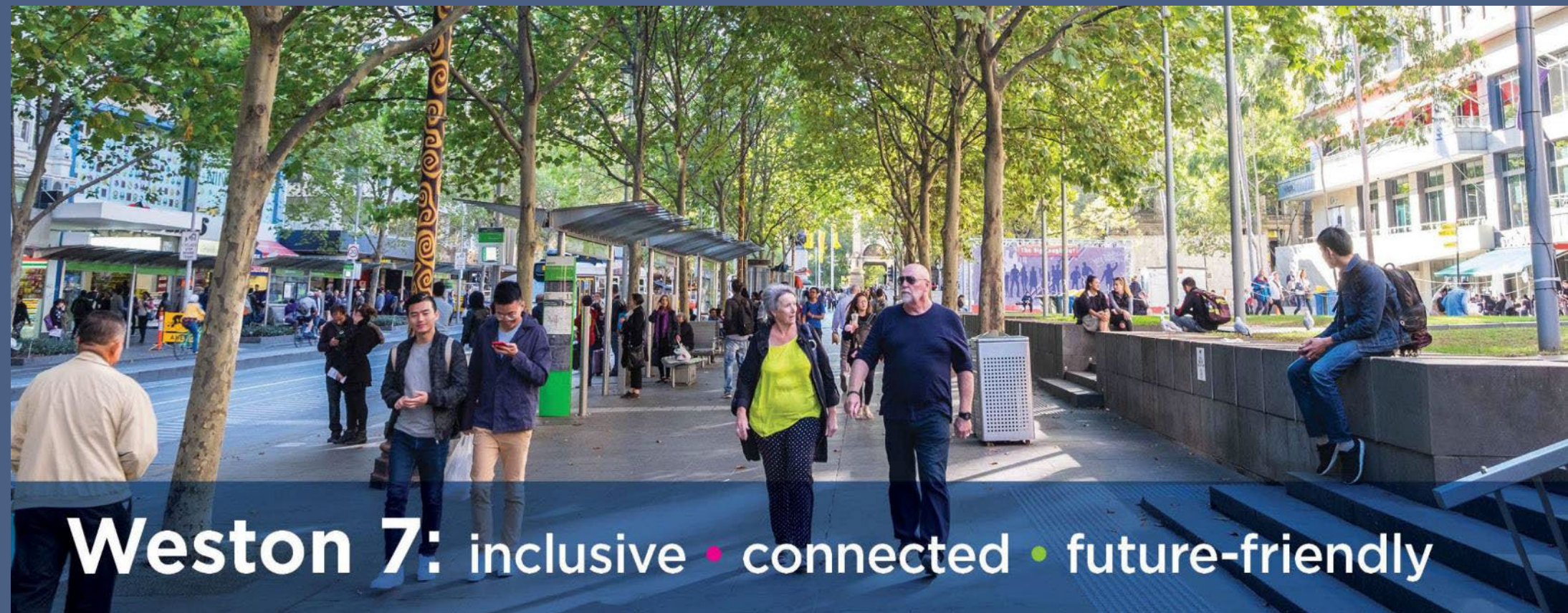
May 2024

C 3  
Communication  
CW(WS) – June 5, 2024  
Item No. 2



# Committee of the Whole

June 5, 2024



**Weston 7: inclusive • connected • future-friendly**

# Weston 7 Secondary Plan Quadrants





The purpose of this presentation is two-fold:

1. To update the Committee on the progress made on the Secondary Plan since the Statutory Public Meeting held on **November 1, 2023**
2. To review the key changes incorporated into DRAFT 3 of the WESTON 7 Secondary Plan

Since the last presentation to the Committee there have been a number of important components of our ongoing work:

1. Comprehensive comments of DRAFT 2 from the Region and from various City Departments, most of which have been implemented into DRAFT 3
2. A Landowners Group was formed following the Statutory Public Meeting. The purpose of the LOG is to collaborate with City staff to establish a fair and reasonable phasing strategy, and ensure appropriate agreements are in place to fund and develop the required municipal service infrastructure and transportation system improvements.

To date, staff have met with the LOG a total of 10 times between December of 2023, up to May 30, 2024.

The LOG has provided comprehensive comments on DRAFT 2 of the WESTON 7 Secondary Plan, many of which have been implemented into DRAFT 3, while others are subject to ongoing discussion.

Since the last presentation to the Committee there have been a number of important components of our ongoing work:

3. Integration of work carried out on the **Transportation Master Plan (TMP)** and the **Integrated Urban Water Plan (IUWP)**. As we are all aware, the capacity of existing and identified future improvements to municipal service infrastructure systems and the transportation system is a fundamental issue within WESTON 7.
  - > **The Transportation System** - There is currently no residual capacity in the City/Region transportation system to accommodate any future growth. The TMP identifies a host of improvements that are all required to facilitate growth to include up to approximately 15,000 new residents and up to approximately 10,000 new jobs, which is well below the estimated growth forecast by this Plan for WESTON 7.
  - > **The Municipal Service Infrastructure Systems** - There is currently some limited residual capacity in the City/Region water and wastewater systems to accommodate future growth. The IUWP identifies a list of water and wastewater system improvements that are required to accommodate up to 62,865 people (including employment equivalent), which is in excess of the estimated growth forecast by this Plan for WESTON 7.

**1. The importance of comprehensive planning** - Comprehensive planning supports the consideration of contextual implications of development on the achievement of the long-term vision for the surrounding community and the planning principles established to achieve that vision. Comprehensive planning ensures that:

- > An identifiable pattern of development is established to create community character and to manage impacts on adjacent properties
- > There are appropriate Pedestrian Realm and Active Transportation Networks that are highly interconnected
- > There are adequate and accessible public service facilities including community centres, schools and other educational, recreational and cultural opportunities embedded within the buildings and spaces throughout the community
- > There is a street and block pattern that supports appropriate forms of development throughout the community. The street and block pattern must be efficient and well connected
- > There is a direct and quantifiable link between the approval of development and the ability of the municipality to provide appropriate municipal service infrastructure and transportation system capacity

- 2. Establishing an appropriate planning policy framework** - Both the Regional Official Plan and the Vaughan Official Plan identify very specific requirements for the preparation and approval of Secondary Plans, and the WESTON 7 Secondary Plan is required to conform with those policies.
  
- 3. Establishing overall projections for growth, and policies for growth management** - To establish the direct link between the amount of growth anticipated and the ability to deliver municipal service infrastructure and transportation system improvements. Crucial to the concept is the establishment of phasing significant growth over time.
  
- 4. Managing building height and density** - Building height and density establish parameters for the ultimate built form within WESTON 7, linked back to the overall growth projections and policies for growth management, including the equitable distribution of limited municipal service infrastructure and transportation system capacity
  
- 5. Managing the mix of land uses** - WESTON 7 is expected to be a mixed-use centre. The intent of requiring a mixture of uses is to ensure that the community does not evolve into simply a major residential enclave, without appropriate supporting opportunities to work, to shop, to go to school and to enjoy a robust collection of community, recreational and cultural facilities

## PART A: The Preamble

The Preamble provides introductory information about the nature and purpose of the WESTON 7 Secondary Plan. It includes commentary on:

- The overall **introduction** to the WESTON 7 Secondary Plan Area, including references back to the City of Vaughan Official Plan
- The **purpose** of the Secondary Plan
- A description of the **location** of WESTON 7
- The **policy context** affecting WESTON 7 and the general approach inherent to the policy framework included in the Secondary Plan
- A discussion of the parameters and **application** of the Secondary Plan
  
- The Preamble has been modestly edited. The key change was to remove much of the detail with respect to growth forecasts. It is now more general.
- The mapping has been adjusted to reflect a proposed minor expansion to the Weston 7 Secondary Plan boundary

## PART B: The Secondary Plan

### Section 1.0 Vision + Principles

- Section 1.0 articulates the overarching Vision for WESTON 7 and establishes 10 supporting Principles.
- The Vision and Principles set the stage for the more detailed policy framework that follows within the rest of the Secondary Plan
- Wording slightly adjusted to reflect specific wording in VOP with respect to the role of WESTON 7 in the City's urban structure
- Added minimum density targets in accordance with City policy for the 2 MTSA's – 200 and 250-people and jobs per hectare
- The rest of Section 1.0 has been modestly edited in response to comments from the LOG, the Region and City staff

## Section 2.0 Growth Management

- Section 2.0 deals with the key issues of growth management. It establishes overall growth estimates, and subdivides those estimates by the defined 4 Quadrants
- Identifies the requirements for Block Planning and Development Concept Reports
- A host of policies that deal with the phasing of growth on the basis of the recent information provided by the TMP and the IUWP
- There are policies that talk to the important role of the Landowner's Group Agreement, and the opportunity to establish a Capacity Allocation Program
- Growth estimates articulated as targets
- Phasing linked to available capacity in municipal infrastructure and transportation system capacity
- Exceeding Secondary Plan wide growth estimates will require an OPA
- Requirements for Block Plans, Development Concept Reports and Land Owner Agreement clarified

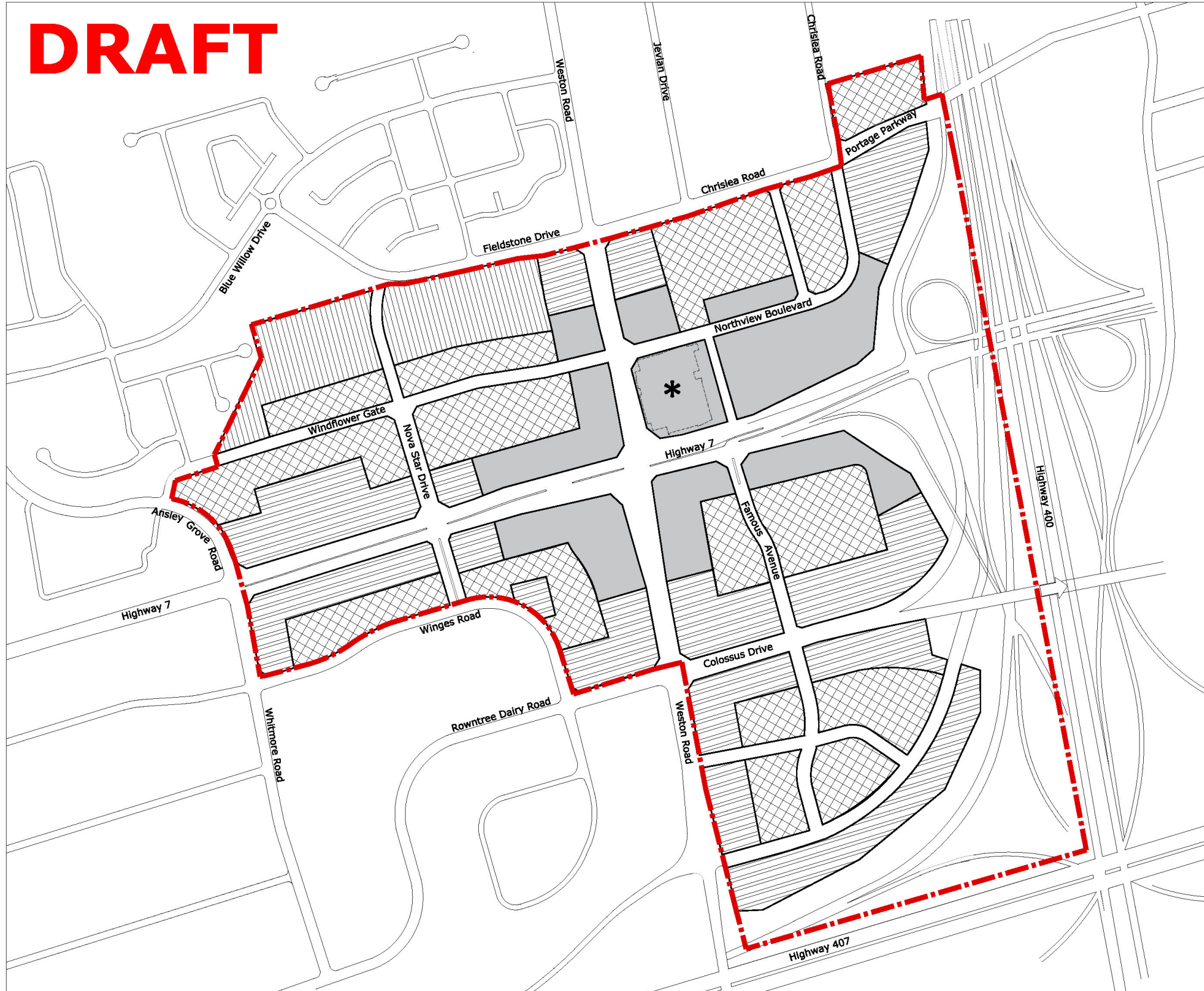


## Section 3.0 Building a Successful Community

- Section 3.0 identifies a number of topic specific policies that apply to development throughout WESTON 7, including:
  - Providing Housing Options
  - Promoting a Strong Economy
  - Supporting a Healthy Community
  - Providing Public Service Facilities
  - Ensuring High Quality Design
  - Promoting Sustainability + Adapting to Climate Change
  
- Modest editing within this Section, as suggested by the Region, City staff and the LOG
- Reviewed Section on housing in the context of the identified OLT decision, some adjustments made, although the intent of the policies remain
- The location of community hub is still preferred (permissive policy)
- Policy refined for location of schools, but language about urban format school is kept

## Section 4.0 Land Use + Built Form Policies







- Section 4.0 includes a substantial policy framework related to Land Use and to Built Form
- The intent is to identify these elements of City building in a comprehensive section, so that they do not have to be repeated within the land use designation identified in Section 5.0
- Provides detail on dealing with various permitted land uses and detail with respect to defining Low-Rise, Mid-Rise and High-Rise Buildings
- Built Form is linked to Schedule 2 – Building Height
- Uses permitted and uses not permitted have been clarified and refined, but these sections remain in the Plan
- Definitions of Floor Space Index, Gross Floor Area and Building Height included for clarity, provides density flexibility
- Minimum and maximum height regulations and maximum density provisions are retained
- Additional flexibility with respect to Low-Rise, Mid-Rise and High-Rise height restrictions added
- Requirements for compatibility refined

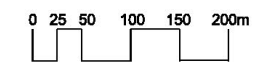


**DRAFT**

## Schedule 2 Weston 7 Building Height

### Legend

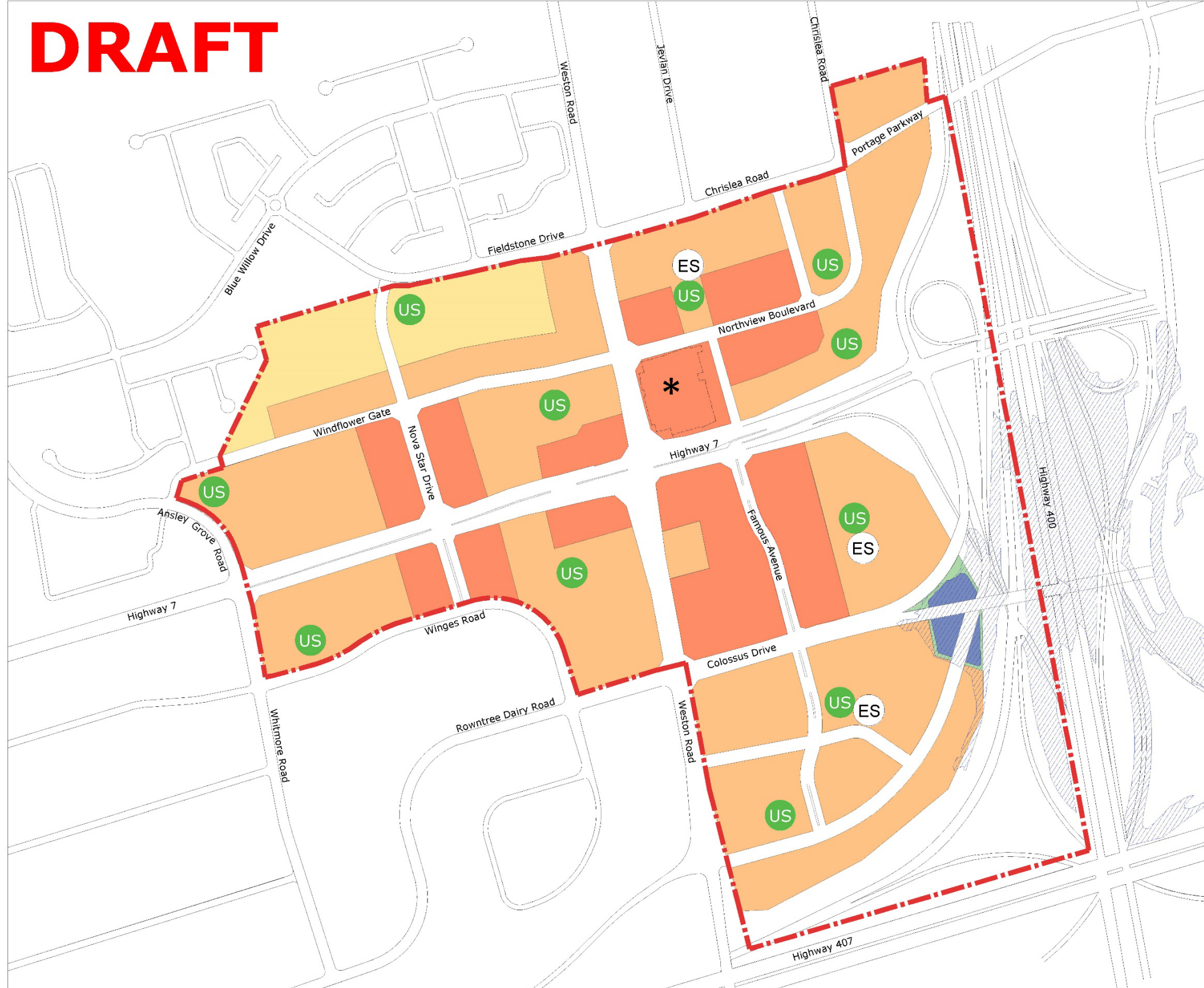
-  Secondary Plan Area
-  Low-Rise
-  Mid-Rise
-  High-Rise I
-  High-Rise II
-  Existing Development (Centro Square)



May 2024










## Section 5.0 Land Use Designations

- Section 5.0 establishes the various Land Use Designations - the Residential I Designation, the Mixed-Use I Designation and the Mixed-Use II Designation
- Each Designation articulates intent, the list of permitted uses and a set of General Development policies
- Section 5.0 also includes two Overlays - the Flood Spill Overlay and the Colossus Drive Corridor Protection Overlay
- The Land Use Designations and Overlays are identified on Schedule 1 – Land Use Designations
  
- All land use designations retained
- Lists of permitted uses refined, but retained
- Non-residential GFA requirements retained, along with prohibition of residential units at-grade in Mixed-Use II
- Uses that support the residential uses and live work units are considered non-residential uses
- Colossus Drive policies added as suggested by the LOG

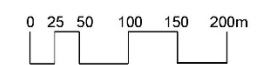
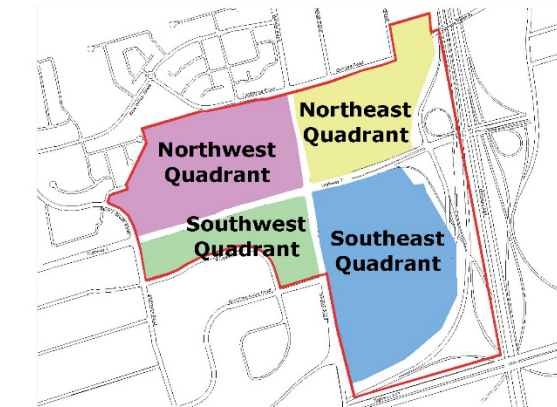


## Schedule 1 Weston 7 Land Use Designations

### Legend

-  Secondary Plan Area
-  Residential I
-  Mixed-Use I
-  Mixed-Use II
-  Urban Squares
-  Elementary School
-  Existing Stormwater Management Pond
-  Flood Plain Spill Area Overlay
-  Existing Development (Centro Square)

### Quadrants

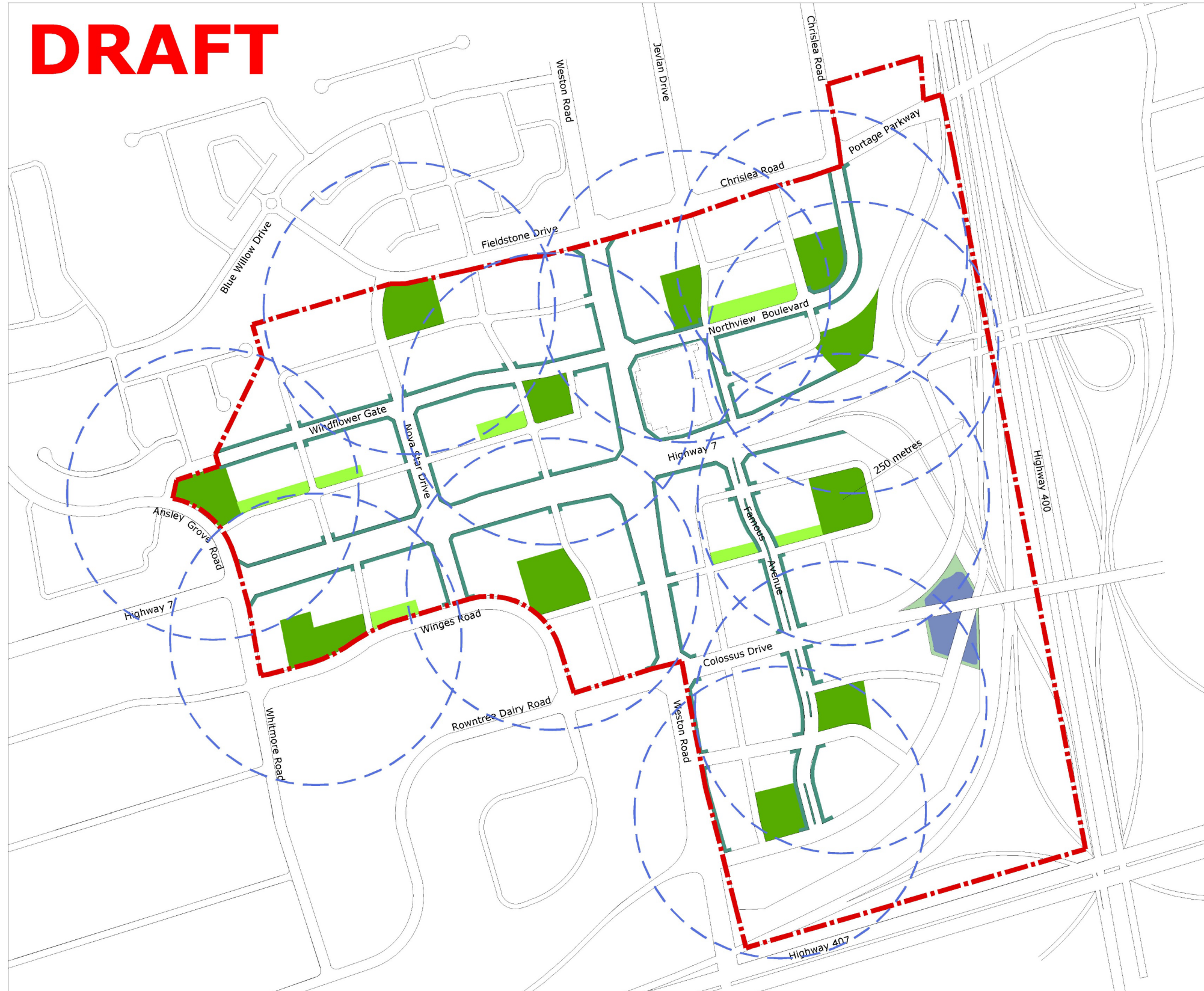


May 2024

## Section 6.0 The Pedestrian Realm Network








- Includes a policy framework that articulates the Pedestrian Realm Network, including direction for Urban Park Spaces and Streetscapes
- The intent is to achieve a comprehensive network of spaces that work together and complement each other, leading to a well-connected, universally accessible Pedestrian Realm and Active Transportation Networks throughout WESTON 7
- Urban Park Spaces include a focus on Urban Squares, with opportunities for Promenades and Pocket Parks, as identified on Schedule 3 – Pedestrian Realm Network
- Streetscapes are identified in two categories – Enhanced Urban Streetscapes and Standard Urban Streetscapes, as identified on Schedule 3 – Pedestrian Realm Network
- A host of changes made in response to comments from the City staff and the LOG, although the policy framework has generally been retained with flexibility added, where appropriate
- New policy regarding offsite dedication (but within WESTON 7) included as suggested by LOG, included in Implementation section

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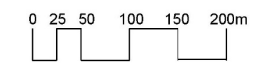


## Schedule 3 Weston 7 Pedestrian Realm Network

### Legend

-  Secondary Plan Area
-  Urban Squares
-  Promenades
-  Enhanced Urban Streetscape
-  Standard Urban Streetscape
-  Existing Stormwater Management Pond
-  250m Radius, 2-3 Minute Walking Distance

Note: Park Locations are Conceptual

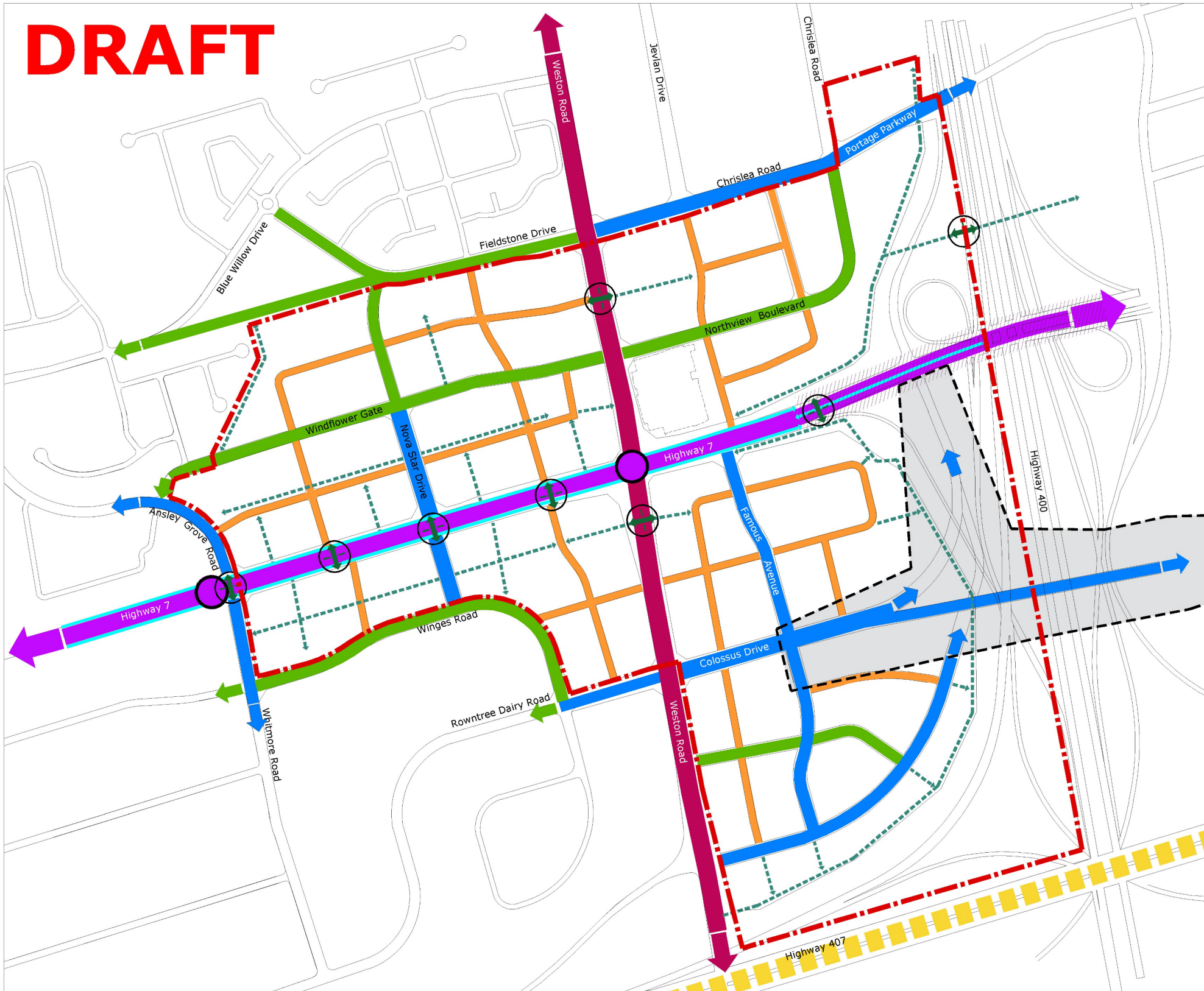


May 2024

## Section 7.0 Transportation, Service Infrastructure + Utilities















- Section 7.0 includes a host of policies related to the establishment of a multi-modal Transportation System - The Active Transportation Network, the Road Network, Public Transit and Parking
- The Road Network included on Schedule 4 – Transportation is informed by the TMP
- Section 7.0 includes policy direction on Service Infrastructure + Utilities – Municipal water and wastewater, stormwater management and utilities and communications/telecommunications facilities
  
- A number of changes implemented from the Region, City staff and the LOG
- Interpretive flexibility added on Active Transportation policies
- ROW width changes informed by the TMP
- Reference to minimum parking requirements removed
- As per the TMP, improvements to the transportation system are required prior to facilitating new development



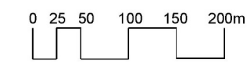


## Schedule 4 Weston 7 Transportation System

### Legend

-  Secondary Plan Area
- Street and Transit Network**
-  Existing Roads
-  Highway 7 - Regional Bus Rapid Transitway
-  Bus Rapid Transit (BRT) Stop
-  Regional Arterial Road
-  Major Collector
-  Minor Collector
-  Local Road
-  Colossus Drive Corridor Protection Area
-  Potential Enhancement Link to VMC
-  Potential 407 Transitway
- Active Transportation Network**
-  Existing Cycle Track
-  Active Transportation (AT) Link
-  AT Grade Separated Pedestrian Connection

Note: Alignments are Conceptual



May 2024

## Section 8.0 Implementation + Interpretation

- Includes specific policy direction on a host of implementation tools that include – Secondary Plan Amendments, Implementing Zoning and Site Plan Approval, other tools include:
  - > Parkland Dedication/Cash-in-Lieu;
  - > Inclusionary Zoning;
  - > Community Benefits Charges;
  - > Development Charges; and
  - > The Community Planning Permit System.
- The interpretation section identifies where the Secondary Plan includes interpretive flexibility, and where specifically it does not
- Implemented a number of comments from the Region, City staff and the LOG, however all of the key concepts within the Secondary Plan are carried forward
- Wording adjusted to reflect appropriate tests – conformity vs. consistency
- Parkland policies related to Strata and POPS have been refined
- Only minor adjustments to the Secondary Plan are allowed without an OPA

1. Update Presentation to Committee of the Whole on **June 5<sup>th</sup>**
2. General release of DRAFT 3 of the WESTON 7 Secondary Plan to the LOG, Agencies, City Departments and the public
3. Technical Advisory Committee meeting
4. Commenting period open to the public
5. Continue to work with the WESTON 7 LOG
6. Present FINAL DRAFT of the WESTON 7 Secondary Plan to Committee of the Whole and request Council adoption in **September 2024 (tentative)**
7. Adopted plan to be submitted to Region for approval (according to current legislation)

Office of the City Clerk  
City of Vaughan  
2141 Major Mackenzie Drive, Level 200  
Vaughan, Ontario, L6A 1T1

June 4, 2023  
File 11009

**Attn: Committee of the Whole**

**RE: Comments on Weston 7 Secondary Plan, File 26.2 (Item 5.2)  
3899, 3901 Highway 7 and 40, 60 Wings Road  
City of Vaughan**

Weston Consulting ('Weston') is the authorized planning agent for Gallu Construction Inc. ('Gallu'), the registered owner of the property municipally known as 3899, 3901 Highway 7 and 40, 60 Wings Road (the 'Subject Lands'), City of Vaughan. The Subject Lands are located in the southwest quadrant of the Weston Road and Highway 7 intersection, and within the proposed Weston 7 Secondary Plan ('W7SP') area. We respectfully provide these comments with respect to the third draft of the W7SP in advance of the Committee of the Whole Working Session on June 5, 2024.

On behalf of Gallu, Weston has been actively participating in the W7SP planning process by monitoring and attending all landowner and stakeholder meetings, providing detailed comments to the City and its outside consultants, as well as providing detailed supporting documents as part of its own development application review process. In particular, we have submitted correspondence in this regard on October 10, 2022 and most recently on September 29, 2023 and October 30, 2023 with respect to the initial drafts of the W7SP.

In addition to our active participation in the W7SP planning process, Official Plan Amendment and Zoning By-law Amendment applications (OP.23.009 and Z.23.017) were submitted on June 30, 2023 to guide development of the Subject Lands within the future land use planning context of the W7SP. The applications propose the development of a mixed-use/master planned community comprising (1) mid-rise office building and (5) high-rise mixed-use buildings, various pedestrian mews, as well as a public park and new east-west private road that has been coordinated with the neighbouring development. The proposed development seeks to add 1,981 new residential units, and construct 6,114.21 square metres of office space.

Since the Statutory Public Meeting on November 1, 2023, we have engaged with 14 other landowners in the W7SP area ("Landowners") to collaborate and collectively advance the secondary plan process in a meaningful and coordinated way. The Landowners have met with City staff and its external partners on a bi-weekly basis for the last several months, while also collaborating internally as a group. Further, we have undertaken a redlining exercise and have collectively submitted redline comments on the Second Draft of the W7SP in an effort to address our concerns with the proposed policy framework.

We are disappointed that despite our efforts, the City's Third Draft of the W7SP continues to ignore many of our collective and site specific concerns as discussed in our previous submissions. We appreciate that the City is looking to advance and finalize the W7SP in an expeditious manner; however, it is our opinion that further collaboration and agreement is required to address macro-level and site specific issues before a revised Draft of the W7SP can be appropriately considered.

We appreciate the opportunity to continue to engage with the City on this matter so that our concerns may be addressed and a supportable W7SP may ultimately be approved. We reserve the right to provide additional comment with respect to the W7SP and request to be notified of any future meetings, reports and decisions related to this matter.

If you have any questions or require further information, please do not hesitate to contact the undersigned at extension 252 or Mina Rahimi at extension 339.

Yours truly,

**Weston Consulting**

Per:



Michael A. Vani, BURPI, MCIP, RPP  
Senior Associate

cc. Gallu Construction Inc.  
L. Alhabash, City of Vaughan  
C. Bruce, City of Vaughan

Attachment 1 – Comments on Second Draft of the W7SP, October 30, 2023

Office of the City Clerk  
City of Vaughan  
2141 Major Mackenzie Drive, Level 200  
Vaughan, Ontario, L6A 1T1

October 31, 2023  
File 11009

**Attn: Committee of the Whole**

**RE: Comments on Weston 7 Secondary Plan (Item 4.4)  
3899, 3901 Highway 7 and 40, 60 Wings Road  
City of Vaughan**

Weston Consulting ('Weston') is the authorized planning agent for Gallu Construction Inc. ('Gallu'), the registered owner of the property municipally known as 3899, 3901 Highway 7 and 40, 60 Wings Road (the 'Subject Lands'), City of Vaughan. The Subject Lands are located in the southwest quadrant of the Weston Road and Highway 7 intersection, and within the proposed Weston 7 Secondary Plan ('W7SP') area. We respectfully provide these comments with respect to the second draft of the W7SP in advance of the Statutory Public Meeting on November 1, 2023.

The W7SP has been anticipated from 2018 to provide a land use planning vision and prescribed policy framework to guide the redevelopment and intensification of the Weston Road and Highway 7 area as a *Primary Centre* with the Vaughan Official Plan's Urban Structure and as a *Protected Major Transit Station Area* per the York Official Plan and the Growth Plan for the Greater Golden Horseshoe. On behalf of Gallu, Weston has been actively participating in the W7SP planning process by monitoring and attending all landowner and stakeholder meetings, providing detailed comments to the City and its outside consultants, as well as providing detailed supporting documents as part of its own development application review process. In particular, we have submitted correspondence in this regard on October 10, 2022 and most recently on September 29, 2023 with respect to the first draft of the W7SP.

In addition to our active participation in the W7SP planning process, Official Plan Amendment and Zoning By-law Amendment applications (OP.23.009 and Z.23.017) were submitted on June 30, 2023 to guide development of the Subject Lands within the future land use planning context of the W7SP. The applications propose the development of a mixed-use/master planned community comprising (1) mid-rise office building and (5) high-rise mixed-use buildings, various pedestrian mews, as well as a public park and new east-west private road that has been coordinated with the neighbouring development. The proposed development seeks to add 1,981 new residential units, and construct 6,114.21 square metres of office space.

Our feedback on the first draft of the W7SP was submitted on September 29, 2023 (attached), which focuses on the proposed heights, densities, land use composition, parks plan, pedestrian/vehicle circulation and general policy aspects with respect to the land use planning vision for the area. Our comments provided both a broad opinion of the W7SP policies and our site specific comments on how greater alignment of the policies with our site-specific development proposal could ultimately improve the W7SP and allow for a streamlined approvals process. The second draft of the W7SP was released on October 12, 2023. The revised draft included many policy updates but did not include the majority of our site specific comments or offer comments provided by the impacted landowner while no significant revisions had been made in response to our input on the initial draft. Further, our requests to meet with staff to discuss our comments were repeatedly denied with staff's timing obligations used as a rationale

Although the W7SP process has been ongoing since 2018, the first draft policies and schedules were not released until August 10, 2023. We appreciate that the City is looking to advance and finalize the W7SP in an expeditious manner; however, given staff's inability to engage with us and other landowners as a result of the accelerated approval timeline, we are of the opinion that there is opportunity to further revise the W7SP to better align with existing active development applications. By staff taking a proactive approach, it will reduce inconsistencies and better reflect the existing technical studies and proposals already put forth by area landowners. Although our comments have been provided, we have yet to receive any meaningful feedback on our concerns, many of which are minor in nature, supported by technical study, and can be addressed in advance of the W7SP approval.

We appreciate the opportunity to provide these comments and request further engagement with staff so that our outstanding concerns may be addressed prior to the approval of the W7SP. We reserve the right to provide additional comment with respect to the W7SP and request to be notified of any future meetings, reports and decisions related to this matter. If you have any questions or require further information, please do not hesitate to contact the undersigned at extension 252 or Mina Rahimi at extension 339.

Yours truly,

**Weston Consulting**

Per:



Michael A. Vani, BURPI, MCIP, RPP  
Associate

- cc. Gallu Construction Inc.
- L. Alhabash, City of Vaughan
- C. Cosentino, City of Vaughan
- A. Slattery, City of Vaughan
- F. Filipetto, City of Vaughan
- C. Bruce, City of Vaughan
- J. Grove, City of Vaughan

Attachment 1 – Comments on First Draft of the W7SP, September 29, 2023

Attachment 2 – Commenting Letter, October 10, 2022

Development Planning  
City of Vaughan  
2141 Major Mackenzie Drive  
Vaughan, Ontario, L6A 1T1

September 29, 2023  
File 11009

**Attn: Lina Alhabash, MCIP, RPP, Senior Planner**

**RE: Comments on the Weston 7 Secondary Plan (First Draft)  
3899, 3901 Highway 7 and 40, 60 Wings Road  
City of Vaughan**

Weston Consulting ('Weston') is the authorized planning agent for Gallu Construction Inc., the registered owner of the property municipally known as 3899, 3901 Highway 7 and 40, 60 Wings Road (the 'Subject Lands'), in the City of Vaughan. The Subject Lands are located in the southwest quadrant of the Weston Road and Highway 7 intersection in the City of Vaughan, and within the proposed Weston/7 Secondary Plan area. An Official Plan Amendment and Zoning By-law Amendment applications (OP.23.009 and Z.23.017) were submitted on June 30, 2023 and deemed complete as of July 28, 2023.

On behalf of the property owner, Weston has been participating in the Weston/7 Secondary Plan ('W7SP') review process and has submitted previous correspondence with respect to the secondary plan on October 10, 2022, and attended the most recent Landowner Group Meeting held on August 30, 2023. It is noted that although the W7SP incorporates some elements of the site specific development applications, our comments on some of the policies are provided below.

### **Proposed Development**

The proposed development contemplates the construction of a mixed-use community comprising (1) mid-rise office building and (5) high-rise mixed-use buildings, a public park, various amenity spaces, driveways and pedestrian mews, as well as a new east-west private road. The subject lands are envisioned to transform into a high-density mixed-use community that has considered earlier conceptual iterations of the W7SP and has been designed to complement and integrate with existing development proposals and abutting parcels within the southwest quadrant.

The proposed development includes a total of 1,981 residential units, 949 square metres of live/work space along the Highway 7 frontage, and a total of 5,165 square metres of office/commercial space located within a separate mid-rise building with a total GFA of 138,082.14 square metres. The residential units are spread between (5) high-rise buildings and include a range and mix of unit sizes and a greater than typical ratio of larger bedroom and family oriented units. The current configuration of units proposes 1,273 (64%) 1-Bedroom units, 337 (17%) 2-Bedroom units, and 371 (19%) 3-Bedroom units.

The site design promotes pedestrian circulation and access over that of private vehicles, providing greater emphasis on the public realm, active transportation, and transit access in an urbanized context. Underground parking facilities are provided for all buildings. A public park spanning an area of 1,603 square metres (representing 10% of site area) is situated in the southwest corner of the subject lands and offers multiple access points via sidewalks, walkways, and driveways. In addition to the public park space, five privately owned public spaces (POPS) are included throughout the site area with one dedicated to each residential and mixed-use building.

### **Proposed Designations**

The First Draft of the W7SP proposes various policies that will apply to the development of the subject lands. In accordance with Schedule 1, Land Use Designations, the subject lands are proposed to be designated as "*Mixed-Use II*", which are expected to include a diverse mixture of retail and service commercial uses, restaurants, cultural, entertainment and recreational land uses at-grade, as well as office uses and a range of apartment dwellings above



the first floor. Schedule 2, Building Height identifies the subject lands as “*Mid-Rise – Up to 8 Storeys*” on the south portion of the lands and “*High-Rise – Up to 18 Storeys*”. The remaining schedules speak to the pedestrian realm network and transportation system.

The following site-specific comments are provided regarding the policies and schedules outlined on the W7SP and how they relate to the current development proposal and existing applications:

#### Overall Comments

- We appreciate that the City has reviewed our site specific OPA and ZBA application and has made some modifications to the W7SP schedules that align with our proposal; however, we are of the opinion that further modification to better align with the proposed development scheme is appropriate and desirable.
- The site specific development applications have been coordinated with adjacent landowners on a coordinate approach for the quadrant. It should be recognized that this developer led coordination has yielded positive contributions to the preparation of the W7SP.
- The W7SP is primarily focused around the Weston Road and Highway 7 intersection. Although it is recognized that this is the focus area for the W7SP, it should also be recognized that the secondary plan area encompasses two Major Transit Station Areas (MTSA) and that the proposed density, heights and land uses can be better dispersed throughout the W7SP area to better utilize and share existing and planned infrastructure, transit services and facilities.
- The W7SP generally speaks to an overall gross density for the secondary plan area; however, we request clarity on how density is to be calculated for individual development sites. The Vaughan Official Plan considers density on a Net Basis (excluding any public conveyances and non-developable lands); however, the VMC Secondary Plan allows for density transfers and FSI calculations on a Gross Basis. In our opinion, it is preferred that a gross calculation be applied in order to ensure landowners that are conveying public roadways, pedestrian connections and parkland will be able to realize the full development potential of their properties while contributing to the overall community needs.
- Overall flexibility in the application of the proposed policies is preferred, noting that the subject property encompasses 16,026.56 square meters of area and ranking it among the more sizeable properties within W7SP. Further, each development parcel presents its own unique opportunities and constraints that should be considered in more detail, as is the benefit with individual development applications that have been formally been submitted to the City.

#### Density and Land Use Composition

The proposed development is entirely proposed to be designated as Mixed-Use II as shown below. The following comments are provided as it relates to density and land use, as well as the policies contained in Section 5 of the W7SP.

- Policy 5.3.3 b) of the General Development Policies requires that stand-alone residential buildings are prohibitive. As noted in the development plan, the proposed development envisions (2) stand-alone residential building along with (3) mixed-use buildings and a stand-alone commercial/office building. Although we acknowledge the intent of this policy in ensuring the W7SP area develops a mixed-use/complete community, it is noted that the achievement of a mixed-use community does not require or necessitate that all buildings within the community are mixed-use. The subject property is 16,026 square metres in size and has a depth of 139 metres, fronting two public roadways, with space in between. Given the size of the subject property, it is recommended that flexibility in the application of this policy be provided so that (2) residential building in the centre of the site (with no frontage on a public roadway) be permitted to develop solely as residential buildings. This provides an opportunity for a localized residential node within the broader mixed-use community, providing optimal access to the mixed-use amenities and uses in the area.

- Policy 5.3.3. b) further requires that a minimum of 15% of a development GFA be non-residential uses. The proposed development includes 6,114 square metres of commercial/office/live-work units which provides a substantial non-residential component to the area. Although this is only 4.5%, it is recognized that the demand for office and commercial uses has been in decline and that the proposed development is not only providing ground related live-work/active uses along the Highway 7 frontage, but also 5,165 square metres of office uses in a dedicated mid-rise building to transition to the office corridor. Given the changing demands for office and commercial uses, it is recommended that staff explore a reduction in the minimum non-res component for individual sites and consider an overall target for non-residential uses within the entire W7SP area.
- Policy 4.1.5 speaks to Live-Work Units and that this unit type is only permitted within a street townhouse building. This development form is rare as live-work units are more commonly contained within the base of mixed-use towers/in podiums where they can address the street, animate frontages, and be better serviced by building amenities and maintenance services (ie. Parking, garbage collection, loading). It is recommended that the live-work permissions be expanded to other land use categories.
- Policy 5.3.3 e) within the Mixed-Use II designation, Mid-Rise Buildings should have a maximum FSI of 3.75, while High-Rise Buildings I should have a maximum FSI of 6.0, and High-Rise Building II should have a maximum FSI of 7.5. As rationalized in the following section as it relates to building height, it is our opinion that the proposed development is better identified as a High-Rise Building II site given its extensive frontage (150 m) along Highway 7, proximity to (2) MTSAs, and its frontage on multiple public roadways. Although phased, the development is being reviewed as a singular development and will be structured as such. As a combined development, the total proposed density is 8.62 FSI on a gross basis, which is only 1.12 FSI greater than the maximum permitted in the High-Rise Buildings II designation. It is our opinion that this modest increase is appropriate given other benefits the realization of this development will meet provincial mandates surrounding intensification while providing for a public park and 1,981 new residential units.

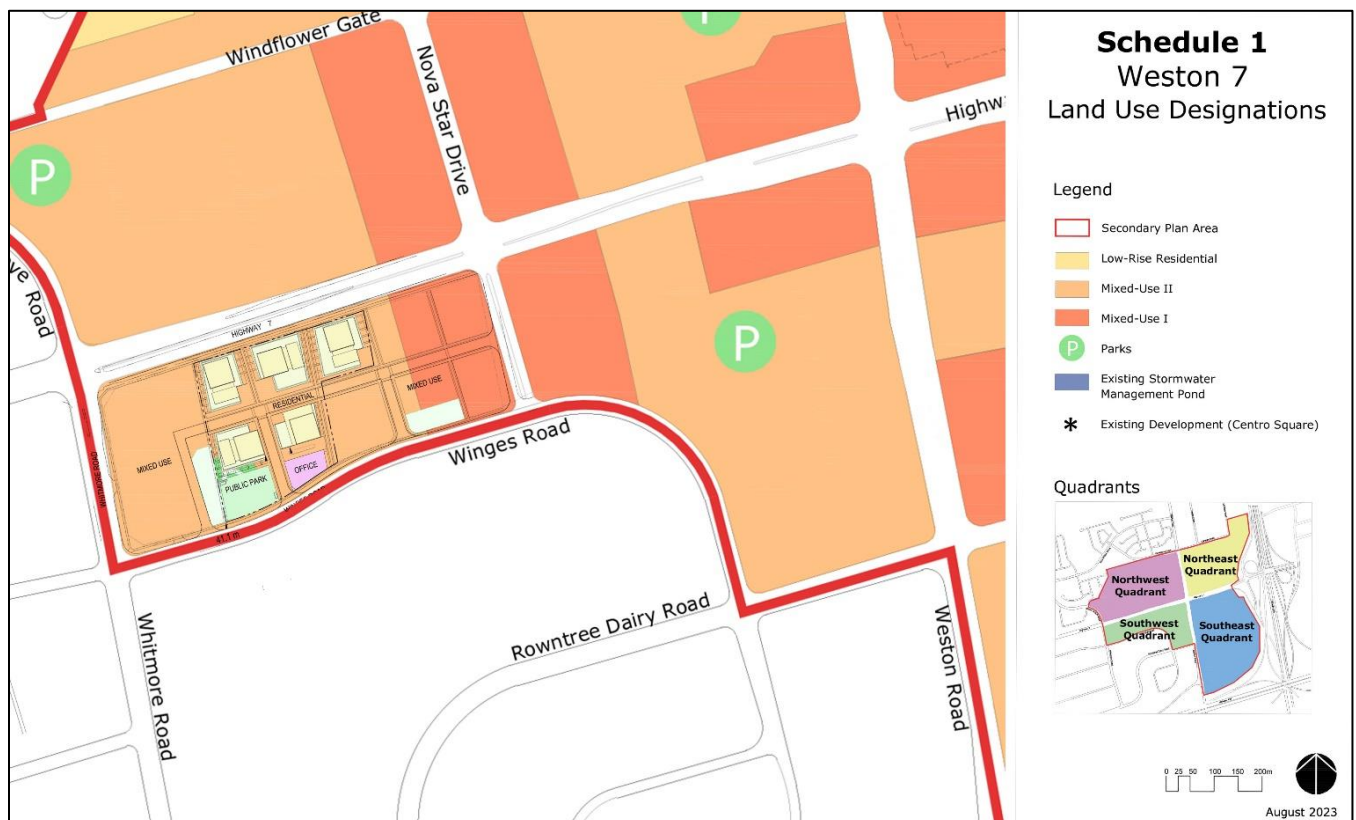


Figure 1: S7SP - Proposed Schedule 1, Land Use Designations

## Building Height

The proposed development is proposed to be have differentiated designations: *Mid-Rise, up to 8 storeys* (on the south side), and *High-Rise I up to 18 storeys* (on the north side) per Schedule 2, Building Heights, illustrated on Figure 2. As such, the (3) buildings along Highway 7 are proposed to be *High-Rise I*, while the (3) buildings to the rear are proposed to be *Mid-Rise*. The following comments are provided as it relates to building heights, as well as the policies contained in Section 4.2 of the W7SP.

- 4.2.4 a) has a discrepancy in the maximum height permissions from the policy text vs. the proposed schedules. In the policy, the maximum height permissible for the High-Rise I designation is 20 storeys (vs. 18 storeys on Schedule 2) and for the High-Rise II designation is 32 storeys (vs. 19+ on Schedule 2). It is advisable that this be clarified and corrected.
- 4.2.3 a) provides for a maximum Mid-Rise Building height of 8 storeys or 27 metres. It is noted that Section 9.2.3.5 of the Vaughan Official Plan, and the generally accepted urban design principle is that a mid-rise building is defined as building over 5-storeys and up to 12-storeys. We question why the W7SP proposes to seek a lower maximum height permission for mid-rise buildings given the need for more housing and development potential for the area. Despite this, the proposed 8-storey office building at the rear of the development conforms to the permissible height regime.
- Schedule 2 focuses the High-Rise II designation towards the Highway 7 and Weston Road intersection only; however, the W7SP encompasses a broader development area and subject lands is serviced by two separate MTSAs. As such, it is our opinion that from a city building perspective, the High-Rise II designation should be spread along the Highway 7 corridor more broadly than presently proposed, allowing for lower building heights on areas that do not have frontage along Highway 7. Highway 7 is a Regional Intensification Corridor and a “*major focus for intensification on the lands adjacent to major transit routes, at densities and in a form supportive of the adjacent higher-order transit*”. Further, this portion of Highway 7 includes a BRT service with access to two stations and the widest right-of-way in the Region. Given the size of the roadway and extensive public realm and boulevard treatments, taller heights along the full extent of Highway 7 should be permitted.
- The proposed development generally conforms to the intent of the W7SP policies by providing for the greatest building heights along the Highway 7 frontage, while stepping the heights down towards the rear of the site. The overall cumulative building height averages to 29 storeys, which is within the maximum permissible height allowance for the High-Rise II designation. As noted previously, the application of the policy should be undertaken with greater flexibility recognizing the larger site context and its ability to disperse the proposed heights and densities more evenly throughout the development proposal.
- The site’s location on the southern portion of the W7SP area provides an optimal development scenario for greater heights and densities to be focused towards the south quadrants. The southern orientation of the site will limit shadow impacts onto the public realm and sensitive residential uses as the subject property is approximately 270 metres from any existing low-rise community areas, which satisfies Policy 5.5.3 f) of the W7SP.

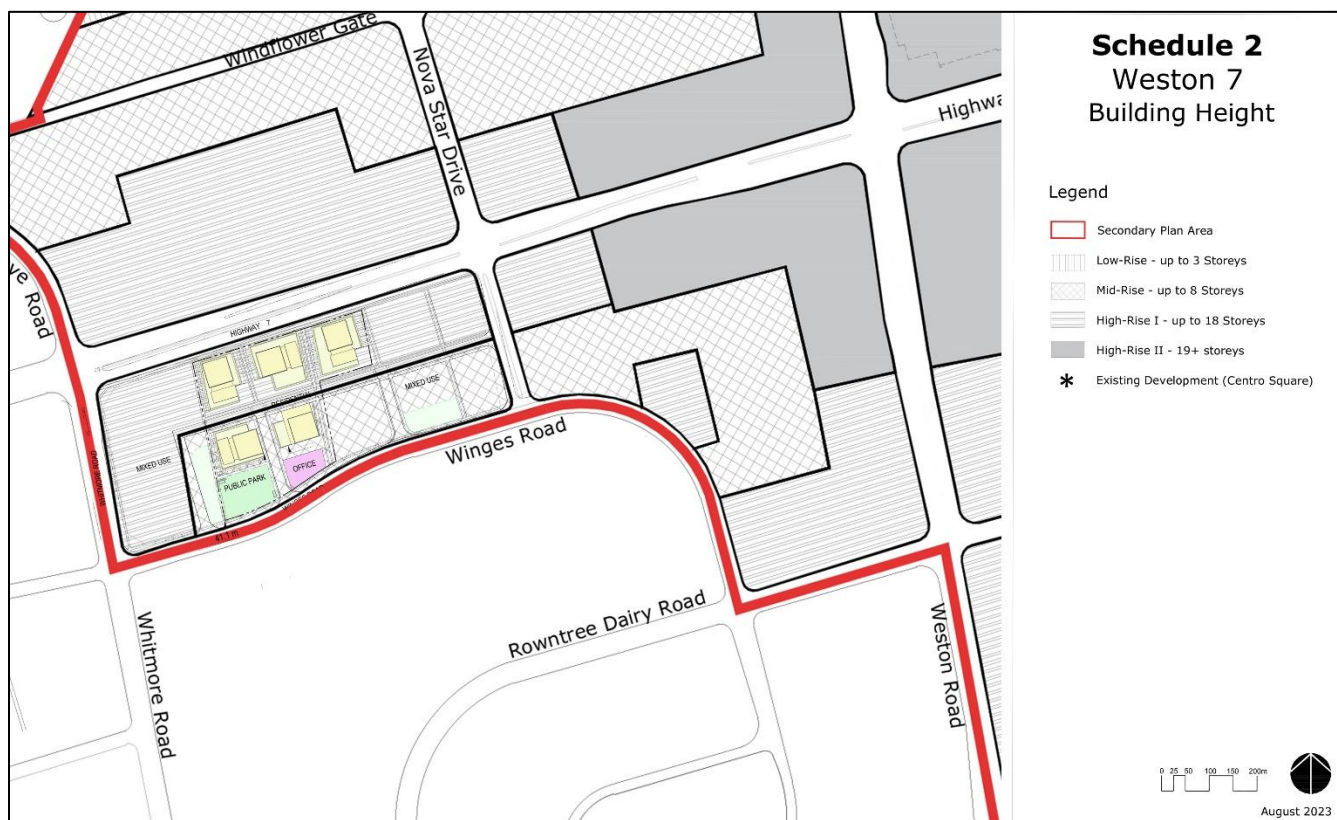


Figure 2: Schedule 2, Building Height

Parks

Schedule 3, Pedestrian Realm Network includes a number of proposed public parks, opens spaces and linkages to be coordinated throughout the W7SP area. In particular it proposes an *Urban Square* along the southern portion of the subject property, as well a *Pedestrian Connection and Connecting Links/Courtyard* along the western property boundary linking the proposed public park to Highway 7. Also envisioned is an *Enhanced Urban Streetscape* along Highway 7.

- While it is recognized that the W7SP has accounted for the proposed development and has generally proposed the public park and linkages in coordination with the submitted proposal, we note that some discrepancies still exist between Schedule 3 and the submitted plans. It is recognized that the W7SP has also considered the neighbouring development application to the west; however, it is noted that the proposed public parkland required for the quadrant has disproportionately been applied to the subject lands, while other lands within the block are not providing an equitable amount of potential park lands. The portion of the proposed Urban Squares presently located where the 8-storey office building is proposed should be shifted to the abutting parcels to the east for a more equitable distribution of parkland, providing more convenient access to public park space to all future residents within the block.

The proposed development is currently proposing to convey 1,603 square metres of public parkland, representing 10% of the development site, which is consistent with Policy 8.1.10 g). This park has been strategically positioned to seamlessly connect with the proposed public park of the adjacent western development, resulting in a larger community park covering approximately 3,093m<sup>2</sup> once fully realized. This integration delivers a substantial community benefit and significant overall parkland contribution to the southwest quadrant to serve the neighbouring developments. As such, an enlarged park beyond what is currently proposed is not required to service the immediate vicinity of the parks space. If the city is intent of exploring additional park lands, it would be more equitable and appropriate for the additional park lands being proposed in the W7SP to be shifted to the east, allowing for more convenient access to parks space within all

areas of the block, while also allowing the optimal parks strategy presently being proposed in the site specific applications to be realized.

- In addition to the Urban Square, the proposed development includes (4) dedicated POPS spaces that would also contribute to the overall parks network and permissible for Parkland Dedication credits per Policy 8.1.10 j) and the City of Vaughan Parkland Dedication By-law 168-2022.
- Given the substantial over contribution of parkland sought by the city from the proposed development, we seek clarity on what cost sharing mechanisms or additional density/development benefits could be achieved on the subject property given its presently contemplated dedication of parkland as compared with other development sites.
- The proposed development prioritizes pedestrian connectivity and active transportation. It provides for a dedicated pedestrian connection and Connecting Links/Courtyard on the western property line to link to the new park space, while also providing extensive linkages between the (3) buildings fronting onto Highway 7, which will increase pedestrian permeability and access interior to the site.
- The W7SP includes policies that allow for the dedication of Strata Parks.



Figure 3: Schedule 3, Pedestrian Realm Network

Pedestrian Circulation and Road Network

The proposed development prioritizes pedestrian connectivity and active transportation over vehicle usage given the site’s location between (2) VIVA Stations and within a delineated MTSA. Schedule 4, Transportation System proposes an east-west *Laneway* that bisects the property, which is in line with the current development proposal, while also generally aligning with the intended road pattern subject to minor deviations in alignment. Also proposed is a *Local Road* for the eastern perimeter of the subject property, creating a link between Wings Road and Highway 7. The proposed development includes (4) direct pedestrian linkages and or mews’ to Highway 7 from the internal areas of the site in order to promote active transportation and the prioritization of pedestrian movement.

Crozier and Associates submits the attached Transportation Opinion Letter which concludes that although they are generally in support of the of the larger area-wide recommended transportation improvements, the new proposed north-south public road connection between the Nova Star Drive extension and Whitmore Road which bisects the Subject Property is not necessary from a traffic capacity perspective and would not be preferable from a safety perspective. The proposed new road will introduce additional conflict points between vehicles and non-auto transportation users and likely introduce significant cut-through traffic to the quadrant in an attempt for automobile traffic avoid delays and congestion issues at the critical Weston Road and Highway 7 intersection. Please refer to the attached Transportation Opinion Letter for additional discussion.

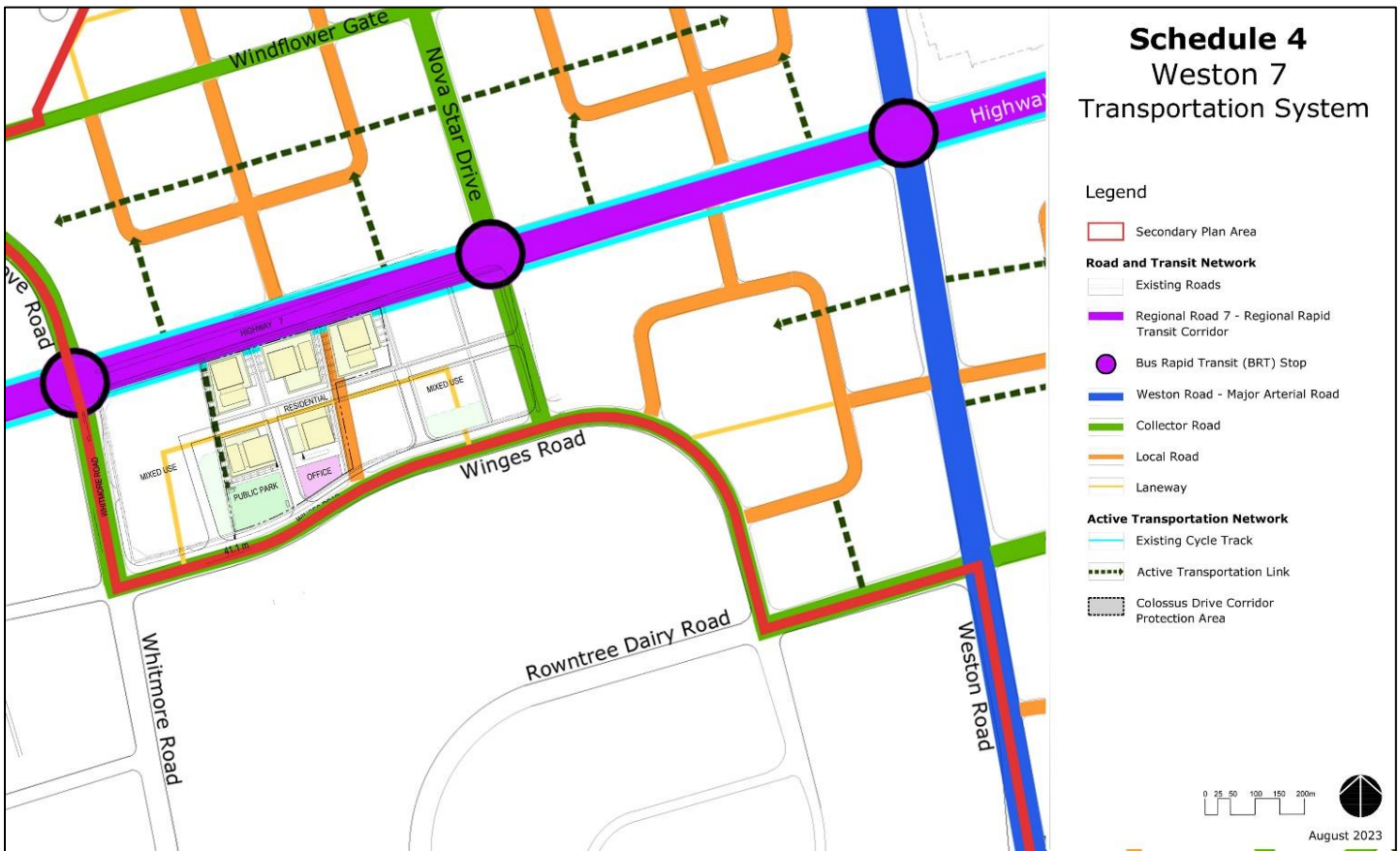


Figure 4: Schedule 4, Transportation System

We appreciate the opportunity to provide these comments as it relates to the W7SP and wish to continue to participate in the secondary plan process. We request that the comments contained in this letter be considered for incorporation into a revised W7SP and that a meeting be scheduled with the appropriate staff to discuss the W7SP policies as it relates to the proposed development.

We reserve the right to provide additional comments on this matter and request to be notified of any future meetings, reports and decisions relates to this matter. Should you have any questions regarding the above comments, please contact the undersigned at extension 252 or Mina Rahimi at extension 339.

Yours truly,  
**Weston Consulting**  
Per:



Michael Vani, BURPI, MCIP, RPP  
Associate

- c. Gallu Construction Inc.  
Brandon Bradt, Crozier and Associates  
C. Cosentino, City of Vaughan  
A. Slattery, City of Vaughan  
F. Filipetto, City of Vaughan  
C. Bruce, City of Vaughan  
J. Grove, City of Vaughan

Att. Transportation Opinion Letter, Crozier and Associates

**SEPTEMBER 26, 2023**

**PROJECT NO: 2325-6447**

**SENT VIA: EMAIL  
WESTON7TMP@WSP.COM  
MARTA.ROIAS@VAUGHAN.CA**

City of Vaughan  
Development Planning Department  
2141 Major Mackenzie Drive  
Vaughan, ON L6A 1T1

**Attention: Marta Roias  
Project Manager, Transportation**

**RE: TRANSPORTATION OPINION LETTER  
WESTON 7 SECONDARY PLAN & TRANSPORTATION MASTER PLAN (1<sup>ST</sup> DRAFT)  
3899 & 3901 HIGHWAY 7 AND 40 & 60 WINGES ROAD, CITY OF VAUGHAN**

Dear Ms. Roias,

C.F. Crozier & Associates (Crozier) has been retained to provide transportation engineering services by Gallu Construction (the Applicant) in support of the development applications for the site located at 3899 & 3901 Highway 7 and 40 & 60 Winges Road (Highway 7 and Winges) in the City of Vaughan, Regional Municipality of York.

The subject lands fall within the Weston Road and Highway 7 (Weston 7) Secondary Plan Area in the southwest quadrant. The Secondary Plan Study and Transportation Master Plan (TMP) regarding the planning and development of these lands commenced in May 2020. It is also noted that a Transportation Mobility Plan for the applicant's property was prepared and submitted in June 2023.

A separate Transportation Opinion Letter was previously prepared by Crozier on behalf of the applicant regarding draft material related to the Weston 7 Transportation Master Plan presented at the June 1, 2023 landowner's group (LOG) meeting.

The purpose of this Transportation Opinion Letter is to provide feedback and comments on the 1<sup>st</sup> draft of the Weston 7 Secondary Plan and Transportation Master Plan (dated August 2023) related to the proposed multi-modal transportation network within the southwest quadrant where the applicant's lands are located.



## **Weston 7 Southwest Quadrant Transportation Network Comments**

This letter will focus on the transportation network improvements that are proposed within the western portion of the southwest quadrant of the Weston 7 lands where the applicant's property resides including: the proposed new north-south active transportation connection and the new north-south local road connection.

Other improvements such as the Nova Star Drive and Wings Road improvements are not discussed herein but continue to be supported by Crozier to support the development of the southwest quadrant, and the Secondary Plan area.

### New North-South Active Transportation Connection

A new north-south active transportation connection in the form of a Multi-Use Pathway has been proposed between Whitmore Road and Nova Star Road on the south side of Highway 7 through the entire southwest quadrant of Weston 7 that was not on previous potential plans, although it was included as a proposed connection in the applicant's development proposal.

This active transportation connection is supportable and fulfils a need for more north-south active transportation connections in the Pedestrian Realm that will connect active users between the existing and proposed dedicated transportation facilities on Highway 7 and Wings Road, as well as directly to the proposed parks within the quadrant.

This connection appears to be well located along the property line between the applicant's lands and the adjacent applicant to the west, which will assist active users with convenient connections directly into both the development blocks and the co-located parklands.

Therefore, this new active transportation connection can be supported.

### New North-South Local Street Connection between Wings Road and Highway 7

The Weston 7 TMP (1<sup>st</sup> draft) continues to propose a new north-south local road connection to Wings Road from Highway 7, which cannot be supported. As part of the pre-application process and via preparing Terms of Reference for the proposed development application, both Region and City transportation staff identified that a connection to Highway 7 would not be supported (see Appendix for correspondence).

Crozier is of the opinion that this public road connection would not be necessary or desirable for the following reasons:

- **Safety Concerns:** This connection would introduce a new conflict point for vulnerable road users (pedestrians and cyclists) who are travelling east/west along Highway 7. While during congested peak hour conditions this risk may be mitigated by lower operating speeds on Highway 7, this risk is increased during off-peak conditions where vehicles can travel at higher operating speeds on Highway 7 and then make high-speed right-turns in through the local road connection across the sidewalk and separated cycle track.

Additionally, the applicant's property is proposed to feature a shared laneway which connects to the east and west adjacent properties providing multiple ways in and out of the site, the accesses from the adjacent accesses can operate as functional emergency accesses should they be needed. Therefore, the proposed new north-south local street is expected to be unnecessary from an emergency access perspective.

Furthermore, this connection would very likely be used during congested peak hour operations on Highway 7 as a cut-through connection for non-local trips, increasing traffic and decreasing safety for the lands located adjacent to the new north-south road.

- Access and Road Network Hierarchy: Generally, access should be provided to specific destinations via the lowest order roadway. It is not preferred to have local roadways making connections to much higher order roadways/arterials such as Highway 7, these connections should be made via higher order collector roads such as Nova Star Drive and Whitmore Road.

Vehicle access can be adequately served in this block via driveway connections to/from the lower order roadways (Winges Road) without the need for direct Highway 7 access.

- Traffic Capacity: The connection would need to be right-in right-out and therefore would provide minimal additional capacity to vehicles seeking access to and from Highway 7. Additionally, the planned road extension of Nova Star Road south of Highway 7 to Wings Road is expected to provide the additional connectivity/capacity needed to serve the development of the subject lands and the surrounding southwest quadrant.

While the access may be convenient for vehicles inbound from the west and outbound to the east, it is not needed to serve the auto access needs of the quadrant as shown within the submitted Transportation Mobility Plan as part of the development application.

In consideration of the above, an additional mid-block, public north-south roadway is not deemed necessary from a traffic capacity perspective, nor would it be preferable from a safety perspective since it would introduce additional conflict points between vehicles and non-auto transportation users.

By removing this connection, a better public realm and active transportation safety can be maintained along the Highway 7 frontage to encourage non-auto forms of transportation within Weston 7, which will be necessary as the Weston 7 area continues to develop.

## Summary

Crozier and the applicant are generally in support of the larger area-wide recommended transportation network improvements proposed within the Weston 7 Transportation Master Plan (1<sup>st</sup> Draft) area such as the Colossus Drive Overpass, Right of Way requirements, new active transportation facilities and connectivity, as well as the Nova Star Drive extension within the southwest quadrant.

However, the new proposed north-south public road connection between the Nova Star Drive extension and Whitmore Road cannot be supported and is not considered necessary from a traffic capacity perspective. Furthermore, it would not be preferable from a safety perspective since it would introduce additional conflict points between vehicles and non-auto transportation users and likely introduce significant cut-through traffic to the quadrant to avoid delays/congestion issues at the critical Weston Road and Highway 7 intersection.

We trust that the concerns identified herein will be heard and addressed with the utmost care recognizing that the safe and efficient movement of all modes of transportation remains paramount for the many future residents and visitors within the Weston 7 area.

Sincerely,

**C.F. CROZIER & ASSOCIATES INC.**



Brandon Bradt, M.Eng. CEM, P.Eng.  
Manager, Transportation Planning

TDS

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Transportation Opinion Letter - Weston 7 TMP.docx

**C.F. CROZIER & ASSOCIATES INC**



Theshantha De Silva, E.I.T.  
Engineering Intern, Transportation

# Appendix A

## City of Vaughan Terms of Reference and Pre-Application Comments

## Theshantha De Silva

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**From:** Brandon Bradt  
**Sent:** Friday, May 5, 2023 11:28 AM  
**To:** Theshantha De Silva  
**Subject:** FW: [External] 3899 & 3901 Highway 7 and 40 & 60 Wings Road Terms of Reference

TOR from City

**Brandon Bradt**, M.Eng. CEM, P.Eng.  
Manager (Planning), Transportation  
DID: 416.842.0033

---

**From:** Paul Grove <Paul.Grove@vaughan.ca>  
**Sent:** July 12, 2022 12:27 PM  
**To:** Melanie Nguyen <mnguyen@cfcrozier.ca>  
**Cc:** Brandon Bradt <bbradt@cfcrozier.ca>; Marta Roias <Marta.Roias@vaughan.ca>  
**Subject:** RE: [External] 3899 & 3901 Highway 7 and 40 & 60 Wings Road Terms of Reference

Hi Melanie,

Thanks for reaching out. Please see our comments/feedback below on the submitted Terms of Reference. Please note these comments are not exhaustive and additional requirements may be provided with the submission of the Transportation Mobility Plan. Also note that in the absence of a concept plan or site statistics, the requirements listed below are subject to change. Please also refer to comments provided by our IPCAM team as they are managing the completion of the Transportation Master Plan which will support the Weston & 7 Secondary Plan.

### Background

Comments to be provided with the submission. Access to Highway 7 if proposed is to be confirmed with York Region. Access should be integrated with the neighbouring application at 177 Whitmore Road and provided to Wings Road.

### Study Methodology for the Transportation Mobility Plan

Please include all existing site accesses as part of the study area. The rest of the study area is acceptable. Please note, the LEA study is still under review and caution should be exercised in using these TMCs. Staff note that a number of TMCs from the LEA study are outdated and more recent counts should be collected at this time. Please also note that staff discourage the collection of TMCs during the summer months. Any TMCs used in the study that have been collected during the pandemic must be adjusted based on adjustment factors. Any counts collected in spring 2022 or later may not require adjustment factors. To obtain City TMCs or signal timing plans please contact our Transportation & Fleet Management Services team.

### Analysis Periods and Scenarios

Staff generally require an existing, built-out, build-out + 5 years, and a 2041 horizon (2042 is acceptable)

### Background Developments

Please add:

- OP.22.002 & OP.22.005

- DA.20.046
- Z.19.039
- For all those lands in the southwest quadrant that do not have active development applications, trip generation assumptions must be made for these properties based on the land use and density information from a Planning Justification Report and these assumptions should be approved by the City's Planning Department.

### Roadway and Transit Improvements

The Colossus Drive overpass is subject to considerable study and consideration prior to implementation. It's application in the study should be as a sensitivity scenario if included. Please refer to comments provided by IPCAM as applicable regarding road network assumptions as they relate to the development of the Weston & 7 Secondary Plan

### Background Growth Rate

Please note that staff provided comments on the LEA study and therefore caution should be exercised when applying assumptions from this study. The background growth rates and other calculations should be performed using acceptable methodology and source data such as EMME outputs from York Region, historical TMCs, etc.

Please let us know if you have any questions.

Thank you,

**Paul Grove, M.P.I., MCIP, RPP**  
**Transportation Engineering Lead**  
905-832-8585, ext. 8857 | [paul.grove@vaughan.ca](mailto:paul.grove@vaughan.ca)

**City of Vaughan | Planning & Growth Management Portfolio**  
2141 Major Mackenzie Dr., Vaughan, ON L6A 1T1  
[vaughan.ca](http://vaughan.ca)



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**From:** Musa Deo <[Musa.Deo@vaughan.ca](mailto:Musa.Deo@vaughan.ca)>  
**Sent:** Thursday, June 23, 2022 2:19 PM  
**To:** Melanie Nguyen <[mnguyen@cfcrozier.ca](mailto:mnguyen@cfcrozier.ca)>; Paul Grove <[Paul.Grove@vaughan.ca](mailto:Paul.Grove@vaughan.ca)>  
**Cc:** Brandon Bradt <[bbradt@cfcrozier.ca](mailto:bbradt@cfcrozier.ca)>; Vi T.. Bui <[vi.bui@york.ca](mailto:vi.bui@york.ca)>  
**Subject:** RE: [External] 3899 & 3901 Highway 7 and 40 & 60 Wings Road Terms of Reference

Melanie,

Forwarding to my colleague Paul for his review/comment(s) as I believe he's working in this area.

Thank you.

**Musa Deo, P.Eng., PTOE, PMP**  
**Transportation Project Manager, Development Engineering, VMC**  
(905) 832-8585 ext. 8295 | [musa.deo@vaughan.ca](mailto:musa.deo@vaughan.ca) | cell: 647-376-6872

**City of Vaughan | Planning and Growth Management Portfolio**  
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**From:** Melanie Nguyen <[mnguyen@cfcrozier.ca](mailto:mnguyen@cfcrozier.ca)>  
**Sent:** June-23-22 1:41 PM  
**To:** Vi T.. Bui <[vi.bui@york.ca](mailto:vi.bui@york.ca)>; Musa Deo <[Musa.Deo@vaughan.ca](mailto:Musa.Deo@vaughan.ca)>  
**Cc:** Brandon Bradt <[bbradt@cfcrozier.ca](mailto:bbradt@cfcrozier.ca)>  
**Subject:** [External] 3899 & 3901 Highway 7 and 40 & 60 Wings Road Terms of Reference

Good afternoon,

C.F Crozier and Associates (Crozier) has been retained to provide Transportation Engineering services in support of the Official Plan Amendment application for a mixed-use development located at the sites of 3899 & 3901 Highway 7, and 40 & 60 Wings Road in the City of Vaughan, Region of York.

To support our Transportation Mobility Plan (TMP), we are kindly requesting that you review the following Terms of Reference (ToR) and provide feedback regarding our scope of work and request for data. Should you not be the appropriate person for correspondence, it would be very appreciated to be directed to the appropriate contact.

#### **Background**

It is our understanding that the concept plans for the subject lands are still in development, however, are expected to include three (3) multi-use residential towers with ground floor retail uses along with green space.

#### **Study Methodology for the Transportation Mobility Plan**

The study shall be consistent with the Region's Transportation Mobility Plan Guidelines and Access Guidelines. The following intersections are proposed to be analyzed as part of the scope of the study:

- Ansley Grove Road/Whitmore Road at Highway 7 (Signalized)
- Nova Star Drive at Highway 7 (Signalized)
- Weston Road at Highway 7 (Signalized)
- Colossus Drive at Weston Road (Signalized)
- Wings Road/Auto Park Circle at Rowntree Dairy Road (Signalized)
- Wings Road/Trowers Road at Whitmore Road (Signalized)

We kindly request any recent available traffic count and signal timing plans for the above noted intersections. Additionally, please confirm the noted above intersections are sufficient for this study.

It is noted that all the intersections identified above were also examined within the TMP conducted by LEA for the proposed development at 177 Whitmore Road. Therefore, Crozier proposes to use LEA's existing (2021) traffic volumes as the basis of the existing conditions assessment per Figure 2-4 of the TIS. Please confirm this approach would be acceptable.

Alternatively, we may consult specialty traffic counting firms we typically work with, in the event recent counts are not available. Travel patterns have generally returned to normal levels after the Covid-19 pandemic's peak. However, please advise if the City is not accepting of new counts due to its lingering effects on traffic. As such, please advise with regards to any further steps should there be no applicable traffic data at the study intersection.

#### **Analysis Periods and Scenarios**

The above intersections will be analyzed in the weekday A.M. and P.M. peak hours for the following horizons: the existing year of 2022, a full build out year of 2027, a 5-year horizon beyond full build-out of 2032, as well as an analysis of a 2042 (20-year) horizon similar to the TIS completed by LEA for adjacent development to the west of the proposed site.

### **Background Developments**

We have reviewed the City of Vaughan website to determine if there are any additional background developments that should be considered within the horizon of the study. The following background developments will be considered for traffic analysis:

- 177 Whitmore Road
- 3940 Highway 7
- 3850 Highway 7
- 7520, 7540, 7560 Weston Road
- 1 Auto Park Circle
- 7501-7621 Weston Road

Please provide any additional background developments in the vicinity of the proposed development and associated traffic impact studies that should be included in our analysis.

### **Roadway and Transit Improvements**

According to York Region's Transportation Master Plan (2016), Weston Road is proposed to be widened from 4 to 6 lanes, with one (1) new lane in each direction designated for HOV/Transit use, for 2041 and would therefore be included in the 2042 horizon analysis.

Additionally, according to the City of Vaughan's Transportation Master Plan (2012), Colossus Drive is proposed to be extended across Highway 400 as a strategic improvement and would therefore be included in the 2042 horizon analysis.

Per WSP's Weston 7 Transportation Master Plan (TMP) Landowners Group Meeting on October 15, 2021, Nova Star Drive is proposed to be extended into a primary connection across Highway 7 to Wings Road to improve connectivity and will also be included in the 2042 horizon analysis.

Lastly, It is noted that per York Region's Transportation Master Plan (2022) there are proposed cycling facilities to be determined along Weston Road for 2051.

Please provide us with any additional roadway improvements within the study area network.

### **Background Growth Rate**

A growth rate of 0.7% per year will be applied along Highway 7 and Weston Road to grow historical counts to 2022 based on LEA Consulting Ltd's Traffic Impact & Parking Study for the proposed mixed-use development located at 177 Whitmore Road dated March 1, 2022.

Please advise whether the assumed growth rate is sufficient, or alternatively please provide an appropriate growth rate(s) to reflect expected growth in the area.

### **Trip Generation and Distribution**

Trip generation for the proposed development will be forecasted using the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11<sup>th</sup> Edition.

Site generated traffic to and from the boundary road network will be assigned using 2016 Transportation Tomorrow Survey (TTS) data.

### **Multi-Modal Analysis Procedures**



Weekday A.M. and P.M. peak hours will be analyzed using Synchro 11.0 analysis software, using Highway Capacity Manual (HCM) methodology per the Region's TMP Guidelines. MMLOS will also be evaluated for non-auto modes based on the Region's TMP Guidelines for the existing and future total horizons.

### **Parking and Loading Study**

The site, located in EM1 (Prestige Employment Zone), is subject to the City of Vaughan Zoning By-Law 1-2021. It is understood that the proposed parking supply may differ to the City's parking requirements. As the site is located within a 2.5km radius of the Ansley Grove BRT station and the Vaughan Metropolitan Centre Station (Line 1 Yonge-University), there is an opportunity for a reduction in required parking and thus a parking study may be conducted. If required, the parking study would be completed following the City's Parking Study Guideline. The parking study would examine the travel behaviour within the area and provide a database of similar sites with approved or pursued parking requirement reductions. Past parking demand studies in areas of similar context would be reviewed.

Likewise, it is understood that the proposed loading supply may deviate from the requirements and a loading justification study may be completed to justify the variance. The study would provide an itemized list of comparable sites with approved or pursues loading restrictions within the area, if available. If required, a loading demand study will be completed. In the case no suitable proxy surveys are available, Crozier will consult the appropriate parties to complete the study.

### **Transportation Demand Management (TDM) Opportunities**

Existing and future Transportation Demand Management (TDM) opportunities will be explored to reduce single-occupant vehicle (SOV) trips and promote applicable alternative modes of transportation, including transit and active transportation, following York Region Transportation Mobility Plan Guidelines and the City of Vaughan Transportation Demand Management Guideline including the TDM Toolkit.

### **Summary**

We request the following information for inclusion in the study, along with any comments that arise with regards to the above Terms of Reference. Please provide:

- Confirmation that the intersections of study outlined are sufficient
- Signal timing plans available for the intersections of study identified in this Terms of Reference
- If the assumed growth rate is applicable or provide relevant growth rate(s) applicable to the roadways of study
- Confirmation that the relevant background developments are sufficient or provide any additional relevant background developments, as well as associated traffic impact studies that are to be included in our study
- Details of any additional planned roadway or transit improvements in the surrounding study area within the proposed horizon year(s)

I hope the contents outlined in this email are acceptable. Should you have any questions or require any further information, please feel free to contact us.

Best,

Melanie Nguyen

**Melanie Nguyen** | Engineering Intern  
2800 High Point Drive, Suite 100 | Milton, ON L9T 6P4  
T: 905.875.0026

<b>Office Use Only</b>	<b>Assigned PAC No.</b>	<b>PAC.22.065</b>	
	<b>Date of PAC Meeting</b>	<b>August 11<sup>th</sup>, 2022</b>	
	<b>PAC Expiration Date (180 days from date of PAC Meeting)</b>	<b>February 7, 2023</b>	
	<b>Planner</b>	<b>Dulaa Osman, Christopher Cosentino</b>	
	<b>Owner/Agent</b>	<b>Gallu Construction Inc. / Michelle Wei</b>	
	<b>Site Location</b>	<b>3899, 3901, Hwy 7 &amp; 40, 60 Wings Road</b>	
	<b>Proposal</b>	<p>A PAC meeting has been requested to facilitate the development of four, high-rise, mixed use buildings. Three buildings front onto Highway 7 and are 40, 33, and 38 storeys tall. One building fronts Wings Road and is proposed to be 25 storeys in height. The proposed development contains a total Gross Floor Area of 137,698m<sup>2</sup>. The applicants is proposing the development of 1,848 dwelling units, 2,832m<sup>2</sup> of retail space and 1,217.03m<sup>2</sup> of office space. The development also proposes a total of 1,477 underground parking spaces – 1,110 residential spaces and 278 visitor spaces.</p>	
		<input checked="" type="checkbox"/> <b>Major Official Plan Amendment</b>	<input type="checkbox"/> <b>Draft Plan of Subdivision</b>
	<input type="checkbox"/> <b>Minor Official Plan Amendment</b>	<input checked="" type="checkbox"/> <b>Site Development</b>	
	<input checked="" type="checkbox"/> <b>Zoning By-law Amendment</b>	<input checked="" type="checkbox"/> <b>Draft Plan of Condominium (common element only)</b>	

## **IMPORTANT – READ AND ACKNOWLEDGE**

### **1.0 Purpose**

- 1.1 The purpose of the Understanding is to identify the information required to commence a complete application as set out in the *Planning Act* for only the specific development application(s) subject to this Understanding.
- 1.2 The Understanding will be completed by Planning Staff of the Development Planning Department and will form part of a complete application.
- 1.3 The PAC meeting or PAC Understanding does not imply or suggest any decision whatsoever on the part of City staff or the Corporation of the City of Vaughan to either support or refuse the application(s).

### **2.0 PAC Execution**

- 2.1. The PAC Understanding will only be considered valid once executed by both the City Planner/Planning Technician and the Owner/Agent
- 2.2. If the PAC Understanding is not signed and returned by the Owner/Agent, it is considered null and void. As part of a complete application submission, we require an executed PAC Understanding. Applications will not be accepted without the signed PAC Understanding.

## Dulaa Osman

---

**From:** Wong, Justin <Justin.Wong@york.ca>  
**Sent:** Friday, September 23, 2022 11:11 AM  
**To:** Mark Antoine; Dulaa Osman  
**Subject:** [External] RE: PSC.22.V.0364 (PAC.22.065) - 3899, 3901, Hwy 7 & 40, 60 Wings Road  
**Attachments:** PSC.22.V.0364 Submission Checklist YR SP.pdf

Hi Mark and Dulaa,

My apologies for the delayed response. Here are our comments:

We understand the purpose of this pre consultation involves OPA, ZBA, Site Plan and Draft Plan of Condominium applications to facilitate the development of four, high rise, mixed use buildings with heights of 33, 38, and 40 storeys fronting Highway 7 and a 25 storey building fronting Wings Road, with a total of 1848 proposed dwelling units and 1477 underground parking spaces. York Region provides the following comments:

- A Planning Justification Report is required as part of a complete application clearly outlining how this proposal complies with all the relevant policies of the applicable Provincial, Regional and local planning documents, including the YROP and the Local Official Plan. The Planning Justification Report shall also indicate how the proposed development conforms with the planned urban structure.
- York Region staff do not have any special submission requirements on the potential OPA, ZBA and Draft Plan of Condominium applications – your standard circulated documents are sufficient.
- For the site plan application, a checklist has been attached.
- Transportation comments:
  - It should be noted that City of Vaughan is in the process of Weston 7 Secondary Plan. Therefore, it is strongly recommended that the proposed application be deferred until the VMC Secondary Plan review and update is completed to ensure consistency related to the policy, urban built form and most importantly, the fine grid transportation network.
  - If the applicant wants to proceed with the development, a Transportation Impact Study will be required that takes into consideration Weston 7 Secondary Plan. The Study shall include the increase height and density anticipated as a result of the Secondary Plan review and update process initiated by the City of Vaughan. The Study will be deemed incomplete until the impacts of the anticipated growth in the area are fully analyzed. Additionally, The Study shall ensure consistency related to the policy, urban built form and most importantly, the fine grid transportation network. The Study shall develop a phasing plan and all the associated transportation infrastructure improvements required to implement the phases of the development.
  - The Study shall ensure that sufficient and appropriate access arrangement and the required infrastructure improvements associated with each phase of the proposed development are implemented, to the satisfaction of the Region.
  - The comprehensive Transportation Study shall be consistent with the format and recommendations of the Region's Transportation Mobility Plan Guidelines for Development Applications (November 2016).
  - Transportation Mobility Plan Study terms of reference shall be approved by the Regional and City of Vaughan staff prior to the commencement of the Study.
  - The proposed development shall implement the internal roadway network as planned in the updated VMC Secondary Plan.

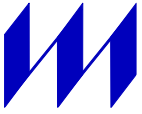
- The Study shall identify all the associated transportation infrastructure improvements required to implement the proposed development.
  - The Study shall provide a comprehensive Transportation Demand Management Plan (TDM) consistent with Region Transportation Mobility Plan Guidelines to the satisfaction of York Region. The TDM Plan shall include a TDM checklist that summarizes the programs and measures, estimated costs and responsibility of the applicant to implement TDM recommendations.
- York Region RapidCo comments:
    - No direct site access will be permitted onto Highway 7, all access shall be provided via Wings Road or Whitmore Road
    -



- The site is located within the CTC Source Protection Region corresponding with the Toronto and Region Conservation Authority (TRCA) boundary. Water Resources would like to note the site is partially in an identified area of concern due to known high water table conditions and confined artesian aquifer conditions, which could have geotechnical implications with respect to construction activities including, but not limited to, dewatering (short term or long term), foundation construction, and building stability. As such, Water Resources recommends that any geotechnical and hydrogeological investigations undertaken by the owner take into account the fact that groundwater levels may currently be artificially depressed at the site due to third party permanent dewatering systems in the area. Also, please note that the Environmental Monitoring and Enforcement group of the Environmental Services department should be contacted at [sewerusebylaw@york.ca](mailto:sewerusebylaw@york.ca) for a dewatering permit, if required. Should the applicant have any questions please contact the Source Water Protection Admin at York Region at 1 877 464 9675 ext. 75139 or [SourceWaterProtection@york.ca](mailto:SourceWaterProtection@york.ca) to discuss the proposed works and associated requirements from Water Resources. For more information on Source Protection please visit [www.York.ca/protectingwater](http://www.York.ca/protectingwater). A Section 59 Notice (Source Protection Permit) WILL NOT be required.
- Please refer to York Region’s Development Application Fees on our webpage: [York.ca/developmentservices](http://York.ca/developmentservices). All fees need to be made payable by cheque to “The Regional Municipality of York”. Development application fees are subject to annual adjustments and increases. Any unpaid fees, regardless of the year the application is submitted, will be subject to current fee requirements.

Please be advised that the comments above are based upon the information provided as part of this pre consultation meeting request. Should the scope of the proposal change and/or should it be determined that additional approvals are required under the Planning Act, our comments and requirements may be subject to change.

Please contact me should you or the applicant have any questions regarding this e mail.



**WESTON  
CONSULTING**

planning + urban design

Sent by email to: Michelle.Moretti@vaughan.ca

October 10, 2022

File 11009

Ms. Michelle Moretti  
Senior Policy Planner  
City of Vaughan  
Planning and Environmental Sustainability Department  
2141 Major Mackenzie Drive  
Vaughan, Ontario  
L6A 1T1

**Re: Weston & Hwy 7 Secondary Plan Review  
Written Submission On behalf of Gallu Construction  
3899, 3901 Highway 7, and 40 & 60 Wings Road, City of Vaughan**

Weston Consulting Planning and Urban Design has been retained by Gallu Construction Inc. ("Gallu") to act as planning consultant for their lands municipally known as 3899, 3901 Highway 7, and 40 & 60 Wings Road (the "Properties") in the City of Vaughan. The Gallu Properties have significant frontage on the Highway 7 intensification corridor and Wings Road, comprising 492 feet and 360 feet, respectively. The subject Properties are occupied by a 6 story office building and a three single-storey commercial building with associated surface parking.

As you may be aware our client recently completed it's PAC meeting on August 11th, 2022 with City staff. The City recently issued the comment package which is currently under review by my client.

The purpose of this correspondence is to provide our client's comments in response to the planning process undertaken to date for the Weston & Hwy 7 Secondary Plan and the Demonstration Plan prepared by the Planning Partnership. This written submission expands and refines the February 16, 2021 correspondence issued by Bousfield's Inc. on behalf of Gallu Construction for the Properties and should be considered the current perspective of the owner in relation to the secondary plan. My client will be submitting correspondence under separate cover for the TMP being prepared for the Secondary Plan in the next few weeks. This will be based upon input from our client's transportation engineer.

Given the proximity of the Properties to the Ansley Grove and the Weston MTSA's, we encourage the City to plan beyond the minimum density targets of the York Region Official Plan in order to take full advantage of the significant public sector investment in transit supportive infrastructure.

Gallu does not support the heights, densities, and the general layout of the building footprints illustrated in the demonstration plan for the southwest quadrant of the secondary plan. We recommend that the Whitmore & Hwy 7 intersection be identified as a secondary gateway in the

Secondary Plan and that the proposed densities and heights proposed by the Kingsmoor Applications should be comparable to the balance of the quadrant facilitating a non-uniform building skyline with tall buildings developed throughout the secondary plan rather than a “circus tent” building skyline as illustrated in the Planning Partnership’s Demonstration Plan. The correct approach in our opinion, if maintained, would unnecessarily restrict the assignment of future heights and densities for the Properties and other properties within the southwest quadrant of the secondary plan.

Despite the foregoing comments on the secondary plan, which are of specific issue to Gallu as presented in the Demonstration Plan, it is noted that as certain comments pertain to and are in direct response to elements of the Kingsmoor Inc. Applications. These comments were provided to the City in two separate submissions as Gallu’s formal input to the May 3, 2022 statutory public meeting and a further submission dated August 26, 2022.

In addition to our stated concerns with the insufficient allocation or distribution of heights and densities to the southwest quadrant of the secondary plan area illustrated by the Demonstration Plan, we note the following additional concerns:

1. **The Internal Road Network**

We suggest that the east/west mid-block road shown on the Demonstration Plan within the precinct should be identified clearly as a private road or a laneway with a maximum width of 6-8 metres. The same approach should be applied to the mid-block north/south road shown in the Weston & Hwy 7 Secondary Plan bisecting the Gallu Properties. In our opinion, a public road connection through the Gallu property is not necessary and a connection can be provided by other means.

Presently there is a right in and right-out access to the Properties at this location, and in the Planning Partnership’s Demonstration Plan the extension of this access is not identified as a continuation of this proposed road on the north side of Hwy 7. In the event that this road is anything but a 6-8 metre width, Gallu’s northeast corner will be impacted and the development envelope will be unnecessarily reduced.

Lastly, there are signalized intersections at Nova Star Drive and at Whitmore Road, which, in our view are more than adequate to serve as mid-block connections for the southwest quadrant of the Weston & Hwy 7 Secondary Plan once Nova Star Drive is extended to Winges Road. In our opinion, private access driveways from the public roads to the Properties will be adequate to serve this area of the development precinct.

2. **Parkland**

It is our opinion that the share of the public park block as illustrated on the Demonstration Plan on the Kingsmoor lands is underrepresented and disproportionate. Gallu’s position is that a more equal share of the park block located between the Kingsmoor and the Gallu

Properties should be implemented and that consideration for an overall reduced park size for the shared Gallu and Kingsmoor park should be advanced.

Generally speaking, on site amenities assist in reducing the size of the park block given on-site recreational amenities will alleviate some of the parkland need in the southwest quadrant of the secondary plan area. Additionally, it is our position that greenfield development service standards should not be used to calculate parkland within an intensification area, in favour of a more compact urban form park from a size and programming perspective.

Consideration should be given and accommodation provided for the substitution of the public park block with a smaller urban square function and size that is a private open space amenity open to the public and credited towards CIL of parkland. Furthermore, we support the concept of strata parks, and we recommend this be pursued through the City's Secondary Plan as set out in the City's new Parkland Dedication By-Law.

Furthermore, any the pedestrian walkways that the Applications illustrate in the Demonstration Plan should be shared equally and provide appropriate minimum setbacks in a manner that is equitable and achieves the connectivity objectives.

### **3. Height/Density/Massing**

We generally support the implementation of one mixed use land use designation in the Secondary Plan that provides for a range of heights, densities and uses that aligns with the City's urban structure as prescribed by the Vaughan Official Plan.

With regards to height and density, we do not agree with the approach illustrated in the Planning Partnership's Demonstration Plan which promotes a "circus tent" building skyline with the greatest heights assigned to the Weston & Hwy 7 intersection. Our vision for Hwy 7 is an avenue that promotes a non-uniform building skyline with tall buildings greater than 18 floors throughout the secondary plan.

We believe that the heights and densities (minimum of 35 floors) approved for the Centro development or similar at Weston Road and Hwy 7 should also apply to the balance of the precinct that recognizes the Weston gateway into the Secondary Plan that is located on an Intensification Corridor and serviced by two MTSA's (Ansley Grove and the Weston).

We ask that these comments be considered by staff in further updates to the secondary plan and we look forward to actively participating in the Weston & Hwy 7 Secondary Plan and will continue to monitor process actively.

Accordingly, we request notice of any items, reports, meetings, and decisions regarding the Weston & Hwy 7 Secondary Plan.

If you have any questions regarding the above comments, please contact the undersigned at extension 290.

Yours truly,

**Weston Consulting**

**Per:**



David Waters MCIP, RPP, PLE  
Associate

Encl.

c. Client  
Clerk's Office, City of Vaughan



City of Vaughan  
2141 Major Mackenzie Drive  
Vaughan, ON L6A 1T1

June 4<sup>th</sup>, 2024  
File 6988

**Attn: Todd Coles, City Clerk**

**Re: Weston 7 Secondary Plan: FILE NO. 26.2, VICINITY – WESTON ROAD AND HIGHWAY 7  
7600 Weston Road**

Weston Consulting is the planning agent for Dev-West Properties Inc., the registered owner of the lands municipally addressed as 7600 Weston Road in the City of Vaughan (herein referred to as the “**subject lands**”) and legally described as LT 3 PL 65M2339 EXCEPT PT 1, YR2278100; S/T LT247794 CITY OF VAUGHAN. We are monitoring the Weston 7 Secondary Plan (the “**Secondary Plan**”) process on behalf of our client and are submitting the comments herein with respect to the upcoming reports regarding the Secondary Plan itself and Transportation Master Plan, being brought forward to council at the June 5, 2024 Committee of the Whole working session.

### Comments/Submissions

The subject lands are located on the southwest corner of the Highway 7 and Weston Road intersection, in the Southwest Quadrant of the Weston 7 Study Area (Figure 1). In the area surrounding the subject lands, there is an existing mixed-use high-rise development at the intersection’s northeast quadrant (7777 Weston Road), and smaller parcels containing existing gas stations on the northwest and southeast quadrants. With consideration of the Highway 7 and Weston Road intersection, which includes direct access to the BRT, the subject lands are a prominent site located at a critical corner within the Secondary Plan Area and present the greatest opportunity for intensification within its boundaries.



**Figure 1: Aerial Photo of the Subject Property**

Throughout the process of formulating the Weston 7 Secondary Plan, our client has been consistently active in the appropriate steps, as encouraged by Staff, for participation in progressing development of the Secondary Plan. This has included various delegations to council (the most recent occurring in October 2023) and actively

participating in the Weston 7 Landowners Group and their process in providing commentary and redlines of draft policy and ongoing meetings with Staff to engaging in working sessions on this matter. We appreciate the ongoing willingness of Staff to work with ourselves and the Landowners Group through this ongoing process. However, despite these efforts, there has been limited progress in resolving issues previously raised, specifically with respect to height and density provisions, and the location of local roads. As these items have remained consistent, the purpose of this letter is to reiterate the position of our client, and provide additional recommendations as follows, in the hopes that we can continue to work with Staff to resolve these matters prior to the final Secondary Plan being approved by Council later in 2024.

### *Height and Density*

Allocations for height and density as proposed in the Secondary Plan are not sufficient in providing appropriate levels of intensification along Highway 7, which contains a major transit corridor. This is especially evident in the context of the subject lands, which have direct access to higher-order transit, and are the largest parcel located at a prominent corner of this significant intersection, presenting a unique opportunity to facilitate additional heights and densities.

### *Local Roads*

There is the intersection of a proposed local road (north-south) and active transportation line (east-west) running directly through the subject lands, neither of which were contemplated in the final draft of the 2023 Vaughan Transportation Master Plan (the “TMP”). This proposed network divides the site into small parcels, hindering the comprehensive and cohesive development potential of the subject lands and significantly limiting their viability. We have provided comments to Staff that indicate that we are supportive of local roads to provide connectivity throughout the Secondary Plan area, but that the location of these roads should be determined through site specific development applications. Given that all lands within the Secondary Plan area are existing developed parcels, determining the location of roads through site specific applications is a more appropriate process to allow for cohesive phasing and recognition of the existing built context.

### *Parkland Dedication*

With respect to Parkland Dedication, we believe that the most appropriate method for providing this amenity is through the allocation of Privately Owned Public Space (“POPS”) on the subject lands. By maintaining private ownership of this space, which has occurred in other Secondary Plan areas such as the Vaughan Metropolitan Centre, the burden of maintenance will not be placed on the city while the benefits of such spaces will still be available to the public. Taking these factors into consideration, we are of the opinion that POPS are most appropriate in ensuring the provision of parkland in association with development of the subject lands.

### *Non-Residential Requirements*

In terms of the appropriate land use designation, we believe that maintaining a consistent Mixed-Use designation spanning throughout the site, absent of a height or density maximum, would facilitate a more comprehensive and coordinated development of the subject lands. This has been reflected on the redline plans prepared by the Weston 7 Landowner Group. Fragmenting the provisions with respect to permitted uses and requirements for non-residential area would limit the potential of lands located in a prominent area of the secondary plan, while unnecessarily complicating and restraining their development. Further to this, non-residential uses should be limited to the ground floor and directed at a lower rate than prescribed in the most recent draft of the plan. In the Vaughan Metropolitan Centre Secondary Plan, this provision was reduced from 18% to 11.5% to recognizing the market changes and the appropriateness of excessive non-residential uses. Given that Weston and 7 is not intended to maintain the same level of office and non-residential intensification as the VMC, we have recommended that the proposed non-residential rate be significantly lower than the proposed 11.5% within the VMC, and the 15% contemplated in the draft Weston 7 Secondary Plan.

## Summary and Recommendations

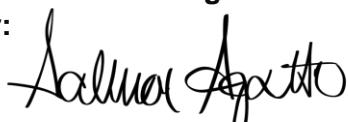
As described above, we recommend that height and density provisions be removed, allowing appropriate intensification to be determined through good planning and urban design. Further, we request that the unnecessary proposed local roads be removed from the subject lands, parkland be provided through POPS at a pre-determined rate, and a unified Mixed-Use designation be applied to the entirety of the subject lands with non-residential requirements be limited to the ground floor. Based on the rationale outlined above, we are of the opinion that these recommendations are appropriate for the contemplation of the subject lands in the Weston 7 Secondary Plan. Further to these recommendations, the determination of capital improvements required to support development within the Secondary Plan area, and the means of funding such measures, remains ongoing, and we believe that this information is fundamental to the success of the Secondary Plan and should be determined prior to approval of the plan.

We are actively engaged with the Weston 7 Secondary Plan process, including participation in the Weston 7 Landowners Group and the ongoing discussions City Staff. We reserve the right to provide additional comments through this process and are appreciative of the continued opportunity to do so. Weston Consulting will continue to monitor and participate in the Secondary Plan process on behalf of our client and request to be notified of the release of any updated draft policies or mapping and any upcoming meetings or decisions as it relates to this matter. Additionally, we request that staff and committee take the comments above into consideration in review of this item. If you have any questions, please contact the undersigned at [ssgotto@westonconsulting.com](mailto:ssgotto@westonconsulting.com) or Ulysses Perkunder at [uperkunder@westonconsulting.com](mailto:uperkunder@westonconsulting.com).

Your Truly,

**Weston Consulting**

Per:



Sabrina Sgotto, HBA, RPP, MCIP  
Vice President

- c. West-Dev Properties Inc.  
J. Shapira, Wood Bull LLP



**RIOCAN**  
REAL VISION. SOLID GROUND.

Vaughan City Hall  
2141 Major Mackenzie Dr.  
Vaughan, ON L6A 1T1

RioCan Real Estate Inv Trust

3555 & 3733 Highway 7, 7501, 7575,  
7601 & 7621 Weston Road, 10, 11, 20,  
21, 30, 31, 40, 41, 55, 67 & 71 Colossus  
Drive and 16, 21, 30, & 31 Famous  
Avenue

<p>C 6 Communication CW(WS) – June 5, 2024 Item No. 2</p>
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Dear Mayor and Members of Council,

RioCan REIT (“**RioCan**”) are the owners of 7501-7621 Weston Road, also known as the Colossus Centre, a 25-hectare site south and east of Highway 7 and Weston Road (the “**Colossus Centre Site**”). The Colossus Centre Site is currently the subject of active Official Plan Amendment applications (OP.22.002 and OP.22.005) which were submitted March 1, 2022, and deemed complete on July 23, 2022 (the “**Colossus OPA Applications**”).

At the City’s request, RioCan along with 12 other landowners in the Weston 7 area have formed a Landowners’ Group (the “**LOG**”) to provide coordinated landowner input to the City of Vaughan (the “**City**”) on the Weston 7 Secondary Plan (“**W7SP**” or “**the Plan**”). The LOG has met with City Staff ten times since February of 2024 to discuss both the landowner’s concerns and opportunities within the Plan. In addition, in late 2023 and early 2024, prior to incorporating the LOG, many of the landowners met separately with City Staff to discuss the Plan. RioCan in particular has discussed and documented desired policy changes and related opportunities in the Plan. We have also been working with City Staff to enable data sharing to allow the LOG to undertake detailed study of the Plan’s approach to land use densities and transportation modeling in particular.

While the LOG has been meeting with City Staff for more than five months, in our opinion, purposeful discussion and collaboration that was the City’s goal in requesting that the LOG be created is only just getting started. To date, the LOG has provided extensive coordinated red-line comments and planning rationale related to specific desired areas of change within the Plan draft provided in October 2023 and the most recent Plan draft being discussed at Council today. The Plan that is before Council does not respond as comprehensively to the LOG’s suggestions as we had hoped. There are a number of areas where we believe a greater balance between the City and the LOG’s objectives (which include RioCan objectives) can be more comprehensively met including:

- the overall height approach to and particularly the rationale for where height is deployed across the Plan, the South East Quadrant and the Colossus Centre Site,
- the requirement for a high proportion of non-residential uses as a factor of the overall GFA,
- the requirement for non-residential uses at grade and the prohibition of standalone residential buildings; and
- the emphasis on Weston Road and Highway 7 in particular as areas to improve the public realm, rather than focusing public realm improvements interior to the blocks and away from major roads.



**RIO CAN**  
REAL VISION. SOLID GROUND.

RioCan Real Estate Inv Trust

3555 & 3733 Highway 7, 7501, 7575,  
7601 & 7621 Weston Road, 10, 11, 20,  
21, 30, 31, 40, 41, 55, 67 & 71 Colossus  
Drive and 16, 21, 30, & 31 Famous  
Avenue

We are committed to continuing our work with the City to not only establish a fair and reasonable phasing strategy as described in the June 5 Staff report accompanying the draft Plan today, but also to inform the policy directions of the Plan. Additional modifications to the Plan are required to ensure the City develops a resilient Plan that enables responsible growth and intensification while maintaining the flexibility required to respond to changing market conditions overtime.

We have been appreciative of Staff's time and resource commitment to support the discussions with the LOG to date. We look forward to utilizing the LOG's regular meetings with Staff to bring updated comments and alternatives to the table for discussion.

Sincerely,

*Melissa Bruzzese*

Melissa Bruzzese

AVP, Development, RioCan Management Inc.

C 7

Communication

CW(WS) – June 5, 2024

Item No. 3

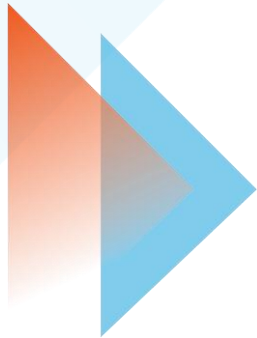
# Weston 7 Transportation Master Plan

Committee of the Whole (Working  
Session)

June 5, 2024



# Agenda



1. Summary of Analysis
2. Weston 7 Preferred Network
3. Recommendations



# Acknowledgements

## City Project Team

Marta Roias

## Consultant Project Team (WSP)

Brett Sears

Jeremy Finkleman



# Summary of Analysis

# Base Assumptions

- ▶ Key infrastructure improvements have been assumed to be completed by 2041 per the York Region Transportation Master Plan, including:
  - Completion of Langstaff Road between Highway 7 to Weston Road (6 lanes and flyover of CN rail yard)
  - Widenings of other major arterials such as Steeles Ave, Weston Rd and Keele St
  - Transit improvements such as BRT on Jane Street and on Steeles Avenue.

# Growth Scenarios

	People	Jobs	Combined (p+j)
W7 Phased Buildout	15,840	10,041	25,881
W7 Full Buildout (Mar 2021)	53,497	15,551	69,048
W7 Full Buildout (Oct 2023)	40,750	13,750	54,500

# Scenario Analysis

## ▶ Weston 7 Full Buildout (Mar 2021)

1. Base “2041 York Region” assumptions
2. Revised assumptions – “2041 York Region” assumptions plus:
  - Reduced number of trips per person
  - Reduced residential parking supply
  - Increased parking costs
  - Improved transit service

## ▶ Weston 7 Phased Buildout

3. With Revised assumptions

Full Buildout scenarios **exceeded** transportation network capacity.  
Phased Buildout was **within** transportation network capacity.

# Analysis Summary

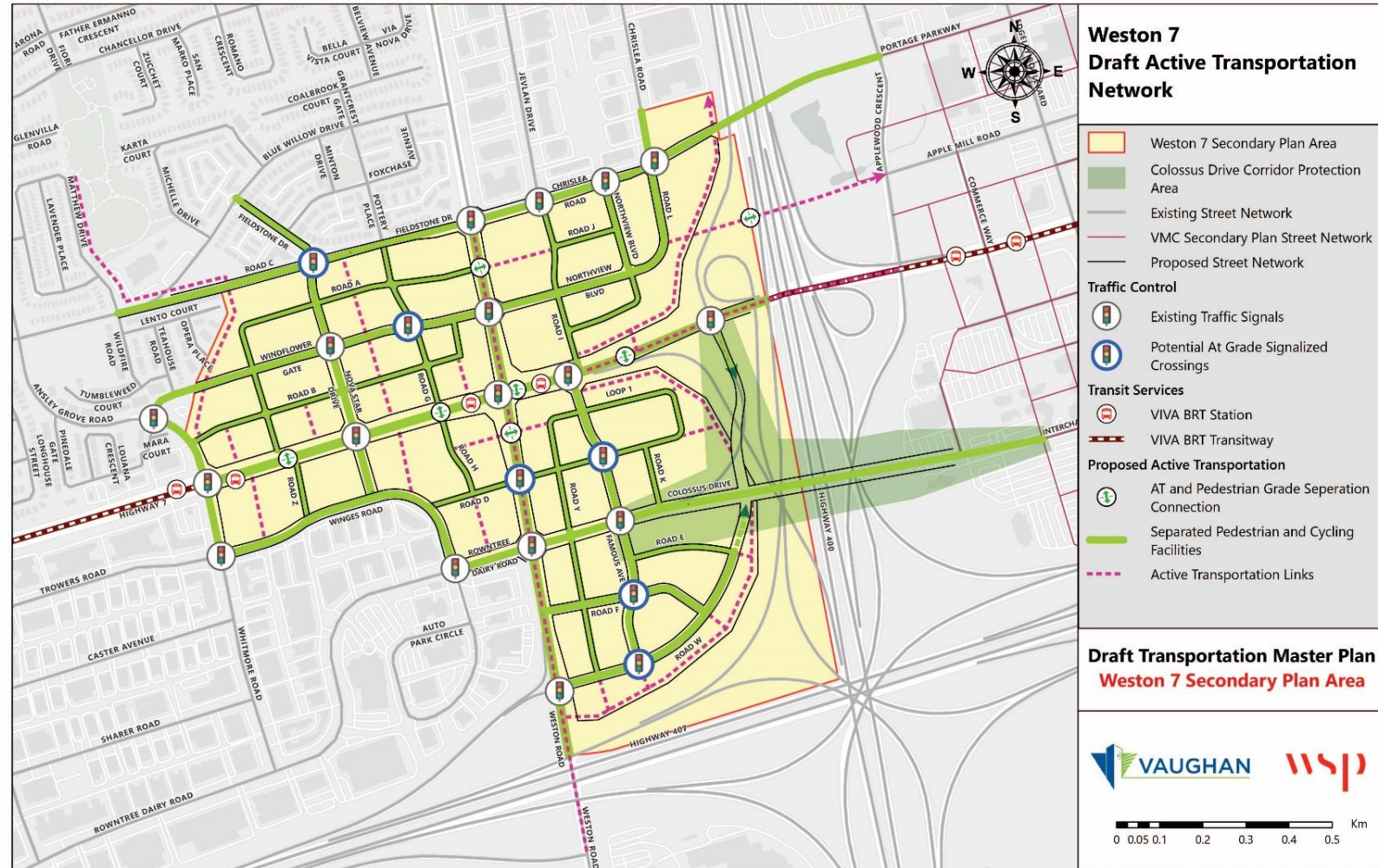
- ▶ Infrastructure assumed to be in place by 2041 in greater York Region can only support the Weston 7 Phased Buildout growth scenario
- ▶ Additional measures including new infrastructure and demand management will be necessary to achieve Weston 7 Full Buildout
- ▶ Weston 7 transportation network is designed to leverage these additional measures in anticipation of Weston 7 Full Buildout

# Weston 7 Preferred Network

# Multi-Modal Transportation System

## ► Active Transportation Network

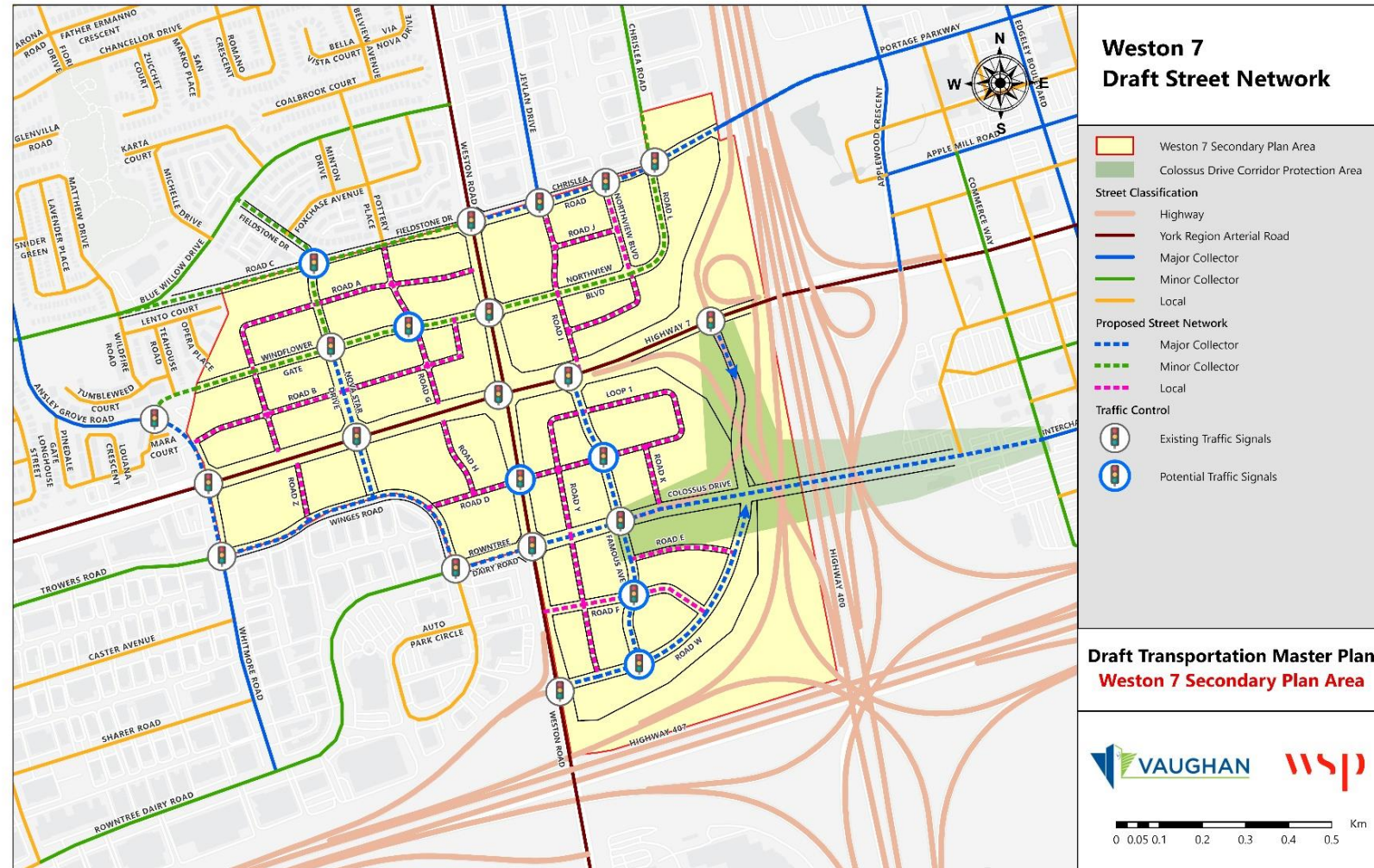
- Fine-grid and porous network
- Proposes new options to cross arterial roads and highways



# Multi-Modal Transportation System

## ► Street Network

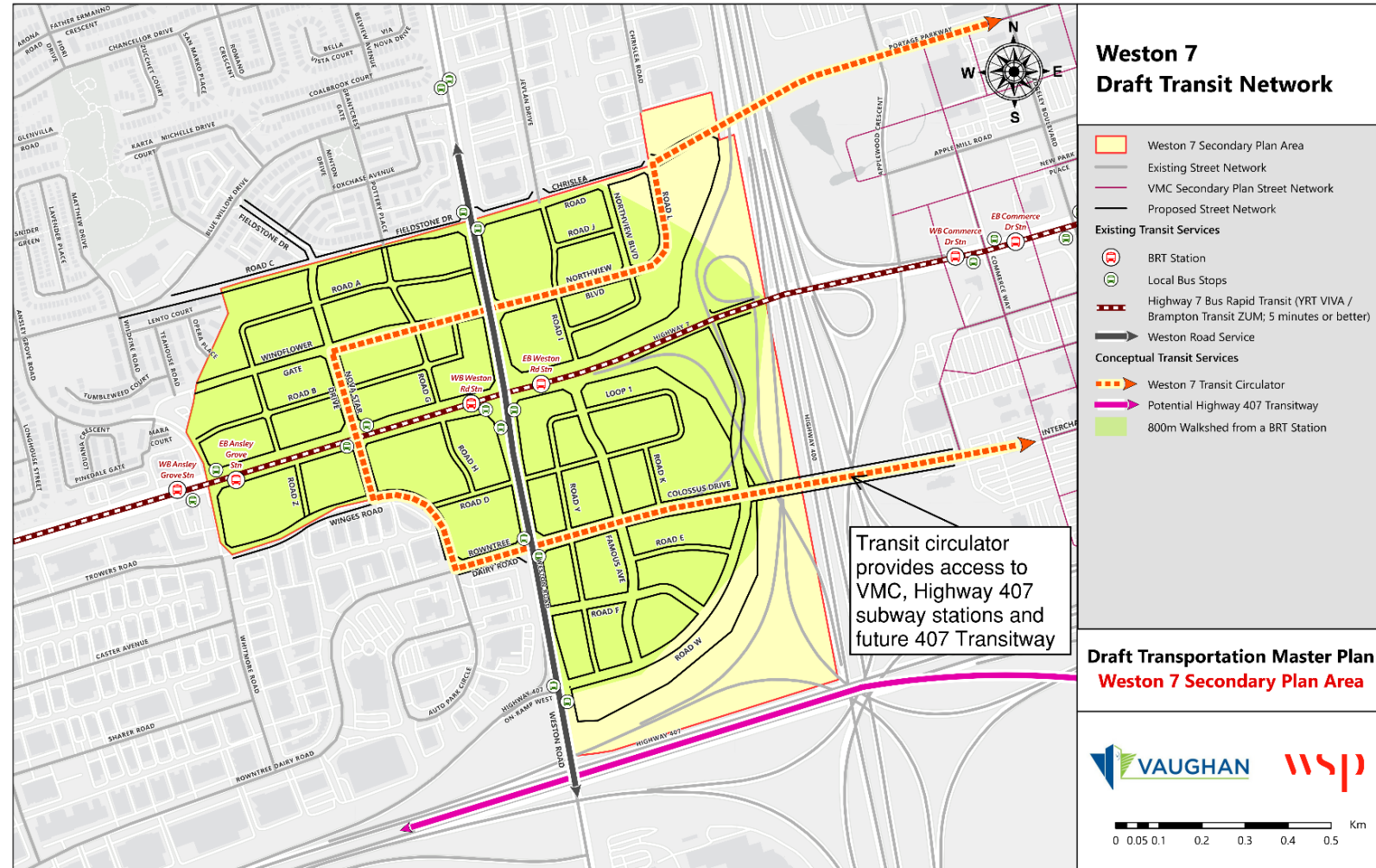
- Establish minimum rights-of-way to create safety for all users
- Protect for future Colossus Drive Extension





# Multi-Modal Transportation System

- ▶ Transit Network
  - Improved frequency for all routes connecting to Weston 7
  - New BRT transitway on Jane Street
  - Transit circulator service



# Recommendations

# Implementation

- ▶ Development is held within a quadrant until:
  - The lands for the collector street network are secured in that quadrant.
  - The lands for key active transportation infrastructure are secured in that quadrant.
- ▶ Establish a growth threshold of ~26,000 people and jobs for Weston 7
- ▶ Before exceeding threshold, complete:
  1. Broader area improvements (e.g. Langstaff flyover)
  2. Key components of Weston 7 network
  3. Study and discussions for new improvements and demand management measures to achieve Weston 7 Full Buildout

# Follow-up Actions

- ▶ Continued studies and discussions on new infrastructure and demand management measures to achieve Weston 7 Full Buildout:
  - New infrastructure identified should be in context of 2051 anticipated growth for all of Vaughan
  - Demand management measures could include reducing transportation demand (e.g. parking) to achieve Weston 7 Full Buildout

# Next Steps

- ▶ Seek approval in principle of the TMP findings and recommendations.
- ▶ Receive comments from Weston 7 Landowners Group and Technical Advisory Committee.
- ▶ Refine implementation policies with Policy Planning.
- ▶ Summarize comments and responses and report back to Council when Secondary Plan and TMP are finalized.

**DATE:** June 4, 2024

**TO:** Mayor and Members of Council

**FROM:** Vince Musacchio, Deputy City Manager, Infrastructure Development

**RE:** **COMMUNICATION – Committee of the Whole (Working Session),  
June 5, 2024**

**Item #1**  
**MUNICIPAL NON-CONVENTIONAL STORMWATER MANAGEMENT  
FACILITIES POLICY AND ACCEPTANCE PROCEDURE**

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**Purpose**

To provide a copy of Attachments 1 through 4 associated with the Municipal Non-Conventional Stormwater Management Facilities Policy And Acceptance Procedure.

For more information, contact Frank Suppa, Director of Development Engineering, ext. 8255.

Respectfully submitted by



Vince Musacchio, Deputy City Manager,  
Infrastructure Development

**Attachment(s)**

1. Non-Conventional Stormwater Management Facilities Background Report by Resilient Consulting Corporation, dated February 14, 2023.
2. City of Vaughan Municipal Non-Conventional Stormwater Management Facilities Policy dated June 5, 2024.
3. City of Vaughan Municipal Non-Conventional Stormwater Management Facilities Acceptance Procedure dated June 5, 2024.
4. City of Vaughan Non-Conventional Stormwater Management Facility Engineering Design Criteria & Standard Drawings dated June 5, 2024.



## NON-CONVENTIONAL STORMWATER MANAGEMENT FACILITIES BACKGROUND REPORT

Final Submission

2023-001

February 14, 2023



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## Executive Summary

Resilient Consulting Corporation ('Resilient') has been retained by the City of Vaughan (the 'City') to develop a policy, procedure, and relevant design criteria/standards for the approval of non-conventional municipal stormwater management facilities ('SWMFs') associated with new development. The City, along with many neighbouring municipalities, is experiencing increased pressure to shift from requiring conventional SWMFs (i.e. wet/dry ponds) to accepting publicly owned and operated non-conventional SWMFs (i.e. underground tanks, superpipes, etc.). These facilities can be incorporated below new public parklands or below right-of-ways, as the underground feature allows for dual purpose of the land above. At the time of development of this report, approval of non-conventional SWMFs has largely been completed on a case-by-case basis with considerations for feasibility, maintenance and operation requirements, and site-specific design constraints. An interim approach for accepting these facilities was adopted by the City in 2022, however the goal of this project is to develop a new formal policy, procedure, and design criteria for accepting non-conventional SWMFs. The primary objectives in developing this framework are:

- To provide a decision framework to determine where new non-conventional SWMFs may be accepted;
- To streamline the evaluation and acceptance process for non-conventional SWMFs;
- To provide a list of allowable stormwater management technologies/facility configurations that can be accepted as municipal facilities; and,
- To examine financial implications and lifecycle costs of implementing non-conventional SWMFs vs. conventional facilities and develop cost recovery mechanisms to be apply to subject developments to ensure implementation of non-conventional SWMFs are financially viable alternatives in the long-term.
- To create a standard operating procedure (SOP) that outlines the inspection, operation and maintenance protocols for the non-conventional SWMFs to ensure the long-term success of implementation.

The City of Vaughan, and other regulatory agencies have various existing policies, procedures, guidance documents, and established criteria for the approval of stormwater management facilities, including but not limited to; City of Vaughan *MECP's CLI-ECA for Municipal Stormwater Management Systems* (2022), *MECP Draft Low Impact Development Stormwater Management Guidance Manual* (2022), City of Vaughan *Engineering Design Criteria & Standard Drawings* (2020), *TRCA Stormwater Management Criteria* (2012), and *CVC/ TRCA Low Impact Development Stormwater Management Planning and Design Guide* (2010). These documents provide regulations and design criteria in relation to the approval of conventional SWMFs, and do not explicitly reference the design requirements of non-conventional SWMFs. In 2022, the City adopted an interim approach to approving non-conventional SWMFs which detailed the financial contribution required by the developer to compensate for an increase in cost when compared to conventional SWMFs, in addition to providing some general limitations and considerations when preparing the facility design. At the time of its development, no other municipality within the Greater Toronto Area ('GTA') had created a formal overall approval policy for the acceptance for non-conventional SWMFs. A thorough review of the City's existing policies and programs has been conducted as a part of this report to identify relevant guidelines and restrictions that should be taken into consideration during the preparation of the City's formal policy, procedures and standards for non-conventional SWMFs, ensuring consistency across the City's planning and development policies.



In addition, six (6) municipalities across Ontario were contacted to confirm if any policies, procedures, design criteria, or standards have been implemented for non-conventional SWMFs within their jurisdiction. The following is a list of the contacted municipalities:

- City of Markham, Ontario
- City of Mississauga, Ontario
- City of Richmond Hill, Ontario
- City of Hamilton, Ontario
- City of Burlington, Ontario
- City of Kitchener, Ontario

Upon review of this collected information, it was confirmed that, with the exception of the City of Markham, the remaining neighbouring municipalities do not currently have any specific policies or guidelines in place to address the approval of non-conventional SWMFs.

There are many potential advantages to implementing a non-conventional SWMF, including but not limited to: providing a dual-purpose to the land (ie. not just SWM pond), requires a smaller at-surface footprint, eliminates at-surface water quality concerns such as standing-water and E.Coli contamination from wildlife, can be designed to accommodate both passive and active programming of the space above the facility or other dual utilitarian usage such as parking and roads, lowers water temperature of discharge, and improves safety by eliminating the potential of drowning and/or falls through ice. Apart from these benefits, there are many applications that cannot accommodate the required area for a dry/wet pond. As such, it is acknowledged that non-conventional SWM facilities may have advantages as opposed to conventional dry/wet ponds in locations with restricted available area.

Non-conventional SWMFs may also have disadvantages in comparison to traditional SWM ponds. These disadvantages may include:

- Reliance on engineered products with design lives of 50 to 100 years to achieve volume requirements, instead of open excavated ponds;
- Limitations on monitoring and inspections associated with confined space entry requirements;
- Elevated frequency and complexity of the maintenance and inspection of system;
- Potential presence of odour due to improper maintenance;
- Potential for significant failure or loss of storage volume through clogging if routine maintenance of pre-treatment devices is not carried out; and,
- Significant impact to park facilities and programs for major repairs and lifecycle replacement.

To support the project objective of defining a list of acceptable technologies, a detailed review of common non-conventional SWMFs was completed to assess the feasibility of each option, operation and maintenance requirements, specific advantages/disadvantages, and limitations for each facility, and estimate capital and lifecycle costs. The following non-conventional SWMFs have been assessed:

- Plastic "Milk-Crate" Systems;
- Plastic Arch Chamber Facilities;
- Modular Concrete Chambers;
- Superpipes;
- Cast-in-place Concrete Facility; and,
- Modular Form Cast-in-place Systems.

Various limitations were defined for each of the non-conventional SWMFs type examined, ranging from standard height sizes and required burial depths for many of the pre-cast systems, winter weather conditions and anticipated delays for the cast-in-place systems, and delivery considerations for

superpipe systems to ensure safe passage under bridge overpasses. Similarly, specific requirements such as load bearing capacity, separation from groundwater elevations (for infiltration facilities), and minimum cover need to be considered when selecting a preferred SWMF. Lastly, consultation with the City's operation and maintenance department is required prior to finalizing the acceptable list of technology to discuss the requirements of the preferred system and ensure proper equipment, staff training, and external services are available to complete the required maintenance.

A lifecycle assessment was completed as a part of this report to compare the financial implications associated with each of the common non-conventional SWMFs outlined above. The lifecycle assessment of these facility types found that the modular form cast-in-place systems resulted in the lowest capital cost investment, and ultimately lowest lifecycle cost as a result of its long-life expectancy (100-years). Although these costs are the lowest, this system has the highest maintenance costs, and has many limitations and considerations associated with construction. Superpipe facilities were noted as the most expensive option upfront and may not be best suited for large storage volume applications due to this associated cost.

Upon completion of the Background Report, stakeholder engagement sessions will be arranged to review and discuss the results of the report, in addition to providing opportunities for internal and external stakeholders to provide feedback on their concerns associated with the current interim approach for accepting non-conventional SWMFs. A technical review of the City's existing sixteen (16) non-conventional SWMFs will then be completed prior to proceeding with Stage 2 of the project.

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## 1 Introduction

The implementation of effective stormwater management is critical in mitigating the undesirable impacts of urbanization on the natural hydrologic cycle and on local watercourses and associated infrastructure. Stormwater management (SWM) infrastructure has been installed in the City of Vaughan ('City') since the early 1980s, with the City currently owning and operating 147 conventional stormwater management facilities ('SWMFs'). Conventional stormwater management ponds are a common approach for addressing stormwater management requirements within a new development, however a significant amount of developable land is required to implement these facilities. The increased demand for housing and high value of land has resulted in developers looking for alternative options for publicly owned and operated SWMFs. To date, the City has approved or is in the process of approving 16 non-conventional SWMFs, which have been reviewed and considered on a case-by-case basis taking into consideration acceptability, feasibility, maintenance, and operation requirement for each application. These non-conventional SWMFs are under roadways, passive open space blocks and within parks. These approved facilities have included underground stormwater tanks and superpipe storage. Due to the higher total cost of ownership for these non-conventional SWMFs, the City has also required a one-time cost contribution from the developer, calculated on a case-by-case basis, ensuring the financial cost differential between operation, maintenance, and replacement of conventional and non-conventional SWMFs is secured.

In June 2022, an interim approach for accepting non-conventional SWMFs was adopted by City Council to address the increased pressure for approval of innovation stormwater solutions from local developers. One of the recommendations of the Council Report suggested the City retain a consulting engineering firm to develop of a formal policy and procedure for reviewing and accepting non-conventional SWMFs. As a result, Resilient Consulting Corporation ('Resilient') was retained by the City to prepare a City Policy, Procedure, and Engineering and Parks Design Criteria for non-conventional SWMFs, thereby addressing the City's needs for evaluating, accepting, implementing and maintaining non-convention SWMFs. These new documents will strictly apply for publicly owned and maintained infrastructure, and will not apply for non-conventional SWMFs proposed on private lands.

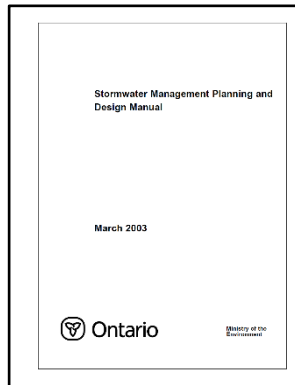
To facilitate the development of this new policy, procedure, and design criteria, the following comprehensive background review was prepared by Resilient to assess the City's current interim approach for accepting non-conventional SWMFs and to identify any design consideration, constraints and data gaps that should be taken into consideration during the preparation of the new design framework. Relevant background reports reviewed as a part of this report are provided in **Appendix A**.

## 2 Existing Policy and Procedure Review

As with all municipalities in Ontario, the City of Vaughan must operate according to planning and policy framework that has been developed to support provincial, regional and local objectives in growth. All new City policies and procedures must ensure that the final recommendations are consistent with these provincial, regional and local policies and objectives.

The following sections provide a review of these existing documents that may be applicable during the development of the new City of Vaughan policy, procedure and design criteria for non-conventional SWMFs.

## 2.1 MECP Stormwater Management Planning and Design Manual, March 2003



The MECP Stormwater Management Planning and Design Manual provides technical and procedural guidance for the planning, design and review of stormwater management practices. The manual provides practical guidance for specific circumstances and encourages the development of innovative designs and technologies for stormwater management outside of what is specified within the manual. Design guidance is provided for individual lot level, conveyance and end-of-pipe practices, taking into consideration physical constraints such as soil type and groundwater conditions, climate considerations, restoration, maintenance and financial implications.

The manual is divided into the following key sections:

- Environmental Planning;
- Environmental Design Criteria;
- Stormwater Management Plan and SWMP Design;
- Infill Development;
- Operation, Maintenance and Monitoring; and,
- Capital and Operational Costs.

Chapter 4 of the manual focuses specifically on the design and implementation of a stormwater management plan to meet all local criteria for water balance, water quality, erosion and water quantity controls. Various lot level controls, including rooftop storage, superpipe storage, infiltration trenches, and pervious pipe systems are identified within the manual to reduce peak runoff rates and promote onsite infiltration, ultimately reducing end-of-pipe storage requirements. However, these controls typically require implementation on lands held in private ownership, with maintenance and effectiveness of the system contingent on the actions of the landowners.

The end-of-pipe SWMFs identified within the manual include:

- Wet ponds;
- Wetlands;
- Dry ponds; and,
- Infiltration basins.

Detailed design criteria for the development of these conventional end-of-pipe facilities, include treatment volume requirements, forebay depth, side slopes and retention times are provided within the manual, in addition to various equations that can be utilized to determine specific design parameters.

Chapter 6 and Chapter 7 of the manual focuses on the operation and maintenance requirements, and financial implications associated with the implementation of these urban stormwater solutions. Approximate unit costs for capital construction and commonly required maintenance activities, such as grass cutting and the flushing of pipes, are provided based on industry standard pricing from 2003.

The MECP Stormwater Management Planning and Design Manual does not provide design criteria or guidance in relation to non-conventional end-of-pipe SWMFs, such as underground arch chambers systems or concrete facilities. The manual does provide some guidance on the use of superpipes to provide subsurface storage and reduce peak flows, however this is examined as a lot level control only, as superpipes must be implemented within a treatment train in order to provide the required water balance, water quality, and erosion control requirements.

## 2.2 City of Vaughan Official Plan 2010 and Update

The City of Vaughan 2010 Official Plan ('OP') addresses the City's long-term planning requirements to the year 2031 and, in addition to consolidating all former land use policies into one document, the Plan brings the City into conformity with recent provincial and regional land use policy direction. The OP is part of an overall Growth Management Strategy, initiated by Council, that will shape the future of the City and guide its continued transformation into a vibrant, beautiful and sustainable City.

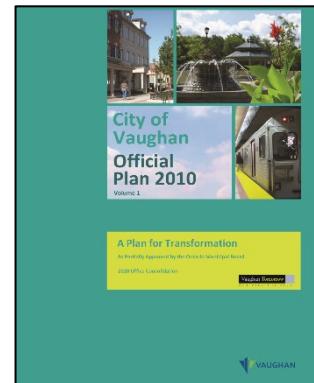
The goals of the Official Plan are as follows:

- Goal 1: Strong and Diverse Communities;
- Goal 2: A Robust and Prominent Countryside;
- Goal 3: A Diverse Economy;
- Goal 4: A Vibrant and Thriving Downtown;
- Goal 5: Moving Around without a Car;
- Goal 6: Design Excellence and Memorable Place;
- Goal 7: A Green and Sustainable City; and,
- Goal 8: Directing Growth to Appropriate Locations.

The above goals constitute the City of Vaughan's Vision for Transformation and were developed following extensive consultation with Vaughan residents to define the main principles that would guide the development of the OP.

Policy 3.6.6 (3.6.6.1. – 3.6.6.17.) of the OP provides direction on stormwater management in the City of Vaughan. Given the extensiveness of the Policy, a summary of the main points is provided below:

- To recognize stormwater management facilities as a functioning part of Vaughan's natural water system and ecosystem, new development will employ stormwater management practices that are sensitive to the natural environment and natural heritage features.
- That new development must satisfy the City and demonstrate consistency with the TRCA Stormwater Management Criteria for water quantity (flood flow) control, water quality control, erosion control, groundwater recharge and water balance, for the protection of hydrologically sensitive features.
- Consideration of innovative stormwater management approaches must be implemented and designed in accordance with MECP's Stormwater Management Practices Planning and Design Manual and with reference to TRCA's LID Stormwater Management Planning and Design Guide.
- New stormwater facilities shall be:
  - located outside of valley and stream corridors, unless approved by TRCA and MECP;
  - located, where possible, adjacent to open spaces, parks and/or natural heritage areas contributing to a connected system and to encourage public access to these facilities, where appropriate;
  - integrated into surrounding developments as publicly accessible open space; and,
  - designed as naturalized or formal landscapes that are complementary to adjacent features, including adjacent landscapes or natural heritage features.
- Undertake stormwater management on a volume control basis that maintains recharge rates, flow paths and water quality to the extent possible, in addition to peak flow control, and to maintain pre-development water balance. Particular emphasis shall be placed on areas confirmed as significant recharge areas.



- To support the TRCA in establishing programs for ongoing monitoring of ambient conditions as part of the Regional Watershed Monitoring Program, including evaporation, stream flow, channel form, groundwater levels, water quality and terrestrial communities and species to provide baseline data to facilitate an adaptive management approach.

As summarized above, the 2010 OP encourages the implementation of innovative stormwater management approaches where appropriate, however these designs must remain in accordance with guidelines set forth by the MECP and TRCA. At this time, the MECP and TRCA have yet to implement regulations specific to non-conventional SWMFs. The OP also emphasizes the need for new SWMFs to be designed as publicly accessible facilities located adjacent to open spaces, parks or natural heritage areas.

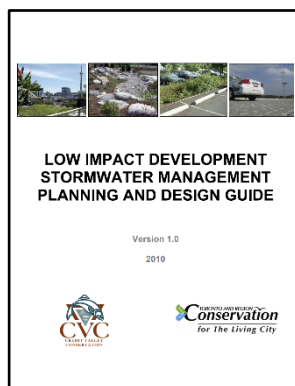
Policy 7.3 of the OP also provides detail related to parks and open spaces within the City of Vaughan, which require consideration during the implementation of non-conventional SWMFs under parkland. Parks and open space design requirements, including park size, recreational uses, and orientation will impact the feasibility of constructing underground stormwater infrastructure within these spaces.

The City of Vaughan is currently in the process of completing an Official Plan Review to guide the City's growth for the next 30 years and beyond. As a component of this review, the City has prepared seven background reports which summarize research, best practices, and feedback received from the community regarding their hopes for Vaughan in the future. The following background reports were prepared in 2022 to provide recommendations for development of future Official Plan policy:

- Agricultural System Review;
- Residential Growth, Intensification and Housing Needs Strategy;
- Employment Land Use Review;
- Climate Change Adaptation and Resilience Framework;
- Commercial Land Use Review;
- Natural Heritage Network Review; and,
- Urban Design, Built Form, Compatibility and Sustainable Development.

The prepared background reports provide an overview of existing policies and regulations in place across Canada related to the various areas of interest, in addition to providing strategic recommendations for updating the existing 2010 City of Vaughan OP. The application of non-conventional SWMFs is not directly identified within the available background reports, however policy recommendations include encouraging the incorporation of innovative and low impact stormwater management practices and green infrastructure where feasible.

### 2.3 CVC/ TRCA Low Impact Development Stormwater Management Planning and Design Guide, 2010



The CVC/TRCA Low Impact Development Stormwater Management Planning and Design Guide was developed by Credit Valley Conservation (CVC) and the TRCA to provide direction on landscape-based stormwater management planning and LID best management practices for development within the CVC and TRCA watersheds. The guide provides direction on the selection, design, construction, and monitoring of these landscaped-based stormwater management strategies, with particular focus on the planning and design of structural low impact development practices.

The guide provides the key principles in the design of LIDs as follows:

- Use existing natural systems as the integrating framework for planning;



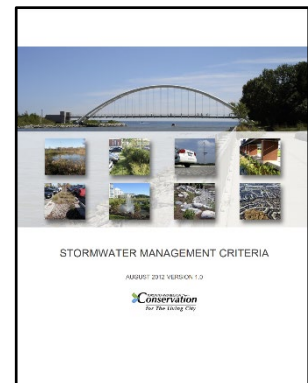
- Focus on runoff prevention;
- Treat stormwater as close to the source as possible;
- Create multifunctional landscapes; and,
- Educate and maintain.

LID practices, applied within a treatment train approach with end-of-pipe facilities, were noted to provide increased runoff reduction, be more cost effective, have lower maintenance burdens, and be more protective of aquatic habitat than stand alone end-of-pipe facilities.

## 2.4 TRCA Stormwater Management Criteria, August 2012

The Toronto and Region Conservation Authority ('TRCA') Stormwater Management Criteria provides current design guidelines and requirements related specifically to stormwater management within the TRCA's jurisdiction, building upon the TRCA Planning and Development Procedural Manual (2007) that outlines the general requirements when seeking development approval by the TRCA. This document is intended to provide guidance to developers, consultants, municipalities and land downers during the planning and design of stormwater management infrastructure, outlining the requirements to achieve flooding, water quality, erosion, water balance and natural heritage standards. The primary stormwater management design criteria required by the TRCA is as summarized below:

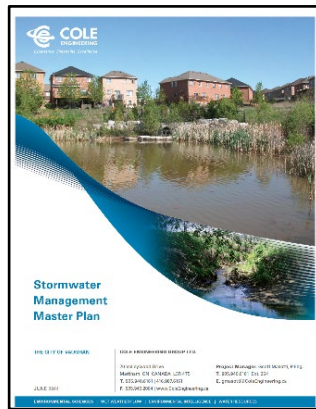
- **Stormwater Quantity:** Control peak flows to the appropriate watershed flood control criteria.
- **Erosion:** At minimum, retain 5mm on site where conditions do not warrant the detailed analysis. For sites with SWM ponds, 25mm – 48 hr detention may be required based on the completion of an erosion assessment.
- **Stormwater Quality:** Achieve Enhanced Level of Protection (80% TSS removal) and mitigate thermal and bacteriological impacts.
- **Water Balance:** For Low Volume Groundwater Recharge Area, implement best efforts to maintain recharge. For Significant, Ecologically Significant, and High Volume Ground Recharge Areas, a site specific water balance analysis and recharge is required. For natural features, maintain the hydrologic regimes.



This criteria is presented as the minimum requirements when preparing a stormwater management plan, however this criteria may not apply where a comprehensive environmental study has been completed and approved, and where the study has established refined criteria based on a location specific technical analysis.

With regards to the SWM practices that may be accepted by TRCA, the document refers to both the MECP Stormwater Management Planning and Design Manual (2003) and the TRCA/CVC Low Impact Development Stormwater Management Planning and Design Guide (2010) to outline infrastructure that may be utilized in the development of a SWM strategy. Conventional SWMFs, including SWM ponds, wetlands, oil and grit separators ('OGS') and LID practices are referenced throughout the document, however it was noted that the TRCA encourages the implementation of innovative designs and green infrastructure, provided the proposed works also satisfy all applicable requirement and criteria set forth within the document.

## 2.5 City of Vaughan SWM Master Plan Class EA Study, 2014



The City's Stormwater Management ('SWM') Master Plan Class EA evaluates the effectiveness of the existing SWM infrastructure within the City. The study evaluated the use of alternative SWM practices for effective treatment of stormwater from source, conveyance, and end-of-pipe controls, to promote protection of the natural environmental systems and was conducted in accordance with the Master Plan process as outlined in the Municipal Engineers Association Municipal Class EA guidance (October 2000, as amended in 2007 and 2011).

To support the overall study objective of determining the Best Management Practices ('BMPs') for SWM in support of future intensification with the City, the following three alternatives were identified for evaluation:

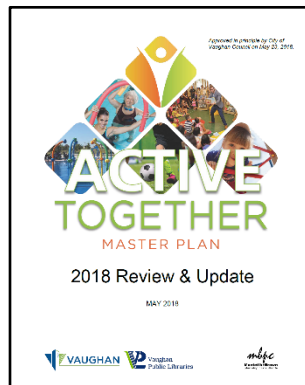
1. Do nothing;
2. Lot level/ at source/ conveyance controls; and,
3. End-of-pipe measures.

The "Do Nothing" alternative identified within the Class EA was noted to not require any action by the City, however no SWM strategy would be provided for future development and this approach would not meet the environmental objectives of the City's SWM practices. The implementation of lot level/ at source/ conveyance level controls were considered "small scale" controls for meeting SWM design criteria, and may include implementation of the following:

- Roof Downspout Disconnection;
- Bioretention;
- Green Roofs;
- Soakway Pits, Infiltration Trenches, and Chambers;
- Permeable Pavement;
- Rainwater Harvesting;
- Rooftop Storage;
- Parking Lot Storage;
- Underground Storage;
- Grassed Swales;
- Perforated Pipe System;
- Vegetated Filter Strips; and,
- Oil/ grit Separators.

End-of-pipe measures identified within the Class EA consisted of wet ponds, dry ponds and constructed wetlands. The alternatives were evaluated on a Secondary Plan basis, with the preferred SWM strategy for each area including a combination of lot level, conveyance and end-of-pipe controls. The recommendation of non-conventional stormwater infrastructure, including underground storage facilities remained limited to small scale applications at the lot level, and were not considered for end-of-pipe SWMFs. The use of underground storage was recommended as a part of the overall treatment train approach for Younger Steeles Secondary Plan area, Woodbridge Core Secondary Plan area, the West Vaughan Employment area, Huntington Road Community, Vaughan Mills Centre, Concord Centre, the Vaughan Health Campus of Care, Dufferin St./ Centre St. area and the Promenade Mall.

## 2.6 City of Vaughan Active Together Master Plan 2018



The 2018 City of Vaughan Active Together Master Plan ('ATMP') Update guides the provisions of parks and open space, recreation and library facilities within the City to the year 2031, providing an assessment of current levels of service and delivering recommendations on both policy and infrastructure requirements for this period. The 2018 ATMP Update contains 103 recommendations intended to guide municipal and community investments in parks, recreation, and library facilities. An implementation plan has been included within the recommendations, however successful implementation is noted to be highly dependent upon a variety of factors including funding, partnerships and land availability.

Recommendation #4 for the ATMP applies to the acceptance of open space lands as dedicated parkland space. As outlined in the ATMP, open space lands is defined as sites with no to low development potential, which may include land used for conventional stormwater management infrastructure. The ATMP recommends that undevelopable open space lands not be accepted as a part of the parkland dedication requirements set forth by the City. The City may assume these lands through voluntary dedication or easement, however no credit will be applied to the developer.

Recommendation #12 of the ATMP encourages the implementation of non-traditional parks and open spaces in areas of intensification and recommends the establishment of standards to provide guidance on how these are to be implemented. Specifically, the recommendation references the need to work with the development industry to identified alternative park space options to supplement prescribed parkland dedication requirements. This may include the application of strata parks, which in the context of parks and recreation refers to public spaces that are developed on underground stormwater infrastructures, parking garages or other roof slab constructions.

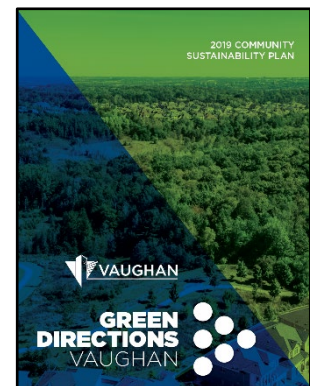
Based on the recommendations summarized above, the ATMP supports the City's current effort to establish standards for non-traditional parks and open spaces located above non-conventional stormwater infrastructure (strata parks) in areas of intensification, which may be able to supplement required parkland dedications required by the developer. Conventional SWMFs located in open space lands are recommended to not be acceptable as a part of parkland dedication, therefore requiring developers to utilize additional developable land to meet these parkland dedication requirements.

## 2.7 City of Vaughan Green Directions Vaughan, 2019

Green Directions Vaughan ('GDV') was first approved by Council in 2009 as the City's Community Sustainability and Environmental Master Plan, and most recently underwent an update in 2019. The Plan outlines the sustainable priorities of the City and provides actions to aid the City in maintaining a healthy natural environment, vibrant communities and a strong economy. The Plan provides guidance on achieving a more sustainable future by addressing environmental, cultural, social and economic values.

The following six (6) primary goals are outlined within the Plan:

1. To significantly reduce waste and the use of our natural resources.
2. To ensure sustainable development and redevelopment.
3. To ensure that the City is easy to get around with a low environmental impact.



4. To create a vibrant community where citizens, business and visitors thrive.
5. To be leaders in advocacy and education on sustainability issues.
6. To ensure a supportive system for the implementation of GDV.

The GDV provides a number of key objectives for each goal, which are further supported by the development of sustainability actions that can be implemented by the City to achieve these goals. These sustainability actions act as quantitative indicators that are critical in tracking the progress of achieving these overall goals within the next five (5) years.

Objective 1.3 of the GDV provides direction to the City on stormwater management and water conservation as it relates back to the primary goal of significantly reducing waste and the use of our natural resources. The objective identifies the need for the City to support enhanced standards of stormwater management and water conservation at City facilities, and to work with others to care for Vaughan's watersheds.

Sustainability actions identified under this objective include:

- Identify best management practices to minimize salt use on hard surfaces and protect receiving watercourse from salinity increases;
- Establish a water quality monitoring program for stormwater management assets;
- Identify stormwater management initiatives to protect and regenerate key watershed functions including the regulation of water quantity, the regulation of water quality and temperature, sediment and erosion control, hydrologic connectivity and habitat provisions. Stormwater management will be informed by watershed planning and long-term land use planning and development forecast;
- Integrate climate change considerations into guidelines for flood control and stormwater management;
- Continue to work with York Region in support of water conservation;
- Encourage low impact development and a treatment train approach to stormwater management through the development review process and by implementing and monitoring stormwater rate program, including the technical and community engagement aspects and innovative pilot initiatives; and,
- Improve tracking of potable water use at the City facilities to identify conservation opportunities and best practices, and in conjunction with the corporate energy management strategy.

Non-conventional SWMFs are not specifically identified within the GDV, however innovative approaches to enhancing stormwater management within the watershed are encouraged.

## **2.8 City of Vaughan Engineering Design Criteria & Standard Drawings, 2020**

The City of Vaughan Engineering Design Criteria and Standard Drawings ('EDCSD') provides guidance to those engaged in the design and construction of municipal infrastructure within the City of Vaughan. The EDCSD provides criteria and standard drawings for a range of municipal projects, including but not limited to municipal infrastructure, lot grading and site development. Section 1.3 of the EDCSD provides specific design considerations as it relates to stormwater management, which have been further subdivided into the following sections:

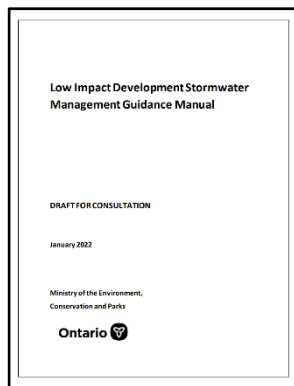
- General Design Considerations;
- Storm Sewer System Design;
- Testing and Inspection;

- Decommissioning;
- Stormwater Management Facilities; and,
- LID Practices.

As per the EDCSD, the implementation of end-of-pipe SWMFs are typically considered only for developments greater than five (5) hectares, where the application of lot level controls is considered impractical. Design criteria within the document is limited to conventional SWMFs, with criteria provided for the design of emergency overflows, outfalls, spillways, plantings and safety measures for conventional stormwater ponds. The EDCSD does not provide design criteria or standard drawings for non-conventional SWMFs.

As part of future phases of the current project, Resilient will be responsible for developing design criteria and engineering standards for non-conventional SWMFs. The developed information will be included in a future version of the EDCSD.

## 2.9 MECP Low Impact Development Stormwater Management Guidance Manual (Draft), January 2022



The Low Impact Development Stormwater Management Guidance Manual, published in draft by the MECP for public review in January 2022, provides performance guidance for stormwater management specifically related to the implementation of Low Impact Development ('LID'). LID is defined within the manual as a stormwater management strategy, system or facility that seeks to mitigate the impacts of increased runoff and stormwater pollution by managing runoff close to its source. Implementation of LIDs employ small scale site design strategies to mimic the natural water cycle through the process of infiltration, evapotranspiration, harvesting, filtration, detention, and reuse. The manual offers information that is complimentary to the 2003 MECP Stormwater Management Planning and Design Manual and the 2008

Design Guidelines for Sewage Works, providing guidance on implementation of a holistic treatment train approach for stormwater management within Ontario.

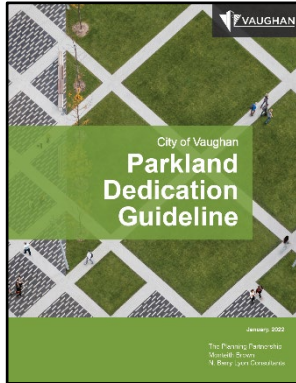
In addition to providing guidance and criteria on the design, construction and operation of LIDs, the manual also provides guidance for achieving the runoff volume control target (90<sup>th</sup> percentile precipitation event) for new development, re-development, linear development, and stormwater retrofits within Ontario.

All performance guidelines provided in the manual are limited to lot level, at the source, and conveyance controls, however design guidance for end-of-pipe treatment is excluded from the document. As a result, the LID SWM Guidance Manual is of limited benefit in providing direction of the design and implementation of end-of-pipe dual use SWMFs.

## 2.10 City of Vaughan Parkland Dedication Guideline, January 2022

The City of Vaughan Parkland Dedication Guideline offers guidance on the parkland dedication and acquisition process, providing key considerations to assist in the implementation of a revised approach to address increased pressure for acceptance of alternative parkland spaces. The document was primarily developed to serve as a comprehensive guideline used for the development of a future

Parkland Dedication By-Law. At the time of the preparation of the guideline, the City did not have a Parkland Dedication By-Law in place. A Cash-in-Lieu By-Law, last updated in 2012, was used to impose parkland/payment-in-lieu conditions through the development process, however a new Parkland Dedication By-Law was noted to be required by September 18<sup>th</sup>, 2022.



A total of fifty-four (54) considerations are provided within the guideline, with input ranging from the amount of gross land area that should be required as parkland to administrative elements for the implementation of the new by-law. Consideration #46 provides input on the dedication of parkland for conventional stormwater management facilities, recommending that lands required to accommodate these SWMFs not be accepted for dedication. In relation to non-conventional SWMFs, the guideline considers opportunities of parkland dedication for strata parks, where the City is provided ownership of parkland located over the top of an underground structure or facility such as a SWMF. The guideline recommends that the land area of a strata park should be counted toward the required parkland

dedication, but the actual amount of land counted may be discounted to reconcile issue related to lifecycle costs and lifespan of these facilities.

## 2.11 City of Vaughan MECP's CLI-ECA for Municipal Stormwater Management Systems, April 2022

The Environmental Compliance Approval for a Municipal Stormwater Management System was issued to the City of Vaughan by the Ministry of Environment, Conservation and Parks ('MECP') on November 25<sup>th</sup>, 2022, in accordance with the Environmental Protection Act (1990). The approval covers the entire municipal stormwater management system owned and operated by the City, which is classified as a separate system from all sanitary systems located within city limits. The approval also covers stormwater management systems located on private lands that are considered a part of the municipal stormwater treatment train, including infiltration trenches, swales and rear lot catch basins located at seven (7) different sites within the city.

A total of 245 stormwater management facilities and pumping stations are authorized under the ECA, which are broken down into the following facility types:

- 119 Stormwater Management Ponds – Wet (Including wetlands, hybrids)
- 26 Stormwater Management Ponds – Dry
- 19 Super Pipe/ Storage Facilities
- 28 Sedimentation MTD – OGS
- 1 Pumping Station

An additional thirty-nine (39) facilities are identified within the ECA to be connected to the municipal stormwater management system; however, ownership of these facilities have not been assumed by the City, and separate ECAs are required for these facilities.

In addition to providing details on each authorized facility, the ECA outlines acceptable future alterations to the system, stormwater management criteria, inspection and monitoring requirements, and annual reporting needs.

## 2.12 Vaughan Sustainability Metrics Program, May 2022

The Sustainability Metrics Program, developed in partnership by the Cities of Brampton, Markham, Richmond Hill and Vaughan, is a point-based system implemented as a part of the development application process to encourage sustainable performance of new developments. As a component of the application submission, development proposals are required to achieve a minimum sustainability scores dependent on the type of planning application. The Sustainability Metric is organized into the following categories:

- Built Environment (BE);
- Mobility (MB);
- Natural Environment and Parks (NE);
- Infrastructure and Buildings (IB); and,
- Innovation (IN).

The Natural Environment and Parks category provides opportunities for points related to the implementation of stormwater infrastructure. Specifically, additional points are awarded for retaining increased runoff volume on site (NE-9), for providing advanced quality controls (NE-10), and for enhancing the public use values of stormwater management facilities through the installation of beautification measures around SWM ponds (NE-12). At this time, there are no point opportunities strictly related to the implementation of non-conventional SWMFs.

## 2.13 City of Vaughan Parkland Dedication By-Law 168-2022, June 2022

The Parkland Dedication By-Law 168-2022 was passed by Council on June 28<sup>th</sup>, 2022 following completion of the Parkland Dedication Guideline in January 2022. The By-law includes provisions to allow the City to continue to retain the ability to require that land be conveyed for park or other public recreational purpose as a condition of development, with the amount of land determine by applying an 'alternative rate' of parkland provision. The following key elements were included:

- Updated definition for compatibility with other City documents;
- Updated list of exempt categories;
- Clarity and expansion of lands acceptable for conveyance and parkland credit;
- Provisions for off-site land dedication;
- Updated phased-in fixed unit dates for payment-in-lieu; and,
- Transition provisions.

Parkland dedication for non-conventional SWMFs is addressed in Section 3 (2) of the By-law, which states the City is willing to accept full (100%) credit towards satisfying the parkland dedication requirements for development or redevelopment of strata parks, and land encumbered by underground SWMFs, utility coordinators and other publicly owned infrastructure. As per Section 3 (3), to achieve full credit the City and the owner must enter an agreement that the land for dedication:

- A. Is permit-ready for active and/or passive park programming;
- B. Is designed and developable to City standards;
- C. Does not prohibit or restrict public programming;
- D. Will be open and accessible to the public at all times;
- E. Meets applicable criteria of City's OP; and,

F. Meets requirements of Greenbelt or Oak Ridges Moraine policies.

Conventional SWMFs, such as stormwater ponds, will not be acceptable for parkland dedication, as detailed under Section 3 (5).

## **2.14 City of Vaughan Committee of the Whole (Working Session) Report, June 2022**

The City of Vaughan Committee of the Whole Report, dated June 8<sup>th</sup>, 2022, provides a status update on the City's current interim approach for reviewing and accepting non-conventional stormwater infrastructure implementation and the associated financial contribution that is required to offset the additional costs of this infrastructure once it has been assumed by the City. The Report highlights the need for the development of a formal policy and procedure for accepting non-conventional SWMFs, as current approvals are completed on a case-by-case basis. At this time, no other municipality within the Greater Toronto Area ('GTA') has created a formal approval policy for the acceptance for non-conventional SWMFs or provided requirements for financial contributions from developers to operate these facilities on public lands. The exception to this is the City of Markham, who requires a one-time payment by the developer for the cost differential between operation, maintenance, rehabilitation and replacement cost of a conventional SWMFs compared to alternative infrastructure based on a 50-year lifespan.

The interim approach applied by the City is noted to be effective in ensuring stormwater management is achieved, however it does not take into consideration important social, economic and environmental factors and the overall integration of these non-conventional SWMFs within future communities. As a result, the City is in need of a formal policy that will ensure all development and planning matters are considered during the approval process.

The Report also provides a brief overview of the submission and review process of a dual-use SWMFs policy paper submitted in January 2022 by Malone Given Parsons. The policy paper focuses on opportunities to implement underground stormwater storage within future City parks for land use efficiency and to allow for more development areas. The City retained WSP Canada ('WSP') to complete a peer review of the policy paper, with WSP noted to be in general agreement with the findings of the report. Recommendations regarding technical design requirements, and the need for further research into the financial implications of dual-use SWMFs were provided by WSP. Results of this peer review were incorporated into the development of the interim policy and are to be taken into consideration during the development of the formal policy and procedures for approval of non-conventional SWMFs.



## 2.15 Existing Policy and Procedure Review Summary

The following table provides a summary of the reviewed policies and procedures as they related to the implementation of non-conventional SWMFs within the City of Vaughan.

*Table 1. Summary of Existing Policies and Procedures Input on Non-Conventional SWMFs*

<b>Existing Policy/ Procedure/ Guideline</b>	<b>Relevance to Implementation of Non-Conventional SWMFs</b>
MECP Stormwater Management Planning and Design Manual, March 2003	<ul style="list-style-type: none"> <li>The manual does not provide design criteria or guidance in relation to non-conventional end-of-pipe SWMFs.</li> <li>The manual does provide some guidance on the use of superpipes to provide subsurface storage and reduce peak flows, however this is examined as lot level control only.</li> </ul>
City of Vaughan Official Plan 2010 and Update	<ul style="list-style-type: none"> <li>The OP encourages the implementation of innovative stormwater management approaches where appropriate, however the application of non-conventional SWMFs is not identified within the Plan.</li> </ul>
CVC/ TRCA Low Impact Development Stormwater Management Planning and Design Guide, 2010	<ul style="list-style-type: none"> <li>No reference to non-conventional end-of-pipe SWMFs within guideline.</li> </ul>
TRCA Stormwater Management Criteria, August 2012	<ul style="list-style-type: none"> <li>Design criteria was not provided for non-conventional SWMFs, however it was noted that the TRCA encourages the implementation of innovative designs and green infrastructure, provided the proposed works also satisfy all applicable requirement and criteria set forth within the document.</li> </ul>
City of Vaughan SWM Master Plan Class EA Study, 2014	<ul style="list-style-type: none"> <li>Non-conventional stormwater infrastructure was identified within the Class EA, however it was recommended for implementation at lot level rather than end-of-pipe SWMFs.</li> </ul>
Active Together Master Plan (ATMP), 2018	<ul style="list-style-type: none"> <li>ATMP encourages the implementation of non-traditional parks and open spaces in areas of intensification, including strata parks developed on underground stormwater infrastructure, parking garages and roofs.</li> </ul>
City of Vaughan Green Directions Vaughan, 2019	<ul style="list-style-type: none"> <li>Non-conventional SWMFs are not specifically identified within the document, however innovative approaches to enhancing stormwater management within the watershed are encouraged.</li> </ul>
City of Vaughan Engineering Design Criteria & Standard Drawings, 2020	<ul style="list-style-type: none"> <li>The EDCSD does not provide design criteria or standard drawings for non-conventional SWMFs.</li> </ul>

Existing Policy/ Procedure/ Guideline	Relevance to Implementation of Non-Conventional SWMFs
MECP Low Impact Development Stormwater Management Guidance Manual (Draft), January 2022	<ul style="list-style-type: none"> <li>• Performance guidelines limited to lot level, at the source and conveyance controls, and excludes end-of-pipe facilities.</li> <li>• No reference to non-conventional SWMFs within guideline.</li> </ul>
City of Vaughan Parkland Dedication Guideline, January 2022	<ul style="list-style-type: none"> <li>• Guideline considers opportunities of parkland dedication for strata parks, where the City is provided ownership to parkland located over the top of underground structure or facility such as a stormwater management facility.</li> </ul>
City of Vaughan MECP's CLI-ECA for Municipal Stormwater Management Systems, April 2022	<ul style="list-style-type: none"> <li>• Identifies nineteen (19) non-conventional SWMFs (superpipes/ storage facilities) that have currently been authorized under the ECA.</li> <li>• Lists the stormwater management criteria under the CLI-ECA program.</li> </ul>
Vaughan Sustainability Metrics Program, May 2022	<ul style="list-style-type: none"> <li>• No opportunity to be awarded points for implementing non-conventional SWMFs.</li> </ul>
City of Vaughan Parkland Dedication By-Law 168-2022, June 2022	<ul style="list-style-type: none"> <li>• City will accept full (100%) credit towards satisfying the parkland dedication requirements for development or redevelopment of strata parks, and land encumbered by underground SWMFs, utility coordinators and other publicly owned infrastructure.</li> </ul>
City of Vaughan Committee of the Whole (Working Session) Report, June 2022	<ul style="list-style-type: none"> <li>• Defines the interim approach for approving non-conventional SWMFs.</li> <li>• Identifies the need to develop a formal policy and procedure for approval.</li> </ul>

### 3 Stormwater Management Approval Process

Prior to implementation, applications for the installation of City assumed SWMFs must undergo a multi-stage review process, completed by the City and other relevant regulatory agencies, to ensure all stormwater related design criteria are achieved. The following sections provide a general overview of the current approach for the review and approval of conventional and non-conventional SWMFs within the City of Vaughan. In addition, data gaps identified during the review of the current interim approval process for non-conventional SWMFs have been identified.

#### 3.1 City of Vaughan Approach for Conventional SWMF Approval

The City's process for approval of conventional SWMFs requires a developer to follow a multi-stage application process where several design submissions are reviewed by various internal departments within the City prior to being granted approval to proceed. Upon commencement of the project, the developer must initially determine and receive approval of the Block limits that the facility will occupy. This process is typically completed through a 'Draft Plan of Subdivision' process, where conditions for the approval of these facilities is listed. Subsequent to the Draft Plan of Subdivision is the Plan of Subdivision, where the detailed design of these SWMFs is completed and approved.

A detailed design submission of the SWMF is to follow, where the City relies on the criteria outlined in the City of Vaughan Engineering Design Criteria & Standard Drawings (2020), the MECP

Stormwater Management Planning & Design Manual (2003) and the TRCA Stormwater Management Criteria (2012) for review and approval of proposed conventional SWMF. Both the City and TRCA criteria reference recommendations detailed in the MECP SWMP Manual, including the application of the following criteria:

- At a minimum, pre-development peak flows are to be maintained to adhere to water quantity objectives. Watershed specific targets have been established by the TRCA and are to be adhered to when discharge to TRCA jurisdiction is proposed.
- A minimum 80% total suspended solids (TSS) is to be removed from 90% of the site average runoff to achieve water quality objectives.
- A minimum 5mm across the site area is to be retained on-site for water balance and erosion control criteria. Depending on the results of an erosion assessment, extended detention of the 25mm event for a 48-hour period may also be required.

Further to the above, the City and TRCA have outlined various criteria and provides guidance on the design, construction, and maintenance of the facility outlets, spillways, safety measures, and plantings. Additional design guidance including, but not limited to, the sizing of SWM pond forebays, extended detention, active storage, and sediment drying area is provided in the MECP SWMP Manual. In summary, conventional SWMF are to demonstrate:

- Satisfactory quantity, quality, water balance, and erosion control (if required).
- Acceptable lengths, depths, side slopes, area ratios, and volumes of the facility forebay, permanent pool, and active storage, if applicable.
- Satisfactory inlet/outlet minimize size, slope, and elevations.
- Adequate spillway and emergency overflow design and stone protection.
- Accessible maintenance route alignment, slopes, widths, and turn-arounds (if required).
- Acceptable safety fencing, signs, buffers, and vegetation/plantings.

A Stormwater Management Report, sealed by a Professional Engineer licenced in Ontario, that demonstrates satisfactory results of all applicable conditions and criteria, must be submitted to the City for review in order to receive final approval. In addition to the City and TRCA, the MECP must also be in receipt of this final approved SWM Report as part of the Consolidated Linear Infrastructure Environmental Compliance Approval (CLI-ECA) process. An application detailing the proposed SWMF, including site location, watershed/receiving system, drainage area size, ownership, land use, type of facility, operations/maintenance, and specific details on the facility (ie. treatment level, volume retention, storm event, treatment train, sewers/outfalls) is to be submitted to the MECP alongside the processing fee and final SWM Report for final review and approval before the construction phase of the project can commence. Additional considerations, including defining operation and maintenance requirements, costs and warranty periods must also be agreed upon between the owner and City prior to being granted final approval.

### **3.2 City of Vaughan Interim Approach for Non-Conventional SWMF Approval**

As previously noted, an interim approach for approving non-conventional SWMFs was adopted by City Council in June 2022 in response to increased pressure by developers to approve innovation stormwater solutions for greenfield and infill/intensification developments within the City of Vaughan. The interim approach was modelled using similar policy framework to that implemented by the City of Markham, which required financial compensation to be paid by the developer to cover the cost differential between operation, maintenance, rehabilitation and replacement a non-conventional SWMF vs. conventional SWMF over a 50-year lifespan. In addition to the financial implications, the

approach provides details on design limitations and considerations that must be addressed by the developer prior to the City considering approval of non-conventional SWMFs.

Key features of the interim approach for accepting non-conventional SWMFs are as follows:

- The developer must provide reasons for the non-compliance of the City's OP policies for stormwater infrastructure;
- A recommendation report shall be prepared by a qualified engineer identifying and documenting the benefits of the proposed non-conventional SWMFs, which shall be submitted to the City for review and approval prior to development application. If City staff disagree with the provided rationale, a peer review consultant will be retained to provide their professional opinion, with costs of the review paid by the developer;
- Non-conventional SWMFs will not be supported for greenfield developments unless a compelling argument outlining the benefits is demonstrated to the City and the City's peer reviewer, if required;
- Consideration of non-conventional SWMFs may be considered for specific growth areas and intensifications/infill development based on land constraints and the proposed density;
- Prior to final approval, the owner shall provide a one-time cost contribution in present value for non-conventional SWMF to compensate for any increase in cost when compared to conventional SWMFs, based on operation, maintenance, rehabilitation and replacement costs over a 50 year lifecycle;
- Non-conventional SWMFs proposed under road right of ways should be avoided;
- For park development on top of non-conventional SWMFs, the following should be considered:
  - Park program flexibility and design restrictions;
  - Technical details (soil depths, tree canopy, etc.);
  - Disruption due to operation and maintenance;
  - Long term life cycle costs on park replacement;
  - Capital costs due to structural constraints; and,
  - Requirements for developer to build the park to ensure warranties are not voided.
- Provisions for parkland credits for dual-use parks/ underground SWMFs was considered through the Parkland Dedication By-law update, as described in **Section 2.4** above.

The overall approval process for non-conventional SWMFs follows the same general steps as conventional facilities, as outlined above in **Section 3.1**. However, the acceptance of a non-conventional SWMFs application is considered by the City on a case-by-case basis, and must include supporting documentation justifying the need to implement a non-conventional SWMF in addition to defining how water quality, quantity, erosion control and water balance targets will be achieved. These design targets are the same for both conventional and non-conventional SWMFs and are clearly defined within the TRCA, MECP and City guidelines. As noted above, these guidelines provide additional design recommendations specific to conventional SWMFs, such as spillway sizing and outlet pipe requirements for traditional stormwater management ponds, however no technical recommendations are provided explicitly for the design of non-conventional SWMFs. As a result, the preparation of the design of non-conventional SWMFs is reliant on the experience of the designing engineer, with additional support provided by the suppliers and manufacturers of these non-conventional SWMF products.

Similarly, the review and approval of the technical design of the non-conventional SWMF is also reliant on the knowledge and experience of the City's Engineering Department and all other supporting departments, as standardized technical requirements have yet to be defined within the interim approval approach or regulatory policies and guidelines.

### 3.3 Data Gaps in Interim Approval Approach of Non-Conventional SWMFs

As previously noted, the approval of a non-conventional SWMFs is currently completed on a case-by-case basis, which guarantees that the SWMF can effectively meet the stormwater management needs of the site while also securing financial contributions to the City to cover the additional ownership costs associated with the non-conventional SWMF. This current approach does not take into consideration numerous other factors including the social, economic and environmental impacts of implementing non-conventional SWMFs, nor assess the benefits or drawbacks this infrastructure could have on future communities.

The following data gaps have been identified during the review of the current interim approach, which have been divided into the following six (6) key categories:

- Engineering Design;
- Development Planning and Policy;
- Urban Design;
- Parks Planning;
- Active Outdoor Recreation;
- Lifecycle implications; and,
- Operation, Maintenance, Rehabilitation and Replacement.

By identifying these data gaps in the initial stages of the project, Resilient can ensure that this missing information is addressed during the development of the formal policy, procedure, and design criteria for non-conventional SWMFs approval. It is anticipated that throughout the consultation process additional data gaps within the interim approach will be identified by internal and external stakeholders. These recommendations will be documented accordingly and incorporated into the formal documents where appropriate.

*Table 2. Key Data Gaps in the Current Interim Approach of Non-Conventional SWMF Approval*

Engineering Design
<ul style="list-style-type: none"> <li>• <b>Design specific criteria for non-conventional SWMFs is needed.</b> The design of conventional SWMFs is highly reliant on engineering design criteria outlined in the MECP Stormwater Management Planning and Design Manual (2003) and TRCA Stormwater Management Criteria (2012), which are referenced throughout many of the policies and guidelines reviewed in <b>Section 2</b> of this report. This engineering criteria is limited to conventional SWMFs and does not provide any criteria related to specific design elements of non-conventional SWMFs.</li> <li>• <b>Need for specification of acceptable technology.</b> At this time, the current approach for approval of non-conventional SWMFs does not provide any direction as to which types of non-conventional SWMFs may be accepted within the City of Vaughan. Numerous innovative stormwater management technologies are available on today's market, including plastic arch chambers, superpipes and concrete tanks. Each of these non-conventional SWMFs are made of different materials that adhere to various Canadian standards, require different levels for maintenance, and have varying operational lifespans.</li> <li>• <b>Direction on treatment train expectations.</b> Similar to conventional stormwater management approaches, non-conventional approaches are still required to achieve water quality, quantity, erosion control and water balance standards specific to their proposed site location. Achieving these standards through the implementation of the non-conventional SWMF alone may not be feasible, and lot level or conveyance controls and additional water quality measures may be required to meet these requirements. The formal approach should confirm the minimum requirements that are to be provided by the non-conventional SWMF as a standalone facility, and what requirements can be achieved elsewhere through the implementation of a treatment train approach.</li> </ul>

<p><b>Development Planning and Policy</b></p> <ul style="list-style-type: none"> <li>• <b>Inclusion of Parkland Dedication By-Law 168-2022.</b> Following adoption of the interim approach for approval of non-conventional SWMFs in early June 2022, the Parkland Dedication By-Law was passed by Council on June 28<sup>th</sup>, 2022. The By-Law states that the City may accept full (100%) credit towards satisfying the parkland dedication requirements for development or redevelopment of strata parks, and land encumbered by underground SWMFs, utility coordinators and other publicly owned infrastructure, as long as the additional approval requirements as per Section 3 (3) of the By-Law are achieved.</li> <li>• <b>Good Planning Sense.</b> The implementation of non-conventional SWMFs may provide many benefits particularly when reviewing land value, however the social, community and mental impacts of not providing a conventional SWM pond, which is often seen as amenity space to residents, needs to be reviewed.</li> </ul>
<p><b>Urban Design</b></p> <ul style="list-style-type: none"> <li>• <b>Urban Design Factor Integration.</b> The interim approach does not specify how to address potential impacts (both positive and negative) to urban design form of parklands above non-conventional SWMFs. Examples of urban design aspects to be considered ensuring that the placement of access points and maintenance routes do not conflict with critical public realm components of parks such as gathering places or recreational spaces.</li> </ul>
<p><b>Parks Planning</b></p> <ul style="list-style-type: none"> <li>• <b>Need for specification of acceptable recreational facilities above facility.</b> The current approach for approval of non-conventional SWMFs identifies a list of considerations for park development to be located on top of non-conventional SWMFs, however specific expectations for what will be accepted above these facilities is not provided. A list of suitable recreational facilities that will be accepted above the facility, such as sports fields, plazas and rinks, and what will not be accepted will provide guidance in selection of the overall non-conventional SWMF design, specifically in relation to facility configuration, cover depth, soil types and loading requirements.</li> <li>• <b>Definition of planting expectations above facility.</b> The City of Vaughan is committed to promoting the planting of trees for enhancement of City parks. The implementation of non-conventional SWMFs below parkland can significantly impact where trees can be planted within the site, largely due to the impact of the plant roots on the structural integrity of the underground facility and the depth of soil cover above the facility. The existing approach does not define minimum planting requirements for within these parks.</li> </ul>
<p><b>Active Outdoor Recreation</b></p> <ul style="list-style-type: none"> <li>• <b>Identification of park programming goals needed.</b> Early identification of the City's intentions for parkland located above these facilities, whether it be for passive or active programming, will have a considerable impact on the design and configuration of the proposed non-conventional SWMFs.</li> </ul>
<p><b>Lifecycle Implications</b></p> <ul style="list-style-type: none"> <li>• <b>Development of standardized cost for operation, maintenance, repair, and replacement needed.</b> As non-conventional SWMFs are a relatively new and evolving concept for local municipalities, there is limited understanding of the cost associated with operation, maintenance, repair, and replacement of these facilities. One-time cost contributions collected from developers have largely been estimated at this time, with the hope that these financial contributions are sufficient to cover the additional costs associated with the implementation on non-conventional SWMF over their lifetime. As a result, the City has faced significant financial risks in approving these facilities.</li> </ul>
<p><b>Operation, Maintenance, Rehabilitation and Replacement</b></p> <ul style="list-style-type: none"> <li>• <b>Development of Standard Operating Procedures (SOPs) required.</b> The long term operation, maintenance, rehabilitation and replacement needs for non-conventional SWMFs is not defined in the City's current SOPs. A new SOP will be required, which will include, but not be limited to, inspection programs, including frequency of inspection, the methods or test employed to detect when maintenance is required, health and safety procedures and all additional regulatory requirements identified by the MECP.</li> </ul>

## 4 Review of Current Industry Practices

To develop a better understanding of the industry standard, six (6) municipalities within the GTA and surrounding area were contacted to determine if any policies, procedures, or design criteria has been applied within their municipality to address non-conventional SWMFs acceptance and implementation. These municipalities were selected based on their sizes and current development pressures being similar to Vaughan's. At the time of finalizing this report, responses were received from the following municipalities:

- City of Markham;
- City of Mississauga;
- City of Hamilton;
- City of Kitchener; and,
- City of Burlington.

Based on feedback received from these municipalities, no other municipality within the GTA and surrounding have created a formal approval policy or standards for the acceptance of non-conventional SWMFs or provided requirements for financial contributions from developers to operate these facilities on City lands. As previously noted, the exception to this is the City of Markham, who has implemented a policy to collect financial contributions for the cost differential between conventional and non-conventional SWMFs, should the developer propose implementation of non-conventional SWMFs. All correspondence with municipalities contacted as a part of this background review is provided in **Appendix B**.

### 4.1.1 City of Markham, Ontario

The City of Markham has been identified as the only municipality in the GTA to have prepared a document or policy addressing non-conventional stormwater infrastructure.

In 2019, the City developed an Alternative Infrastructure Policy ('AIP') which provides framework for the approval of alternative forms of infrastructure and details how additional costs incurred by the City over the lifespan of the infrastructure would be recovered. The policy is applied when a developer seeks to build alternative infrastructure, such as non-conventional SWMFs, that may result in a higher total cost of ownership to the City when compared to more conventional infrastructure, such as SWM ponds. The City requires payment by the developer of the cost differential between conventional and the alternative infrastructure based on two (2) lifecycles to a maximum of 50 years. Approval of the alternative infrastructure and determination of the required payment is completed on a case-by-case basis, and the policy has currently been applied to two (2) underground SWMFs located within the Village of Fairtree Subdivision. Lifecycle cost estimates for conventional and alternative infrastructure are currently being refined by the City of Markham to ensure all important components of future maintenance, operation and replacement are taken into consideration when determining the fee to be paid by the developer.

The latest discussions regarding the implementation of non-conventional SWMFs within the City of Markham occurred during the Development Services Committee Meeting on June 13<sup>th</sup>, 2022. A overview on SWMFs owned by the City was presented by the City's Director of Engineering, with specific focus on underground ('U/G') stormwater tanks and the opportunities and constraints associated with their implementation. The presentation touched on the City's current AIP, as well as discussed how parkland credit designation for parks located above these U/G tanks is currently being negotiated on a case-by-case basis. The following recommendations were presented and moved by the Committee:

- That proposals for U/G tanks be reviewed on a case-by-case basis by Engineering and Planning Departments, in consultation with Environmental Services Department, to ensure that the proposed location is appropriate, and the proposed type of U/G tank meets the City's specifications and criteria;
- That the Engineering Department, in consultation with Planning and Environmental Services Department, procures the services of a professional engineering consultant to assist in the development of appropriate criteria of acceptance for the considerations of U/G tanks, along with the acceptable uses above the facilities, along with the necessary specifications on U/G tank facilities.
- That the developers proposing to install U/G tanks in lieu of open stormwater ponds must provide the City with a financial contribution to offset the additional future costs to maintain and operate the U/G tanks and staff be authorized to negotiate the financial contributions from the developers.
- That the Planning Department be authorized to determine the applicability of parkland credits for proposed uses on top of U/G tanks and negotiate the appropriate parkland credit for proposed parks deemed suitable to be located on top of U/G tanks.

At this time, the City of Markham has yet to retain the services of a professional engineering consultant to assist in the development of criteria, standards and specifications for acceptance of U/G tanks, however this is anticipated to be initiated in the near future.

#### **4.1.2 City of Mississauga, Ontario**

Unlike many other municipalities within the GTA, the nature of development within the City of Mississauga is largely limited to intensification and redevelopment, as limited greenfield sites remain within the jurisdiction. As a result, Mississauga has received limited pressure from developers to implement non-conventional SWMFs on public lands and has not identified the need to adopt non-conventional stormwater management policies, procedures, or standards at this time.

Non-conventional SWMFs, including underground arch chambers and concrete tanks, have been implemented internally by Mississauga below existing public park space. These projects however have primarily been installed as flood mitigation retrofits, with the financial burdens of operation, maintenance and repair costs taken into consideration prior to implementation by the City.

#### **4.1.3 City of Hamilton, Ontario**

At the present time, the City of Hamilton is currently in the process of developing Green Standards and Guidelines related to development on private properties, with the intention to development similar guidelines for public infrastructure in the future.

Similar to many other municipalities, the implementation of non-conventional SWMFs on lands that are to be assumed by the City are completed on a case-by-case basis. At this time, proposed non-conventional SWMFs for public infrastructure is very uncommon, with the City largely only receiving development applications for non-conventional SWMFs on private land.

The City is also in the process of commencing an urbanization project that will require the implementation of municipally owned non-conventional SWMFs, however this project is still in its infancy, and the design of these non-conventional SWMFs have yet to be completed.



#### 4.1.4 City of Kitchener, Ontario

The City of Kitchener relies upon the following set of documents when making decisions in relation to the approval of stormwater management infrastructure:

- Integrated Stormwater Management Master Plan and Policy (2016), which provides details on design criteria, targets, and fees;
- CLI-ECA, which defines MECP design criteria and maintenance requirements applied to the whole City of Kitchener stormwater network;
- City of Kitchener Development Manual (2021), which provides further details on design criteria for end-of-pipe facilities. End-of-life facilities are identified as wetlands, ponds and infiltration facilities as per the Manual;
- Operation and Maintenance SOPs and best management practices, when available; and,
- Stormwater Asset Management Plan (2022), which provides guidance on asset maintenance, rehabilitation and replacement needs.

The City of Kitchener does not have a policy specifically related to the implementation of non-conventional SWMFs, and instead takes a non-prescriptive approach to reviewing these facilities, ensuring that objectives of the above documents are achieved by the proposed facility.

#### 4.1.5 City of Burlington, Ontario

The City of Burlington Stormwater Management Design Guideline, prepared in 2020, is used for the review and approval of all stormwater management systems and infrastructure proposed within the City of Burlington. The Guidelines provide detail on the design process, submission requirements, modelling and overall design criteria for conveyance and stormwater management infrastructure. As defined in the Guidelines, end-of-pipe SWMFs consist of systems with open ponding areas used to provide quantity, erosion, and quality controls to mitigate development impacts, and may refer to dry ponds, wet ponds, wetlands or hybrids. The Guideline does not provide any criteria or requirements related to the implementation of non-conventional SWMFs.

## 5 Review of Non-Conventional SWMFs

The use of conventional SWMFs, such as dry or wet ponds, have been used for many decades as a means to adhere to stormwater management criteria set forth by provincial, regional and local regulatory authorities. The implementation of these conventional facilities, when compared to alternative forms of stormwater management, were preferred by developers as construction costs were significantly less than alternative options, such as underground facilities. As the price of developable land continues to elevate, the use of these conventional facilities is becoming less desirable as a large capital investment is needed for the land. The City currently owns approximately 147 conventional SWMFs, with another 16 non-conventional SWMFs in various phases (ie. assumed, approved, under review), which include underground storage tanks and superpipes to provide required stormwater management controls.

There are many potential advantages to implementing a non-conventional SWMF, including but not limited to:

- Provides a dual-purpose to the land (i.e. parkland above the facility);
- Requires a smaller at-surface footprint;
- Eliminates at-surface water quality concerns such as standing water and E.Coli contamination from wildlife;
- Provides both passive and active programming of the space above the facility;
- Lowers water temperature of discharge; and,

- Improves safety by eliminating the potential of drowning and/or falls through ice.

Non-conventional facilities are becoming increasingly popular, especially in the GTA, as available land is limited resulting in highly constrained sites. These facilities may be ideal for land development projects where additional land is not available for a conventional system, and in park settings where the land can be re-purposed above the facility.

Although a long list of advantages are noted for non-conventional SWMFs, there are some significant potential disadvantages including a higher overall cost for installation, maintenance, operation, repair and replacement when compared to conventional SWMFs. Non-conventional SWMFs are typically buried underground, and are reliant on engineered products or structures with design lives of 50 to 100 years to support the ground above the facility. In the case of open excavated ponds, while there may be risk of erosion of slopes or failure of outlet structures, there is no risk of collapsing ground as the facility is not buried and notable deficiencies with the infrastructure are more readily observable.

Non-conventional SWMFs typically utilize a pre-treatment system to remove a majority of suspended solids in stormwater before entry to the main facility. Pre-treatment systems are designed to be frequently maintained through relatively simple methods such as flushing and vacuuming using equipment typically owned or contracted by the asset owner. However, for many non-conventional SWMFs, if pre-treatment is not maintained, sediment will begin entering and accumulating within the main facility, resulting in loss of storage volume and reducing effectiveness of the SWMF. Removal of sediment from the main facility may be much more difficult and may require excavation and replacement of engineered products, resulting in higher costs and disruptions to facilities.

The review of several types of facilities has been completed to highlight the various advantages and disadvantages for each facility, including capital and lifecycle costs, operation/maintenance requirements, and all other identified limitations and considerations. The objective of this review is to provide the required supporting documentation for use in preparing a list of non-conventional SWMFs that will be accepted for implementation within the City of Vaughan. The detailed review of various types of non-conventional SWMFs is included in the following sections, with a summary presented in table format included in **Appendix C**.

## 5.1 "Milk-Crate" System

The "milk-crate" system gets its name from its appearance – a box-like modular system with thin walls that include openings to allow for the passage of water. These systems are made of high-density polyethylene ('HDPE') and are available in a variety of standard heights. The product can be stacked to achieve a required height or increase storage volume while maintaining a limited footprint. The forms have been designed for standard loading applications including loads from parking lots/industrial areas, however adequate coverage over the facility is required. Infiltration can be promoted through the system through the installation of open-bottom facilities or restricted through the use of an impermeable liner.

A variety of suppliers for this type of system exist and include:

- Layfield Group: *Brentwood StormTank Module*
- Atlantis: *Matrix Tank*
- ACO: *Stormbrixx*
- StormCon: *Greenstorm Geocellular Module*

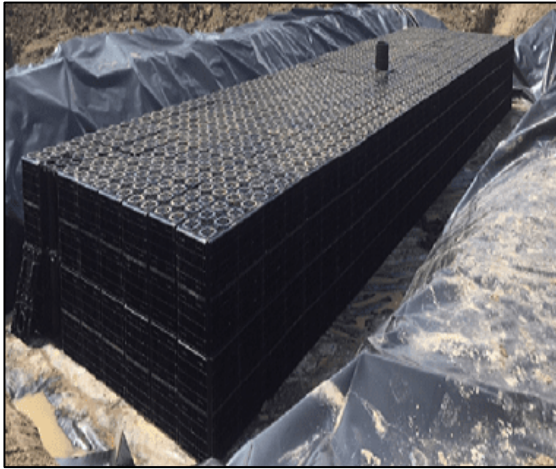


Figure 1: Example "Milk-crate" system, Source: ACO

The main advantage of the "milk-crate" system is the high void ratio (over 95%) when compared to its arch chamber competitors. The square shape of each modular unit allows for the system to maximize internal storage space without losing potential storage opportunities to exterior stone or perimeter material. Another advantage of these products is the quick and easy assembly of the facility. As the systems are made of plastic materials, the system can be snapped into place by hand without the need for large equipment. In addition, these products come disassembled and therefore packaging and shipping is improved over its competitors.

The main disadvantage of the "milk-crate" system is that it forms a closed facility in the sense that entry is not a possibility without excavation and local disassembly of the system. Further to this, the system has minimal opportunity for quality treatment and is therefore reliant on an external treatment device. This increases the risk of sediment-laden water entering the facility, increasing the maintenance frequency of the system and quality treatment system. Maintenance of these facilities is paramount to their success and therefore frequent inspection via camera and subsequent maintenance is recommended to minimize the risk of having to excavate and replace the system.

During the design of "milk-crate" systems, groundwater elevation needs to be taken into consideration to ensure groundwater seepage into the facility is not anticipated and to confirm if an impermeable liner is required. If infiltration is required by the system, verification that there is adequate separation between the bottom of the system and the groundwater table is required. This consideration is not typically required for the design and implementation of concrete-based facilities, as they are often designed to be watertight systems. Lastly, these types of facilities are less common in the industry and therefore contractor familiarly with the product may be limited, and prices elevated as a result when compared to other arch style SWMF products.

A key limitation to the implementation of "milk-crate" systems is restrictions imposed by burial depth and the standard height sizes. The pre-made structures are manufactured to specific heights that may not work within a highly constrained site. Another limitation to this system is that the facility cannot be entered for inspection and maintenance. While pathways in the facility are provided for inspection using CCTV equipment, manual entry is not possible. As a result, excavation of the system is required to address any repairs or extensive maintenance required for the system.

Maintenance of "milk-crate" systems include semi-annual inspection for the first 5-years and additional inspection after every large storm event to ensure the facility is operating as designed. After 5-years, inspection can be reduced to an annual basis where visual inspection of the facility and sediment accumulation is completed through the inspection ports. A VacTruck and high-pressure flusher nozzle is required to perform maintenance on the facility once sediment accumulation reaches the maximum acceptable depth specified by the supplier. It is noted that confined space entry is not required for inspection or maintenance of these facility types.

In regard to costs of these facility, the "milk-crate" system is more expensive than their plastic arch shape competitors, as these facilities are usually selected for the stacking capability which ultimately require deeper excavations. However, stone quantities required for installation are less than arch

chamber systems. The estimated installation cost for these systems is approximately \$500/m<sup>3</sup> of storage.

With proper maintenance, these facilities are estimated to have 50-year lifespan before replacement is required. This assumes that inspection of the facility is performed on an annual basis, and inlets/outlets are regularly cleared of any debris. As confined space entry of these facilities is not possible, maintenance costs are reduced when compared to the concrete systems that allow entry for major rehabilitation assessment. The results of the lifecycle assessment indicate that the “milk-crate” system has the third lowest capital cost compared to over non-conventional SWMF systems. Maintenance costs of these facilities are the lowest, however life-expectancy is half that of the assessed concrete systems and therefore replacement of these structures after 50-years has been included in the assessment. Refer to **Appendix D** for the lifecycle assessment for each non-conventional SWMF.

## 5.2 Plastic Arch Chambers

The plastic (or polymeric) arch chamber system is widely used and accepted in industry in the GTA and south-western Ontario. These systems are made of HDPE and formed in arch shapes at various standard heights and lengths. The system consists of end caps, clear stone, manifolds, connecting piping, and modular chambers that easily snap together on-site. Plastic arch chamber systems can be designed to be water-tight through the use of an impermeable liner, or provide infiltration capabilities by designing an open-bottom facility. The plastic arch chamber system can also provide water quality treatment by incorporating an “isolator row” at the beginning of the system,



Figure 2: Example of Arch Chamber System, Source: ADS

which consists of a row of chambers that has been wrapped entirely in geotextile. The inlet connection in the “isolator row” is set at a lower elevation than the rest of the system, encouraging the first flush that is heavy in sediment to enter this row rather than dispersing throughout the system. There are various suppliers of the plastic arch chamber system, including but not limited to:

- ADS: *Stormtech Chambers*
- Terrafix: *Triton System*
- Cultec: *Recharger Unit*
- Soleno: *StormChamber*

The main advantage of the plastic arch chamber system is their versatility and the industry wide familiarity with the product. As previously mentioned, the majority of underground SWMFs currently approved by various municipalities are plastic arch chamber systems. Therefore, several designers, engineers, contractors, and regulatory agencies have experience with the product, which leads to a higher chance of successful implementation. Canadian Standards Association (CSA) has a series of standards B184 “Polymeric subsurface stormwater management structures”. These documents provides guidance and surety for designers and reviewers as it includes standardized requirements for:

- Materials and manufacturing;

- Design and structural integrity;
- Durability and longevity; and,
- Storage capacities and tolerances.

It is noted that the current editions of CSA B184 series covers arch-shaped stormwater management structures only, and other types of structures will be considered for future editions.

From a technical perspective, the plastic arch chamber systems have been identified to achieve water quantity, quality, and water balance requirements within the facility, removing the need for lot level and conveyance controls. The "isolator row" implemented within the facility has recently been ETV certified to achieve the minimum 80% TSS removal therefore removing the need for an external treatment system in many cases.

A large component to the function of these facilities is the clear stone placed at the system's base, between the chambers, and as cover material above the chambers. This clear stone provides a level base to install the product on, promotes infiltration between the system, and acts as structural cover over the system. The use of clear stone can be beneficial to the overall system, as it provides a void ratio of 0.40 allowing for additional storage opportunities. The placement of this clear stone is often completed using a stone slinger, therefore space for equipment setup should be considered prior to selection of this SWMF type. The import of large quantities of stone results in significant truck traffic and stockpiling requirements during construction of larger facilities.

Other disadvantages to plastic arch chamber systems are the need to confirm groundwater elevations, as high groundwater elevations will require the implementation of an impermeable liner below the system. This consideration is not typically required for the concrete facility competitors, which can be installed as watertight systems. In addition, maintenance of these arch chambers can be difficult given the shape of the infrastructure, particularly with the smaller units where manual entry is not feasible. If the facility were to become damaged and settlement from the surface is observed, a full excavation and replacement of the damage section is required, as minor rehabilitation is not an option for these facilities.

The key limitation to the plastic arch chamber system is the required burial depth to accommodate the top layer of stone and minimum cover requirements over the structures. This limitation plays a factor in the design process, particularly on sites with shallow servicing connections. While various heights of the structures are available, the heights are pre-determined and therefore changing to a smaller unit may be required when height is a constraint. Some arch chamber systems allow for stacking of more than one layer of storage units, however stacking of units may increase the potential of structural failure and must be considered carefully.

Maintenance of these facilities include semi-annual inspection for the first year of operation and after every large storm event. Annual visual inspection of the facility through the inspection ports is to be completed and sediment accumulation depth measured to confirm if maintenance on the facility is required. As sediment accumulation should be limited to the "isolator row" in a properly functioning system, maintenance should be limited to the use of a VacTruck and high-pressure flusher nozzle within this row only. Confined space entry is not required to complete maintenance on the facility; however, entry is possible in the larger systems if needed.

The estimated initial capital cost to install a plastic arch chamber system is approximately \$250/m<sup>3</sup> of provided storage. With proper maintenance, these facilities are estimated to last 50-years before replacement is required. This assumes that inspection of the facility is performed on an annual basis, and inlets/outlets are cleared of any debris to ensure proper function. As confined space entry of these facilities is not possible, maintenance costs are reduced when compared to the concrete

systems that allow entry for major rehabilitation assessment. The results of the lifecycle assessment indicate that plastic arch chamber systems have the second lowest capital costs and lifecycle cost. Maintenance costs of these facilities are the lowest, however life-expectancy is half of the concrete systems and therefore replacement of these structures after 50-years has been included in the assessment. Refer to **Appendix D** for the lifecycle assessment for each non-conventional facility.

### 5.3 Modular Concrete Chambers

Modular concrete chambers are another widely accepted non-conventional SWMF utilized in the GTA and southwestern Ontario. These systems are made of concrete box sections with partially open internal walls to allow for water movement throughout the system. The box sections are pre-cast within controlled facilities and can be formed at various standard heights and lengths. The systems can be designed to be water-tight or can promote infiltration by implementing a granular base below the facility. These facility types achieve high load bearing standards (HS-20) and are therefore attractive for roadway, parking lot, and industrial land uses. There are various suppliers of the modular concrete chamber systems, including but not limited to:



Figure 3: Example Modular Concrete Chamber, StormTrap

- Stormtrap: *SingleTrap, DoubleTrap*
- Contech: *Con/Span Detention System, Terre Arch*
- DECAST: *I-Storm*

The main advantage of these facilities is the high void ratio (over 95%) and high load bearing capacity, allowing for these structures to be placed at greater depths than the plastic alternatives on the market. Other advantages to modular concrete chambers include the versatility of these structure, as they can be installed below numerous services including parking structures, roadways, industrial parks, and residential buildings.

The main disadvantage of modular concrete chambers is the high upfront installation costs. These systems are typically more expensive than the plastic alternative, and have an increased cost of shipment, delivery, and staging. As this is a pre-cast structure, the pieces are large and bulky requiring numerous deliveries in comparison to an equivalent sized plastic system. The installation of modular concrete chamber system is also considerably more challenging than most other non-conventional types of facilities, as the chambers require heavy machinery to move and install. Available work space for operation and placement of this heavy machinery needs to be considered during the design phase of these projects.

Inspection of these facilities is required on an annual basis and after large storm events to confirm sediment accumulation depths and confirm the facility is operating as designed. Inspection can be completed through the facility inspection ports and confined space entry is typically not required for inspection, however entry is usually possible via standard maintenance hole openings. Once accumulation depths exceed the suppliers limit, maintenance on the facility is to be completed using a VacTruck and high-pressure flusher nozzle to break-up and remove debris. Maintenance frequency is estimated at 5-10 years for dry vault systems, and 3-5 years for wet vault systems.

The cost to implement modular concrete chamber systems can be quite high due to the pre-cast nature of the product and more strained shipment/delivery needs, with estimated costs in the range of \$1000/m<sup>3</sup> of installed storage. As noted above, there are many added benefits with this type of

facility, namely, the increased structural integrity of the system and its versatility. Assessment of site conditions, including expected loading for the land use and servicing depth constraints, is key when selecting if a modular concrete chamber system is required, or if a plastic unit would be better suited for the required application.

With proper maintenance, a modular concrete chamber system is estimated to have a 100-year lifespan before requiring replacement. This lifespan is conditional upon completion of the required inspection and maintenance, ensuring that inlets/outlets are cleared of debris and sediment is removed as needed. This lifecycle assessment also accounts for a confined spaced entry inspection and concrete repairs every 25-years to promote the longevity of these structures. The results of this assessment indicate that modular concrete chamber systems have the second highest capital cost investment, resulting to the second highest lifecycle cost. This can be attributed to the high cost of precast structures and relatively high maintenance costs. Refer to **Appendix D** for the lifecycle assessment for each non-conventional facility.

## 5.4 Superpipes

A superpipe facility includes the installation of large diameter pipes connected in sequence or series onsite to provide subsurface storage. These pipe systems are typically comprised of HDPE or corrugated steel pipe ('CSP') due to cost and weight considerations when compared to concrete pipes. Superpipe systems are limited in functionality, as they can only provide quantity control within the end-of-pipe facility, and do not provide infiltration or quality control. To provide quantity control, a small diameter conveyance pipe is located at the outlet of the superpipe system which acts as an orifice control reducing peak flows and retaining water within the system. Marginal water quality benefits may be experienced within a superpipe facility, as the system ultimately provides a flat space where coarser material can settle. However, credit towards 80% TSS removal through the implementation of a superpipe system is not recognized in the industry. External quality control devices are required upstream of these facilities to minimize maintenance requirements and meet SWM design criteria. There are several suppliers of storm sewers, but those particular to stormwater detention include, but are not limited to:

- Soleno: *Solfo* and *Wheolite Detention Systems*
- ADS: *N-12 Pipe Retention System*
- Contech: *CMP* and *Duromaxx Systems*



Figure 4: Example of Superpipe System, Source: Contech

Like plastic arch chamber systems, one of the many advantages of superpipe systems is their familiarity in industry and design simplicity. Installation of pipes and sewers is a common practice for many contractors and is considered the easiest of all assessed non-conventional SWMFs to implement.

The main disadvantage of a superpipe facility is its lack of versatility, as the system only provides peak flow reduction and does not achieve water quality or water balance objectives. Therefore, a

treatment train approach is required to adhere to current SWM standards. In addition, the cost of

material for this system is high when compared to some other non-conventional SWMFs reviewed during this assessment.

Key limitations of a superpipe system include the restriction on available pipe sizes. Although pipe diameters up to 3.0 metres are readily available from many suppliers, delivery of this size of pipe can become complicated as travel routes need to be considered. It is common practice to assume pipe diameters of 1.8 metres can easily pass under various bridge structures, with larger pipe diameters requiring confirmation to ensure adequate clearance is available before being delivered.

Other limitations of superpipe facilities include the minimum and maximum cover depths over the pipes. Further, these facilities are not well suited for large volume structures, and the price per cubic metre of storage is high and storage space opportunities are lost through the circular pipe shape when compared to a square shape product. Lastly, due to the size of these pipes, heavy equipment is needed on-site to install the product.

Maintenance of these facilities should be completed on an annual basis to monitor sediment accumulation and ensure adequate function of the outlet pipe. Visual inspection is completed through access manholes provided at the upstream and downstream ends of the facility. A VacTruck and high-pressure water nozzle is required to complete maintenance. Confined space entry is not required to complete routine inspection or maintenance of these facilities, although entry with appropriately certified personnel is possible in the large diameter systems, if required.

The price of a superpipe system is highly dependent on the material, size of the pipe and the depth at which it is installed. In general, larger diameter pipes have a higher price per linear metre of pipe, however the price per cubic metre of storage is lower than when compared to smaller diameter pipes. Further, shallower installed systems are cheaper as a result of less excavation than deeper systems. To compare with other non-conventional SWMF pricing, a typical cost of \$2,000/m<sup>3</sup> has been assumed, although this cost is recognized as being highly dependent on the characteristics of the subject site. An additional potential benefit of superpipes is that they can achieve a dual function of conveyance and storage in a single piece of infrastructure.

With proper maintenance, superpipe facilities are estimated to have a lifespan of 100-years before requiring replacement. This assumes that inspection of the facility is performed on an annual basis, and inlets/outlets are cleared regularly of any debris. Sediment and debris should be removed from the facility every 5-years, or when sediment accumulation depths are noted in excess during the inspections. Maintenance is completed using a VacTruck/Flusher to flush the system. The results of the lifecycle assessment indicate that a superpipe system has the highest capital and lifecycle costs. Refer to **Appendix D** for the lifecycle assessment for each non-conventional facility.

## 5.5 Cast-in-place Concrete Facility

The implementation of cast-in-place concrete facilities utilize traditional cast-in-place techniques (using manually assembled formwork removed after concrete curing) to construct an underground stormwater tank. These facilities do not use sacrificial form systems to construct the facility, but rather use standard concrete forms to create the tank. The system is often designed to be watertight and requires the installation of





a concrete base slab, therefore removing the ability for the SWMF to promote infiltration. A baffle wall can be incorporated in the system design to provide some pre-treatment for water entering the facility. This pre-treatment chamber can promote the settling of sediment and debris; however, quality control objectives can not be achieved within the use of this pre-treatment chamber alone, and additional measures such as an OGS unit is required to meet water quality targets. With the exception of columns required for structural support, the interior of a cast-in-place concrete tank is largely open space that can provide significant storage opportunities and has a very high void ratio (over 95%). These facilities can also be designed with very high load bearing capacity making it ideal for areas with high vehicular traffic (i.e. parking lots, industrial areas, and roadways). These facilities do not have specific suppliers, but rather require a specialized concrete contractor with experience to form, place reinforcement and pour the required concrete.

The main advantage of a standard cast-in-place concrete facility is that they are highly customizable and are not constrained by any pre-made supplier products.

The main disadvantage of these cast-in-place facilities is the high costs associated with construction and increased construction time to allow for concrete curing. These SWMFs require a large quantity of concrete and reinforcement to construct, therefore cost of installation is highly dependent on the availability and price of steel and concrete at the time of construction. A significant amount of labour is required to construct forms and reinforcement, particularly for roof slabs of the facility. The implementation of this type of facility also requires specialized concrete contractors, whereas other non-conventional facilities (such as arch chambers or milk-crate systems) are constructed by civil contractors responsible for site servicing. The success of these facilities is highly dependent on the Contractor's ability to construct a high-quality concrete structure.

Another disadvantage to cast-in-place concrete facilities is construction complications associated with installation of these facilities during the winter months. Considerations for time delays, protection/insulation, and heating of the concrete should be considered when developing an accurate budget and schedule for the project. The GTA experiences temperatures below  $-5^{\circ}\text{C}$  and combined with snow and mixed precipitation for 3-4 months of the year, therefore restricting the window for suitable weather conditions for concrete construction. To reduce the impact of these conditions on construction, cast-in-place concrete facilities should be planned to commence in the spring and finish before the winter.

Maintenance of these facilities should be completed on an annual basis to monitor sediment accumulation and ensure adequate function of the outlet pipe. Visual inspection is completed through the access manholes provided at the upstream and downstream ends of the facility. A VacTruck and high-pressure flusher nozzle is required to complete maintenance. Confined space entry is not required to complete routine inspection or maintenance of these facilities, although entry with appropriately certified personnel is possible, if required. An upstream treatment unit can be incorporated into the storm network to provide pre-treatment of the incoming water and ultimately minimize sediment accumulation. Alternatively, a baffle wall can be included inside the tank to isolate any sediment and debris that enters the system and minimize the area requiring maintenance.

The estimated cost of a cast-in-place structure is approximately  $\$1000/\text{m}^3$  of installed storage, which may fluctuate depending on the depth of the facility. There are added benefits with this type of facility, namely, the structural integrity allowing it to be placed at all reasonable depths with various amounts of loading. Assessment of the site conditions, including expected loading for the land use and servicing depth constraints, is key when selecting if the cast-in-place system is required, or if a plastic prefabricated option would be better suited for the site.

With proper maintenance, these facilities are estimated to last 100-years before needing replacement. On a bi-annual basis, entry into the facility is recommended to inspect and perform maintenance as required, including sediment removal from any baffle walls constructed to limit sediment entry to the main facility. Every 5-years, the facility may require debris and sediment removal from the main facility by use of a VacTruck and flushing equipment. This lifecycle assessment also accounts for a confined spaced entry inspection and concrete repairs every 25-years to promote the longevity of these structures. The results indicate that these facility types are similar to modular concrete chambers and have the second highest capital cost investment resulting in the second highest lifecycle cost. This can be attributed to the high cost of the custom formwork and relatively high maintenance costs. Refer to **Appendix D** for the lifecycle assessment for each non-conventional facility.

## 5.6 Modular Form Cast-in-place Concrete

The implementation of modular form cast-in-place concrete facilities have been growing in popularity in recent years given their structural integrity, long lifecycle, and ease of installation. These systems typically include a plastic forming system that is used to replace traditional concrete forming systems required for concrete structures. The forms are entirely sacrificial and do not provide any structural support to the facility. Similar to modular plastic chambers, the modular concrete forms are lightweight and easily snap together, allowing for installation to be completed by hand. These concrete facilities can be designed to be water-tight by using a concrete base slab and waterproofing material or can promote infiltration by using a granular base for the facility. Modular form cast-in-place concrete facilities achieve high load bearing standards (HS-20) making them attractive for construction below roadways, parking lots, and industrial land uses. These facilities provide a large void ratio (over 95%) with lost capacity limited only as a result of the plastic forms located within the tank (i.e. no stone involved). At this time, the leader in the industry responsible for supplying these sacrificial forms is CUPOLEX Engineering Solutions Inc.

The main advantage of the modular form cast-in-place facility is the forming system provides significant time saving opportunities when compared to traditional forming systems. Installation of the modular forms is significantly faster than traditional forms, and no time is spent removing the forms following completion of the concrete pour as the modular forms are to remain in place during operation of the facility. An additional advantage of modular form cast-in-place facilities is the height of the system can be customized within the design range specified by the supplier, providing an advantage over competitors that have products manufactured at pre-made standard heights. There is also a structural design advantage achieved through the use of the dome shaped forms, and frequent column spacing that is not feasible with traditional forming systems.



Figure 6: Example Modular Form Cast-in-place Concrete

The main disadvantage of the cast-in-place concrete system is the increased construction time for concrete curing and rebar placement when compared to the plastic and precast SWMFs reviewed during this assessment. In addition, modular form cast-in-place facilities are a relatively new

technology, therefore additional training time and effort is required for contractors who have limited experience in installing these facilities.

Similar to traditional cast-in-place facilities, cold weather concrete work is a key limiting factor to the implementation of modular form cast-in-place systems. Cold weather conditions typically experience in Ontario during the winter months are not ideal for constructing a cast-in-place concrete facility, and heating and insulating considerations must be taken into account to ensure the proper curing of the poured concrete.

Maintenance of these facilities is the same as the traditional cast-in-place systems. Inspection should be completed on an annual basis to monitor sediment accumulation and ensure adequate function of the facility. Visual inspection is completed through the access manholes/inlets provided throughout the facility. A VacTruck and high-pressure flusher nozzle is required to complete maintenance. Confined space entry is not required to complete routine inspection or maintenance of these facilities, although entry with appropriately certified personnel is possible, if required. An upstream treatment unit can be incorporated into the storm network to provide pre-treatment of the incoming water and ultimately minimize sediment accumulation. Alternatively, a baffle wall can be included inside the tank to isolate any sediment and debris that enters the system and minimize the area requiring maintenance.

The estimated cost to install a modular form cast-in-place system is approximately \$250/m<sup>3</sup> of storage. It is important to note that the system requires the use of concrete and therefore the price is subject to variability with the price of concrete. This price is the lowest of the evaluated options but can have potential delays depending on weather conditions. Although this system can be the least capital cost alternative, it is not recommended to be constructed during winter months so timing should be considered when deciding on the preferred system.

With proper maintenance, modular form cast-in-place facilities are estimated to last 100-years before requiring replacement. This lifecycle assessment also accounts for a confined spaced entry inspection and concrete repairs every 25-years to promote the longevity of these structures. The results indicated that these facility types have the lowest capital cost investment and ultimately the lowest life-cycle costs. This can be attributed to the long-life expectancy of these facilities, when compared to the plastic competitors that are expected to require replacement within 100-years. Refer to **Appendix D** for the lifecycle assessment for each non-conventional facility.

## 6 Next Steps

Upon completion of the Background Report, it is recommended that a stakeholder engagement session be arranged to review and discuss the results of the report, in addition to providing opportunity for relevant internal and external stakeholders to provide feedback regarding their concerns associated with the current interim approach to accepting non-conventional SWMFs. Resilient will then initiate the next deliverable of the project, which consists of the review and evaluation of the City's existing sixteen (16) non-conventional SWMFs. These facilities will be assessed based on their performance and will include the documentation of the pros and cons of each non-conventional SWMF.

The preparation of these review documents will ultimately support the development of Stage 2 of the project, which includes the development of a formal City of Vaughan Policy, Procedure, Engineering and Park Design Criteria and Standard Drawings.

# **APPENDIX A**

## **Relevant Background Information**

No.	Name of Document	Author	Date	Location
1	Stormwater Management Planning and Design Manual	MECP	March 2003	<a href="https://www.ontario.ca/document/stormwater-management-planning-and-design-manual/stormwater-management-plan-and-swmp-design">https://www.ontario.ca/document/stormwater-management-planning-and-design-manual/stormwater-management-plan-and-swmp-design</a>
2	City of Vaughan Official Plan and Update	City of Vaughan	2010	<a href="https://www.vaughan.ca/projects/policy_planning_projects/official_planning_2010/Pages/default.aspx">https://www.vaughan.ca/projects/policy_planning_projects/official_planning_2010/Pages/default.aspx</a>
3	Low Impact Development Stormwater Management Planning and Design Guide	TRCA/CVC	2010	<a href="https://files.cvc.ca/cvc/uploads/2014/04/LID-SWM-Guide-v1.0_2010_1_no-appendices.pdf">https://files.cvc.ca/cvc/uploads/2014/04/LID-SWM-Guide-v1.0_2010_1_no-appendices.pdf</a>
4	Stormwater Management Criteria	TRCA	August 2012	<a href="https://trca.ca/conservation/stormwater-management/understand/swm-criteria-2012/download">https://trca.ca/conservation/stormwater-management/understand/swm-criteria-2012/download</a>
5	SWM Master Plan Class EA Study	City of Vaughan	2014	<a href="https://www.vaughan.ca/projects/planning_growth/SWMMP_EA/General%20Documents/Volume%201%20-%20SWM%20Master%20Plan%20Report_Final%20Sections%201%20-%207.pdf">https://www.vaughan.ca/projects/planning_growth/SWMMP_EA/General%20Documents/Volume%201%20-%20SWM%20Master%20Plan%20Report_Final%20Sections%201%20-%207.pdf</a>
6	Active Together Master Plan	City of Vaughan	2018	<a href="https://www.vaughan.ca/projects/community/active_together/General%20Documents/96-360%20Vaughan%20ATMP_Final_May%202018.pdf">https://www.vaughan.ca/projects/community/active_together/General%20Documents/96-360%20Vaughan%20ATMP_Final_May%202018.pdf</a>
7	Green Directions Vaughan	City of Vaughan	2019	<a href="https://www.vaughan.ca/cityhall/environmental_sustainability/GreenDirections/General%20Documents/2019Green%20Directions%20Vaughan%20FINAL.pdf">https://www.vaughan.ca/cityhall/environmental_sustainability/GreenDirections/General%20Documents/2019Green%20Directions%20Vaughan%20FINAL.pdf</a>
8	Engineering Design Criteria and Standard Drawings	City of Vaughan	December 2020	<a href="https://www.vaughan.ca/services/DesignCriteria/Pages/default.aspx">https://www.vaughan.ca/services/DesignCriteria/Pages/default.aspx</a>
9	Low Impact Development Stormwater Management Guidance Manual (Draft)	MECP	March 28, 2022	<a href="https://municipalclassea.ca/files/7_DRAFT_MOECC_LID%20SWM%20Manual.pdf">https://municipalclassea.ca/files/7_DRAFT_MOECC_LID%20SWM%20Manual.pdf</a>
10	Parkland Dedication Guideline	City of Vaughan	January 2022	<a href="https://www.vaughan.ca/cityhall/departments/pipd/pp/General%20Documents/Parkland%20Dedication%20Guideline_Jan_25_2022.pdf">https://www.vaughan.ca/cityhall/departments/pipd/pp/General%20Documents/Parkland%20Dedication%20Guideline_Jan_25_2022.pdf</a>
11	MECP's CLI-ECA for a Municipal Stormwater Management System, ECA Number: 011-S701	City of Vaughan	April 2022	<a href="https://prod-environmental-registry.s3.amazonaws.com/2021-03/Guide%20to%20Applying%20-%20First%20Consolidated%20Linear%20Infrastructure%20ECA.pdf">https://prod-environmental-registry.s3.amazonaws.com/2021-03/Guide%20to%20Applying%20-%20First%20Consolidated%20Linear%20Infrastructure%20ECA.pdf</a>
12	Sustainability Metrics Program	City of Vaughan, Markham, Brampton and Richmond Hill	May 2022	<a href="https://www.vaughan.ca/cityhall/departments/dp/Pages/Sustainability-Metrics.aspx">https://www.vaughan.ca/cityhall/departments/dp/Pages/Sustainability-Metrics.aspx</a>
13	Parkland Dedication By-Law 168-2022	City of Vaughan	June 2022	<a href="https://www.vaughan.ca/cityhall/departments/pipd/pp/General%20Documents/Draft%20Parkland%20Dedication%20By-law.pdf">https://www.vaughan.ca/cityhall/departments/pipd/pp/General%20Documents/Draft%20Parkland%20Dedication%20By-law.pdf</a>
14	Committee of the Whole (Working Session) Report on "City Approach on Non-Conventional Stormwater Infrastructure" and associated attachments	City of Vaughan	June 8, 2022	<a href="https://pub-vaughan.escribemeetings.com/filestream.ashx?DocumentId=108314">https://pub-vaughan.escribemeetings.com/filestream.ashx?DocumentId=108314</a>

# **APPENDIX B**

## **Correspondence with Municipalities**

**From:** [Muir, Robert](#)  
**To:** [Mark Bassingthwaite](#)  
**Cc:** [Saad Yousaf](#); [Andy Lee](#); [Rebecca Turbitt](#); [Samantha Archibald](#)  
**Subject:** RE: Non-Conventional SWMF Industry Scan  
**Date:** January 20, 2023 4:34:49 PM

---

Hi Mark,

We would be glad to support this and collaborate with our good neighbours in Vaughan.

We have a policy to recover the additional costs of alternative infrastructure (can include underground tanks), based on the differential over 50 years when compared to conventional/traditional servicing (e.g., with a wet pond) – this is called our Alternative Infrastructure Policy “AIP”.

Council has directed us to evaluate costs on a case by case basis. This June 13, 2022 Development Services Committee meeting Item 9.1 had the latest discussion (see DSC minutes and presentation by my Development Services colleagues that our department (Environment Services) supported): meeting minutes: <https://pub-markham.escribemeetings.com/Meeting.aspx?Id=d0d6f741-feb0-47f4-8c14-a744237ce3de&Agenda=PostMinutes&lang=English&Item=23&Tab=attachments>, presentation: <https://pub-markham.escribemeetings.com/filestream.ashx?DocumentId=55598>

While we do a case by case evaluation I do see that having a process, and some accepted standardized cost items and unit costs, would be worthwhile. As we have reached out externally for support on costing we have found sometimes, for some items, that we may have robust costs internally to rely on (as we are maintaining/operating many assets already and some of our programs are long-standing).

We have applied the AIP for 2 plastic underground arch systems (Fairtree subdivision) – that was the first time we developed and applied this policy and admittedly the cost estimation was approximate. We are refining these costs and filling gaps for the more important components on the lifecycle costs though. Last spring we did a comparison of open flood control storage vs a RC underground tank and selected the open storage based on cost and other considerations (federal grant for natural infrastructure was at risk with a tank). Over the past ½ year we are repeating the assessment for 2 underground RC tanks now for North Markham developments. While there is no agreement with the developer on the AIP amount yet, we’d be glad to share what we’ve estimated as appropriate costs from our perspective.

We don’t have a list of acceptable/unacceptable technologies, just general direction (June 2022 resolutions below) to ensure proposals are “appropriate”. Resolution 5 is to develop criteria (performance standards, as opposed to approved products) which should support our review process. Markham will be seeking outside support to develop those criteria but that has not been initiated yet (lead will be Development Services I expect).



## Recommendations (General)

4. Proposals for U/G tanks be reviewed on a case by case basis by Engineering and Planning Departments, in consultation with Environmental Services Department, to ensure that the proposed location is appropriate and the proposed type of U/G tank meets the City's specifications and criteria;
5. Engineering Department, in consultation with Planning and Environmental Services Departments, procures the services of a professional engineering consultant to assist in the development of appropriate criteria of acceptance for the consideration of U/G tanks, along with the acceptable uses above the facilities, along with the necessary specifications on U/G tank facilities;

20

I hope that helps share where we are and where we are going. Let me know if there are any questions and how we may fit in to your worthwhile endeavor.

Thanks so much Mark. Have a great weekend everyone !

Rob

Robert J. Muir, M.A.Sc., P.Eng.  
Manager, Stormwater | Environmental Services  
Community Services Commission | City of Markham  
101 Town Center Blvd., Markham, Ontario L3R 9W3  
Mobile: 416.991.2106 | Email: [rmuir@markham.ca](mailto:rmuir@markham.ca)  
[www.markham.ca](http://www.markham.ca)

---

**From:** Mark Bassingthwaite <[mbassingthwaite@resilientconsulting.ca](mailto:mbassingthwaite@resilientconsulting.ca)>

**Sent:** Friday, January 20, 2023 3:56 PM

**To:** Muir, Robert <[RMuir@markham.ca](mailto:RMuir@markham.ca)>

**Cc:** Saad Yousaf <[saad.yousaf@vaughan.ca](mailto:saad.yousaf@vaughan.ca)>; Andy Lee <[andy.lee@vaughan.ca](mailto:andy.lee@vaughan.ca)>; Rebecca Turbitt <[rturbitt@resilientconsulting.ca](mailto:rturbitt@resilientconsulting.ca)>; Samantha Archibald <[sarchibald@resilientconsulting.ca](mailto:sarchibald@resilientconsulting.ca)>

**Subject:** Non-Conventional SWMF Industry Scan

**CAUTION: This email originated from a source outside the City of Markham. DO NOT CLICK on any links or attachments, or reply unless you recognize the sender and know the content is safe.**

Good afternoon Rob,



Resilient Consulting is currently working with the City of Vaughan to develop a policy, procedure and relevant design criteria/standards for the approval of non-conventional municipal stormwater management facilities (SWMFs) associated with new development. The City, along with many neighbouring municipalities, is experiencing increased pressure to shift from requiring conventional municipal SWMFs (wet/dry ponds) towards accepting publicly owned and operated non-conventional SWMFs (underground storage tanks, superpipes, etc.), typically within new public park lands. The primary objectives in developing this framework for the City are:

- To provide a decision framework to determine where new non-conventional SWMFs may be accepted;
- To streamline the evaluation and acceptance process for non-conventional SWMFs;
- To provide a list of allowable stormwater management technologies/facility configurations that can be accepted as municipal facilities; and,
- To examine financial implications and lifecycle costs of implementing non-conventional SWMFs vs conventional facilities, and develop cost recovery mechanisms to be apply to subject developments to ensure implementation of non-conventional SWMFs are financially viable alternatives in the long-term.

At this time, approval of these non-conventional SWMFs has largely been completed on a case-by-case basis, taking into consideration feasibility, maintenance and operation requirements, and site specific design. An interim approach for accepting these non-conventional SWMFs was adopted by the City in 2022, however the goal is to have the new formal policy and procedures in place by the end of this year.

To support the development of this policy and procedure, we are reaching out to other municipalities to determine if any policies, procedures, design criteria or standards have been implemented within your municipality to address non-conventional SWMFs acceptance and implementation. Our goal in reviewing this information is to identify design approaches, considerations and data gaps within current non-conventional SWMFs practices which will be taken into consideration during the development of the City's formal policies and procedures. We would greatly appreciate if you could confirm if any of the above information is available within your municipality, and provide such information if possible.

If you are not the correct person to contact regarding this matter, could you please forward to the appropriate person?

Thank you for your assistance!

Mark

Mark Bassingthwaite, P.Eng.  
Resilient Consulting  
PO Box 643  
Whitby, ON L1N 5V3  
[mbassingthwaite@resilientconsulting.ca](mailto:mbassingthwaite@resilientconsulting.ca)  
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**From:** [Muneef Ahmad](#)  
**To:** [Mark Bassingthwaite](#)  
**Cc:** [Saad Yousaf](#); [Andy Lee](#); [Samantha Archibald](#); [Rebecca Turbitt](#); [Jennifer Whittard](#)  
**Subject:** RE: Non-Conventional SWMF Industry Scan  
**Date:** January 24, 2023 11:37:51 AM  
**Attachments:** [image001.png](#)  
[image002.png](#)

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Good morning Mark,

Appreciate you reaching out. I believe I'd be the appropriate person at Mississauga that could speak to this.

Having said that, there isn't much to report actually. From past discussions with staff at Vaughan, we understand this pressure has been escalating around the GTA (e.g. thought I heard this inquiry from Oshawa as well, but could be mistaken). One of our key discussion points was the necessary inter-departmental dialogue that would be required to confirm how potential parkland credits would be handled. The nature of development is somewhat different in Mississauga from other municipalities as we don't have a lot of remaining greenfield development. The lakefront development we have does not require water quantity control so water quality and runoff volume reduction is being addressed through ROW LID and end-of-pipe OGS. As a function of these factors mentioned here, we've not found ourselves pressured to consider similar proposals for SWMF's under parks although we have constructed them ourselves as flood mitigation retrofit projects.

This is not to say it hasn't been asked in some form. Developers have asked us to consider LID on our roads to address their SWM requirements. It never got beyond my level, that is the developer didn't escalate. We've been standing firm so far that public lands are to serve communal function and are retained for the potential for any retrofit opportunities that may exist beyond subject development lands. Consequently, we don't have any relevant policies, procedures or standards that come to mind which speak to this inquiry.

Hoping this message may be helpful in some way. Do let me know if you think we could provide any further support. I'd certainly be interested to hear how this journey progresses.

Thank you very much,



**Muneef Ahmad** P.Eng

Manager-Stormwater Projects & Approvals, Environmental Services Section

T 905-615-3200 ext.4793

[muneef.ahmad@mississauga.ca](mailto:muneef.ahmad@mississauga.ca)

City of Mississauga | Transportation & Works Department,  
Infrastructure Planning & Engineering Services



Follow us on Instagram [@saugastormwater](https://www.instagram.com/saugastormwater)

---

**From:** Mark Bassingthwaite <mbassingthwaite@resilientconsulting.ca>

**Sent:** Friday, January 20, 2023 3:58 PM

**To:** Muneef Ahmad <Muneef.Ahmad@mississauga.ca>

**Cc:** Saad Yousaf <saad.yousaf@vaughan.ca>; Andy Lee <andy.lee@vaughan.ca>; Samantha Archibald <sarchibald@resilientconsulting.ca>; Rebecca Turbitt <rturbitt@resilientconsulting.ca>; Jennifer Whittard <jwhittard@resilientconsulting.ca>

**Subject:** Non-Conventional SWMF Industry Scan

Good afternoon Muneef,

Resilient Consulting is currently working with the City of Vaughan to develop a policy, procedure and relevant design criteria/standards for the approval of non-conventional municipal stormwater management facilities (SWMFs) associated with new development. The City, along with many neighbouring municipalities, is experiencing increased pressure to shift from requiring conventional municipal SWMFs (wet/dry ponds) towards accepting publicly owned and operated non-conventional SWMFs (underground storage tanks, superpipes, etc.), typically within new public park lands. The primary objectives in developing this framework for the City are:

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- To streamline the evaluation and acceptance process for non-conventional SWMFs;
- To provide a list of allowable stormwater management technologies/facility configurations that can be accepted as municipal facilities; and,
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At this time, approval of these non-conventional SWMFs has largely been completed on a case-by-case basis, taking into consideration feasibility, maintenance and operation requirements, and site specific design. An interim approach for accepting these non-conventional SWMFs was adopted by the City in 2022, however the goal is to have the new formal policy and procedures in place by the end of this year.

To support the development of this policy and procedure, we are reaching out to other municipalities to determine if any policies, procedures, design criteria or standards have been implemented within your municipality to address non-conventional SWMFs acceptance and

implementation. Our goal in reviewing this information is to identify design approaches, considerations and data gaps within current non-conventional SWMFs practices which will be taken into consideration during the development of the City's formal policies and procedures. We would greatly appreciate if you could confirm if any of the above information is available within your municipality, and provide such information if possible.

If you are not the correct person to contact regarding this matter, could you please forward to the appropriate person?

Thank you for your assistance!

Mark

Mark Bassingthwaite, P.Eng.  
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## Rebecca Turbitt

---

**From:** Daniels, Hanna <Hanna.Daniels@hamilton.ca>  
**Sent:** February 9, 2023 10:16 AM  
**To:** Mark Bassingthwaite  
**Cc:** Saad Yousaf; Andy Lee; Rebecca Turbitt; Samantha Archibald; Jennifer Whittard  
**Subject:** RE: Non-Conventional SWMF Industry Scan

Good morning Mark,

First, I have to say kudos to your Team and Vaughan for this work! I would be so happy to contribute, but I think you're at least a step or two ahead of us. We are in the process of developing Green Standards and Guidelines for private infrastructure, and will eventually get to standards for public infrastructure.

Similar to Vaughan, the implementation of non-conventional SWMFs on public lands/as City assets are assessed on a case by case basis. To be honest, those cases are not common but we approve them quite often on private property where they will remain private assets. We are in the process of kicking off a neighbourhood servicing/urbanization project that will require municipally owned non-conventional SWMFs, but it's still in its infancy and will be precedent setting for Hamilton Water. If you're interested, I can keep you posted on that work.

Sorry I couldn't provide more on this, but please do keep me in the loop as you progress and I will share our Green Standards and Guidelines for private developments once they're finalized (which is soon I hope).

Take care for now!  
Hanna

### Hanna Daniels

Senior Project Manager, Water/Wastewater Planning (Acting)  
Public Works  
Hamilton Water, City of Hamilton  
(905) 546-2424 Ext.3421



---

**From:** Mark Bassingthwaite <mbassingthwaite@resilientconsulting.ca>  
**Sent:** Wednesday, February 8, 2023 9:59 AM  
**To:** Daniels, Hanna <Hanna.Daniels@hamilton.ca>  
**Cc:** Saad Yousaf <saad.yousaf@vaughan.ca>; Andy Lee <andy.lee@vaughan.ca>; Rebecca Turbitt <rturbitt@resilientconsulting.ca>; Samantha Archibald <sarchibald@resilientconsulting.ca>; Jennifer Whittard <jwhittard@resilientconsulting.ca>  
**Subject:** RE: Non-Conventional SWMF Industry Scan

Hi Hanna,

I am following up on the below email. We are hoping to obtain your feedback regarding the below in the next few days in order to finalize our background report.

Please let us know if you have any questions or are able to provide feedback.

Thank you,  
Mark

---

**From:** Mark Bassingthwaite  
**Sent:** January 20, 2023 3:59 PM  
**To:** Daniels, Hanna <[Hanna.Daniels@hamilton.ca](mailto:Hanna.Daniels@hamilton.ca)>  
**Cc:** Saad Yousof <[saad.yousaf@vaughan.ca](mailto:saad.yousaf@vaughan.ca)>; Andy Lee <[andy.lee@vaughan.ca](mailto:andy.lee@vaughan.ca)>; Rebecca Turbitt <[rturbitt@resilientconsulting.ca](mailto:rturbitt@resilientconsulting.ca)>; Samantha Archibald <[sarchibald@resilientconsulting.ca](mailto:sarchibald@resilientconsulting.ca)>; Jennifer Whittard <[jwhittard@resilientconsulting.ca](mailto:jwhittard@resilientconsulting.ca)>  
**Subject:** Non-Conventional SWMF Industry Scan

Good afternoon Hanna,

Resilient Consulting is currently working with the City of Vaughan to develop a policy, procedure and relevant design criteria/standards for the approval of non-conventional municipal stormwater management facilities (SWMFs) associated with new development. The City, along with many neighbouring municipalities, is experiencing increased pressure to shift from requiring conventional municipal SWMFs (wet/dry ponds) towards accepting publicly owned and operated non-conventional SWMFs (underground storage tanks, superpipes, etc.), typically within new public park lands. The primary objectives in developing this framework for the City are:

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If you are not the correct person to contact regarding this matter, could you please forward to the appropriate person?

Thank you for your assistance!

Mark

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## Rebecca Turbitt

---

**From:** Nick Gollan <Nick.Gollan@kitchener.ca>  
**Sent:** February 9, 2023 4:05 PM  
**To:** Mark Bassingthwaite  
**Cc:** Saad Yousaf; Andy Lee; Samantha Archibald; Rebecca Turbitt; Jennifer Whittard; Travis Pawlick; Leah Walter  
**Subject:** RE: Non-Conventional SWMF Industry Scan  
**Attachments:** MUN-UTI-2003 - Stormwater Management Policy.pdf

Hi Mark,

I'm sorry for not getting back to you sooner. I have included Leah and Travis from Kitchener, who oversee operations and maintenance as well as environmental compliance, respectively.

We are interested in this work, particularly the outcomes, as we continually evolve our processes and keep the door open for innovative practices where appropriate.

I can say there are essentially five pillars we currently rely on to make decisions:

- 1) Integrated Stormwater Management Master Plan and the associated policy documents (infiltration in the context of source protection planning, minimum volume criteria and targets, stormwater management fee)
  - Overarching policy attached; master plan report available upon request
- 2) [Consolidated Linear Infrastructure Environmental Compliance Approval](#) issued by the Province to the City for the entire stormwater network
- 3) 2021 [Development Manual](#)
- 4) Operations and Maintenance standard operating procedures and best management practices
- 5) [Stormwater Asset Management Plan](#)

We currently have a non-prescriptive approach for when to accept “non-conventional” stormwater management approaches – as long as the outcomes and objectives of the aforementioned strategies are achieved by what is being proposed.

It might be worth having a structured conversation/meeting to share ideas.

Thanks for reaching out; as I mentioned, we are interested in following this work, providing valuable input, and using some appropriate recommendations for Kitchener.

Have a great afternoon.

Kind Regards,

**Nick Gollan, C.E.T.** (he/him)

Manager, Planning and Programs | Sanitary and Stormwater | City of Kitchener  
519-741-2200 ext. 7422 | TTY 1-866-969-9994 | [nick.gollan@kitchener.ca](mailto:nick.gollan@kitchener.ca)

---

**From:** Mark Bassingthwaite <mbassingthwaite@resilientconsulting.ca>  
**Sent:** Wednesday, February 8, 2023 9:59 AM  
**To:** Nick Gollan <Nick.Gollan@kitchener.ca>  
**Cc:** Saad Yousaf <saad.yousaf@vaughan.ca>; Andy Lee <andy.lee@vaughan.ca>; Samantha Archibald <sarchibald@resilientconsulting.ca>; Rebecca Turbitt <rturbitt@resilientconsulting.ca>; Jennifer Whittard <jwhittard@resilientconsulting.ca>  
**Subject:** RE: Non-Conventional SWMF Industry Scan

You don't often get email from [mbassingthwaite@resilientconsulting.ca](mailto:mbassingthwaite@resilientconsulting.ca). [Learn why this is important](#)

Hi Nick,

I am following up on the below email. We are hoping to obtain your feedback regarding the below in the next few days in order to finalize our background report.

Please let us know if you have any questions or are able to provide feedback.

Thank you,  
Mark

Mark Bassingthwaite, P.Eng.  
Resilient Consulting  
PO Box 643  
Whitby, ON L1N 5V3  
[mbassingthwaite@resilientconsulting.ca](mailto:mbassingthwaite@resilientconsulting.ca)  
P: 289-943-4651  
[www.resilientconsulting.ca](http://www.resilientconsulting.ca)  
@resilientccorp

---

**From:** Mark Bassingthwaite  
**Sent:** January 20, 2023 4:21 PM  
**To:** [nick.gollan@kitchener.ca](mailto:nick.gollan@kitchener.ca)  
**Cc:** Saad Yousaf <[saad.yousaf@vaughan.ca](mailto:saad.yousaf@vaughan.ca)>; Andy Lee <[andy.lee@vaughan.ca](mailto:andy.lee@vaughan.ca)>; Samantha Archibald <[sarchibald@resilientconsulting.ca](mailto:sarchibald@resilientconsulting.ca)>; Rebecca Turbitt <[rturbitt@resilientconsulting.ca](mailto:rturbitt@resilientconsulting.ca)>; Jennifer Whittard <[jwhittard@resilientconsulting.ca](mailto:jwhittard@resilientconsulting.ca)>  
**Subject:** Non-Conventional SWMF Industry Scan

Good afternoon Nick,

Resilient Consulting is currently working with the City of Vaughan to develop a policy, procedure and relevant design criteria/standards for the approval of non-conventional municipal stormwater management facilities (SWMFs) associated with new development. The City, along with many neighbouring municipalities, is experiencing increased pressure to shift from requiring conventional municipal SWMFs (wet/dry ponds) towards accepting publicly owned and operated non-conventional SWMFs (underground storage tanks, superpipes, etc.), typically within new public park lands. The primary objectives in developing this framework for the City are:

- To provide a decision framework to determine where new non-conventional SWMFs may be accepted;

- To streamline the evaluation and acceptance process for non-conventional SWMFs;
- To provide a list of allowable stormwater management technologies/facility configurations that can be accepted as municipal facilities; and,
- To examine financial implications and lifecycle costs of implementing non-conventional SWMFs vs conventional facilities, and develop cost recovery mechanisms to be apply to subject developments to ensure implementation of non-conventional SWMFs are financially viable alternatives in the long-term.

At this time, approval of these non-conventional SWMFs has largely been completed on a case-by-case basis, taking into consideration feasibility, maintenance and operation requirements, and site specific design. An interim approach for accepting these non-conventional SWMFs was adopted by the City in 2022, however the goal is to have the new formal policy and procedures in place by the end of this year.

To support the development of this policy and procedure, we are reaching out to other municipalities to determine if any policies, procedures, design criteria or standards have been implemented within your municipality to address non-conventional SWMFs acceptance and implementation. Our goal in reviewing this information is to identify design approaches, considerations and data gaps within current non-conventional SWMFs practices which will be taken into consideration during the development of the City's formal policies and procedures. We would greatly appreciate if you could confirm if any of the above information is available within your municipality, and provide such information if possible.

If you are not the correct person to contact regarding this matter, could you please forward to the appropriate person?

Thank you for your assistance!

Mark

Mark Bassingthwaite, P.Eng.  
Resilient Consulting  
PO Box 643  
Whitby, ON L1N 5V3  
[mbassingthwaite@resilientconsulting.ca](mailto:mbassingthwaite@resilientconsulting.ca)  
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@resilientccorp

## Rebecca Turbitt

---

**From:** Malik, Umar <Umar.Malik@burlington.ca>  
**Sent:** February 8, 2023 1:19 PM  
**To:** Mark Bassingthwaite; Shahzad, Arif  
**Cc:** Saad Yousaf; Andy Lee; Samantha Archibald; Rebecca Turbitt; Jennifer Whittard  
**Subject:** RE: Non-Conventional SWMF Industry Scan  
**Attachments:** 2020-STORM DESIGN MANUAL.pdf

Good afternoon Mark,

I hope you are doing well.

Attached is the City of Burlington's most recent Stormwater Management Guidelines document. It was prepared in 2020. We follow this to review the development applications and approve stormwater management systems and infrastructure. I hope it will provide you with the information you are looking for.

Regards,

**Umar Malik, M.Eng., P.Eng.**

Stormwater Engineer

Engineering Services

P. 905-335-7600, ext 7426 | E. [umar.malik@burlington.ca](mailto:umar.malik@burlington.ca)

Address 426 Brant Street P.O. Box 5013, Burlington, Ontario, L7R 3Z6

City of Burlington | [www.burlington.ca](http://www.burlington.ca)

---

**From:** Mark Bassingthwaite <mbassingthwaite@resilientconsulting.ca>  
**Sent:** Wednesday, February 08, 2023 10:00 AM  
**To:** Shahzad, Arif <Arif.Shahzad@burlington.ca>; Malik, Umar <Umar.Malik@burlington.ca>  
**Cc:** Saad Yousaf <saad.yousaf@vaughan.ca>; Andy Lee <andy.lee@vaughan.ca>; Samantha Archibald <sarchibald@resilientconsulting.ca>; Rebecca Turbitt <rturbitt@resilientconsulting.ca>; Jennifer Whittard <jwhittard@resilientconsulting.ca>  
**Subject:** RE: Non-Conventional SWMF Industry Scan

**CAUTION:** This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Umar,

I am following up on the below email. We are hoping to obtain your feedback regarding the below in the next few days in order to finalize our background report.

Please let us know if you have any questions or are able to provide feedback.

Thank you,  
Mark

---

**From:** Shahzad, Arif <[Arif.Shahzad@burlington.ca](mailto:Arif.Shahzad@burlington.ca)>

**Sent:** January 23, 2023 9:51 AM

**To:** Mark Bassingthwaite <[mbassingthwaite@resilientconsulting.ca](mailto:mbassingthwaite@resilientconsulting.ca)>; Malik, Umar <[Umar.Malik@burlington.ca](mailto:Umar.Malik@burlington.ca)>

**Cc:** Saad Yousaf <[saad.yousaf@vaughan.ca](mailto:saad.yousaf@vaughan.ca)>; Andy Lee <[andy.lee@vaughan.ca](mailto:andy.lee@vaughan.ca)>; Samantha Archibald <[sarchibald@resilientconsulting.ca](mailto:sarchibald@resilientconsulting.ca)>; Rebecca Turbitt <[rturbitt@resilientconsulting.ca](mailto:rturbitt@resilientconsulting.ca)>; Jennifer Whittard <[jwhittard@resilientconsulting.ca](mailto:jwhittard@resilientconsulting.ca)>

**Subject:** RE: Non-Conventional SWMF Industry Scan

Hi Mark: I have copied Umar Malik on this email. He is more involved in the SWM reviews related to new developments and may be able to provide his insight on this matter.

Thank you,

**Arif Shahzad, M.Eng., P.Eng.**

Senior Project Manager - Stormwater Engineering  
Engineering Services

P. 905-335-7600 ext. 7486| E. [Arif.Shahzad@burlington.ca](mailto:Arif.Shahzad@burlington.ca)

Address 426 Brant Street P.O.Box 5013, Burlington, Ontario, L7R 3Z6

City of Burlington| [www.burlington.ca](http://www.burlington.ca)

 **Please consider the environment before printing this e-mail.**

---

**From:** Mark Bassingthwaite <[mbassingthwaite@resilientconsulting.ca](mailto:mbassingthwaite@resilientconsulting.ca)>

**Sent:** Friday, January 20, 2023 4:00 PM

**To:** Shahzad, Arif <[Arif.Shahzad@burlington.ca](mailto:Arif.Shahzad@burlington.ca)>

**Cc:** Saad Yousaf <[saad.yousaf@vaughan.ca](mailto:saad.yousaf@vaughan.ca)>; Andy Lee <[andy.lee@vaughan.ca](mailto:andy.lee@vaughan.ca)>; Samantha Archibald <[sarchibald@resilientconsulting.ca](mailto:sarchibald@resilientconsulting.ca)>; Rebecca Turbitt <[rturbitt@resilientconsulting.ca](mailto:rturbitt@resilientconsulting.ca)>; Jennifer Whittard <[jwhittard@resilientconsulting.ca](mailto:jwhittard@resilientconsulting.ca)>

**Subject:** Non-Conventional SWMF Industry Scan

**CAUTION:** This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good afternoon Arif,

Resilient Consulting is currently working with the City of Vaughan to develop a policy, procedure and relevant design criteria/standards for the approval of non-conventional municipal stormwater management facilities (SWMFs) associated with new development. The City, along with many neighbouring municipalities, is experiencing increased pressure to shift from requiring conventional municipal SWMFs (wet/dry ponds) towards accepting publicly owned and operated non-conventional SWMFs (underground storage tanks, superpipes, etc.), typically within new public park lands. The primary objectives in developing this framework for the City are:

- To provide a decision framework to determine where new non-conventional SWMFs may be accepted;
- To streamline the evaluation and acceptance process for non-conventional SWMFs;
- To provide a list of allowable stormwater management technologies/facility configurations that can be accepted as municipal facilities; and,
- To examine financial implications and lifecycle costs of implementing non-conventional SWMFs vs conventional facilities, and develop cost recovery mechanisms to be apply to subject developments to ensure implementation of non-conventional SWMFs are financially viable alternatives in the long-term.

At this time, approval of these non-conventional SWMFs has largely been completed on a case-by-case basis, taking into consideration feasibility, maintenance and operation requirements, and site specific design. An interim approach for accepting these non-conventional SWMFs was adopted by the City in 2022, however the goal is to have the new formal policy and procedures in place by the end of this year.

To support the development of this policy and procedure, we are reaching out to other municipalities to determine if any policies, procedures, design criteria or standards have been implemented within your municipality to address non-conventional SWMFs acceptance and implementation. Our goal in reviewing this information is to identify design approaches, considerations and data gaps within current non-conventional SWMFs practices which will be taken into consideration during the development of the City's formal policies and procedures. We would greatly appreciate if you could confirm if any of the above information is available within your municipality, and provide such information if possible.

If you are not the correct person to contact regarding this matter, could you please forward to the appropriate person?

Thank you for your assistance!

Mark




Mark Bassingthwaite, P.Eng.  
Resilient Consulting  
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Whitby, ON L1N 5V3  
[mbassingthwaite@resilientconsulting.ca](mailto:mbassingthwaite@resilientconsulting.ca)  
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@resilientccorp

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This message, including any attachments, is privileged and intended only for the addressee(s) named above. If you are not the intended recipient, you must not read, use or disseminate the information contained in this email/fax. If you have received this email/fax transmission in error, please notify the sender immediately by telephone, fax or email and permanently delete this email from your computer/shred this fax, including any attachments, without making a copy. Access to this email/fax by anyone else is unauthorized. Thank you.

# **APPENDIX C**

## **Summary Table of Non-Conventional SWMF**

No.	Option	Examples	Description	Advantages	Disadvantages	Capital Cost	Maintenance Procedures / Requirements	Rating	Photos
1	"Milk-Crate" System	<ul style="list-style-type: none"> <li>• <a href="#">Atlantis Matrix Tank.</a></li> <li>• <a href="#">Brentwood StormTank Module.</a></li> <li>• <a href="#">EcoRain Tanks.</a></li> <li>• <a href="#">Ausdrain EnviroModule 2.</a></li> <li>• <a href="#">Stormcon Greenstorm Module.</a></li> </ul>	<ul style="list-style-type: none"> <li>• Stackable, modular HDPE chambers in a shape similar to milk crates, designed to detain and/or retain stormwater on site.</li> <li>• Can be configured to infiltrate or lined to limit infiltration.</li> <li>• Sections of the crates snap together and are assembled on site.</li> </ul>	<ul style="list-style-type: none"> <li>• Higher void ratio compared to arch chambers, exceeding 95% in most cases.</li> <li>• Easy installation.</li> <li>• Suitable for use in parks and other land uses with little to no vehicular traffic.</li> <li>• Easily packaged and shipped.</li> <li>• Opportunity for infiltration.</li> </ul>	<ul style="list-style-type: none"> <li>• Groundwater elevation will be a constraint.</li> <li>• More expensive than arch chambers.</li> <li>• Not as commonplace as arch chambers in this area, contractors may not be as familiar.</li> <li>• Cannot enter main system. Therefore no opportunities for maintenance without excavation.</li> <li>• Little opportunity to provide quality control.</li> </ul>	<ul style="list-style-type: none"> <li>• Roughly \$500 per m<sup>3</sup> of storage installed.</li> </ul>	<ul style="list-style-type: none"> <li>• Semi-annual inspection for first years and after every large event.</li> <li>• Annual visual inspection through inspection ports.</li> <li>• CSE not required for inspection – entry not possible.</li> <li>• Use for VacTruck/pump to remove sediment and flush until discharge is clean.</li> <li>• Can incorporate a pre-treatment element to capture most sediment/debris in an easier to maintain location.</li> </ul>	Functional ★★★★★ Suitability ★★★★★ Capital Cost ★★★★★ Maintenance ★★ <b>Overall</b> ★★★★★	
2	Plastic Arch Chambers	<ul style="list-style-type: none"> <li>• <a href="#">Terrafix Triton System</a></li> <li>• <a href="#">StormTech Chambers</a></li> <li>• <a href="#">Soleno Hydrostor and Stormchamber Systems</a></li> <li>• <a href="#">Cultec chambers</a></li> </ul>	<ul style="list-style-type: none"> <li>• Modular arch plastic chambers designed to detain and/or retain stormwater on site.</li> <li>• Can be configured to infiltrate or lined to limit infiltration.</li> <li>• Sections of the chambers snap together and are assembled on site.</li> <li>• Some products allow for "stacked" configuration.</li> </ul>	<ul style="list-style-type: none"> <li>• More void space for storage compared to subsurface infiltration trenches.</li> <li>• Header row for quality control can be easily incorporated into design.</li> <li>• Suitable for use in parks and other land uses with little to no vehicular traffic.</li> <li>• Easy shipping and installation.</li> <li>• Generally cheaper than milk crate systems.</li> <li>• Access ports can be installed for maintenance and flushing.</li> <li>• Opportunity for infiltration.</li> </ul>	<ul style="list-style-type: none"> <li>• Groundwater elevation will be a constraint.</li> <li>• Less void space than milk crate system.</li> <li>• Maintenance can be difficult, especially for smaller units. Larger units can be entered.</li> </ul>	<ul style="list-style-type: none"> <li>• Roughly \$250 per m<sup>3</sup> of storage installed.</li> </ul>	<ul style="list-style-type: none"> <li>• Semi-annual inspection for first year.</li> <li>• Annual visual inspection through inspection ports.</li> <li>• CSE not required for inspection – entry possible on larger structures.</li> <li>• Vacuum/JetVac Process used to remove sediment upon accum. of 3".</li> <li>• CSE required if maintenance on chambers required.</li> <li>• Selection of vacuum/JetVac truck and nozzles key for proper maintenance.</li> <li>• Can incorporate a pre-treatment element.</li> </ul>	Functional ★★★★★ Suitability ★★★★★ Capital Cost ★★★★★ Maintenance ★★★★★ <b>Overall</b> ★★★★★	
3	Modular Concrete Chambers	<ul style="list-style-type: none"> <li>• <a href="#">StormTrap System</a></li> <li>• <a href="#">Contech Terre Arch and CON/SPAN Detention System</a></li> <li>• <a href="#">DECAST I-Storm</a></li> </ul>	<ul style="list-style-type: none"> <li>• Precast, modular concrete storage units installed underground, typically under parking lots.</li> <li>• Sections of arches are pieced together, can be grouted if necessary.</li> <li>• Can be configured to infiltrate or lined to limit infiltration.</li> </ul>	<ul style="list-style-type: none"> <li>• Higher load bearing capacity compared to plastic systems.</li> <li>• Large void spaces.</li> <li>• Opportunity for infiltration.</li> <li>• Can easily configure conc. chambers for long flow path for quality benefits.</li> <li>• Can achieve larger depths compared to plastic, meaning smaller facility footprints.</li> <li>• Many units are designed for confined space entry, which allows for more flexible maintenance /rehabilitation.</li> <li>• Simple shipping and installation, though more expensive than its plastic counterparts.</li> </ul>	<ul style="list-style-type: none"> <li>• Load bearing capacity of the concrete structure largely wasted on parks when little to no vehicular traffic is expected.</li> <li>• Shipment more difficult than plastic storage systems.</li> <li>• More expensive than plastic storage systems.</li> </ul>	<ul style="list-style-type: none"> <li>• Expensive. Up to \$1,000 per m<sup>3</sup>.</li> </ul>	<ul style="list-style-type: none"> <li>• Minimum annual inspection or after large storm events / rainy seasons. CSE not required for inspection.</li> <li>• Maintenance required when sediment occupies 15% of design volume.</li> <li>• Use of VacTruck to remove sediment.</li> <li>• CSE not required for maintenance – entry is possible if needed.</li> <li>• Maintenance frequency typically 5-10 years for dry vaults and 3-5 years for wet vault.</li> </ul>	Functional ★★★★★ Suitability ★★★★★ Capital Cost ★★ Maintenance ★★★★★ <b>Overall</b> ★★★★★	



No.	Option	Examples	Description	Advantages	Disadvantages	Capital Cost	Maintenance Procedures / Requirements	Rating	Photos
4	Superpipes	<ul style="list-style-type: none"> <li><a href="#">Solenio Solflo and Weholite Detention Systems.</a></li> <li><a href="#">ADS N-12 Pipe Retention System.</a></li> <li><a href="#">Contech CMP and Duromaxx Systems</a></li> </ul>	<ul style="list-style-type: none"> <li>Large diameter pipes connected to form a large, underground storage chamber.</li> <li>Typically made from CMP or HDPE pipes.</li> </ul>	<ul style="list-style-type: none"> <li>No constraints from groundwater.</li> <li>Easy installation.</li> <li>Suitable for use in parks and other land uses.</li> <li>Pipes will be large enough for confined space entry, which allows for more flexible maintenance/rehabilitation.</li> <li>Simple shipping and installation.</li> </ul>	<ul style="list-style-type: none"> <li>Marginal water quality benefits.</li> <li>High material costs.</li> <li>No opportunity for infiltration.</li> </ul>	<ul style="list-style-type: none"> <li>Large diameter superpipes can be expensive.</li> <li>Approximately \$2000/m<sup>3</sup> installed</li> </ul>	<ul style="list-style-type: none"> <li>Access manhole provided at upstream and downstream ends for inspection/maintenance.</li> <li>CSE not required for maintenance – entry possible if needed.</li> <li>Flushing and sediment removal required using high pressure water and Hydrovac Truck.</li> <li>Can incorporate a pre-treatment element to capture most sediment/debris in an easier to maintain location.</li> </ul>	Functional ★★★★★ Suitability ★★★★★ Capital Cost ★ Maintenance ★★★★★ <b>Overall</b> ★★★	
5	Cast-in-place Concrete Facility	<ul style="list-style-type: none"> <li>Concrete suppliers / general contractor</li> </ul>	<ul style="list-style-type: none"> <li>Construct a large cast-in-place concrete, underground storage facility.</li> </ul>	<ul style="list-style-type: none"> <li>Large void spaces.</li> <li>Can incorporate baffles to quality control benefits.</li> <li>No constraints from groundwater.</li> <li>Easily accessible with confined space entry, which allows for more flexible maintenance/rehabilitation.</li> <li>Can achieve larger depths compared to other options, meaning smaller facility footprints.</li> </ul>	<ul style="list-style-type: none"> <li>No opportunity for infiltration.</li> <li>Very expensive.</li> <li>More complex construction.</li> </ul>	<ul style="list-style-type: none"> <li>Expensive. Up to \$1,000 per m<sup>3</sup>.</li> <li>During winter months, may require heating when pouring.</li> </ul>	<ul style="list-style-type: none"> <li>Access manhole provided for inspection and maintenance.</li> <li>Measure sediment depth using rod on an annual basis.</li> <li>Hydrovac Truck used to remove sediment/debris.</li> <li>CSE not required for maintenance – entry possible if needed.</li> </ul>	Functional ★★★★★★ Suitability ★ Capital Cost ★★ Maintenance ★★★★★ <b>Overall</b> ★★	
6	Modular Form Cast-in-place Concrete	<ul style="list-style-type: none"> <li><a href="#">Cupolex Rialto Stormwater Tanks</a></li> </ul>	<ul style="list-style-type: none"> <li>Cast-in-place concrete tank system designed to detain and/or retain runoff.</li> <li>Plastic forming network snaps together on-site, concrete poured over top to fill forms.</li> </ul>	<ul style="list-style-type: none"> <li>Large void ratio at 98%.</li> <li>Minimal cover required, ideal for park applications with minimal vehicular traffic.</li> <li>Opportunity for infiltration.</li> <li>Simple shipping and placing form.</li> <li>Easily accessible with confined space entry, which allows for more flexible maintenance/rehabilitation.</li> </ul>	<ul style="list-style-type: none"> <li>Groundwater elevation may be a constraint.</li> <li>Increased construction time for concrete to cure.</li> <li>Cannot enter main storage. Future concrete/crack repairs could be done by machine, similar to sewer repairs.</li> <li>Not as commonplace as arch chambers in this area, contractors may not be as familiar.</li> </ul>	<ul style="list-style-type: none"> <li>Roughly \$250 per m<sup>3</sup> of storage installed.</li> </ul>	<ul style="list-style-type: none"> <li>Access hatches provided to perform inspections and maintenance.</li> <li>Inspection well provided in tank to allow for ease of inspection.</li> <li>Maintenance required when sediment depth reaches 3".</li> <li>Sediment removed using high pressure water and Hydrovac truck.</li> <li>Yearly visual inspection, maintenance every 9-years.</li> <li>Can incorporate a pre-treatment element.</li> <li>CSE not required for regular maintenance – entry possible if needed.</li> </ul>	Functional ★★★★★★ Suitability ★★★★★ Capital Cost ★★★★★ Maintenance ★★★★★ <b>Overall</b> ★★★★★	

# **APPENDIX D**

## **Lifecycle Assessment**



Gallanough Park SWMF Class EA Addendum

Client: City of Vaughan  
Project No: 2020-010  
Date: 10-Feb-23  
Prepared By: RJT

**Cost Estimates**

*Capital Cost (Assuming 10,000 m<sup>3</sup> facility)*

Alt. #	Description	Cost
1	Milk-Crate	\$5,000,000.00
2	Plastic Arch	\$2,500,000.00
3	Modular Conc. Chamber	\$10,000,000.00
4	Super Pipe	\$20,000,000.00
5	Cast-in-place Conc.	\$10,000,000.00
6	Modular Form Cast-in-place	\$2,500,000.00

*Equivalent Annual Maintenance Cost*

Alt. #	Description	Cost
1	Milk-Crate	\$13,000.00
2	Plastic Arch	\$13,000.00
3	Modular Conc. Chamber	\$21,320.00
4	Super Pipe	\$13,000.00
5	Cast-in-place Conc.	\$21,320.00
6	Modular Form Cast-in-place	\$21,320.00

*Maintenance Cost Net Present Value Analysis (100 years, 3%)*

Alt. #	Description	Cost
1	Milk-Crate*	\$902,465.99
2	Plastic Arch*	\$902,465.99
3	Modular Conc. Chamber	\$512,469.96
4	Super Pipe	\$332,198.29
5	Cast-in-place Conc.	\$512,469.96
6	Modular Form Cast-in-place	\$512,469.96

\* Includes replacement fee at 50 years

*Total Value Analysis*

Alt. #	Description	Cost
1	Milk-Crate	\$5,902,465.99
2	Plastic Arch	\$3,402,465.99
3	Modular Conc. Chamber	\$10,512,469.96
4	Super Pipe	\$20,332,198.29
5	Cast-in-place Conc.	\$10,512,469.96
6	Modular Form Cast-in-place	\$3,012,469.96







# THE CORPORATION OF THE CITY OF VAUGHAN

## CORPORATE POLICY

**POLICY TITLE:** MUNICIPAL NON-CONVENTIONAL STORMWATER MANAGEMENT FACILITIES POLICY

**POLICY NO.:** 08.C.03

<b>Section:</b>	Development & Planning		
<b>Effective Date:</b>	June 5, 2024	<b>Date of Last Review:</b>	Click or tap to enter a date.
<b>Approval Authority:</b>	<b>Policy Owner:</b>		
Council	DCM, Infrastructure Development		

### POLICY STATEMENT

It is the policy of the City of Vaughan to consider and approve Non-Conventional stormwater management facilities (SWMFs), where feasible and where they will contribute positively to the surrounding community. This policy establishes the framework for evaluating, accepting, and implementing Non-Conventional SWMFs on land to become municipally owned.

### PURPOSE

The purpose of this policy is to ensure a clear and transparent decision-making process for evaluation and implementation of Non-Conventional SWMFs. The intention of this policy is to provide City of Vaughan staff and the development community with a transparent process for evaluation, acceptance, and implementation of these facilities.

The objectives of this policy are to:

- Provide guiding principles to define when Non-Conventional SWMFs may be considered for integration with blocks that have already defined land uses (e.g., parks and rights-of-way), and when Non-Conventional SWMFs should not be used.
- Define the applicable criteria for acceptance and implementation of these facilities, and development of standard drawings and a list of City accepted technologies.
- Provide a cost-recovery formula to establish an Offset Fee for the increased inspections, operations and maintenance costs of Non-Conventional SWMFs (including any pre-treatment facilities).

## SCOPE

This policy applies to all parties involved in the planning, design, acceptance, implementation, operations, maintenance, rehabilitation, and replacement (where applicable) of Non-Conventional SWMFs intended for municipal ownership and operation, assumed through land development processes. This policy shall be revisited on an as-needed basis.

The approval of these facilities and acceptance of the Offset Fee is the responsibility of the City Manager of the City of Vaughan and/or their delegate acting on their behalf.

## LEGISLATIVE REQUIREMENTS

1. Planning Act, R.S.O. 1990, c P.13
2. Places to Grow Act, 2005, S.O. 2003, c. 13
3. Bill 23, More Homes Built Faster Act, 2022, S.O, 2022, c. 21
4. Ontario Water Resources Act, R.S.O. 1990, c. O.40
5. Clean Water Act, 2006, S.O. 2006, c. 22
6. Environmental Protection Act. R.S.O. 1990, c. E.19

## DEFINITIONS

1. **City:** The Corporation of the City of Vaughan, including all departments, employees, and administrative divisions.
2. **Clean Condition:** Without visual accumulation of sediment or debris.
3. **CLI-ECA:** The City of Vaughan's Consolidated Linear Infrastructure Environmental Compliance Approval.
4. **Conventional SWMF:** End-of-pipe stormwater management practice limited to a wet or dry Stormwater Management Pond to provide water quantity control and/or quality treatment, and/or erosion control of tributary area runoff.
5. **Council:** Council of the City of Vaughan.
6. **Development Application (or Development):** Proposal put forward by a Landowner to the City for review and decision, pertaining to a change of land use, construction of a new building, or the creation of a parcel of land, as governed under the *Planning Act*. The applicable types of Development Applications which only apply to this procedure are Block Plan, Secondary Plan, Official Plan Amendment, Zoning By-law Amendment, and Draft Plan of Subdivision.
7. **Greenfield Development:** The development of a property, site, or area on undeveloped land in an urban or rural area.
8. **Infill Development:** The development or redevelopment of a property, site, or area with a new development at a higher density or building height than is currently permitted by the Official Plan within an area that is already developed.
9. **Initial Submission:** The stage of a Development Application process whereby an applicant submits documents for the first time to the City for staff review.

10. **Landowner:** The party who owns the property or is the representative of the party who owns the land.
11. **LID:** Low Impact Development
12. **Manufactured Treatment Devices (MTD's):** Devices used to target the treatment and removal of pollutants from stormwater runoff from development sites, to achieve regulatory water quality objectives.
13. **Non-Conventional SWMF:** All end-of-pipe stormwater management facilities outside the Conventional SWMF, as defined above, that are designed to provide quantity control and extended detention.
14. **O&M:** Operations and Maintenance
15. **Offset Fee:** A one-time cost contribution to be paid by the Landowner to the City for the implementation of the Non-Conventional SWMF to compensate for any increase in cost when compared to a conventional SWMF, calculated by a formula. Is the differential between the calculated fees for a Conventional and Non-Conventional Facility.  $\text{Inspection/Monitoring Costs} + \text{Maintenance Costs} = \text{offset fee}$ .
16. **OGS:** Oil-Grit Separator. Is considered a facility that will provide pre-treatment prior to runoff entering the Non-Conventional SWMF.
17. **PEO:** Professional Engineers Ontario
18. **Permanent Pool:** A volume of water that is retained within a conventional SWM facility to provide for the settling and dilution of sediments and pollutants; provides water quality control.
19. **Pre-treatment:** Treatment of stormwater upstream of/prior to entering the quantity control/extended detention area of a Non-Conventional SWMF or a Conventional SWMF via a single or multiple measures in series. Facilities do not require confined space entry for maintenance. This single or treatment train provides the removal of sediment.
20. **Qualified Engineer:** Licensed Professional Engineer, licensed to practice in Ontario, and competent to practice in the specified engineering discipline.
21. **Qualified Engineer of Record:** Licensed Professional Engineer who has sealed any submitted drawings or reports.
22. **ROW:** Right-of-way
23. **Sealed:** Documents that have been stamped using the rubber stamp/impression of the rubber stamp issued by Professional Engineers Ontario (PEO) to all license holders. The seal (or stamp) identifies the Engineer taking personal and professional responsibility for the content of the documents. The seal must be signed and dated by the license holder.
24. **SWMF:** Stormwater Management Facility
25. **Treatment Train Approach:** Providing stormwater treatment first, at the lot level, then in conveyance, followed by "end-of pipe" (where stormwater gets discharged). A treatment train is required to meet the multiple objectives of water balance, water quality, erosion control and flood control in an overall stormwater management strategy.



## **POLICY**

### **General Considerations**

- 1.1. Non-Conventional SWMFs may be considered for both greenfield and intensification/infill developments if sufficient design information is provided to show that implementation of a Non-Conventional SWMF is possible, and a Non-Conventional SWMF Justification Report is provided to and reviewed by the Development Planning Department and the Development Engineering Department and accepted by the City.
- 1.2. A Stormwater Management solution applying the use of a Non-Conventional SWMF, as required through the development process, may be accepted by the City if:
  - 1.2.1. The draft plan has been developed and accepted by the City with the intent that a Non-Conventional SWMF will be implemented as the stormwater solution.
  - 1.2.2. Justification is presented within a Non-Conventional SWMF Justification Report, prepared by a licensed Qualified Engineer, which provides sufficient evidence a Non-Conventional SWMF can be implemented while remaining in conformance with applicable City of Vaughan, York Region and Provincial legislation, by-laws (as amended or superseded), policies, and design criteria. The Non-Conventional SWMF Justification Report shall: i) identify the conceptual design of the proposed Non-Conventional SWMF; ii) In accordance with the considerations of the Vaughan Official plan, document the social, environmental, and economic benefits, impacts, and long-term O&M requirements and high-level maintenance costs of the proposed facility; and iii) be submitted to the City for review and acceptance at the Initial Submission of the development process, which may include but is not limited to a Master Environmental Servicing Plan, Block Plan, Secondary Plan, Official Plan Amendment/Zoning By-law Amendment or Draft Plan of Subdivision. The City may retain a qualified external Peer Reviewer to assist with technical review as needed, to be paid for by the Landowner.
  - 1.2.3. The proposed Non-Conventional SWMF, as an end of pipe control, is a part of a treatment train approach which will include source and conveyance controls in series through MTD's and/or LID techniques, where applicable.
  - 1.2.4. The proposed Non-Conventional SWMF adheres to the City's list of accepted SWM practices and technologies outlined in the Non-

Conventional SWMF Criteria, as well as MECP's Stormwater Management Planning and Design guidelines, outlined in the Design Criteria for Non-Conventional SWMFs.

- 1.2.5. Frequent inspections and maintenance (such as sediment removal from pre-treatment facilities and visual inspections) shall not require confined space entry and shall use conventional equipment such as vacuum and flushing trucks.
  - 1.2.6. Major concrete rehabilitation (25 year interval) and structural inspection is permitted to require confined space entry.
  - 1.2.7. The proposed Non-Conventional SWMF (both plastic and concrete) adheres to applicable CSA standards and/or be approved by the City's Products and Standards committee, as outlined in the Non-Conventional SWMF Criteria.
- 1.3. Non-Conventional SWMFs may be considered within parkland, open space, and proposed road ROW's if supporting documentation can demonstrate that the proposed facility is not in conflict with proposed surface features and functions, underground services and utilities, and planned park programming. Frequent inspections, operations and maintenance of the proposed facility shall not conflict with planned City programming, operations, and maintenance. Traffic considerations for application in road ROWs shall be provided in the Operations & Maintenance manual. Major maintenance, rehabilitation or replacement of Non-Conventional SWMFs, resulting in disruption to park programming, operations and maintenance, shall be on an infrequent basis. All the above must be confirmed for detailed design acceptance and municipal assumption.

## **2. Technical Considerations**

- 2.1. A Stormwater Management solution applying use of Non-Conventional SWMF may be accepted by the City if:
  - 2.1.1. The proposed solution, defined in the detailed Stormwater Management Report, achieves all required water quantity, water quality, water balance and erosion control targets for the development, as defined by City of Vaughan's Engineering Design Criteria and Standards and the 2003 MECP Stormwater Management Planning and Design Manual. The proposed Non-Conventional SWMF shall only be used for water quantity control and extended detention and shall not be used for water balance controls. Water quality treatment may be provided by separator/isolator rows, and any additional measures required to

meet 80% TSS removal. Pre-treatment is required to meet those criteria, as described below in Section 2.1.2. Water quality and water balance shall be achieved by employing a Treatment Train approach.

- 2.1.2. The proposed solution provides pre-treatment of captured runoff through a Treatment Train approach that may include the use of LID measures, OGS Units, pre-treatment cells (such as isolator/separator rows), or other acceptable technology by the City prior to discharging to the Non-Conventional SWMF. Stormwater shall be pre-treated to a minimum of 80% total suspended solids (TSS) removal, using a particle size distribution defined by City standards, prior to discharging to the quantity control portion of the Non-Conventional SWMF. All pre-treatment measures shall be easily maintained by the City and must not require confined space entry (except for major maintenance events as detailed in Section 1.2.5). The implementation of treatment measures to achieve water quality targets for the subject development located downstream of the Non-Conventional SWMF will not be accepted.
- 2.1.3. Non-Conventional SWMFs that provide infiltration will not be accepted.
- 2.1.4. Non-Conventional SWMFs with a permanent pool will not be accepted.
- 2.1.5. All Non-Conventional SWMFs shall be gravity draining. Any Non-Conventional SWMFs requiring pumping to drain the facility will not be accepted.
- 2.1.6. An O&M Manual for the proposed Non-Conventional SWMF and any pre-treatment systems is required for review and acceptance by the City. The O&M Manual shall include at a minimum, the requirements for inspections and monitoring, sediment loading estimates, and an Offset Fee assessment for the proposed stormwater infrastructure, all of which shall be completed based on a 50 year time period, according to the City's Procedures, Standards and Design Criteria for Non-Conventional SWMFs. The manual shall also specify staging areas for anticipated maintenance operations to ensure park accessibility and right-of-way functionality during maintenance.
- 2.1.7. The design of Non-Conventional SWMF must adhere to the requirements outlined in the City's Criteria and Standards, CLI-ECA, other applicable Environmental Compliance Approvals, or other legislative requirements.

### **3. Parkland Considerations**

- 3.1. Provisions of parkland credits for dual-use park/Non-Conventional SWMF may be considered through application of criteria contained within the Parkland Dedication By-Law 168-2022, as amended, or superseded.
- 3.2. To receive Parkland Dedication, the design of dual-use park block with proposed park space above a Non-Conventional SWMF must meet the following requirements.
  - 3.2.1. The SWMF does not impact the City's ability and obligation for park space or ability to include active and/or passive programming of the park space. The SWMF must not inhibit the park from being permit-ready for any programming.
  - 3.2.2. The SWMF does not prohibit or restrict public programming.
  - 3.2.3. The park space must be open and accessible to the public at all times and will not be out of use as a result of frequent operations and maintenance of the Non-Conventional SWMF, with the exception of areas identified for staging requirements, as described in the Operations and Maintenance Manual.
  - 3.2.4. The park space and SWMF is designed, developed, and maintained to City standards.
  - 3.2.5. The park space meets applicable criteria in the City's Official Plan and Secondary Plan.
  - 3.2.6. The design of the Non-Conventional SWMF will be based on Park needs (e.g., the location of the SWMF), stormwater management criteria and City of Vaughan Engineering design criteria.
  - 3.2.7. As a result of the Non-Conventional SWMF design, lands will not be encumbered with poor drainage, erosion issues or extreme slopes.
  - 3.2.8. Design SWMF, landscaping and park feature placements are to consider future rehabilitation/major maintenance requirements to minimize mature tree removal in the future.
- 3.3. The design of Non-Conventional SWMFs located below proposed parkland blocks shall comply with the technical design requirements defined in the City's Park's Design Criteria and Criteria and Standards for Non-Conventional SWMFs, including but not limited to, minimum facility cover depth, static and dynamic loading conditions, and access requirements.

- 3.4. To be accepted as programmed park space, frequent inspections, operations, and maintenance of the proposed SWMF shall not conflict with, prohibit, or restrict planned park programming, operations, and maintenance. Major maintenance, rehabilitation, or replacement of Non-Conventional SWMFs, resulting in disruption to park programming, operations, and maintenance, may be accepted on an infrequent (>25 year period) basis. Accessibility to the park by the public will not be infringed on by frequent operations and maintenance of the Non-Conventional SWMF, with the exception of staging areas identified in the Operations and Maintenance Manual.
- 3.5. To be accepted for parkland use, the Landowner shall agree to design and construct the park to the City's satisfaction and the Landowner shall enter into a developer build agreement with the City to design and build the Park as per Developer Build Parks Policy, No. 07.2.05.

#### **4. Right-of-way Considerations**

- 4.1. Implementation of Non-Conventional SWMFs within a ROW will only be accepted if they do not require modification of the total ROW width in order to accommodate the facility, and the Non-Conventional SWMF infrastructure is capable of fitting within the right-of-way without infringing on other existing or planned services within the ROW.
- 4.2. The design of Non-Conventional SWMFs located within City of Vaughan ROW shall achieve the required separation and offsets from other municipal infrastructure and servicing, as outlined in the MECP Stormwater Management Planning and Design Manual, March 2003, City of Vaughan's most current Engineering Design Criteria, Standard Drawings, and Criteria for Non-Conventional SWMFs.
- 4.3. Major operations, maintenance, or rehabilitation to the Non-Conventional SWMF, resulting in disruption to traffic may be accepted on an infrequent basis (>25 year period). In anticipation of major maintenance, traffic considerations and construction staging considerations, using current traffic considerations, shall be included in the Operations & Maintenance Manual for the facility.
- 4.4. The design shall consider placement of inspection ports/access manholes/clean out access locations that will minimize impacts to traffic during frequent inspections and maintenance.
- 4.5. To be accepted by the City, the Landowner agrees to design and construct the facility within the ROW to the satisfaction of the City.

## **5. Operations and Maintenance**

- 5.1. An O&M Manual for all components of the Stormwater Management solution that are to be assumed by the City, including pre-treatment units or measures and the Non-Conventional SWMF, shall be provided to the City for review and acceptance. The O&M Manual shall detail the required operation and maintenance procedures/efforts, required equipment/certifications, maintenance frequency on all related infrastructure, and associated costs. In addition, the O&M Manual shall include the following:
- 5.1.1. Maintenance frequency of the facility, which shall be provided based on the sediment loading rate from the development.
  - 5.1.2. Detailed breakdown of the procedure, effort, equipment, and cost for each inspection / maintenance item for the entire Stormwater Management Solution.
  - 5.1.3. A list of equipment required to complete the required inspection and maintenance, as well as any required certifications for staff completing both frequent and infrequent inspections and maintenance (e.g. confined space entry).
  - 5.1.4. Maintenance procedures with a high disruption level to the public must be highlighted during the preparation of this manual and considered during the development of the annual O&M costs.
  - 5.1.5. Frequent inspections and maintenance (such as sediment removal from pre-treatment) must not require confined space entry; must be completed using conventional equipment such as vacuum and flushing trucks; shall minimize disruption to the public; and shall be completed from hard surfaces to eliminate restoration costs.
  - 5.1.6. Major maintenance or rehabilitation of Non-Conventional SWMFs requiring confined space entry and resulting in disruption to park programming, operations, and maintenance, shall be assumed to be on a basis of >25 year period for concrete SWMFs, and > 50 year period for plastic SWMFs. The O&M Manual shall delineate the area of disturbance.
  - 5.1.7. Any additional information requested by the City related to operations, maintenance, rehabilitation, and replacement is to be provided by the Landowner.

5.2. Any additional cost to the City of the proposed Non-Conventional SWMF over a 50 year time period shall be determined with consideration of the following:

5.2.1. The Landowner shall provide a 25-year Manufacturer's extended warranty on SWMFs. In the event that a warranty cannot be provided, the City will require the Landowner to provide a rehabilitation fee as a component of the maintenance cost in the Offset Fee.

5.2.2. Costs are to be compared (Inspection/Monitoring Costs + Maintenance Costs= the offset fee costs) between a Conventional SWMF of equal volume and/or function to assess any increased costs associated with implementation of the Non-Conventional SWMF (if applicable).

5.3. The Landowner shall demonstrate, through the completion of a minimum three-year monitoring and reporting program to the satisfaction of the City and Schedule E of the CLI-ECA policy, that the Non-Conventional SWMF and all other stormwater management systems, are functioning as designed.

## **6. Cost-Recovery**

6.1. As part of assumption, the Landowner shall provide a one-time cost contribution in present value to the City for the implementation of the Non-Conventional SWMF to compensate for any increase in cost when compared to a Conventional SWMF. The value of the cost contribution shall be calculated using the City's standardized financial formula.

6.1.1. This Offset Fee will be calculated as a component of the O&M Manual for acceptance by the City.

6.1.2. The Maintenance cost component of the Offset Fee shall include costs associated with removing and/or replacing SWM infrastructure, park assets and removal/replacement of trees located above underground facilities that require repair and/or replacement.

6.1.3. The Landowner shall provide a 25-year Manufacturer's extended warranty on SWMFs. In the event that a warranty cannot be provided, the City will require the Landowner to provide a rehabilitation fee as a component of the maintenance cost in the Offset Fee. Any such warranty must be provided in a legally binding agreement acceptable to the City solicitor.

**7. Assumption**

- 7.1. Prior to assumption, the Landowner shall prove, using CCTV, or other methods to the satisfaction of the City, structural stability of the Non-Conventional SWMF including a certificate of conformance from a Qualified Engineer; confirmation that the Non-Conventional SWMF (including all pre-treatment facilities) is provided to the City in clean condition (no sediment or debris is present); is operating as designed; has been maintained as specified by the O&M Manual; and has met all other requirements for assumption per the Subdivision Agreement (if applicable).
- 7.2. Prior to assumption, the Landowner shall provide record drawings for the Non-Conventional SWMF, sealed by the Qualified Engineer of Record, certifying that construction was carried out as per the accepted design. Record drawings are to be in accordance with the PEO's guidance document on Preparing As Built and Record Documents.
- 7.3. If the City is responsible for implementation of the Park features after assumption, the Landowner shall be responsible for any additional costs, outside of standard development charges, caused by the Non-Conventional SWMF. Costs shall be documented through the cost estimate prepared for park construction, and will be compared to the approved Park's budget, per the Developer Build Parks Policy No. 07.2.05.

**ADMINISTRATION**

*Administered by the Office of the City Clerk.*

<b>Review Schedule:</b>	SELECT If other, specify here	<b>Next Review Date:</b>	Click or tap to enter a date.
<b>Related Policy(ies):</b>			
<b>Related By-Law(s):</b>			
<b>Procedural Document:</b>			

**Revision History**

<b>Date:</b>	<b>Description:</b>
Click or tap to enter a date.	



**POLICY TITLE:** MUNICIPAL NON-CONVENTIONAL STORMWATER MANAGEMENT FACILITIES  
**POLICY NO.:** 08.C.03.

Click or tap to enter a date.	
Click or tap to enter a date.	



# THE CORPORATION OF THE CITY OF VAUGHAN

## CORPORATE PROCEDURE

**PROCEDURE TITLE: MUNICIPAL NON-CONVENTIONAL STORMWATER MANAGEMENT FACILITIES ACCEPTANCE PROCEDURE**

**PROCEDURE NO.:** Procedure number to be assigned by Policy Coordinator.

<b>Section:</b>	Development & Planning		
<b>Effective Date:</b>	June 5, 2024	<b>Date of Last Review:</b>	Click or tap to enter a date.
<b>Policy Parent:</b> MUNICIPAL NON-CONVENTIONAL STORMWATER MANAGEMENT FACILITIES POLICY		<b>Procedure Owner:</b> DCM, Infrastructure Development	

### PROCEDURE STATEMENT

The City's acceptance process for Non-Conventional Stormwater Management facilities (SWMFs) is a comprehensive guidance document that can be used by City Staff for the review, acceptance, and implementation of Non-Conventional SWMFs within land intended for municipal ownership, in support of development planning applications.

### PURPOSE

The purpose of this procedure is to outline requirements for the evaluation, approval, and feasible implementation of Non-Conventional SWMFs.

The objectives of this procedure are to:

1. Establish a transparent process for internal and external stakeholders to evaluate acceptable Non-Conventional SWMF requests.
2. Establish a method for financial impact assessments, to accurately determine an Offset Fee.
3. Ensure the long-term financial viability of Non-Conventional Stormwater Management Facilities.
4. Define where Non-Conventional SWMFs can and cannot be integrated within City parkland and right-of-ways.

**PROCEDURE TITLE: MUNICIPAL NON-CONVENTIONAL STORMWATER MANAGEMENT FACILITIES ACCEPTANCE PROCEDURE**

**PROCEDURE NO.:** Procedure number assigned by Policy Coordinator.

**SCOPE**

This procedure document replaces the existing guidance found in the *City Interim Approach on Non-Conventional Stormwater Management Infrastructure* procedure.

This procedure applies to internal and external stakeholders involved in the design, acceptance, implementation, and operation/maintenance of municipally owned and operated Non-Conventional SWMFs, assumed through the land development process for Development Applications which may include but are not limited to Block Plan, Secondary Plan, Official Plan Amendment, Zoning By-law Amendment, and Draft Plan of Subdivision.

The acceptance of these facilities and confirmation of the Offset Fee(s) is the responsibility of the City Manager of the City of Vaughan and/or their delegate acting on their behalf.

**LEGISLATIVE REQUIREMENTS**

1. Planning Act, R.S.O. 1990, c P.13
2. Places to Grow Act, 2005, S.O. 2003, c. 13
3. Bill 23, More Homes Built Faster Act, 2022, S.O, 2022, c. 21
4. Ontario Water Resources Act, R.S.O. 1990, c. O.40
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**DEFINITIONS**

**1. Definitions**

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5. **Council:** Council of the City of Vaughan.
6. **Development Application (or Development)** Proposal put forward by a Landowner to the City for review and decision, pertaining to a change of land

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use, construction of a new building, or the creation of a parcel of land, as governed under the *Planning Act*. The applicable types of Development Applications which apply to this procedure may include but are not limited to Block Plan, Secondary Plan, Official Plan Amendment, Zoning By-law Amendment, and Draft Plan of Subdivision.

7. **Greenfield Development:** The development of a property, site, or area on undeveloped land in an urban or rural area.
8. **Infill Development:** The development or redevelopment of a vacant, underutilized, or previously developed property, site, or area where the surrounding area is already developed.
9. **Infrastructure:** Physical assets developed and used by a municipality to support its social, cultural, and economic services (Source: FCM, 2017)
10. **Initial Submission:** The stage of a Development Application process whereby an applicant submits documents for the first time to the City for staff review.
11. **Landowner:** The party who owns the property or is the representative of the party who owns the land.
12. **LID:** Low Impact Development.
13. **Offset Fee:** A one-time cost contribution to be paid by the Landowner to the City for the implementation of the Non-Conventional SWMF to compensate for any increase in cost when compared to a conventional SWMF, calculated by a formula. Is the differential between the calculated fees for a Conventional and Non-Conventional Facility.  $\text{Inspection/Monitoring Costs} + \text{Maintenance Costs} = \text{offset fee}$ .
- 14.
15. **Manufactured Treatment Devices (MTD's):** Devices used to target the treatment and removal of pollutants from stormwater runoff from development sites, to achieve regulatory water quality objectives.
16. **Non-Conventional SWMF:** All end-of-pipe stormwater management facilities outside the Conventional SWMF, as defined above, that are designed to provide quantity control and extended detention.
17. **O&M:** Operations and Maintenance.
18. **OGS:** Oil-Grit Separator.
19. **Park Recreation Facility:** A public facility designed and equipped for the conduct of sports, leisure activities, and other customary and usual recreation activities, used by the public for active and/or passive recreation.
20. **Permanent Pool:** A volume of water that is retained within a conventional SWMF to provide for the settling and dilution of sediments and pollutants; provides water quality control.
21. **Pre-treatment:** treatment of stormwater upstream of/prior to entering the quantity control area of a Non-Conventional SWMF or a Conventional SWMF via a single or multiple measures in series. Facilities do not require confined space entry for maintenance. This single or treatment train provides the removal of large to micro size debris.

**PROCEDURE TITLE: MUNICIPAL NON-CONVENTIONAL STORMWATER MANAGEMENT FACILITIES ACCEPTANCE PROCEDURE**

**PROCEDURE NO.:** Procedure number assigned by Policy Coordinator.

- 22. **Qualified Engineer:** Licensed Professional Engineer, licensed to practice in Ontario, and competent to practice in a specified engineering discipline.
- 23. **Qualified Engineer of Record:** Licensed Professional Engineer who has sealed any submitted drawings or reports.
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- 25. **Sealed:** Documents that have been stamped using the rubber stamp/impression of the rubber stamp issued by Professional Engineers Ontario (PEO) to all license holders. The seal (or stamp) identifies the Engineer taking personal and professional responsibility for the content of the documents. The seal must be signed and dated by the license holder.
- 26. **SWMF:** Stormwater Management Facility.
- 27. **Treatment Train Approach:** Providing stormwater treatment first, at the lot level, then in conveyance, followed by “end-of pipe” (where stormwater gets discharged). A treatment train is required to meet the multiple objectives of water balance, water quality, erosion control and flood control in an overall stormwater management strategy.

**PROCEDURE**

The following steps provide comprehensive guidance and information on the review of acceptable Non-Conventional SWMFs proposed as part of a Development Application. Refer to appended flow charts and checklists for each step for additional guidance on this process.

**1. Procedural Steps**

**1.1. Step 1: Initial Submission**

1.1.1. Non-Conventional SWMF Justification Report

- i. A Non-Conventional SWMF Justification Report must be submitted by the Landowner to the City for review and acceptance, at the initial stages of the development process, which may include but is not limited to the submission of a Master Environmental Servicing Plan, Block Plan, Secondary Plan, or Official Plan Amendment/Zoning By-law Amendment. However, if possible, intent to use a Non-Conventional SWMF should be identified as soon as possible in the development process, prior to any formal submissions as listed above, during any pre-consultation with the City. The Non-Conventional SWMF Justification Report must clearly demonstrate the benefits to the City of implementing a Non-Conventional SWMF solution compared to a Conventional SWMF. The Non-Conventional SWMF Justification Report must be reviewed and accepted by the City prior to proceeding to a

**PROCEDURE TITLE: MUNICIPAL NON-CONVENTIONAL STORMWATER MANAGEMENT FACILITIES ACCEPTANCE PROCEDURE**

**PROCEDURE NO.:** Procedure number assigned by Policy Coordinator.

Technical Report to the Committee of the Whole.

- ii. At the discretion of the Director of Development Engineering of the City of Vaughan and/or their delegate acting on their behalf, submitted Non-Conventional SWMF Justification Reports may be subject to an external peer review, with costs to be paid for by the Landowner. The option to undertake an external peer review will be on a case-by-case basis, based on factors including but not limited to the size and type of the Non-Conventional SWMF, the complexity of its incorporation into the proposed development, and availability of City resources.
- iii. The Non-Conventional SWMF Justification Report must, at minimum, meet the following requirements:
  - Must be prepared and sealed by a Qualified Engineer.
  - Must provide sufficient evidence that the Non-Conventional SWMF can be implemented to meet SWM criteria for the site, without infringing on other design criteria or site-specific constraints.
  - Must identify the conceptual design of the proposed Non-Conventional SWMF, including but not limited to, the proposed location and functions over the Non-Conventional SWMF, surface grades, sub-surface infrastructure elevations, outlet elevations, potential impacts to natural heritage, and overview of existing underground utilities.
  - Must provide overview of existing site-specific conditions such as soil type and group, existing topography, and any known groundwater concerns or historical groundwater data, to be later confirmed through Geotechnical and/or Hydrogeological Investigations to ensure adequate subsurface conditions for the conceptual design.
  - Must document the social, environmental, and economic benefits of implementing a Non-Conventional SWMF within the development, as well as any potential impacts to above ground programming; and,
  - Must provide a high-level overview of the anticipated operation and maintenance (O&M) requirements to maintain the facility, including the equipment required.

1.1.2. Financial Compensation Consideration

To be included in the Non-Conventional SWMF Justification Report, an estimate of the required financial compensation for implementation of the Non-Conventional SWMF must be prepared for the City, including the estimated Offset fee costs of the facility over a 50-year period.

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Refer to **Appendix 1** for the Initial Submission Flow Chart and Checklist for additional guidance.

**1.2. Step 2: Draft Plan of Subdivision Submission / Functional Servicing**

**1.2.1. Coordination of Park Requirements**

- i. Where Non-Conventional SWMFs are proposed under a park, coordination is required between the City of Vaughan Parks Infrastructure Planning and Development Department and the Landowner to identify the required features and programming that should be protected for during design of the Non-Conventional SWMF. This coordination should take place prior to City staff bringing forward a Technical Report to the Committee of the Whole for the proposed Draft Plan of Subdivision.
- ii. The City of Vaughan Parks Infrastructure Planning and Development shall provide direction to the Landowner as to the needs of the park block, based on location, demographic, and the size of the proposed park block, as guided by existing City Policies, any relevant Master Plans, and existing City Guidelines.
- iii. The Landowner is to reference the City's Parks Design Criteria for Non-Conventional SWMF to ensure all applicable criteria are achieved, including but not limited to, minimum cover depth, offset distances, static and dynamic loads, access requirements, etc.
- iv. Prior to City Staff bringing forward a Technical Report to the Committee of the Whole, the Landowner is required to indicate if their intentions are to achieve full Parkland Dedication of the parkland location above the Non-Conventional SWMF. The Landowner must illustrate; that all criteria to achieve full Parkland Dedication is met and in accordance with By-Law-168-2022, as amended or superseded; that park criteria can be met based on the proposed park block; and that the proposed Non-Conventional SWMF, inclusive of maintenance, will not impact the intended function of the park and park recreation facilities.
- v. Parkland dedication credit continues to be determined and issued by the Parks Infrastructure Planning and Development Department through By-Law-168-2022, as amended or superseded.

**1.2.2. City Acceptance of Stormwater Management Strategy & Non-Conventional SWMF Technology**

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**PROCEDURE NO.:** Procedure number assigned by Policy Coordinator.

- i. At this stage, the Landowner shall determine whether the proposed Non-Conventional SWMF meets the requirements of Schedule D in the CLI-ECA and is therefore qualified for pre-authorization.
- ii. Review of the overall SWM scheme for the proposed development is to be completed in accordance with the City of Vaughan's standard engineering review process, ensuring that all control targets are achieved by the stormwater infrastructure proposed for the development. The Functional Servicing Report (FSR) submitted to the City for review and acceptance shall include details on the Non-Conventional SWMF proposed for the development site. City Staff shall be in general agreement with the overall SWM scheme prior to bringing a Technical Report to the Committee of the Whole for the Draft Plan of Subdivision.
- iii. The City shall consider the proposed Non-Conventional SWMF to achieve only the water quantity control and erosion control through extended detention targets for the development. Water quality control and water balance targets must be achieved by SWM infrastructure provided independently from and upstream of the Non-Conventional SWMF for the overall SWM scheme to be accepted by the City. An 'Isolator' and 'Separator' Row type pre-treatment at the inlet of the Non-Conventional SWMF, in combination with other upstream pre-treatment for water quality controls, is acceptable to achieve the required 80% TSS removal.
- iv. A Treatment Train approach upstream of a Non-Conventional SWMF for quality control is required prior to discharging runoff into the Non-Conventional SWMF. The implementation of treatment measures located downstream of the Non-Conventional SWMF will not be accepted by the City.
- v. Captured runoff must be pre-treated to a minimum 80% TSS removal prior to entering the main cell of the Non-Conventional SWMF, using the ETV Canada particle size distribution, or as defined by current City standards, whichever is more stringent. All pre-treatment measures must be easily maintained by City staff and must not require confined space entry. Infrastructure considered acceptable by the City for treatment train implementation include:
  - LID Measures;
  - OGS Units; and



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- Pre-Treatment Cells (isolator/separator row).
- vi. The following information related to the proposed Non-Conventional SWMF must be included within the FSR / Draft Plan of Subdivision Submission for the City's review and acceptance prior to City staff bringing forward a Technical Report to the Committee of the Whole:
- Location of the proposed facility, including justification for the selected location (i.e., in parkland, open space, ROW, etc.). The FSR must confirm that there is no conflict with proposed surface features, underground utilities, and planned park programming;
  - Confirmation that the proposed volume of the facility meets the defined targets for water quantity control and extended detention, including preliminary design of any proposed flow control structure(s);
  - Confirmation that the proposed water quality control strategy adheres to the specified TSS removal rate prior to runoff entering the quantity control component of the Non-Conventional SWMF;
  - Confirmation that all retention requirements are satisfied independently from and upstream of the Non-Conventional SWMF;
  - Supporting Geotechnical and Hydrogeological Investigations to demonstrate adequate conditions for the Non-Conventional SWMF and the upstream Treatment Train facilities.
  - Preliminary grading above the facility, and facility access locations to confirm adequate O&M access for City crews;
  - All supporting calculations and/or models for the design of the Non-Conventional SWMF; and
  - Outlet controls must be of gravity type. No pumping will be accepted.
- vii. A list of City of Vaughan Acceptable Technologies for Non-Conventional SWMFs is available within the City of Vaughan Engineering Standard Criteria for Non-Conventional SWMF. The proposed technology for the subject development must adhere to these standards.
- viii. The Landowner is to indicate their intent to provide a 25 year Manufacturer's extended warranty on concrete SWMFs. In the event that a warranty cannot be provided, the City will require the Landowner to provide a rehabilitation cost as a component of the Maintenance cost. Acceptance of these warranty plans is solely at the discretion of the City and requires a legal agreement between the City and the supplier, to the satisfaction of the City Solicitor.
- ix. Once the proposed Non-Conventional SWMF technology category has been accepted by Council through the acceptance of Technical Report

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to the Committee of the Whole for the associated Draft Plan of Subdivision or Site Plan (i.e., Cast-In-Place Modular System, Superpipes, Plastic Arch Chamber etc.), substitution for an alternative form of technology will not be accepted. A proposed alternative to the accepted Non-Conventional SWMF technology category may require a full Draft Plan of Subdivision or Site Plan resubmission.

Refer to **Appendix 2** for the Draft Plan of Subdivision / FSR Flow Chart and Checklist for additional guidance.

**1.3. Step 3: Detailed Design / Perfect Submission**

**1.3.1. City Acceptance of SWM Report and Design Drawings**

- i. Review of the detailed design of the Non-Conventional SWMF and all pre-treatment water quality measures are to be completed in accordance with the City of Vaughan's standard engineering review process. Following Draft Plan of Subdivision Approval, a detailed Stormwater Management (SWM) Report is to be submitted by the Landowner to the Development Engineering Department for review and acceptance, in addition to detailed design and shop drawings for the proposed facility prior to the execution of a Subdivision Agreement or other Development related Agreement, as applicable.
- ii. The replacement or substitution of Non-Conventional SWMF technology shall not be acceptable during review of the detailed design submission. Should the Landowner propose a replacement or substitution for the proposed Non-Conventional SWMF technology or product, they may be required to resubmit a new Draft Plan of Subdivision for acceptance by Council.
- iii. Landscape Plans and Park Design Drawings completed by a Landscape Architect shall be provided to the Parks Department for review and acceptance.

**1.3.2. City Acceptance of Operations & Maintenance Manual for the Non-Conventional SWMF**

- i. An Operation and Maintenance (O&M) Manual detailing the requirements of the Non-Conventional SWMF and any pre-treatment systems that are to be assumed by the City shall be submitted by the Landowner to City of Vaughan Development Engineering Department for circulation to Environmental Services Department for review and

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acceptance prior to the execution of a Subdivision or other Development related Agreement, as applicable.

- ii. The O&M Manual shall detail the required operation and maintenance procedures and efforts, required equipment and certifications, the maintenance frequency on all related infrastructure, and associated costs to perform the required operation and maintenance.
- iii. Maintenance procedures with a high disruption level (i.e., Multi-day operations, earth moving, ground disturbance, traffic impacts, etc.) to the public must be highlighted during the preparation of this manual and considered during development of the annual O&M costs.
- iv. Frequent/regular inspection and maintenance of the Non-Conventional SWMF and pre-treatment infrastructure must not have confined space entry and shall be maintained with conventional equipment such as vacuum and flushing trucks.
- v. The O&M Manual is to be prepared in accordance with the requirements of the Consolidated Linear Infrastructure Environmental Compliance Approval, or other applicable Environmental Compliance Approvals, including development and implementation of a monitoring program.
- vi. At a minimum, the O&M Manual shall include:
  - Maintenance procedure and frequency of the facility and treatment devices based on the sediment loading rate from the development.
  - Detailed breakdown of the time, equipment required and estimated cost for each inspection/maintenance item with cost, as well as any expected disruption to surface features.
  - O&M costs that include provisions for the current Regulations based removal and disposal of sediment from the Non-Conventional SWMF.

**1.3.3. Offset Fee Calculation & City Acceptance**

- i. An Offset Fee calculation for the proposed Non-Conventional SWMF and all pre-treatment facilities is to be completed by the Landowner based on a 50 year time period. The Offset Fee calculation can be included within the O&M Manual or provided as a separate standalone document. City staff must review and accept the Offset Fee calculation prior to the registration of the Subdivision Agreement or other Development related Agreement, as applicable.

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- ii. The Offset Fee and calculation will be finalized and provided by the Landowner to the Development Engineering Department, prior to executing the Subdivision and/or other Development related Agreement, as applicable.
- iii. The Offset Fee is included to quantify the operation and maintenance costs associated with the Non-Conventional SWMF over a time period of 50 years.
- iv. The values provided must be based on the current value of the works included in the Fee.
- v. The Offset Fee is calculated to determine the additional costs for operations and maintenance of the Non-Conventional SWMF (and all pre-treatment facilities) compared to a conventional SWMF of equivalent function.
- vi. The Offset Fee will be composed of two components, calculated separately, over the specified time period of 50 years:
  - Inspection/monitoring costs; and
  - Maintenance costs.
- vii. The inspection (with no confined space entry or CCTV) and monitoring cost considered in the final financial compensation formula shall be the delta between the number of inspections required for a Conventional SWMF and number of inspections required for the Non-Conventional SWMF over the specified time period of 50 years. Each pre-treatment device shall be considered to require an individual inspection. Inspection and Monitoring costs include the fees associated with routine visual inspection including inspection reporting and debris removal. The frequency of this inspection is to be completed at the frequency specified in the approved O&M manual based on recommendations from the facility supplier and/or design engineer.
- viii. Maintenance costs include the fees associated with sediment removal and disposal from all components of the Non-Conventional SWMF (i.e., including OGS units, isolator/separator rows). The routine maintenance cost fee is based on the differential in cost between a Conventional and Non-Conventional SWMF for sediment removal. Sediment loading for the specified period is to be calculated based on sediment loading rates specified for various levels of imperviousness as described in the MECF

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2003 Stormwater Management Planning and Design Manual.

- ix. Maintenance costs shall also consider unit rates for various inspections (i.e., Confined space entry) and maintenance procedures which are available within the City of Vaughan Engineering Standard Criteria for Non-Conventional SWMF. The maintenance cost is to include provisions for rehabilitation or replacement, where applicable, of key SWM features (i.e., treatment train approach).
- x. The assumption for the lifecycle of all SWMF's is to be 100 years. Should the 100-year lifecycle requirement not be met, additional approval will need to be provided including rehabilitation costs.
- xi. A 25-year Manufacturer's extended warranty from the product supplier of SWMFs shall be required and supported by a legally binding agreement to the satisfaction of the City Solicitor.
- xii. Should a 25-year Manufacturer's extended warranty not be provided for the SWMFs, rehabilitation costs shall be provided.
- xiii. Rehabilitation and replacement costs are to consider increased cost of material and construction, disposal of the facility to be replaced, and other site-specific considerations such as available staging area, re-use of material, tree/vegetation replacement, ground cover (i.e., softscape compared to hardscape) and environmental conditions.
- xiv. If the contributing drainage area to a superpipe Non-Conventional SWMF is <2ha, rehabilitation and replacement costs are not required for the SWMF regardless of an extended warranty. Operations and maintenance costs will still apply.
- xv. The unit rates used in the calculation of the Offset Fee shall be subject to annual indexing per Statistics Canada Non-Residential Construction price index, beginning from the year of the Non-Conventional SWMF Design Criteria. Adjustments to the unit rates may be made by the City through updates of the Design Criteria to maintain accuracy to current typical industry rates.
- xvi. Sealed engineering opinions by a Qualified Engineer for the service life of the Non-Conventional SWMF are to be provided.
- xvii. Parkland dedication credit is assessed independently of the Offset Fee and continues to be determined and issued by the Parks Department through By-Law-0168-2022, as amended or superseded.

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Refer to **Appendix 3** for the Detailed Design / Perfect Submission Review Flow Chart and Checklist for additional guidance.

**1.4. Step 4: City Assumption**

- 1.4.1. Steps for assumption should be read in conjunction with the Subdivision Agreement. The City may request any other details and information required by the Director of Development Engineering.
- 1.4.2. Prior to assumption of a Non-Conventional SWMF, the City requires that all infrastructure to be assumed is operating as designed and has been maintained as specified by the O&M Manual. To ensure this, the following information is required to be submitted to the Development Inspection and Grading Division of Development Engineering Department:
  - i. The Landowner shall ensure that all stormwater infrastructure to be assumed by the City is in clean, functioning condition using methods to the satisfaction of the City.
  - ii. The Landowner shall provide records of inspection and maintenance reports demonstrating procedures as outlined in the approved O&M Manual.
  - iii. The Landowner shall provide record drawings for the Non-Conventional SWMF, sealed by the Qualified Engineer of Record, certifying that construction was carried out as per the approved design.
  - iv. The Landowner shall demonstrate, through completion of a monitoring program to the satisfaction of the City, that the Non-Conventional SWMF and all associated stormwater management system(s) are functioning as designed.
  - v. Once Assumption takes place, sign off on the Director Notification form of the CLI-ECA is required to be completed and submitted to the MECF.

Refer to **Appendix 4** for the Assumption Stage Review Flow Chart and Checklist for additional guidance.

**2. Related Policies**

Non-Conventional SWMF Policy No. 08.C.03  
City of Vaughan Parkland Dedication By-Law 168-2022, June 2022

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**PROCEDURE NO.:** Procedure number assigned by Policy Coordinator.

**3. References**

MECP Stormwater Management Planning and Design Manual, March 2003  
 MECP Low Impact Development Stormwater Management Guidance Manual (Draft), January 2022  
 City of Vaughan Official Plan 2010 and Update  
 CVC/ TRCA Low Impact Development Stormwater Management Planning and Design Guide, 2010  
 TRCA Stormwater Management Criteria, August 2012  
 City of Vaughan Engineering Design Criteria & Standard Drawings, 2020  
 City of Vaughan Parkland Dedication Guideline, January 2022  
 City of Vaughan MECP’s CLI-ECA for Municipal Stormwater Management Systems, April 2022  
 City of Vaughan Committee of the Whole (Working Session) Report, June 2022

**ADMINISTRATION**

*Administered by the Office of the City Clerk.*

<b>Review Schedule:</b>	SELECT If other, specify here	<b>Next Review Date:</b>	Click or tap to enter a date.
<b>Related Procedure(s):</b>			
<b>Related By-Law(s):</b>			
<b>Supporting Documentation:</b>			
<b>Revision History</b>			
<b>Date:</b>	<b>Description:</b>		
Click or tap to enter a date.			
Click or tap to enter a date.			

# 1.0 Appendix: Review Checklists

Each reviewer from the Development Engineering, Planning and Park’s Department shall assess the submission for completeness based on the items outlined below (where applicable for each department). Each reviewer shall provide their sign off that all relevant material has been provided and is deemed acceptable. If only one Department is responsible for the approval of a listed item, the required Department approval is indicated per the below key.

- = Approval required for Sign-Off
- = Approval not required for Sign-Off, review recommended.
- = Approval not required for Sign-Off.

## Initial Submission/Justification Report

	Development Engineering	Planning	Parks	Environmental Services
<b>General</b>				
Prepared and sealed by a Qualified Professional Engineer (P.Eng.), licensed to practice in Ontario;	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	-
Report has been submitted in “Initial Submission” to the City (accompanying whatever materials are provided for first official submission). For example, the Justification Report should accompany one of the following submissions: <ul style="list-style-type: none"> <li>• Master Environmental Servicing Plan (MESP);</li> <li>• Block Plan;</li> <li>• OPA/ZBA;</li> <li>• Draft Plan.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-
<b>Identification of Benefits</b>				
Social benefits have been identified. These may include, but are not limited to: <ul style="list-style-type: none"> <li>• Additional recreational space (i.e., Parkland Dedication)</li> <li>• Reduce risks of safety hazards</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-



	Development Engineering	Planning	Parks	Environmental Services
Environmental benefits have been identified. These may include, but are not limited to: <ul style="list-style-type: none"> <li>Reduction in pests/bugs</li> <li>Reduction in presences of invasive species</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-
Economics benefits have been identified. These may include: <ul style="list-style-type: none"> <li>Economic growth</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-
<b>Conceptual Design</b>				
The Non-Conventional SWMF drains through gravity drainage and does not require a pump.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	-
The Non-Conventional SWMF design does not provide any permanent pool volume.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	-
The Non-Conventional SWMF is a watertight concrete structure, or plastic structure wrapped with sufficient impermeable liner.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	-
The quantity control portion of the Non-Conventional SWMF achieves water quantity control and extended detention targets only, with additional SWM controls measures provided elsewhere on site	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	-
Pre-treatment measures are provided upstream of the Non-Conventional SWMF with 80% TSS removal achieved prior to runoff entering the quantity control portion of the Non-Conventional SWMF.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	-
The conceptual design is in accordance with the City of Vaughan Design Criteria and Standard Drawings for Non-Conventional SWMF.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-
The report identifies any potential impacts to above ground programming.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-
The conceptual design does not create any obvious obstructions or challenges for land use above the Non-Conventional SWMF.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-
<b>Operation and Maintenance Requirements</b>				
Anticipated O&M requirements of the Non-Conventional SWMF have been identified.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Development Engineering	Planning	Parks	Environmental Services
Requirements are in accordance with the City of Vaughan's O&M standards	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
O&M be completed using equipment and technology currently owned by or available to the City.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conceptual design of Non-Conventional SWMF allows for easy access for frequent O&M.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Financial</b>				
An estimate of the financial requirements for the facility is included in the Justification Report.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	-
<b>Development Engineering Sign-off:</b>			<b>Date:</b>	
<b>Planning Department Sign-off:</b>			<b>Date:</b>	
<b>Parks Department Sign-off:</b>			<b>Date:</b>	
<b>Environmental Services Sign-Off</b>			<b>Date:</b>	

## **Draft Plan/ Functional Servicing Submission**

	Development Engineering	Planning	Parks
<b>General</b>			
Justification Report has been submitted and accepted (Refer to Initial Submission Checklist if Justification Report has been submitted in conjunction with Draft Plan Submission.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The proposed technology is included on the City of Vaughan's Acceptable Technology for Non-Conventional SWMF's List.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Preliminary Design</b>			
Sufficient details been provided to assess the preliminary design of the Non-Conventional SWMF.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
All overall SWM targets have been achieved per City of Vaughan's standard engineering review process and most recent design criteria.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Location and justification for park placement has been provided.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FSR confirms there is no conflict with: <ul style="list-style-type: none"> <li>• Surface features</li> <li>• Underground utilities</li> <li>• Maintenance/access requirements</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Proposed Non-Conventional SWMF meets defined targets for quantity control and extended detention, and preliminary design of flow controls has been provided.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Preliminary grading above facility and access locations have been provided and are acceptable.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
A treatment train approach has been proposed to treat runoff prior to it entering the main cell of the SWMF, treating it to a minimum of 80% TSS removal, using a City defined particle size distribution. Acceptable measures include: <ul style="list-style-type: none"> <li>LID Measures (Bioswale, infiltration gallery, etc.);</li> <li>OGS Units; and</li> <li>Pre-treatment Cells (Isolator Row, etc.).</li> </ul>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Park's Considerations</b>			
City of Vaughan has provided direction regarding requirements for Parkland Block (i.e., programming) which has been incorporated into design.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Owner has indicated intention to apply for Parkland Dedication for parkland above SWMF	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Owner has illustrated all criteria to achieve full Parkland Dedication has been met, in accordance with By-Law 168-2022.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
FSR confirms there is no conflict with planned Park programming.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Financial Considerations</b>			
FSR outlines cost of proposed facility.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Intent to provide an extended warranty plan for SWMFs has been confirmed.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Development Engineering Sign-off</b>			<b>Date:</b>
<b>Planning Department Sign-off</b>			<b>Date:</b>
<b>Parks Department Sign-off</b>			<b>Date:</b>

## Detailed Design/ Perfect Submission

	Development Engineering	Planning	Parks
<b>General Submission</b>			
A detailed Stormwater Management Report and detailed design drawings have been received, prepared, and sealed by a Qualified Professional Engineer (P.Eng.), including: <ul style="list-style-type: none"> <li>SWM Report;</li> <li>Detailed Engineering drawings; and</li> <li>Shop Drawings.</li> </ul>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Complete O&M Manual has been received.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Review &amp; Acceptance of SWM Report &amp; Detailed Design Drawings</b>			
Proposed Non-Conventional SWMF technology has not changed since Draft Plan/ Functional Servicing Submission.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

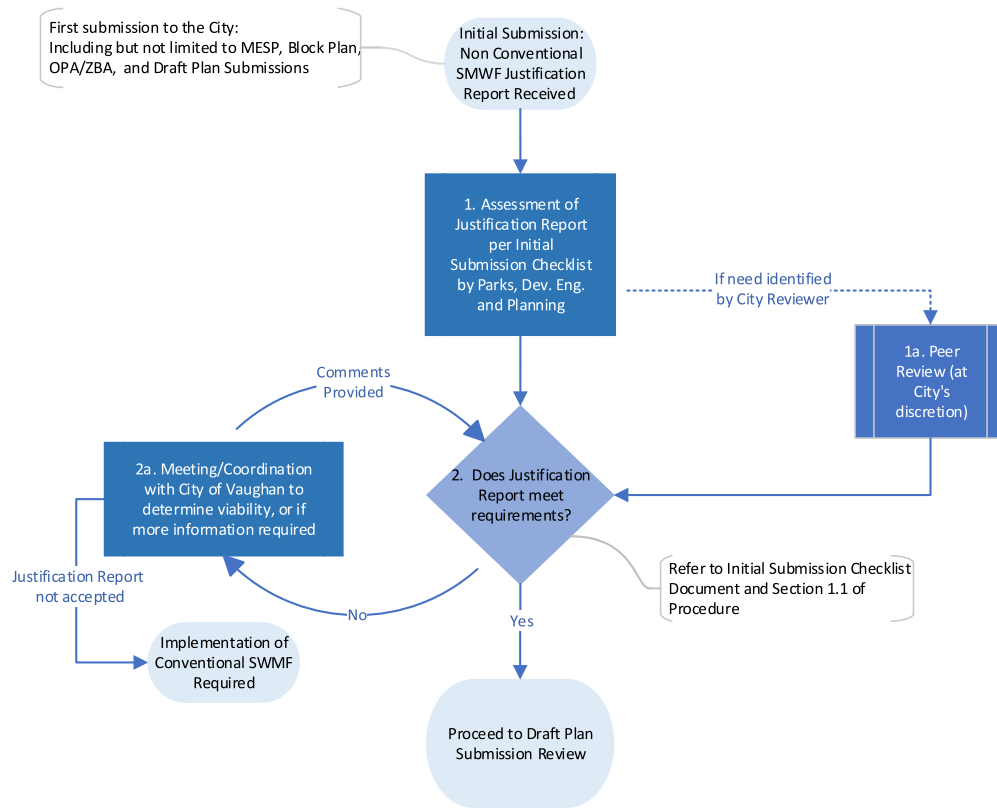
Proposed overall SWM design and drawings meet City of Vaughan's standard engineering review process and Engineering Design Criteria.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Proposed Non-Conventional SWMF design meets City's Non-Conventional SWMF Facility Design Criteria.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Non-Conventional SWMF only provided quantity control and extended detention controls within quantity control portion of facility (not in isolator/separator rows).	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Parks Considerations</b>			
Proposed Non-Conventional SWMF design and associated grading meets Parks criteria.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Proposed Non-Conventional SWMF does not infringe on Park programming.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Parkland Dedication Credit has been finalized and applied.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Review &amp; Acceptance of Operations &amp; Maintenance Requirements</b>			
Complete Operations & Maintenance (O&M) Manual has been submitted for Non-Conventional SWMF and any pre-treatment technology, which includes:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<ul style="list-style-type: none"> <li>Any required equipment and certifications for O&amp;M.</li> </ul>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<ul style="list-style-type: none"> <li>Maintenance frequency and costs on all structures involved in SWM solution, based on development's sediment loading rate.</li> </ul>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<ul style="list-style-type: none"> <li>Consideration and planning for high disruption maintenance activities.</li> </ul>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<ul style="list-style-type: none"> <li>Consideration and planning for frequent inspection and maintenance.</li> </ul>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<ul style="list-style-type: none"> <li>An annual maintenance cost based on detailed breakdown of inspection/maintenance and associated time and costs.</li> </ul>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<ul style="list-style-type: none"> <li>Cost provisions for disposal/treatment of sediment per current Regulations.</li> </ul>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
O&M manual meets requirements outlined in CLI-ECA.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Frequent/regular inspection does not require confined space entry.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A maintenance cost assessment has been provided based on a 50-year period (which can be provided as standalone document), which includes:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<ul style="list-style-type: none"> <li>Quantification of O&amp;M costs over a 50-year period.</li> </ul>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<ul style="list-style-type: none"> <li>Offset Fee has been calculated correctly per Criteria (refer to next section).</li> </ul>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<ul style="list-style-type: none"> <li>Unit rates to calculate the Offset Fee have been indexed appropriately.</li> </ul>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<ul style="list-style-type: none"> <li>Sealed engineering opinion regarding service life of SWMF.</li> </ul>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

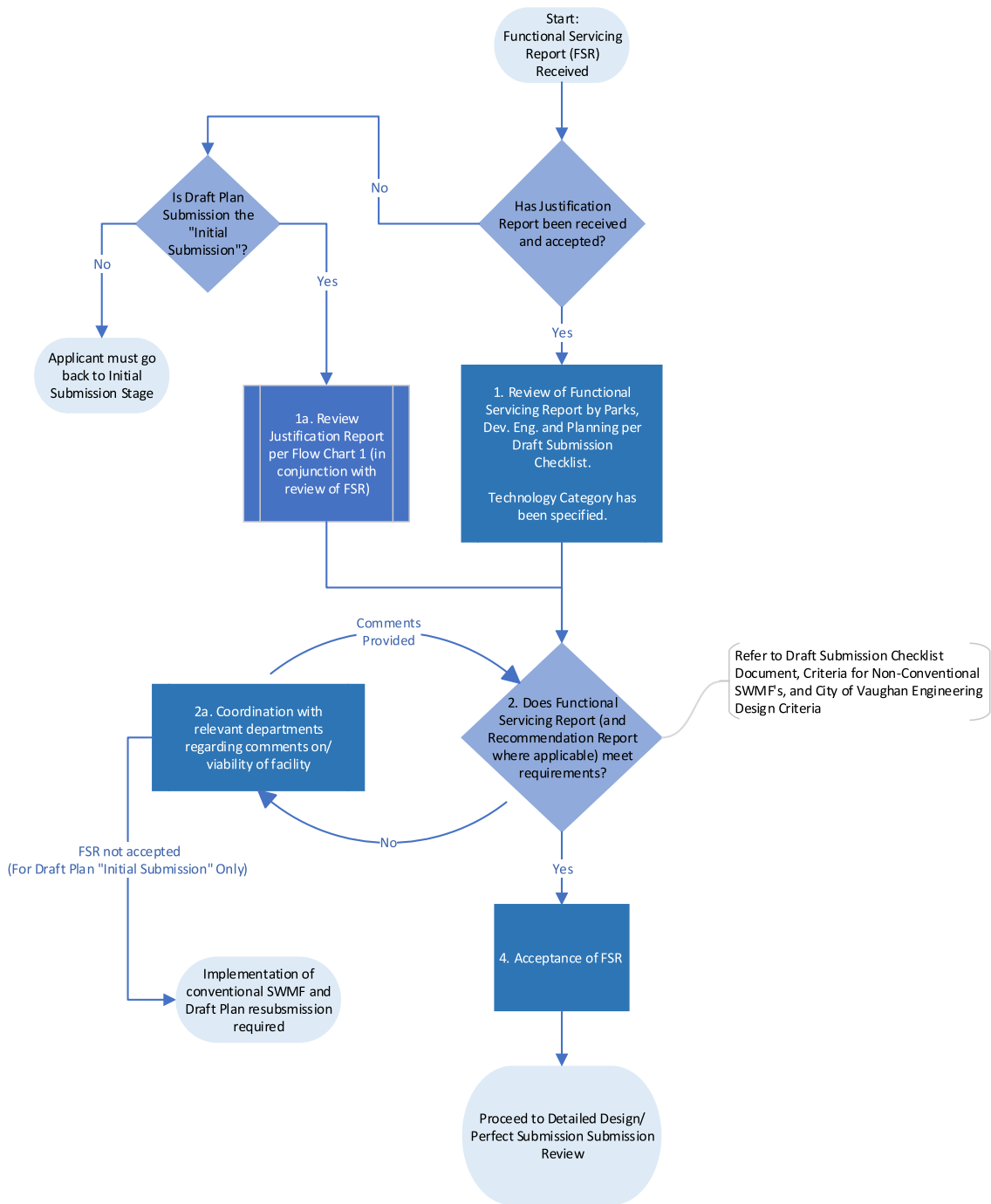
<b>Financial Considerations</b>			
Offset Fee has been calculated using the City's unit rates specified in the criteria, based on the sum of:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>Inspection and monitoring costs (visual inspection, inspection report, and debris removal, and monitoring as required by CLI-ECA), is the delta between Non-Conventional and Conventional SWMF.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>Maintenance costs (including fees associated with sediment removal, confined space entry, component replacement), is the delta between Non-Conventional and equivalent Conventional SWMF.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>An extended warranty from SWMF Manufacturer's has been provided with appropriate legal documentation to the City's satisfaction.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>If an extended warranty is not provided or accepted by the City, SWMF rehabilitation costs have been calculated and added to the Total Offset Fee. SWMF rehabilitation / replacement costs are not required for development areas &lt;2ha using a superpipe facility, regardless of an extended warranty.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Unit rates for various inspection, monitoring, maintenance procedures align with rates outlined in the Design Criteria for Non-Conventional SWMF and have been indexed appropriately.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The Final Compensation Value has been quantified and will be issued through a subdivision / site plan agreement between the City and Landowner.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Development Engineering Sign-off</b>		<b>Date:</b>	
<b>Planning Department Sign-off</b>		<b>Date:</b>	
<b>Parks Department Sign-off</b>		<b>Date:</b>	

## City Assumption

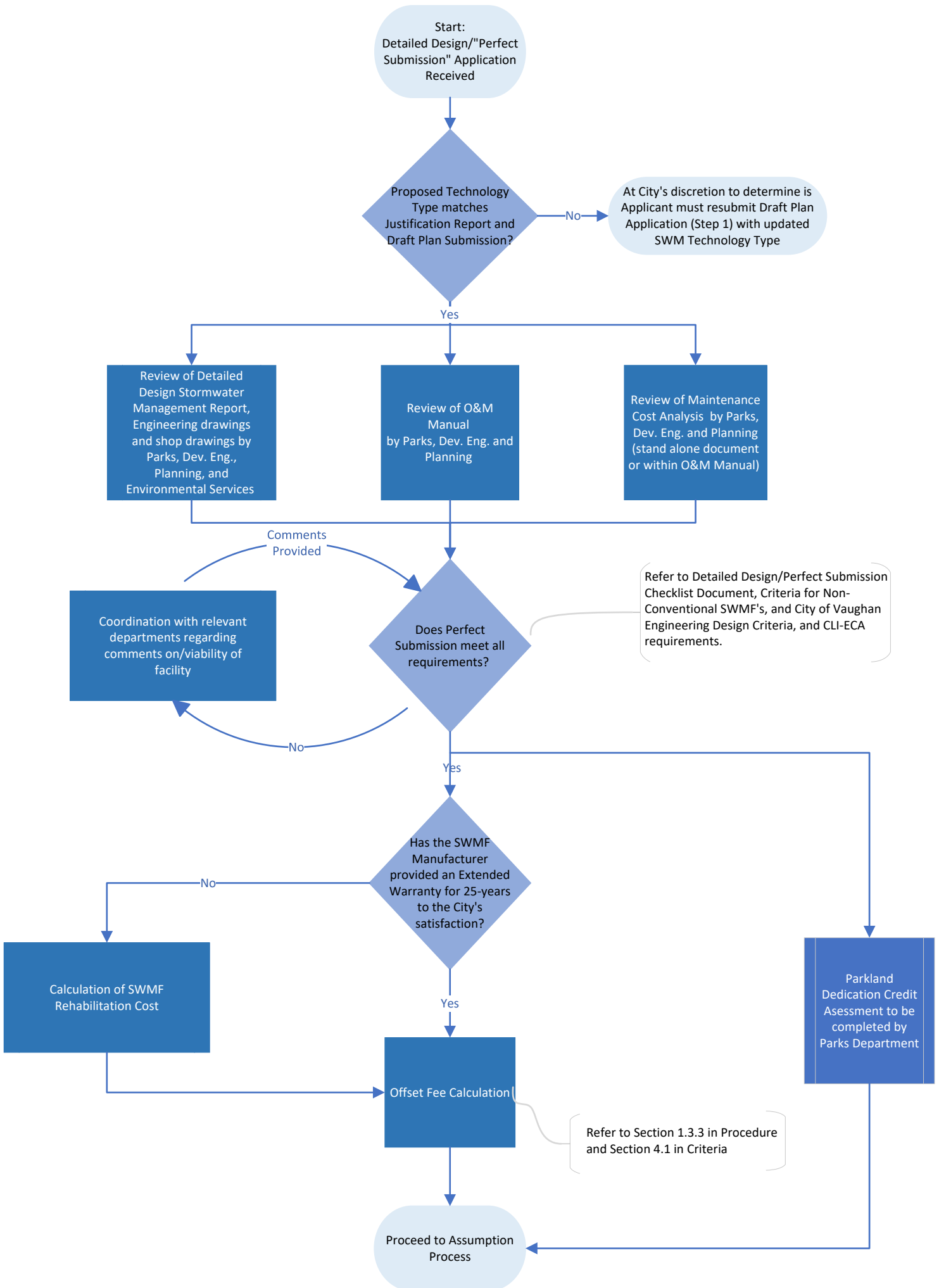
	<b>Development Engineering</b>	<b>Planning</b>	<b>Parks</b>
<b>Assumption Requirements</b>			
Sealed record drawings of Non-Conventional SWMF have been provided, which certify infrastructure was constructed per approved design, as per PEO Guidelines on Preparing As-builts and Record Documents.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Records of inspection and maintenance have been provided and are in compliance with practices outlined in approved O&M manual.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>Infrastructure has been maintained per approved O&amp;M manual.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

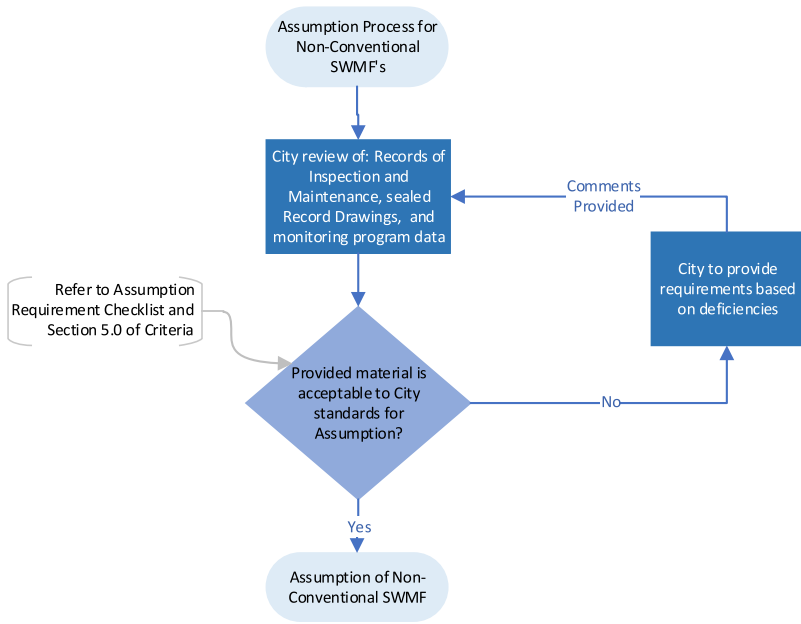
<ul style="list-style-type: none"> <li>Infrastructure is free of debris and sediment build up (determined through methods agreed upon by City)</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Records for monitoring program as agreed upon by the City have been provided.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>Monitoring program records, per CLI-ECA if applicable, indicate infrastructure is functioning as designed.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Development Engineering Sign-off</b>			<b>Date:</b>
<b>Planning Department Sign-off</b>			<b>Date:</b>
<b>Parks Department Sign-off</b>			<b>Date:</b>











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# STANDARD DETAILS

## STANDARD DETAIL INDEX

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## 1.0 INTRODUCTION

This document provides the City of Vaughan (the City) design criteria for the implementation of Non-Conventional Stormwater Management Facilities (SWMF's), such as underground storage tanks or super pipes, within park blocks, open space blocks, or rights-of-way (ROW), which are or will become City owned infrastructure and lands. Operations & Maintenance requirements are also provided, as well as guidance on associated financial requirements. It is recommended that the applicant indicate their intention to implement Non-Conventional SWMF's as early as possible in the development application process, ideally during any pre-consultation discussions with the City.

### 1.1 Submission Materials Overview

The following **Table 1** is a summary of the reports and materials that must be submitted to provide sufficient information for the review of the proposed Non-Conventional SWMF's, as well as the development stage at which they must be submitted.

TABLE 1: SUBMISSION MATERIAL SUMMARY

Report	Level of Design	Development Stage
Non-Conventional SWMF Justification Report	<ul style="list-style-type: none"> <li>Conceptual level of detail which demonstrates viability of facility.</li> </ul>	"Initial Submission" (Can include MESP, Block Plan, Secondary Plan, and OPA/ZBA submissions, as well as Draft Plan Submissions if none of the above apply)
Functional Servicing Report	<ul style="list-style-type: none"> <li>FSR Level Detail for Non-Conventional SWMF and associated facilities, grading, servicing, and modelling.</li> <li>FSR level detail for site specific conditions (ex. Hydrogeological, geotechnical etc.)</li> <li>Justification for product choice for Non-Conventional SWMF.</li> </ul>	Draft Plan of Subdivision Submission
Stormwater Management Report	<ul style="list-style-type: none"> <li>Detailed design for all SWMF's</li> <li>Detailed modelling</li> <li>Shop drawings</li> <li>Detailed sections</li> <li>Engineering drawings</li> <li>Refer to Section 1.1 of existing City Engineering Design Criteria</li> </ul>	Detailed Design/Perfect Submission Stage
Operations & Maintenance Report	<ul style="list-style-type: none"> <li>Refer to <b>Section 3.0</b>.</li> </ul>	Detailed Design/Perfect Submission Stage
Offset Fee Calculation	<ul style="list-style-type: none"> <li>Refer to <b>Section 4.1</b>.</li> <li>Can be submitted with Operations &amp; Maintenance Manual or as separate memo.</li> </ul>	Detailed Design/Perfect Submission Stage

## 2.0 DESIGN CRITERIA

The following criteria guides the design of Non-Conventional SWMF's in conjunction with the City of Vaughan's Engineering Design Criteria (December 2020 or most recent) and MECP's Stormwater Management Planning and Design Manual (2003 or most recent). Please refer to Section 1.1 of the City's Engineering Design Criteria for a complete list of all requirements for an Engineering Submission. All submissions must adhere to the City's overall criteria, applicable Environmental Compliance Approvals, and must not conflict with any other legislative requirements.

### 2.1 General Stormwater Management Criteria

The stormwater management solution shall be developed in accordance with the City's Design Criteria and Standard Drawings (December 2020 or most recent version), TRCA's Stormwater Management Criteria (April 2012 or most recent version), MECP's Stormwater Management Planning and Design Manual (2003 or most recent version), and Schedule D and E of the Consolidated Linear Infrastructure Environmental Compliance Approval (CLI-ECA) (where applicable). Additional studies, including but not limited to Subwatershed Studies, Stormwater Management Master Plans, Environmental Impact Studies, and Monitoring programs should be reviewed on a site-by-site basis to ensure the standard SWM criteria requirements are refined as needed.

It should be noted that these criteria represent a minimum requirement that may be superseded by the results of further studies and local constraints.

### 2.2 List of Acceptable Technologies

**Table 2** below outlines acceptable Non-Conventional SWMF's that will be considered. Criteria specific to each technology type is also provided to inform product choice. Products chosen should not require Confined Space Entry for routine maintenance (as discussed in **Section 3.2**). Plastic facilities are acceptable provided they meet the below criteria. The use of plastic must be justified in the Functional Servicing Report submission stage. It should be noted that this document is subject to future review, which may result in the addition of other acceptable technologies.

TABLE 2: LIST OF ACCEPTABLE TECHNOLOGIES

Acceptable Technology	Criteria
<b>Cast-in-Place Concrete</b>	<ul style="list-style-type: none"> <li>• Provided concrete must meet CSA A23.1 (Concrete Materials and Methods of Concrete Construction).</li> <li>• Is in accordance with CSA S269.1 (Falsework and Formwork) and CSA G30.18 (Rebar)</li> <li>• Structural design to be sealed by P.Eng.</li> </ul>
<b>Pre-Cast Concrete</b>	<ul style="list-style-type: none"> <li>• Provided concrete must meet CSA A23.4 (Precast Concrete Materials Construction).</li> <li>• Structural design to be sealed by P.Eng.</li> </ul>
<b>Superpipes (Concrete)</b>	<ul style="list-style-type: none"> <li>• Must meet CSA A257 (Standards for concrete pipe and manhole sections).</li> <li>• Standard strength class must be specified and shall be selected in accordance with OPSD 807.010 for Height of Fill</li> <li>• Structural design to be sealed by P.Eng.</li> </ul>
<b>Polymeric (plastic) Chamber</b>	<ul style="list-style-type: none"> <li>• Meets CSA B184 Series of Standards for Polymeric subsurface stormwater management structures and/or be approved by the City's Products and Standards Committee.</li> <li>• Meets ASTM F2787 (Standard Practice for Structural Design of Thermoplastic Corrugated Wall Stormwater Collection Chamber) <u>OR</u> ASTM F2418 (Standard Specification for Polypropylene Corrugated Stormwater Collection Chambers).</li> <li>• To be completely lined with minimum two layers of woven geotextile with minimum 1400 N grab tensile strength, 533 N tear resistance and 4600 N Puncture CBR.</li> <li>• Structural design to be sealed by P.Eng.</li> </ul>

### 2.3 Overall SWMF Design Requirements

The following is a list of overall principles and design criteria for the implementation of all Non-Conventional Stormwater Management Facility (SWMF) Types. The Stormwater Management Report must address each item listed below. Any product specific requirements shall be adhered to by the designer. For requirements specific to different use cases, please refer to the relevant sections below:

- The proposed stormwater management solution and design of the Non-Conventional SWMF must be sealed by a Professional Engineer licensed to practice in Ontario and documented in a design report appropriate to the stage of development.
- The proposed SWMF must only collect, receive, and control stormwater runoff, not sanitary or combined sewage.
- The proposed SWMF must be entirely located on municipally owned lands and shall not discharge to non-municipally owned land without the express written consent of landowner receiving the drainage.
- Quality control criteria must be met prior to runoff entering the quantity control portion of the Non-Conventional SWMF, which shall be achieved through an upstream treatment train approach.



- OGS units shall only be credited for a maximum TSS removal of 60%, provided they have been sized using ETV Canada Particle Size Distribution (PSD).
- Isolator/separator rows or baffle walls within underground storage tanks will be considered for quality control, however, it must also be accompanied by other pre-treatment strategies upstream of the SWMF. The volume contained in the isolator/separator rows or by the baffle walls shall not be counted towards quantity control storage.
- Quality controls included in treatment train must be included on the City of Vaughan Approved Technology List and/or be verified by ETV Canada.
- Quality control facilities (e.g., Oil Grit Separator (OGS) Units) will be designed using the entire range dataset of ETV Canada Particle Size Distribution or distribution otherwise specified by the City of Vaughan.
- No infiltration credit will be given for Non-Conventional SWMF's.
- Infiltration facilities may be provided downstream of the Non-Conventional SWMF for water balance credit only. Infiltration facilities may not be located within the park block unless they are designed to exclusively treat runoff from the park, and quality control is provided upstream of the SWMF.
- Standing water will not be acceptable within the Non-Conventional SWMF, including:
  - Permanent pools
  - Retention
- The Non-Conventional SWMF may provide extended detention in the facility, provided existing drawdown criteria is met. The minimum orifice diameter for the outlet shall be 100 mm. The number of orifices should be minimized as much as possible to reduce O&M requirements and costs.
- A stone layer is required above and below the proposed facility to facilitate drainage around the facility.
- The SWMF must be able to accommodate a dual drainage system.
  - Non-Conventional SWMF's must be sized for major system flows.
  - Pre-treatment (quality control of 80% TSS removal) is only required for minor system flows (5 year storm events and lower). Pre-treatment of major system flows is not required.
  - The access points to the Non-Conventional SWMF shall not be used for flow conveyance.
- Outlet locations shall be approved by the City of Vaughan (and TRCA where required).
- Service life of chosen Non-Conventional SWMF product must be a minimum of 100 years. This must be documented by a qualified Professional Engineer.
- Facilities shall be positively sloped, with a minimum slope of 0.3% to facilitate complete drainage and flushing. A minimum slope of 0.5% is preferred. Facilities that require pumping of active storage volumes (outside of operations and maintenance) will not be approved.
- The maximum distance between maintenance access points into the Facility shall be 60 m, or as determined by available maintenance equipment.
- At least one maintenance access point shall be provided directly above or beside all outlet and inlet structures.

- “Hybrid” facilities (e.g., the combined use of a Non-Conventional SWMF with above ground storage) will be considered, provided the following criteria is met:
  - Above ground storage shall not be located within the Park Block and must be in a discrete pond block. Any accompanying pond block must meet all existing City criteria.
  - Quality Control criteria must be met prior to any runoff entering the Non-Conventional SWMF.
- Emergency outlet locations, route and capacity of major system receiver shall be analysed and identified. Emergency outlets shall be able to convey the highest design inflow rate of the facility, while maintaining a minimum 0.30 m freeboard.
- Polymeric (plastic) Chambers:
  - Must be lined with double layer of woven geotextile to ensure stability of stone layer.
  - Manifolds shall be a minimum of 1200 mm in diameter to allow for access.
  - All row connections shall be a minimum of 600 mm in diameter and inverts shall match the chamber bottom elevation to permit flushing.
  - For polymeric (plastic) chamber facilities, Operations and Maintenance (O&M) Manual must demonstrate facility and park layout is to demonstrate that on-site stockpiling of overlying materials during replacement is possible. Stockpile locations must not interfere with park facilities/features and must be located within open space areas. Topsoil, fill and granular materials shall have separate stockpiles.
- Proposed facilities must be able to withstand a minimum traffic rating of the Canadian High Bridge Design Code (CHBDC) CL-625ONT.
- On-site groundwater conditions are to be assessed by a Geotechnical Engineer prior to Detailed Design to confirm groundwater elevations in relation to the proposed Facility depth. A Qualified Engineer will determine whether buoyancy analysis is required to show whether the system can withstand hydraulic uplift conditions. Hydrogeological inspections must support the use of a Non-Conventional SWMF.

### 2.3.1 Right-of-Ways

Non-Conventional SWMF’s may be implemented within right-of-way’s (ROW), which will provide conveyance and detention for runoff from the contributing drainage area. The SWMF design should ensure that all existing City of Vaughan Design Criteria for Roads can be met and shall not be modified to accommodate a Non-Conventional SWMF.

#### 2.3.1.1 General

##### Inlets and Outlets

The proposed on-site storm sewer system will serve as an inlet to the facility.

##### Sizing

The length of the pipe and diameter or height and span will be a function of the storage required to meet required discharge rates for the site.

##### Layout & Locations

Non-Conventional SWMF's in ROWs should be located in the typically approved storm sewer alignment under the roadway asphalt. Alternative locations may be acceptable (i.e., under boulevards) providing separation/offset requirements are satisfied under standard ROW cross-sections. The applicant shall provide a modified ROW cross-section if they are proposing to shift the facility from the typically approved storm sewer alignment, shall consider all crossings in the design of the system, and be responsible for coordination with other utility providers. Plan and Profiles will be required to show all clearances are met.

Facilities should be located within proximity to fire hydrants to supply flushing water for sediment removal.

If located within the asphalt of the right-of-way, facilities are to be located 1.5 m west or south of the road center line from the centreline of pipe, in a separate trench. On crescent roads, or roads with multiple bends, the facility position may follow the same relative side of the road allowance. The minimum horizontal clearance between the outside wall of the adjacent sewer pipes shall be 800 mm.

Curvilinear alignment through deflection at joints of the facilities within manufacturer's specifications are permitted with acceptance from the City.

Minimum clearances between the facility and other services shall be provided in accordance with MECP guidelines. Minimum horizontal and vertical separations between facilities and watermains are established in MECP's Procedure F-6-1.

Additional considerations and consultations shall be required with local service providers to ensure there are no conflicts between other proposed services, utilities, or underground infrastructure.

The ROW width shall not be expanded to accommodate facilities. Detailed cross sections shall be required to demonstrate that the facility fits within the proposed ROW, while achieving all required offsets.

#### Facility Depth

The facility shall have a minimum of 1.2 m cover to the top of the stone layer, per City of Vaughan Engineering Criteria. Maximum depth specifications are product dependent and shall not be exceeded.

#### Facility By-Pass

A by-pass pipe should be provided to redirect flows around the Facility during maintenance, where possible. Per Section 1.3.5.6 of the City's Design Criteria, the by-pass shall be designed to convey the peak flow from the 2-year return period storm event and in accordance with the Stormwater Management Planning and Design Manual ("Maintenance By-pass" in Section 4.7 of 2003 edition). Valves should be avoided as a by-pass option to reduce maintenance requirements and costs. Less maintenance intensive options, such as stop logs, should be used.

#### Emergency Flow Conveyance

The rights-of-way shall provide sufficient conveyance capacity for the major system flows in the event of the outlet failure or blockage, or if the storm event is greater than the facility's design capacity. Major system flows shall be diverted away from surrounding buildings as much as possible, and the overland flow route should be identified on relevant figures and drawings, with sufficient erosion control specifications if required.

#### Pipe Loading

Facilities shall be constructed per the standards listed in **Section 2.3** to ensure structural integrity of the system. Pipe loading calculations shall accompany the Detailed Design submission and be completed per City of Vaughan Engineering Criteria. Selected native backfill may be used above the facility with acceptance from the City and if supported by an opinion from a Geotechnical Engineer. Facility structural design is to be sealed by a Qualified Professional Engineer.

#### Ponding

The Facility shall provide enough storage volume to contain the runoff volume generated by the 100 year storm without causing surface ponding. For Climate Change consideration, the maximum depth of ponding/flow for the August 19th, 2005, storm event shall not exceed 0.30m above the gutter line of the right-of-way, and the water level shall be contained within the right-of-way.

#### 2.3.1.2 Operations & Maintenance Design Requirements

The facility should be designed to allow for routine maintenance without the need for Confined Space Entry, and to minimize traffic disruptions. As such, the following criteria should be met at the detailed design submission:

- Confined Space Entry only required for infrequent maintenance/rehabilitation (>25 year period) and structural inspections (10 year period).
- The maximum distance between inspection/maintenance ports shall not exceed 60m.
- Inspection ports and maintenance access points should be located to facilitate inspection/maintenance with closure of one lane on multi lane roads.
- Personnel access points shall be provided at the upstream and downstream ends of the facility.
- A personnel access point shall be provided above or adjacent to the outlet structure for the facility.
- The footprint of the facility and associated infrastructure must be fully located on municipally owned land.

The Operations & Maintenance (O&M) Manual for the facility must identify frequent and infrequent O&M tasks, related costs, and show clean out options that minimize disruption to the ROW. Further requirements and elaboration are provided in **Section 3.0**.

#### **2.3.2 Parks & Open Space Blocks**

Non-Conventional Stormwater Management facilities may be implemented within park blocks or

open space blocks to provide conveyance and detention for a site. The proposed facility shall be designed to ensure that all existing City of Vaughan criteria for park grading, servicing, and programming and facility requirements can be met if full parkland dedication is to be achieved for the land above the proposed facility. Standard levels of services for park programming, facilities, amenities, and structures shall not be compromised to accommodate a Non-Conventional SWMF.

### 2.3.2.1 General

#### Inlets and Outlets

The proposed on-site storm sewer system will serve as an inlet to the facility. Inlets and catchbasins are to be a minimum of 5 m away from all property lines.

#### Sizing

The height, length and width of the Facility will be a function of the storage required to meet target discharge rates for the site. The minimum and maximum height of the Facility will be dictated by the product choice. SWMF inverts will be dictated by the requirement for gravity drainage.

#### Layout & Location

The location of the facility shall be placed so that safe excavation (as per OHSA) is possible without the use of shoring between the facility and any services or property lines when excavation and facility replacement may be required. Park block services shall not cross over the top of the proposed facility. A minimum horizontal clearance between the outside wall of adjacent sewer pipes shall be 800 mm. Minimum clearances between the facility and other services shall be provided in accordance with MECP guidelines. Minimum horizontal and vertical separations between facilities and watermains are established in MECP's Procedure F-6-1.

Additional considerations and consultations shall be required with local service providers to ensure there are no conflicts between other proposed services, utilities, or underground infrastructure.

Consideration to proposed and future park landscaping is required. The Applicant should consult with the Parks Department to determine preferred tree planting locations within the park block and where installation should be avoided. This will allow the development of mature tree canopy within the park, which can be preserved if system excavation is required.

For polymeric (plastic) chamber facilities, facility and park layout is to demonstrate that on-site stockpiling of overlying materials during replacement is possible. Stockpile locations must not interfere with park facilities/features and must be located within open space areas. Topsoil, fill and granular materials shall have separate stockpiles.

The City shall provide the proposed park programming to inform the location of the Non-Conventional SWMF. Park programming shall not be dictated by the design/location of the SWMF. **Table 3** outlines various Park Programming options and whether a Non-Conventional SWMF will be permitted underneath. Any park facilities or features not listed below shall be confirmed with the City that a Non-Conventional SWMF can be located underneath. Inspections

ports and maintenance access must always be accessible and should not be located underneath any of the Park facilities listed in **Table 3** below. The facility placement, as well as preliminary access route locations, and approximate locations for maintenance and monitoring ports as determined by minimum spacing criteria, should be reviewed and agreed upon by the City's Parks Department prior to Detailed Design submission. It is noted that outside of the Non-Conventional SWMF area and associated buffers, standard Park's Criteria will still apply.

**TABLE 3: PARK FACILITY ACCEPTANCE**

<b>Park Facility</b>	<b>Acceptable Feature above Non-Conventional SWMF</b>
<b>Park Facilities</b>	
Playgrounds (Neighbourhood/Urban Park)	Yes
Playgrounds (District/Regional)	No*
Outdoor Fitness	Yes
Water play	No
Seasonal Domes (Slab on Grade)	No
Permanent Domes or field covers	No
Outdoor Swimming Pools	No
Outdoor Ice Rinks and Ice Skating	No
Skateboard and Wheeled Sports	Yes
Sports Fields (baseball diamond, soccer field, cricket pitch, football field, rugby/multiuse field)	Yes
Structures Requiring Deep Footing (e.g., Baseball backstops, football goal posts)	No
Sports Courts (tennis, basketball, bocce, pickleball, volleyball, ball hockey, multiuse court)	No*
Recreational Trails and Pathways	Yes**
Park Buildings (any kind)	No
Picnic Shelters (on ground or concrete slab)	Yes
Shade Structures (on Concrete Slab, cantilevered or standard)	Yes
Off Leash Dog Areas (Primary/Local)	Yes
Irrigation	Yes
Emergency Signage	Yes***
<b>Amenities, Utilities, and Servicing</b>	
Waste Receptacles on Concrete Slab	Yes
Electrical Transformers/Panels	No
Sanitary/Watermain Servicing and unrelated Storm Servicing	No
Typical Lighting	Yes
Lighting Conduits	Yes
Court and Sports Field Lighting	No
Benches/Seating on concrete slab	Yes
Signage	Yes
Retaining Walls	No
Bridge Structures	No

\*Facilities require additional design considerations for implementation above Non-Conventional SWMF's. Applicant shall coordinate with City Park's Department to determine feasibility of Non-Conventional SWMF beneath feature.

\*\*Primary accessible routes and emergency access routes not permitted above SWMF.

\*\*\*Although discouraged, emergency signage placement is subject to approval by Emergency Planning, Fire and Rescue Services staff.

### Grading

Grading over the proposed facility shall meet the City's requirements for Parkland grading, which allow for a minimum 2% and maximum 5% slope. Steeper sloping and/or retaining walls shall not be permitted over the facility, however armourstone seating may be provided over the Non-Conventional SWMF with the height of seating not to exceed 460mm. It is recommended that consultation with the City's Parks Department be undertaken early in the design process to ensure the proposed seating is acceptable.

### Facility Depth

The Facility shall have a minimum of 1.8 m depth of cover to top of stone to allow flexibility with potential future Park programming. Maximum depth of cover specifications are dependent on the design of the Non-Conventional SWMF and shall not be exceeded. All access points should not exceed 5 m depth to avoid safety platforms, which may complicate inspection and maintenance procedures.

### Facility By-Pass

A by-pass pipe shall be provided to redirect flows around the Facility during major maintenance. Per Section 1.3.5.6 of the City's Design Criteria, the by-pass shall be designed to convey the peak flow from the 2-year return period storm event and in accordance with the Stormwater Management Planning and Design Manual ("Maintenance By-pass" in Section 4.7 of 2003 edition). Mechanical valves should be avoided as a by-pass option to reduce maintenance requirements and costs. Less maintenance intensive options, such as stop logs, should be used.

### Emergency Flow Conveyance

The facility outlet configuration shall be designed with an emergency overflow spillway to allow storm drainage to safely exit the facility if the outlet fails to function, or if the storm event is greater than the Facility's designed capacity. The spillway and/or emergency outlet shall be sized to safely convey the highest design inflow rate of the Facility, including the August 19<sup>th</sup>, 2005, storm for Climate Change consideration. The flow should be directed away from adjacent properties, and the overland flow route should be identified on relevant figures and drawings. Sufficient erosion control should be provided if required.

### Loading

The facility shall be constructed per the standards listed in **Section 2.3** to ensure integrity of the system. Maximum depth specifications are product dependent and shall not be exceeded. Facility loading calculations shall accompany the Detailed Design submission and shall assume Canadian Highway Bridge Design Code (CHBDC) CL-625ONT loading. Selected native backfill may be used with acceptance from the City and if supported by an opinion from a Geotechnical Engineer. The facility structural design is to be sealed by a Professional Engineer.

### Ponding

No surface ponding shall be permitted within the park. The facility shall provide enough storage required to meet required target discharge rates. The required storage volume for the design storm event shall be fully contained within the facility with no use of surface storage.

### 2.3.2.2 Operations & Maintenance Design Requirements

The facility should be designed to allow for routine maintenance without the need for Confined Space Entry, and to cause no park use disruptions during routine maintenance and minimize use disruption as much as possible during major rehabilitation and replacement. As such, the following criteria should be met at the detailed design submission:

- Confined Space Entry only required for infrequent/major maintenance (>25 year period) and structural inspections (10 year period).
- The footprint of the facility and associated infrastructure must be setback 5.0 m from property lines and other infrastructure to allow for excavation without the use of shoring.
- Availability for flow by-pass for infrequent/major maintenance must be considered in the design of the facility. Valves are to be avoided to decrease maintenance requirements. Less maintenance intensive options, such as stop logs, are preferred. The maximum distance between access points for maintenance points shall not exceed 60m.
- Maintenance/inspection ports and maintenance holes shall not be located within field of play, or pedestrian pathways through the park.
- Personnel access points shall be provided at the upstream and downstream ends of the facility, as well as above or directly adjacent to the outlet structure of the facility.
- The facility is to be designed to prevent scouring during routine flushing.
- A warning system shall be incorporated when installing the facility to provide notice to future excavators of the facility's location. Requirements include:
  - Tracer wire around the perimeter of the facility.
  - Warning layer of orange delineation material (such as snow fence) over the top of the stone layer of the facility.

The Operations & Maintenance Manual for the facility must identify frequent and infrequent O&M tasks, related costs, and show clean out options that minimize disruption to the park or open space block. Further requirements and elaboration are provided in **Section 3.0**.

### 2.3.2.3 Access Route Design

The access routes for maintenance of facilities within a park block or open space block are to be considered as part of the overall system. As such, they should conform to the criteria described below. Access route paving will be dependent on the type of maintenance carried out, and type of vehicles used. Should only one access route be provided, the design shall be in accordance with the "heavy duty" maintenance access requirements. O&M requirements, as well as replacement and rehabilitation for the access routes should be considered in conjunction with the facility.

#### "Light Duty" Maintenance Access Routes



- “Light Duty” Access Routes shall be designed as dual-purpose access routes/pedestrian pathways and are for inspection purposes only. Routes will be constructed with either limestone screening with a stabilizing/binder agent (Urban Design Division Standard Drawing MLA-305) or asphalt paving (MLA-208A).
- Routine Maintenance Access/Inspection Ports should be placed so that they are immediately adjacent to but offset from the pathway. The minimum width of these access routes shall be 4.0m. A turnaround, pathway loop or hammerhead is to be provided for a standard vehicle.
- Maintenance ports/manholes should not be located where overhead obstructions could occur (e.g., overhead wires).
- Sufficient lighting to be provided to ensure adequate illumination and shall conform to applicable guidelines in the Section 1.8 of the existing City criteria.
- Tree plantings adjacent to the access route shall be offset a minimum of 3.0 m. Additionally, columnar species shall be proposed, to avoid conflict with overhead branches.

#### “Heavy Duty” Maintenance Access Routes

- Access routes for major rehabilitation or frequent sediment clean out shall be separate from all pedestrian pathways and shall be constructed from concrete.
- Minimum route widths shall be 6.0 m to accommodate large trucks, as determined by the City’s Environmental Services department at the detailed review stage. Curves in the road will have a minimum centreline radius of 12.0 m. A turning circle or hammerhead shall be provided for vehicular ingress/egress.
- Access route shall be constructed from concrete.
- Access route should be assessed by a Transportation Engineer to confirm sufficient turning radii at entrances, exits and turning circles within the site.
- The route shall be constructed to be in accordance with the Urban Design Division Standard Drawing ULA-303.
- The route structure and makeup shall be designed to accommodate the following truck dimensions:
  - Weight: 35,000kg
  - Length: 12.2 m
  - Width: 3.3 m
  - Turning Radius: 15 m
- Sufficient lighting to be provided to ensure adequate illumination for maintenance activities and shall conform to applicable guidelines in the Section 1.8 of the existing City criteria.

## **2.4 Facility Sizing and Modelling**

Facilities will be sized to meet quantity control requirements, per TRCA’s SWM Criteria (April 2012 or most recent version). To address climate change controls, the IDF curve from the York University (YUG) rain gauge for the August 19, 2005, storm event shall be used to model ponding limit requirements within rights-of-way. The IDF curve can be found in Section 1.3.1.16 of the City criteria document.

Facilities shall be sized to ensure that the largest storage volume required does not exceed 90% of the total volume of the Facility. If Regional Controls are required for the proposed development, the required volume may be detained within a Non-Conventional SWMF, provided sufficient details are included to demonstrate feasibility.

Runoff Coefficients for contributing areas shall be determined per Section 1.3.1.17 of the City of Vaughan's Engineering Design Criteria. For storms larger than a 5 year return period, runoff coefficients shall be increased per Section 1.3.1.17 of the City's Engineering Design Criteria.

Computer modelling, as outlined in the Provincial Urban Drainage Design guidelines shall be required in calculating major and minor system flows for design areas greater than 5 hectares.

When the Rational Method is used, the general format of the City's Standard Storm Sewer and Overland Design Sheets are to be used. When computer modelling is used, the report shall indicate model parameters, assumptions used, outflow hydrographs and hydraulic grade line levels where applicable, flow depths and spreads and any other pertinent information.

A computerized hydrologic and hydraulic model is to be developed and used to conduct a dual drainage system analysis for developments greater than 5 hectares in size, although smaller developments may require such analysis depending on receiving drainage systems (at the discretion of the City). In cases where drainage from the development is to discharge to existing systems, detailed modelling of such downstream systems may be required, at the discretion of the City. The analysis is to be fully documented, prepared, and signed by a Professional Engineer.

Pre-treatment facilities (OGS units, low impact development facilities etc.) for quality control will be sized to meet City of Vaughan and TRCA SWM criteria (80% TSS removal). OGS units shall be designed to treat the incoming 5-year flows and will be credited for 60% TSS removal, provided the units have been sized using ETV Canada PSD.

## 2.5 Extended Detention

Extended Detention volume requirements shall be based on the criteria established in the Stormwater Management Planning and Design Manual, the TRCA's Stormwater Management Criteria, or site specific requirements as established in an approved Master Environmental Servicing Plan, Master Drainage Plan, City-Wide Storm Drainage & Stormwater Management Master Plan or as otherwise established by the City, TRCA or other relevant authorities with jurisdiction. Extended Detention may be provided within the Non-Conventional SWMF after pre-treatment. Minimum orifice sizes as outlined in **Section 2.3** are applicable.

## 2.6 Pre-Treatment Facility Options

A treatment train approach is required to accompany the proposed end-of-pipe Non-Conventional SWMF to meet water quality, and water balance criteria. Pre-treatment will also help reduce peak flows from the development and storage requirements by impacting the overall imperviousness of contributing drainage areas (directly and indirectly connected). It should be noted that erosion control capabilities of each pre-treatment facility should be considered against any site-specific detailed erosion analyses.

The following **Table 4** is a list of possible low impact development facilities and manufactured treatment devices assessed for pre-treatment, and what criteria that facility can address (which is dependent on the design of the facility).

**TABLE 4: PRE-TREATMENT ALTERNATIVES**

<b>Technology/Facility</b>	<b>Examples</b>	<b>Benefit</b>
Separation Manufactured Treatment Devices	ETV Verified OGS Units	Quality – maximum of 60% TSS removal if sized with Canadian ETV Particle Size Distribution (PSD)
Infiltration/Filtration	Basins, chambers, trenches, soakaway pits, dry swales, bioswales, grassed/vegetated swales, vegetated filter strips, rain gardens, etc.	Water Balance, Quality (public lands only), Erosion
Exfiltration Trenches/Systems	Perforated pipes, catchbasin exfiltration system	Water Balance, Quality, Erosion
Deep Sump Catchbasins	n/a	Large particle/ debris and garbage removal
Downspout disconnection to Soakaway Pits	n/a	Water Balance, Quantity, Erosion

The following general screening steps should be completed to help select which pre-treatment facility options will be most effective based on-site specific characteristics, however, the ultimate decision of the proposed pre-treatment facility must be acceptable and to the satisfaction of the City.

1. Assess site conditions (hydrogeological, geotechnical, environmental, development regulations).
2. Define design criteria per **Section 2.3**.
3. Screen pre-treatment options (site constraints, opportunities based on land-use types, performance requirements, operations & maintenance requirements)

All pre-treatment facilities should be included in the Operations & Maintenance Manual and Offset Fee calculation.

## 2.7 Design Drawings and Details

Submitted drawings shall adhere to Section 1.1 of the City of Vaughan’s Engineering Design Criteria (December 2020, or most recent).

## 3.0 OPERATIONS & MAINTENANCE MANUAL

An Operations & Maintenance (O&M) Manual shall accompany the Detailed Design submission for all proposed facilities included in the SWM solution, which includes the Non-Conventional SWMF and any

pre-treatment facilities. The Manual shall be in accordance with guidelines set by MECP's Stormwater Management Planning and Design Manual (2003, or most recent version) and requirements in Schedule E of the CLI-ECA (if applicable). The Low Impact Development Stormwater Management Practice Inspection and Maintenance Guide (TRCA, 2016, or most recent version) and other guidance documents from local regulatory agencies can be referenced in the development of the O&M Manual, however CLI-ECA requirements shall remain paramount and takes precedence.

The manual shall outline the following:

- Description of types of facilities including function of facility (e.g., quantity, quality etc.), design volumes, discharges, design events etc.
  - Consultation with the City may be required to determine which department is responsible for various maintenance activities, for outline in the O&M document (e.g., Environmental Services or other).
- Maintenance frequency for all facilities and treatment devices included in the SWM solution, based on the sediment loading rate from the contributing drainage area.
- Annual maintenance costs calculated through a detailed breakdown of cost/frequency for relevant inspection, monitoring, and maintenance items.
- Calculation of costs associated with sediment disposal per most current Excess Soil Management Regulations.
- Facility Surface Inspection and Monitoring plan.
- Detailed execution plan for operations & maintenance based on maintenance type (frequent versus infrequent), including but not limited to the location of maintenance and monitoring ports and relevant access routes.
- Identification of any required personnel, training, and equipment (including dimensions) for all maintenance activities.

An Offset Fee Calculation is to be provided at the same time as the O&M Manual, which can be included in the manual, or provided as a separate document (refer to **Section 4.0** for guidance).

### 3.1 Inspection & Monitoring

The O&M manual shall provide sufficient detail on inspection and monitoring requirements, as well as the calculation of associated fees for inspection and monitoring. The cost differential between the fees for inspection and monitoring for the Non-Conventional SWMF compared to the fees for a Conventional SWMF of equal size/function over 50 years will be used in the calculation of the Offset Fee, as the "Inspection & Monitoring Cost" component. Refer to **Section 4.2** for applicable unit rates.

#### Inspection

The O&M Manual shall outline the inspection schedule for the proposed facilities, to ensure effective performance, as designed. Discharge from the facility is to be free of floating and settleable solids, and not contain oil or other substance in amounts sufficient to create a visible film, sheen, foam, or discoloration on receiving waters.

Within the first two years of post construction, facilities will require inspection after every significant storm to ensure proper functioning, (typically 4 times a year). After the first two years, the facility

should be inspected at a minimum of once a year, and after storm events which cause flooding. Inspection frequency shall also be determined by the recommendations from the chosen facility supplier. Standard inspections will determine what maintenance activities are required and should not require Confined Space Entry or CCTV monitoring.

The O&M Manual should provide a template for inspections, which are to be recorded and be available at the Owner's administrative offices. The template should include the following:

- Name of Inspector
- Asset ID of the Works inspected.
- Date and time of inspection
- Observations from inspection including (where applicable):
  - Hydraulic operation of works (e.g., length of occurrence since the last rainfall event, evidence, or occurrence of overflows.
  - Condition of surface vegetation in and around the Works.
  - Occurrence of obstructions at the inlet and outlet of the Works.
  - Evidence of spills and/or grease/oil contamination.
  - Frequency of surface trash build-up.
  - Measurements of sediment accumulation and water levels.

### Monitoring

The O&M Manual shall outline a monitoring program of the facility in accordance with CLI-ECA requirements (Schedule E) to ensure proper functioning of the facilities from a quantity and quality perspective and inform any corrective measures that may be required prior to assumption. The monitoring plan must be reviewed and approved by the City and at the City's discretion, a third party to verify monitoring plan adequacy. The plan shall:

- Be carried out by the Landowner, or a delegated third party Qualified Person, with data recorded in an electronic database.
- Verify the operation performance of the Non-Conventional SWMF is as designed.
- Assess the environmental impact of the Non-Conventional SWMF.
- Identify the works to be monitored (outlets and facilities providing quantity and/or quality control).
- Identify key receivers to be monitored and monitoring locations.
- Consideration of relevant municipal land use and environmental planning documents.
- Identification of rainfall gauges to be used.
- Develop a program that includes:
  - Characterization of water quality and quantity conditions and development of quality and quantity goals.
  - Hydrological, chemical, physical, and biological parameters as appropriate.
  - Water level shall be measured with water level gauge clearly visible to take readings.
  - Monitoring methodology, including frequency and protocols for sampling, analysis, and recording, with consideration of dry and wet weather events and timing of sampling during wet weather events, and date and time of sampling.
- Identify schedule for plan implementation.

- Result in a report with analysis of monitoring information and data, with findings and recommendations.
- Identify adaptive measures based on results of monitoring.

Monitoring Plans shall be kept current following any alterations to the Non-Conventional SWMF and will be available to members of the public upon request. Monitoring plans shall be in accordance with the existing City of Vaughan monitoring requirements, per Section 1.3.5.20 of the City criteria. At minimum, monitoring will be required for the first two years of operations, and one additional year to be completed by the City, through the monitoring fee collected through the subdivision agreement, for a total of three years of monitoring.

### 3.2 Maintenance Cost

#### Sediment Removal

Sediment removal frequency should be calculated for any component of the treatment train that accumulates sediment. Sediment removal procedure shall be outlined in the O&M Manual. Overall sediment loading rates will be calculated based on the loading rates per impervious area outlined in Section 6.0 of the MECP Stormwater Management Planning and Design Manual, also shown below in **Table 5**.

The manual shall provide a detailed execution plan for sediment removal, which considers:

- Sediment removal construction drawings to demonstrate feasibility.
- Frequency of maintenance.
- Identification of access routes and paving requirements (heavy duty vs. light duty).
- Identification of staging locations.
- Sediment removal technique.
- Assessment of restoration requirements.
- Identification of confined space entry requirements (and applicable certifications).
- Equipment requirements.
- Flow diversion strategies.
- Traffic management considerations
- Consideration of impact on park uses.
- Plan for facility entry.
- Identification of Emergency Overland Flow Route

TABLE 5: SEDIMENT LOADING

Catchment Imperviousness	Annual Loading (kg/ha)	Wet Density (kg/m <sup>3</sup> )	Annual Loading (m <sup>3</sup> /ha)
35%	770	1,230	0.60
55%	2,300	1,230	1.9
70%	3,495	1,230	2.8
85%	4,680	1,230	3.8

\*Source: MECP Table 6.3 in MECP Stormwater Management Planning and Design Manual

#### Increased Maintenance

A Maintenance Cost Assessment shall be completed for the proposed Non-Conventional SWMF and any proposed pre-treatment (e.g., OGS or other LID measures) units, which details the increased maintenance costs for the facility over a 50 year period. All unit rates used in the calculation of the Offset Fee shall be subject to annual indexing per Statistics Canada Non-Residential Construction Price Index, beginning from the year of the Non-Conventional SWMF Design Criteria. Adjustments to unit rates may be made by the City through updates of the Design Criteria to maintain accuracy to current typical industry rates.

Items that may need to be considered in the maintenance cost assessment, depending on product choice and placement, are:

- Structural inspection requirements.
- Replacement and maintenance of maintenance access routes in parks.
- ROW reconstruction.
- Restoration and/or replacement of vegetation/trees above and surrounding the facility after major rehabilitation.
- Replacement of components including OGS units, and inlet and outlet structures.
- Ongoing OGS maintenance.
- Flow by-pass contributions for major maintenance/replacement.
- Traffic Management for major maintenance/replacement within ROW's.
- If the City is responsible for implementation of any Park features, structures, facilities, and amenities where a Non-Conventional SWMF is located, the developer shall be responsible for any additional costs caused by the Non-Conventional SWMF.

Maintenance activities for the first 50 years of the proposed facilities, such as debris removal, shall be outlined in the Manual, including frequency for each maintenance activity and associated cost. Required maintenance activities shall be determined through visual surface inspections of all facilities included in the SWM solution. The Manual must consider the following items in the maintenance cost assessment of the proposed facilities, and provide detailed plans where applicable:

- Frequency of maintenance.
- Identification of access routes and paving requirements (heavy duty vs. light duty).
- Identification of stockpiling locations.
- Identification of staging locations.
- Sediment removal technique.
- Assessment of restoration requirements.
- Identification of confined space entry requirements (and applicable certifications).
- Equipment requirements.
- Flow diversion strategies.
- Traffic management considerations
- Consideration of impact on park uses.
- Plan for facility entry.
- Identification of Emergency Overland Flow Route.

Typical maintenance costs for non-conventional facilities are provided in the table below:

TABLE 6: EXAMPLE MAINTENANCE COSTS AND FREQUENCIES FOR NON-CONVENTIONAL SWMF'S

Item	Unit/ Frequency	Non-Conventional SWMF Rate
Confined Space Entry Structural Inspection	Every 10 years	\$5000/day
Reconstruction of SWMF Inlet/Outlet Components (grates, orifice, weirs, etc.)	Every 50 years	Based on construction cost of inlet/outlet components
Replacement/Maintenance of OGS Components	Every 25 years	Based on construction cost for internal components
<b>Restoration Activities</b>		
Seed and Topsoil	m <sup>2</sup>	\$7
Grass Sod and Topsoil	m <sup>2</sup>	\$30
Upland Vegetation	m <sup>2</sup>	\$5
Trees	each	\$550

The maintenance fees for the operations and maintenance of a comparative Conventional SWMF shall be calculated assuming a design life of inlet/outlet structures of 50 years. The cost of replacement shall be calculated based on current construction costs. Any other maintenance typically associated with Conventional SWMF's shall also be included in the maintenance cost calculation. The below table provides unit costs for typical maintenance activities that can be used in this calculation.

TABLE 7: EXAMPLE MAINTENANCE COSTS AND FREQUENCIES FOR CONVENTIONAL SWMF'S

Item	Unit/ Frequency	Conventional SWMF Rate
<b>Standard Maintenance</b>		
Inlet/Outlet Structures	Every 50 years	Based on construction cost
Grass Cutting	Per ha per year	\$292
Litter Removal	Per ha per year	\$105
Vegetation Maintenance	Per year	\$1,000
Tree trimming for overhead clearance of Access Road	Every 3 years	\$2,000
<b>Restoration Activities</b>		
Seed and Topsoil	m <sup>2</sup>	\$7
Grass Sod and Topsoil	m <sup>2</sup>	\$30
Upland Vegetation	m <sup>2</sup>	\$5
Trees	each	\$550

Items with "Per ha area" listed as their frequency above are for the pond block area. The delta between the total maintenance cost, including sediment removal, over a 50 year period for a Conventional and Non-Conventional SWMF will be used in the calculation of the Offset Fee as the "Maintenance Cost" component. All unit rates used in the calculation of the Offset Fee shall be subject to annual indexing per Statistics Canada Non-Residential Construction Price Index, beginning from the year of the Non-Conventional SWMF Design Criteria.



## 4.0 FINANCIAL REQUIREMENTS

Compensation fees will be calculated and collected by the City after the submission of Detailed Design, prior to assumption. All facilities (quality and quantity) included in the SWM solution to be assumed by the City should be included in the calculation of the fees (pre-treatment and Non-Conventional SWMF).

### 4.1 Final Offset Fee

An Offset Fee Calculation is to be provided at the same time as the submission of the Operations & Maintenance Manual at the detailed design stage. It can be included in the manual or provided as a standalone document. The Offset Fee will quantify the operation and maintenance cost differential between the Non-Conventional SWMF (and pre-treatment facilities) and a Conventional SWMF of equal size/function over a period of 50 years.

The Landowner is to provide a 25-year Manufacturer extended warranty for non-conventional SWMFs. Should an extended warranty to the City's satisfaction not be provided, inclusion of a SWMF rehabilitation fee will be added to the total Offset Fee. Rehabilitation of SWMF's is necessary to ensure the structural integrity and longevity of the facility.

The Offset Fee calculation is to use the unit rates for each activity provided in the tables in **Section 3.2** and **Section 4.2**, and is to be the summation of:

- Inspection and monitoring costs over the specified period.
- Maintenance costs over the specified period.
  - Increased cost of construction, materials and over the specified period shall be considered in the fee calculation.
  - Any proposed pre-treatment units shall be included in the maintenance cost calculation.
- Inclusion of a SWMF rehabilitation fee should a 25-year extended warranty to the satisfaction of the City Solicitor not be provided for the facility:
  - Concrete rehabilitation of 40% of the facility inner surface area for concrete SWMFs.
- If the City is responsible for implementation of the Park features after assumption, the developer shall be responsible for any additional costs caused by the Non-Conventional SWMF.
- In the case of infill developments with drainage areas of 2 ha or less which propose concrete superpipes, a replacement/rehabilitation fee is not required regardless of an extended warranty plan. Additional infrastructure such as inlet and outlet structures and components of pre-treatment devices shall still be considered.

All unit rates used in the calculation of the Offset Fee shall be subject to annual indexing per Statistics Canada Non-Residential Construction Price Index, beginning from the year of the Non-Conventional SWMF Design Criteria. Adjustments to unit rates may be made by the City through updates of the Design Criteria to maintain accuracy to current typical industry rates. All calculations must be accompanied by a Sealed Engineering opinion that corroborates the assumed service life of the proposed SWMF.

The Final Offset Fee shall be a requirement of the Subdivision or other Development Related Agreement and paid to the City by the Landowner prior to the registration of the Subdivision or other Development Related Agreement. The fee shall be determined by the following:

$$\text{Final Offset Fee} = \text{Inspection \& Monitoring Costs} + \text{Maintenance Costs}$$

Where:

“*Inspection & Monitoring Costs*” is defined as the differential between the inspection and monitoring costs calculated for a Conventional versus Non-Conventional SWMF, outlined in the O&M Manual. Refer to **Section 3.1** for a full description of what is involved in these costs. Refer to **Section 4.2** for estimation methodology.

“*Maintenance Costs*” is defined as the differential between the costs, including structural inspections, OGS component replacement, sediment removal, and inlet/outlet replacements, for a Conventional versus Non-Conventional SWMF, outlined in the O&M Manual. Refer to **Section 4.2** for estimation methodology.

#### 4.2 Final Offset Fee Estimation Methodology

##### “Inspection & Monitoring Costs”

The following unit rates shall be used in the calculation of the inspection costs for the proposed Non-Conventional SWMF and Conventional SWMF of equal size/function.

TABLE 8: EXAMPLE INSPECTION COSTS

Item	Frequency (years)	Unit	Non-Conventional SWMF Rate	Conventional SWMF Rate
<b>Inspection Activity</b>				
Surface Inspection	1	each	\$500	\$2000

##### “Maintenance Costs”

The sediment removal cost for a Non-Conventional SWMF shall be determined using a unit rate of \$500/m<sup>3</sup> of sediment. This fee covers all associated restoration, disposal and equipment required for sediment removal.

The comparative maintenance fee for a Conventional SWMF of equal size/function shall be calculated based on a unit rate of \$200/m<sup>3</sup> of sediment. The calculation assumes that the sediment loading rate is consistent between the two facilities. For the purposes of the Offset Fee, sediment accumulation will be calculated over a period of 50 years.

Rates were determined through a survey of recent cleanout costs collected from various municipalities in Southern Ontario.

Overall maintenance costs will be highly dependent on the specified product. Maintenance costs shall be calculated over a period of 50 years and shall include general maintenance for the continued operation of the facilities including upstream treatment train approach. An Engineer shall provide recommendations for structural inspection, and replacement of components such as OGS units, inlets and outlets, based on design life. Further details and considerations are provided in **Section 3.2**.

Rehabilitation of SWMF’s facilities may be added to the Offset Fee should a 25-year Manufacturer extended warranty not be provided or accepted by the City. The warranty must cover any

rehabilitation works that will be required over the first 25 years, beginning at the time of Assumption. Suppliers providing a warranty shall be subject to the terms and conditions of a legal agreement provided by the City, and to the satisfaction of the City solicitor.

TABLE 9: EXAMPLE ADDITIONAL MAINTENANCE COST

Item	Unit/ Frequency	Non-Conventional SWMF Rate
Concrete SWMF Rehabilitation (without extended warranty)	40% of the inner SWMF surface area every 50 years	\$2600/m <sup>2</sup> of internal concrete SWMF surface area

Restoration and rehabilitation/replacement costs for the inlet and outlet structures of a Conventional SWMF of equivalent size/function shall be used to calculate the comparative maintenance costs for a Conventional SWMF. Further details and considerations are provided in **Section 3.2**.

## 5.0 ASSUMPTION

Prior to City assumption of the Non-Conventional SWMF's, the following must be provided through a Certificate of Conformance which has been completed by a Qualified Engineer, in addition to any requirements of assumption provided within the subdivision agreement:

1. Proof of structural stability – to be confirmed through CCTV, or other methods to the satisfaction of the City.
2. Proof that the facility is functioning as intended through flow monitoring.
3. Proof the facility is free of sediment and debris - to be confirmed through CCTV, or other methods to the satisfaction of the City.
4. Record drawings sealed by the Engineer of Record, certifying that the construction was completed per the design. Record drawings are to be in accordance with PEO's guidance document on Preparing As-Built and Record Documents, and the City of Vaughan's As-Constructed Document Requirements.
5. If applicable, record of and agreement on any extended warranty for the rehabilitation of SWMF's.
6. Completion of and records for a minimum two-year monitoring and report program to the satisfaction of the City Terms of Reference and CLI-ECA requirements.

Additionally, requirements per the City's Engineering Design Criteria Section 1.3.5.20 and 1.3.5.21 must be met, where applicable. The following materials required include but are not limited to:

- Annual Sediment Level Monitoring
- Inclusion of:
  - O&M Manual sealed by a qualified P.Eng.
  - SWM Report Sealed by qualified P.Eng.

- Digital photos of the SWM Facility
- AutoCAD drawings of facility
- GIS Shapefiles of facility
- Monthly Outlet Inspection Records
- Inlet and Outlet Flow Monitoring records
- Digital set of approved and the as-constructed technical drawings (sealed by a qualified P.Eng.)

For a comprehensive list, refer to the relevant sections of the City Design Criteria Sections 1.3.5.20 and 1.3.5.21. Depending on results shown in monitoring data, remedial works may be required to the satisfaction of the City, which will require at least one additional complete season of monitoring of remedial works. The City will reserve the right to require additional monitoring until the facility is performing to its satisfaction.

It is noted that in a scenario where the developer does not complete the installation of the park features prior to assumption, the applicant shall be required to provide payment for any additional park development expenses that are due to the implementation of the Non-Conventional SWMF. A budget for the development of the park will be provided by the City which will include estimate construction costs, consulting fees, contingency, applicable taxes, and administrative fees. Per Developer Build Park Policy No. 07.2.05, the landowner will prepare detailed construction drawings at the appropriate stages, as well as a detailed cost estimate. Costs that are incurred that are specific to the Non-Conventional SWMF and in excess of the standard park specifications are the landowner's financial responsibility and will be considered separate from standard development charges.

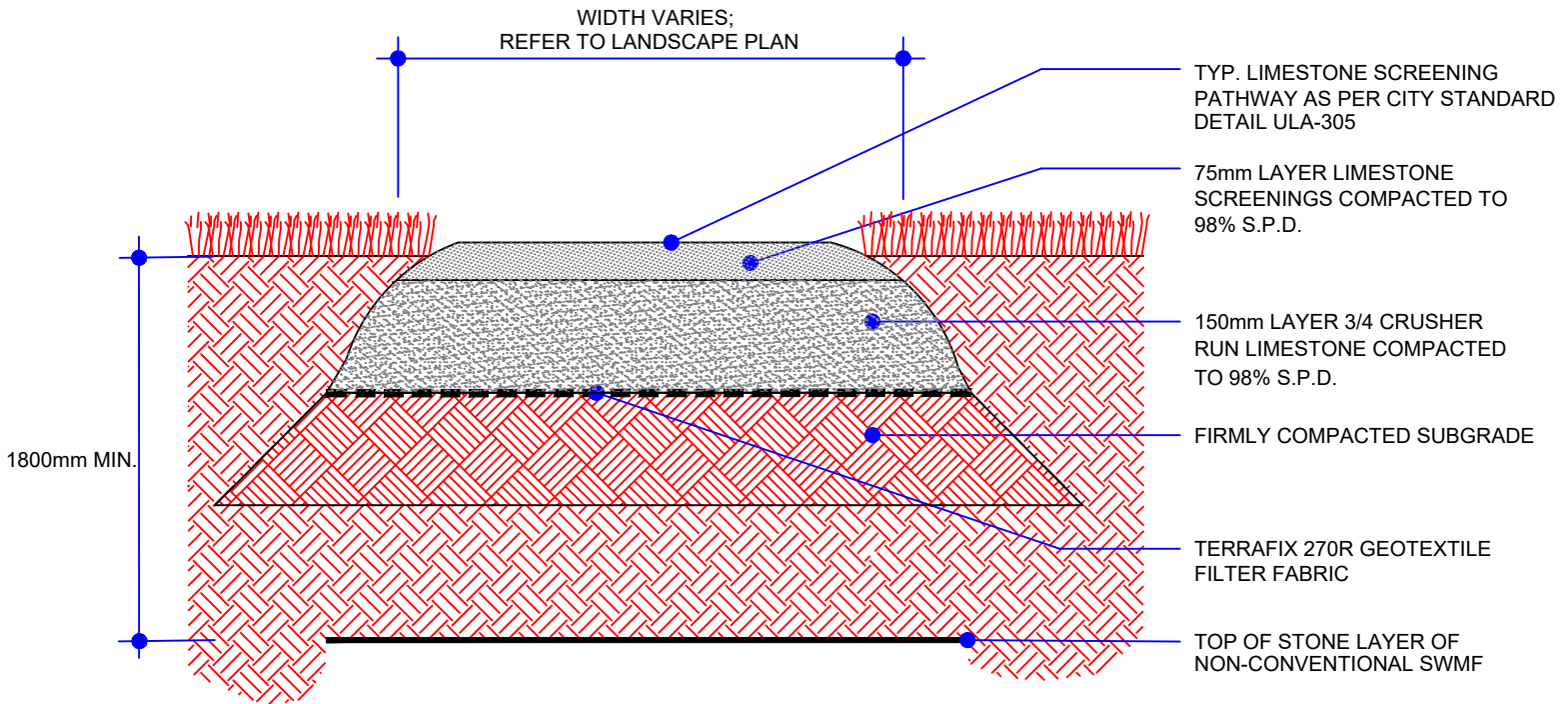
The City may also request any other details and information required by the Director of Development Engineering.

## 6.0 COMPLETION APPROVAL

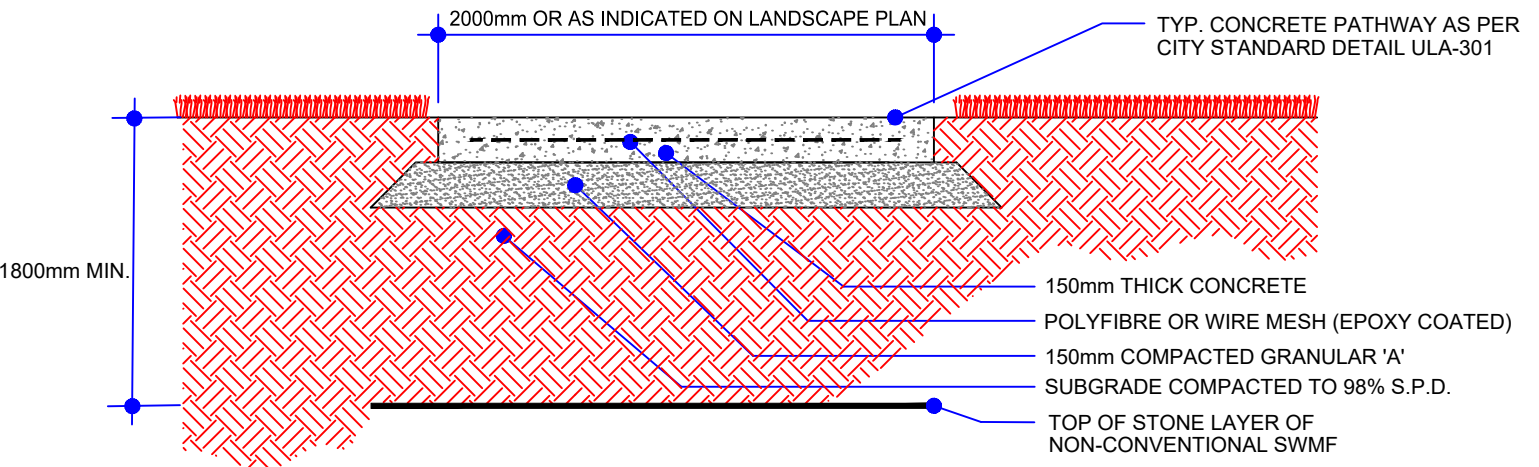
The following list is an overview of documentation required prior to, and for Completion Approval, which shall be submitted in digital format on CD-ROM or DVD disk with the final or as-constructed subdivision submission. Designs are to be in accordance with the requirements per City's Engineering Design Criteria Section 1.3.5.20 & 1.3.5.21 must be met, where applicable. Each submission shall include the applicant's contact information for comment coordination on the sufficiency of each submission.

1. New Facility Information
  - a. Type
  - b. Function
  - c. General Description
  - d. Location Description
  - e. Nearest Major Intersection
  - f. Municipal Address
  - g. Easting
  - h. Northing
  - i. Access
  - j. Driveway (y/n)
  - k. Driveway Material
  - l. Vehicle Turnaround (y/n)

- m. Gate Present (y/n)
  - n. Lock Present (y/n)
  - o. Adjacent Land Use (Residential/Commercial/Industrial/Rural)
  - p. Land Use above facility (ROW/Park/Open Space)
  - q. City Block Number
  - r. Comments
2. Drawings (\*.TIF)
    - a. Storm sewer drainage areas plans (internal and external)
    - b. Overland flow drawings
    - c. All drawings related to proposed SWM facilities including section & details of facility, inlet/outlet structures, detailed plan views etc.
    - d. All major & minor system design sheets
  3. SWM Facility Report (PDF)
    - a. SWM Facility Design Report
    - b. SWM Facility Operations & Maintenance Report
  4. Digital Photos of SWM Facility prior to assumption (\*.JPG)
    - a. All significant components
  5. AutoCAD Drawing (\*.DWG)
    - a. Property lines associated with SWMF area.
    - b. Ensure inlets and outlets are labelled.
  6. GIS File Geodatabase (ESTRI File Geodatabase compatible with ArcMap 10.2.2)
    - a. In NAD83 Zone 17N
  7. Environmental Compliance Approval Document (ECA)
    - a. Certificate of Approval OR Environmental Compliance Approval for each facility.



SECTION - LIMESTONE SCREENING PATHWAY  
(DERIVED FROM CITY STANDARD DETAIL ULA-305)



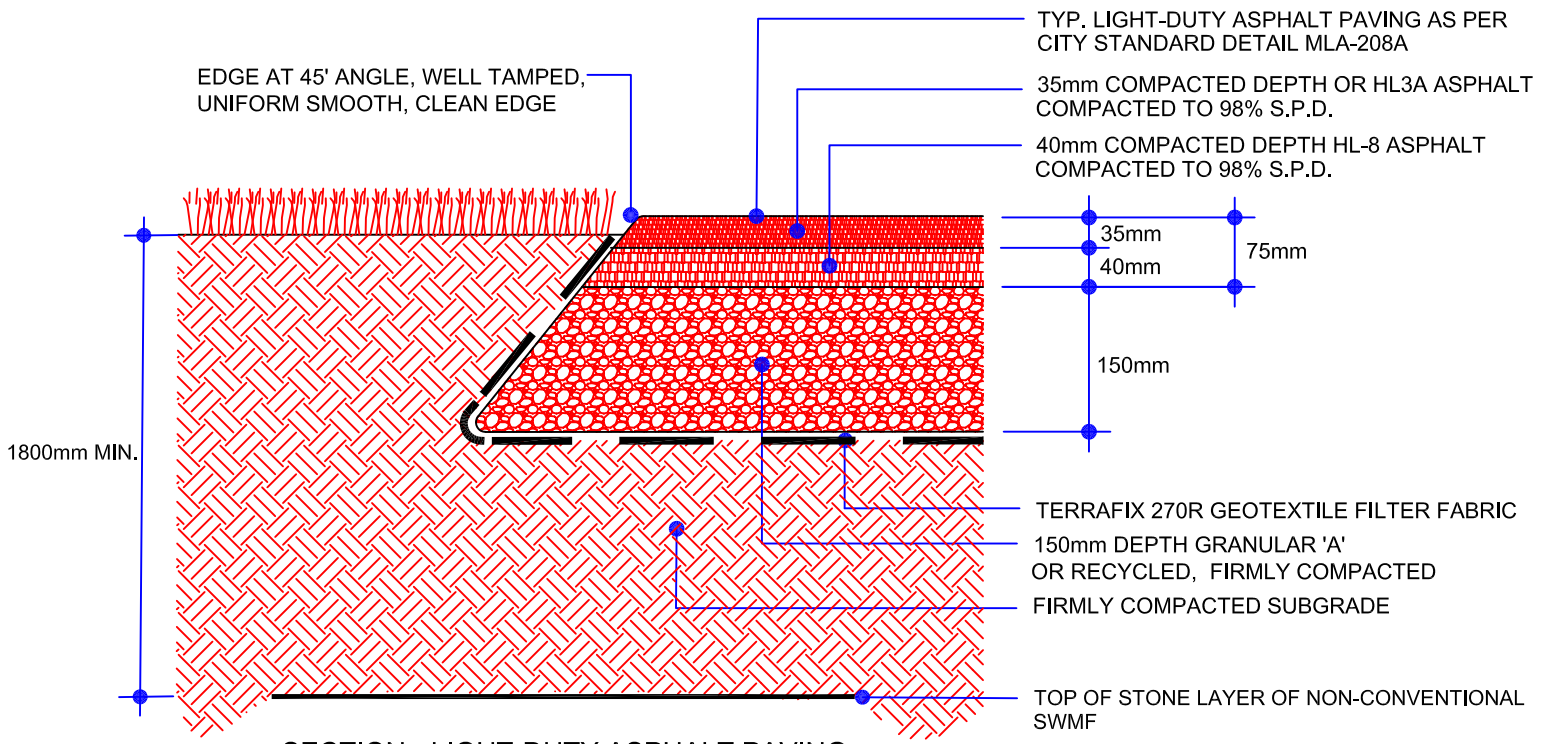
SECTION - CONCRETE PAVING PATHWAY  
(DERIVED FROM CITY STANDARD DETAIL ULA-301)

NOTES:

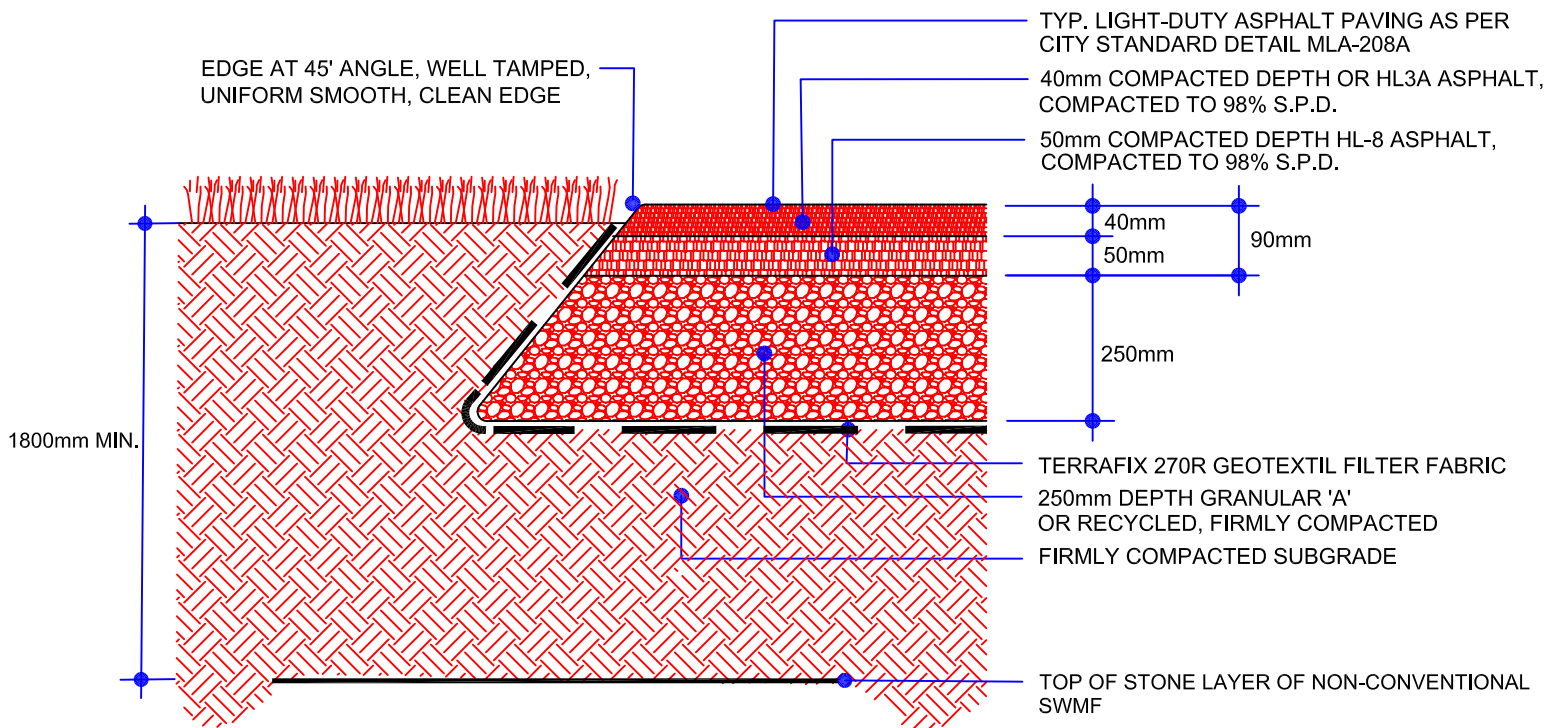
1. ALL DIMENSIONS ARE IN MILLIMETERS
2. THIS TYPICAL DETAIL IS INTENDED TO CONVEY INTENT AND IS FOR REFERENCE ONLY. IT SHALL NOT BE USED AS PART OF THE CONSTRUCTION DRAWING PACKAGE OR SITE PLAN APPLICATION
3. THIS TYPICAL DETAIL IS INTENDED TO DISPLAY DETAILS WITH RESPECT TO PATHWAYS ABOVE NON-CONVENTIONAL SWMF. REFER TO CITY STANDARD DETAILS ULA 301 AND 305 FOR PAVING DETAILS

PATHWAY (TYP.) ABOVE A  
NON-CONVENTIONAL SWMF

SWMF - 01



SECTION - LIGHT-DUTY ASPHALT PAVING  
(DERIVED FROM CITY STANDARD DETAIL MLA-208A)



SECTION - HEAVY-DUTY ASPHALT PAVING  
(DERIVED FROM CITY STANDARD DETAIL MLA-209)

**NOTES:**

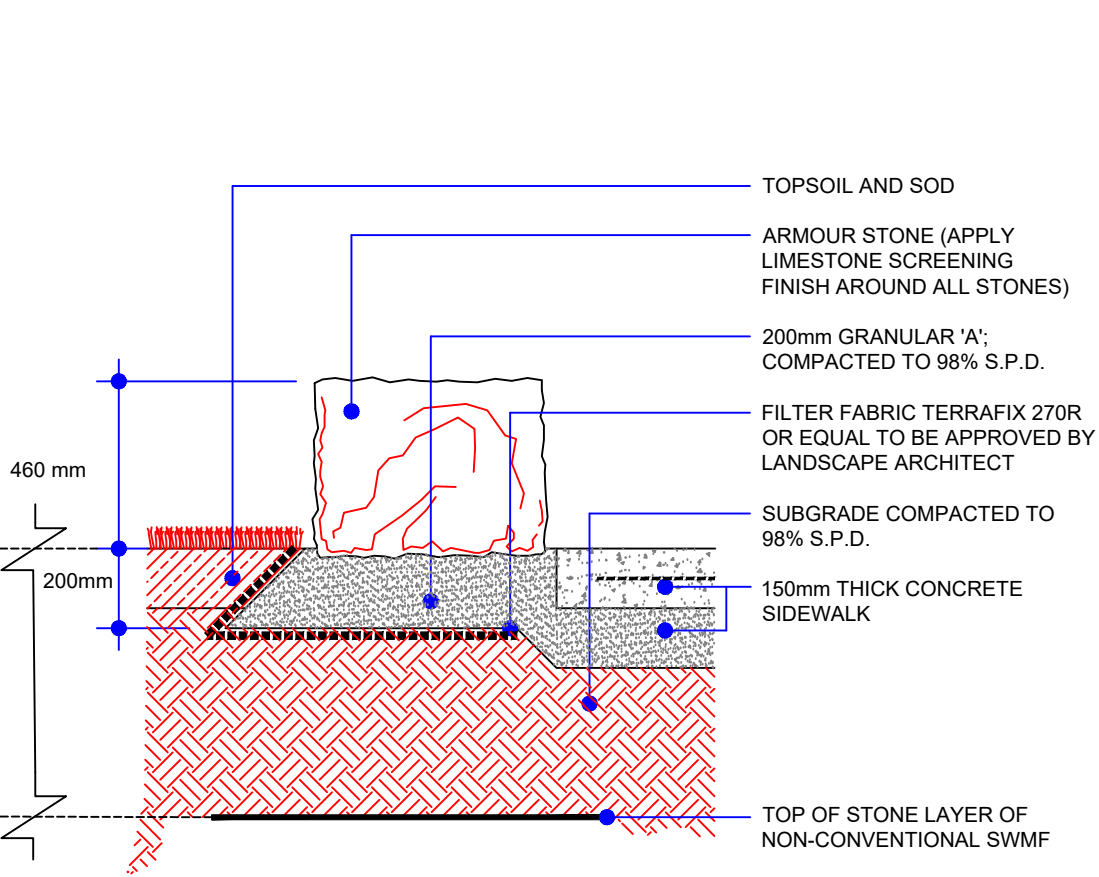
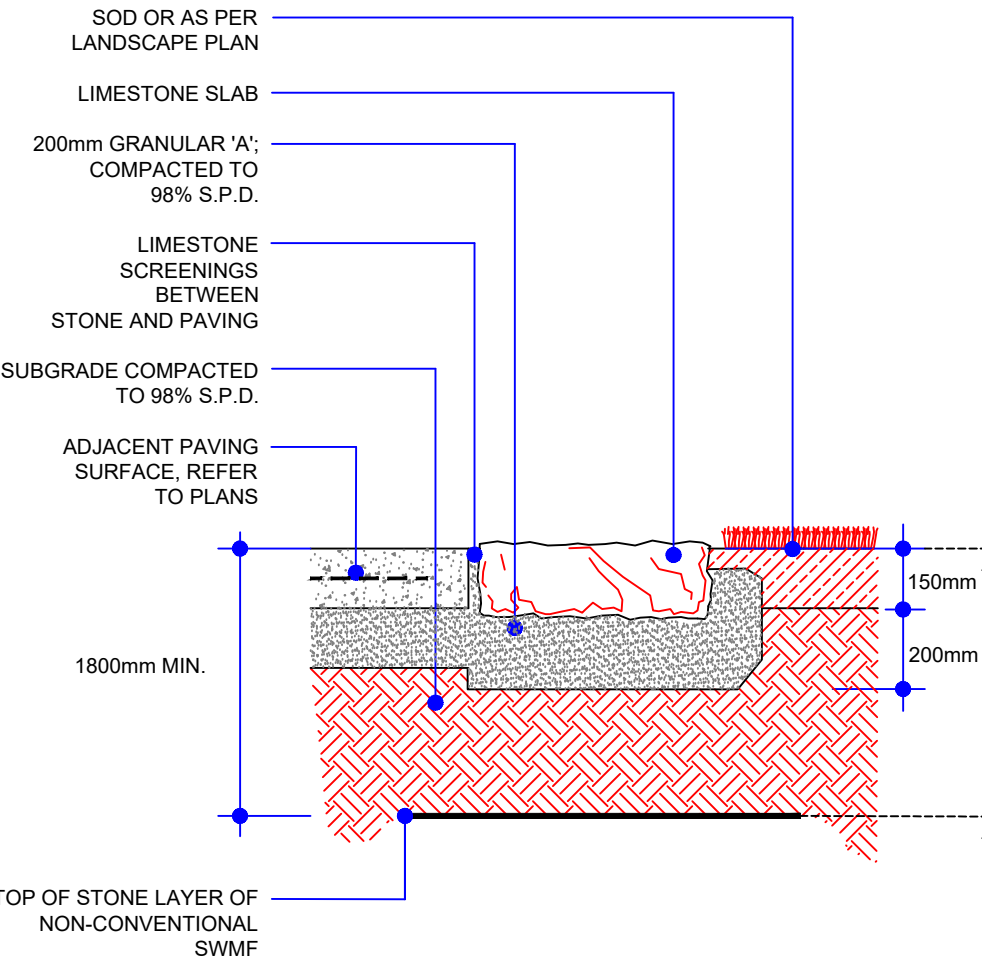
1. ALL DIMENSIONS ARE IN MILLIMETERS
2. THIS TYPICAL DETAIL IS INTENDED TO CONVEY INTENT AND IS FOR REFERENCE ONLY. IT SHALL NOT BE USED AS PART OF THE CONSTRUCTION DRAWING PACKAGE OR SITE PLAN APPLICATION.
3. THIS TYPICAL DETAIL IS INTENDED TO DISPLAY DETAILS WITH RESPECT TO PATHWAYS ABOVE NON-CONVENTIONAL SWMF. REFER TO CITY STANDARD DETAILS MLA 208A AND 209 FOR PAVING DETAILS.

ASPHALT  
PATHWAYS (TYP.) ABOVE  
NON-CONVENTIONAL SWMF

SWMF - 01A

**SECTION - STEPPING STONE  
ADJACENT WALKWAY**  
(DERIVED FROM CITY STANDARD DETAIL ULA-311)

**SECTION - ARMOUR STONE WITH  
P-I-P CONCRETE SIDEWALK**  
(DERIVED FROM CITY STANDARD DETAIL ULA-309)

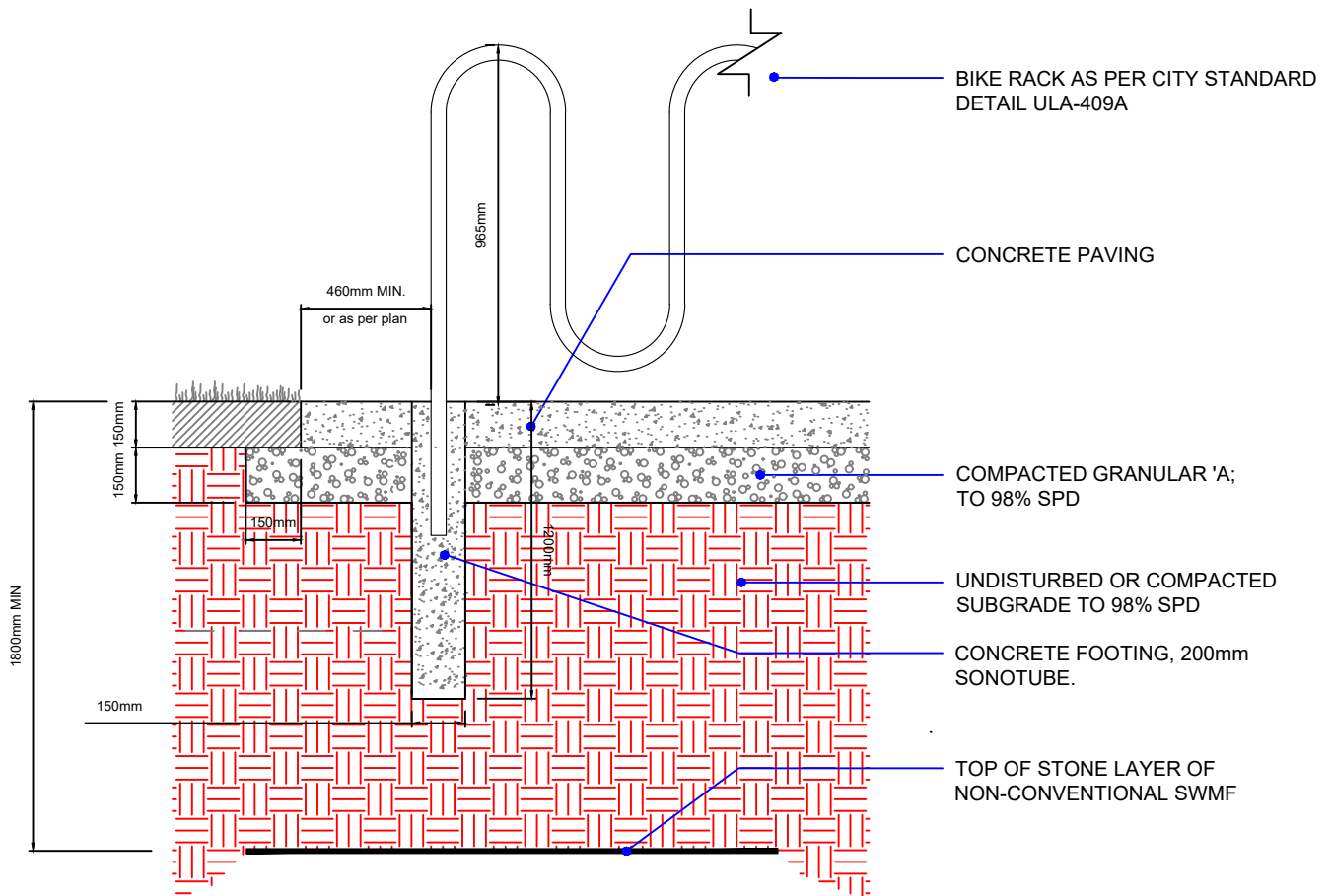


**NOTES:**

1. All stones to be approved by Landscape Architect prior to installation.
2. All quarry stone to have split or naturally weathered faces; no exposed drill markings.

**ARMOUR STONE (TYP.) DETAIL ABOVE A  
NON-CONVENTIONAL SWMF**

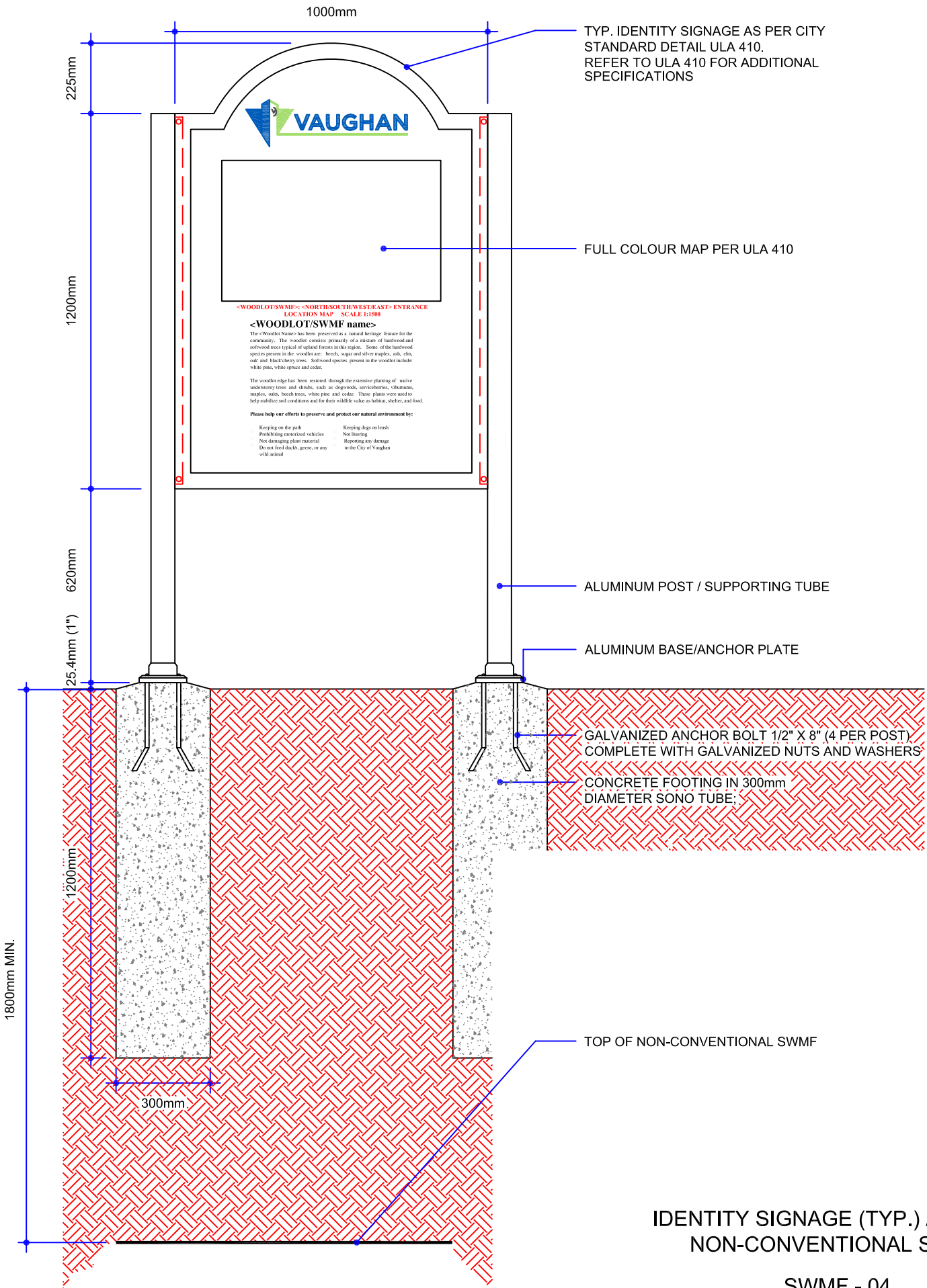




NOTES:

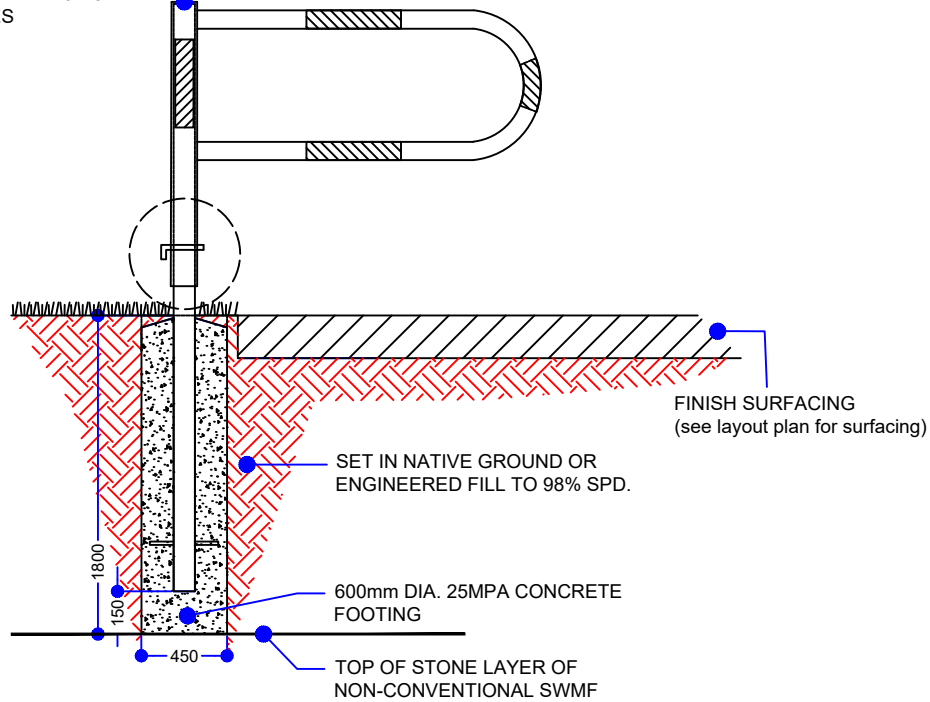
1. ALL DIMENSIONS SHOWN IN MILLIMETRES
2. REFER TO LAYOUT PLAN FOR PLACEMENT/LOCATION OF BIKE RACK
3. THIS TYPICAL DETAIL IS INTENDED TO CONVEY INTENT AND IS FOR REFERENCE ONLY. IT SHALL NOT BE USED AS PART OF THE CONSTRUCTION DRAWING PACKAGE OR SITE PLAN APPLICATION
4. THIS TYPICAL DETAIL IS INTENDED TO DISPLAY DETAILS WITH RESPECT TO BIKE RACKS ABOVE NON-CONVENTIONAL SWMF. REFER TO CITY STANDARD DETAIL ULA 409A FOR BIKE RACK DETAILS

BIKE RACK DETAIL (TYP.) ABOVE A  
NON-CONVENTIONAL SWMF  
SWMF - 03



IDENTITY SIGNAGE (TYP.) ABOVE A NON-CONVENTIONAL SWMF

REFER TO CITY STANDARD  
DETAILS ULA-412 AND 413 FOR  
DETAILS ON GATES

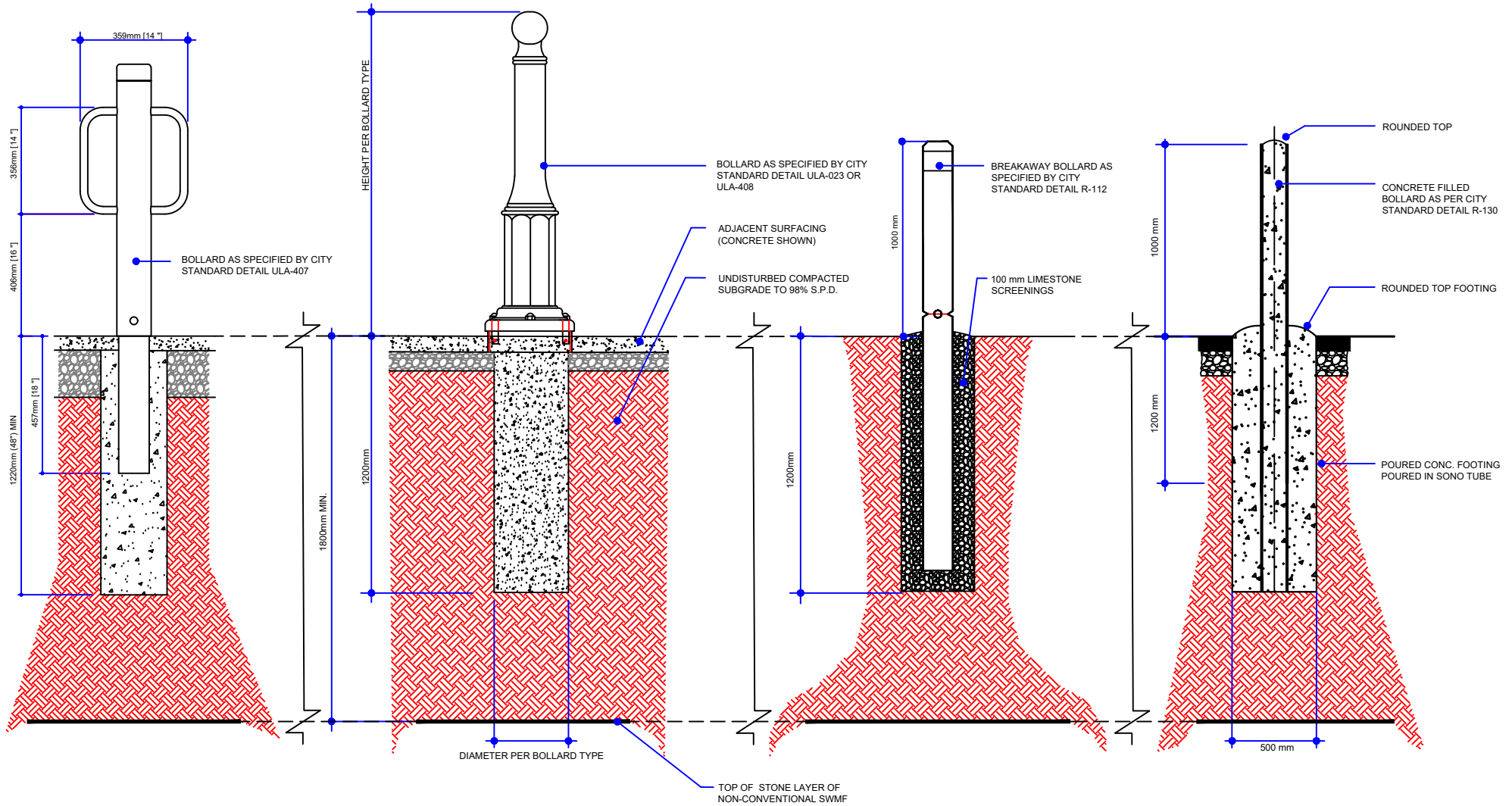


**NOTE:**

1. ALL MEASUREMENTS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
2. THIS TYPICAL DETAIL IS INTENDED TO CONVEY INTENT AND IS FOR REFERENCE ONLY. IT SHALL NOT BE USED AS PART OF THE CONSTRUCTION DRAWING PACKAGE OR SITE PLAN APPLICATION
3. THIS TYPICAL DETAIL IS INTENDED TO DISPLAY DETAILS WITH RESPECT TO GATES ABOVE NON-CONVENTIONAL SWMF. REFER TO CITY STANDARD DETAILS ULA-412 AND 413 FOR GATE DETAILS
4. LOCATION TO BE FIELD STAKED AND APPROVED BY LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
5. PROTECT EXISTING PATHWAYS AND WALKWAYS FROM DAMAGE. CONTRACTOR RESPONSIBLE TO RESTORE ALL DAMAGES AT NO ADDITIONAL COST TO THE CITY.

GATE (TYP.) ABOVE A  
NON-CONVENTIONAL SWMF

SWMF - 05



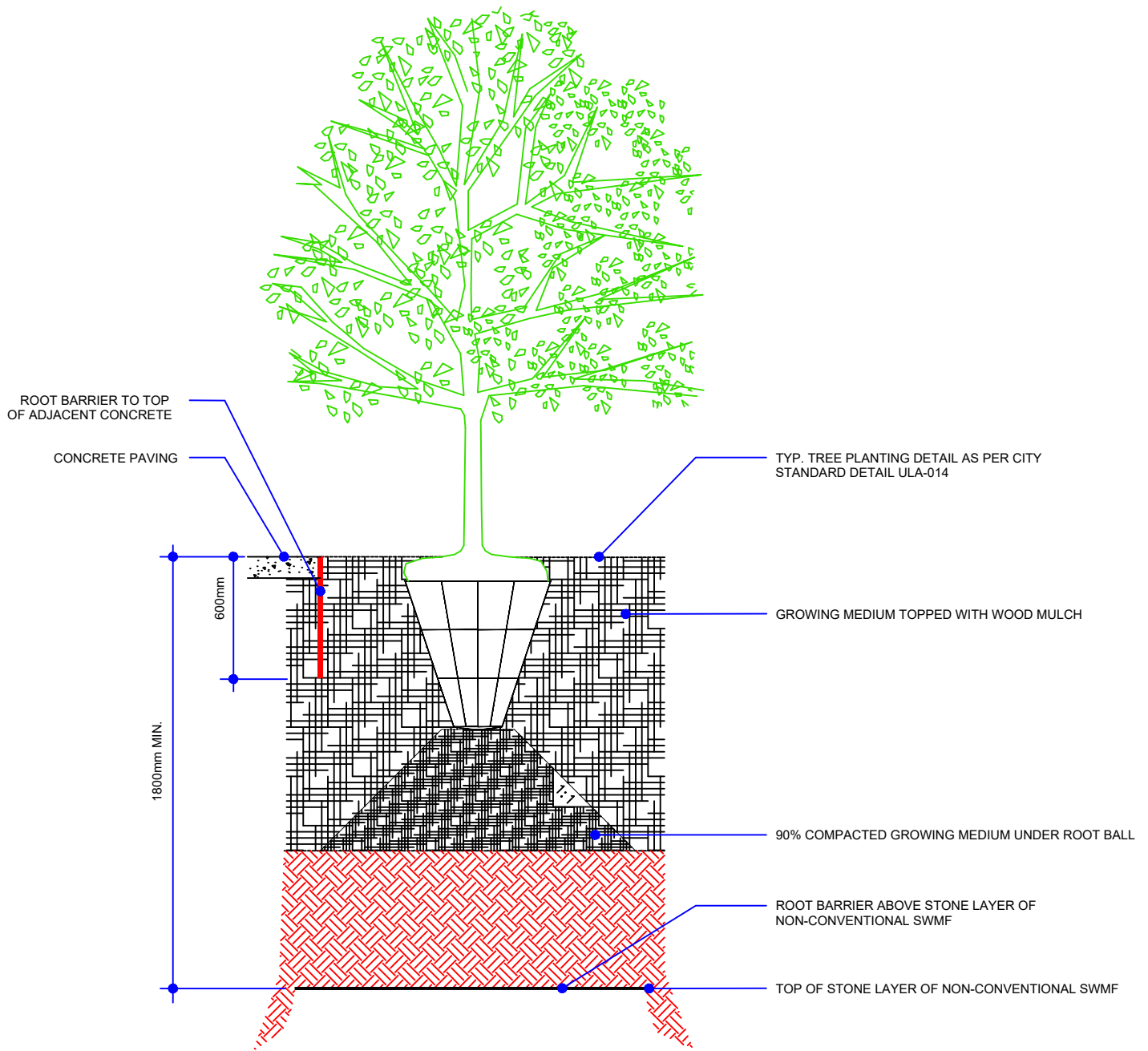
**NOTES:**

1. THIS TYPICAL DETAIL IS INTENDED TO CONVEY INTENT AND IS FOR REFERENCE ONLY. IT SHALL NOT BE USED AS PART OF THE CONSTRUCTION DRAWING PACKAGE OR SITE PLAN APPLICATION

2. THIS TYPICAL DETAIL IS INTENDED TO DISPLAY DETAILS WITH RESPECT TO BOLLARDS ABOVE NON-CONVENTIONAL SWMF. REFER TO CITY STANDARD DETAILS ULA-023, 407 AND 408 FOR BOLLARD DETAILS. REFER TO CITY STANDARD DETAIL R-112 FOR BREAKAWAY BOLLARD DETAILS. REFER TO CITY STANDARD DETAIL R-130 FOR CONCRETE BOLLARD DETAILS

**BOLLARD (TYP.) ABOVE A  
NON-CONVENTIONAL SWMF**

**SWMF - 06**

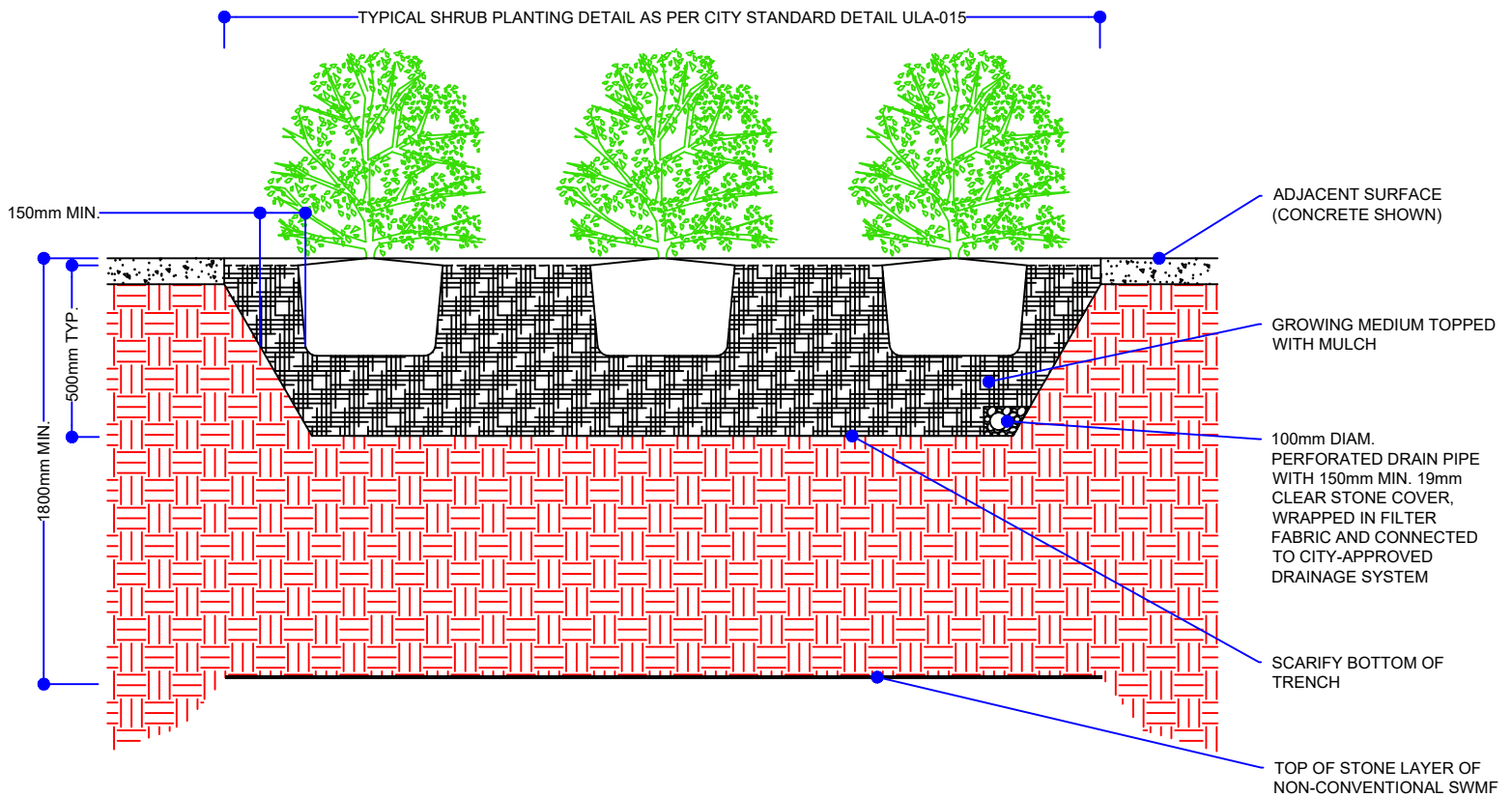


NOTES:

1. THIS TYPICAL DETAIL IS INTENDED TO CONVEY INTENT AND IS FOR REFERENCE ONLY. IT SHALL NOT BE USED AS PART OF THE CONSTRUCTION DRAWING PACKAGE OR SITE PLAN APPLICATION

2. THIS TYPICAL DETAIL IS INTENDED TO DISPLAY DETAILS WITH RESPECT TO TREE PLANTING ABOVE NON-CONVENTIONAL SWMF. REFER TO CITY STANDARD DETAIL ULA-014 FOR TREE PLANTING DETAILS

TYPICAL TREE PLANTING ABOVE A NON-CONVENTIONAL SWMF



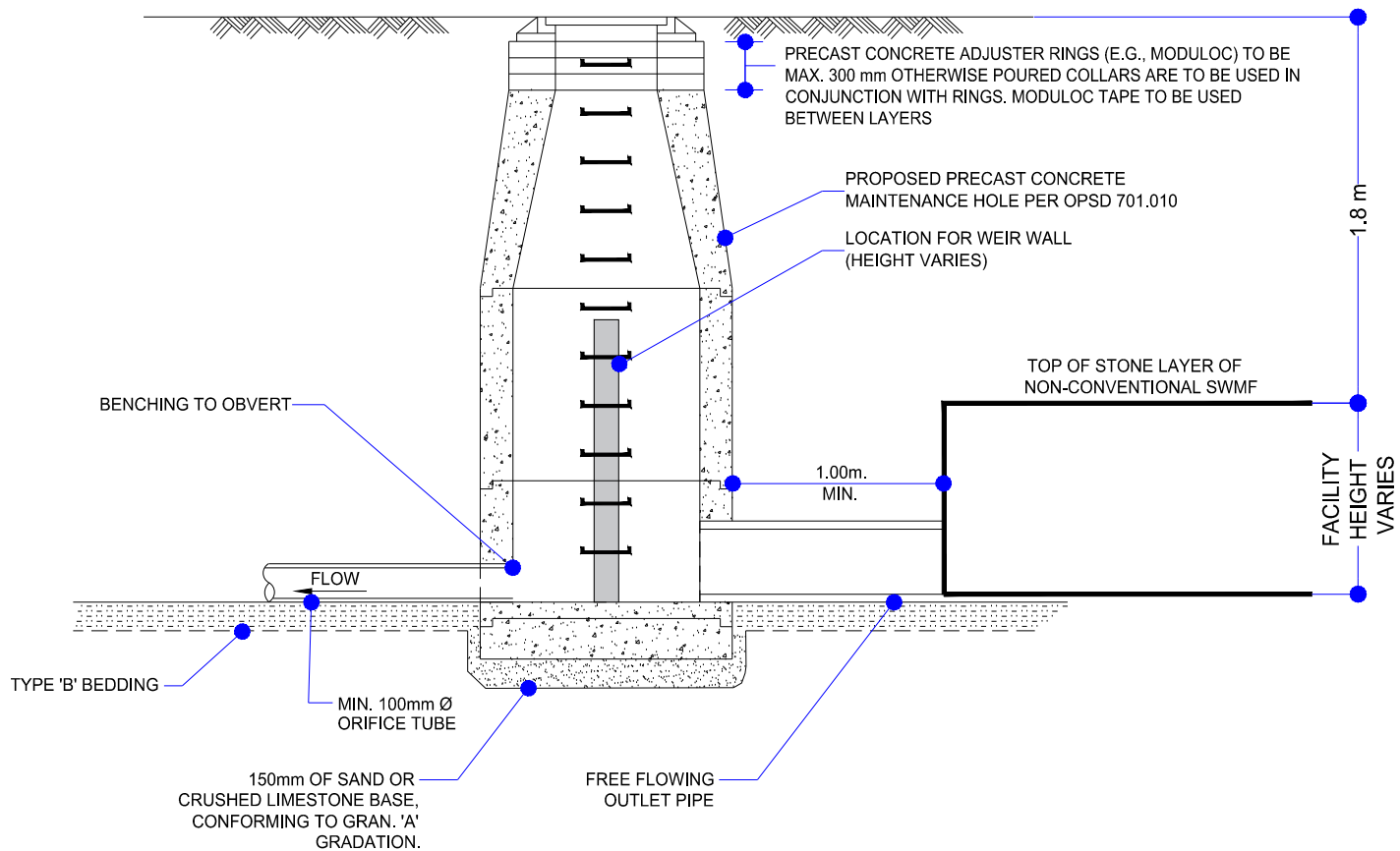
**NOTES:**

1. THIS TYPICAL DETAIL IS INTENDED TO CONVEY INTENT AND IS FOR REFERENCE ONLY. IT SHALL NOT BE USED AS PART OF THE CONSTRUCTION DRAWING PACKAGE OR SITE PLAN APPLICATION

2. THIS TYPICAL DETAIL IS INTENDED TO DISPLAY DETAILS WITH RESPECT TO SHRUB PLANTING ABOVE NON-CONVENTIONAL SWMF. REFER TO CITY STANDARD DETAIL ULA-015 FOR SHRUB PLANTING DETAILS

**TYPICAL SHRUB PLANTING ABOVE  
A NON-CONVENTIONAL SWMF**

**SWMF - 08**

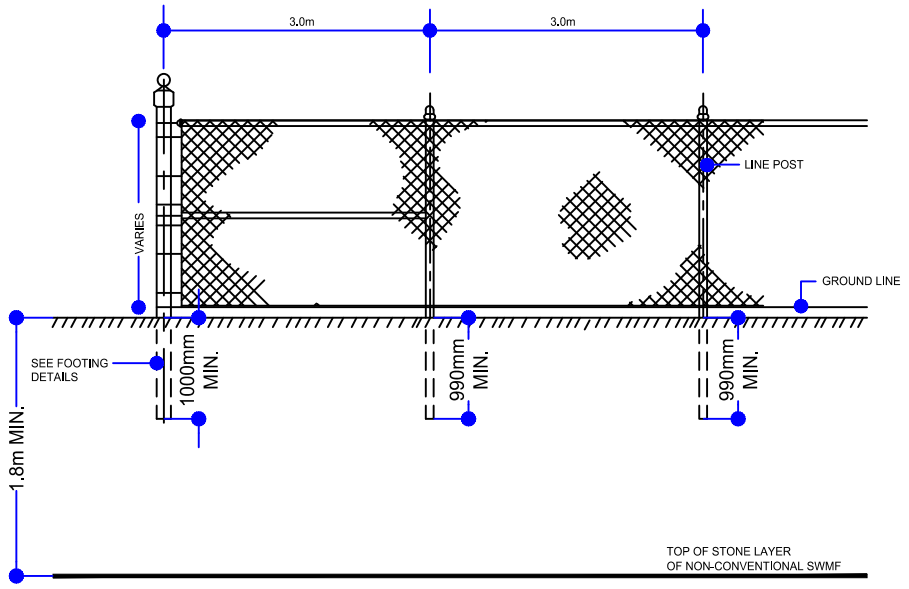


NOTE

1. THIS TYPICAL DETAIL IS INTENDED TO CONVEY INTENT AND IS FOR REFERENCE ONLY. IT SHALL NOT BE USED AS PART OF THE CONSTRUCTION DRAWING PACKAGE OR SITE PLAN APPLICATION
2. THIS TYPICAL DETAIL IS INTENDED TO DISPLAY DETAILS WITH RESPECT TO THE NON-CONVENTIONAL SWMF, DOWNSTREAM MANHOLE CONNECTIONS.
3. THIS DETAIL HAS BEEN DERIVED FROM CITY STANDARD DETAIL C-104.

**EXAMPLE STORM CONNECTION  
DOWNSTREAM FROM NON-CONVENTIONAL  
SWMF**

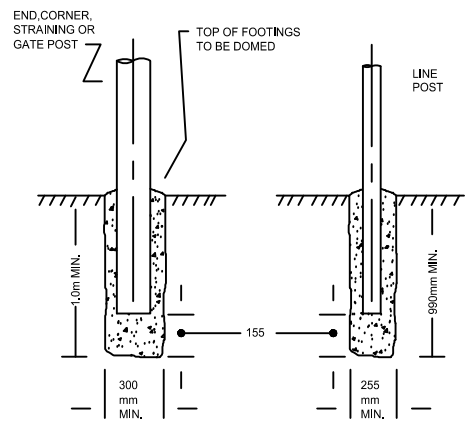
**SWMF - 09**



**FENCE DETAILS**

**NOTE**

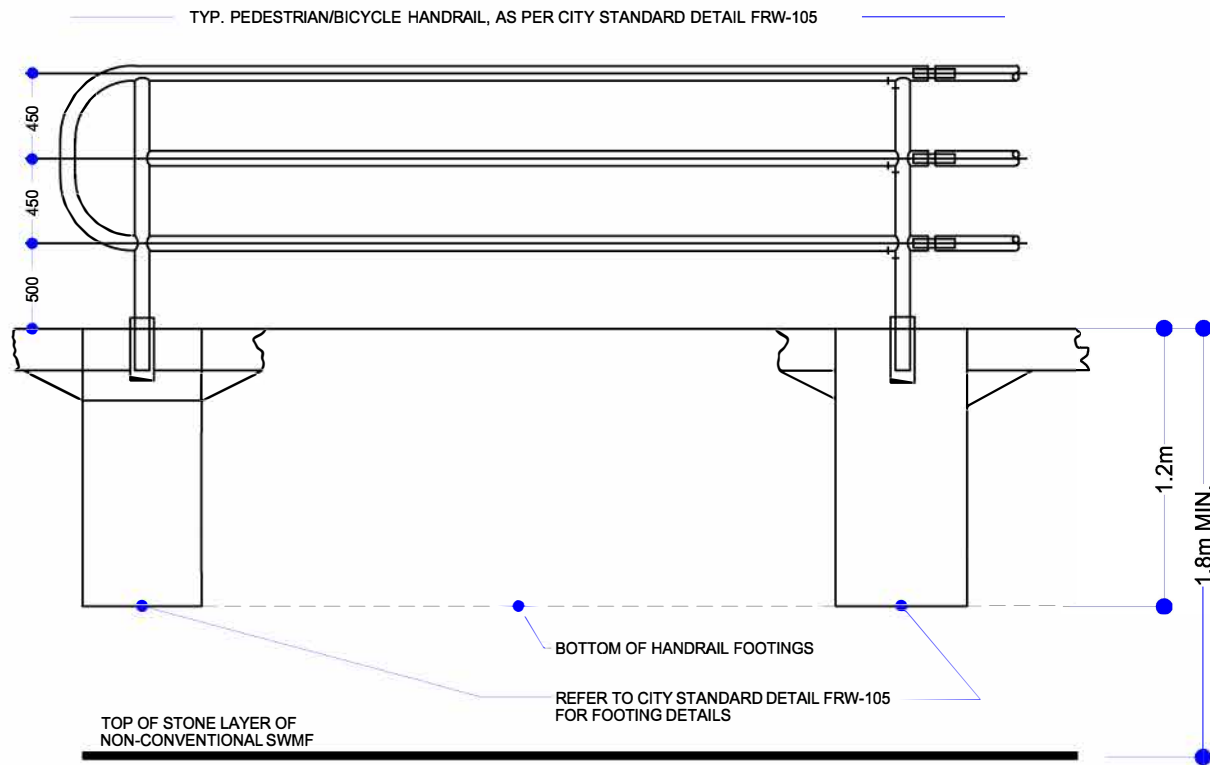
1. THIS TYPICAL DETAIL IS INTENDED TO CONVEY INTENT AND IS FOR REFERENCE ONLY. IT SHALL NOT BE USED AS PART OF THE CONSTRUCTION DRAWING PACKAGE OR SITE PLAN APPLICATION
2. THIS TYPICAL DETAIL IS INTENDED TO DISPLAY DETAILS WITH RESPECT TO CHAIN LINK FENCES ABOVE NON-CONVENTIONAL SWMF. REFER TO CITY STANDARD DETAIL FRW 101 FOR ADDITIONAL SPECIFICATIONS ON CHAIN LINK FENCES



**FOOTING DETAILS**

**CHAIN LINK SECURITY FENCE (TYP.)  
ABOVE A NON-CONVENTIONAL SWMF**

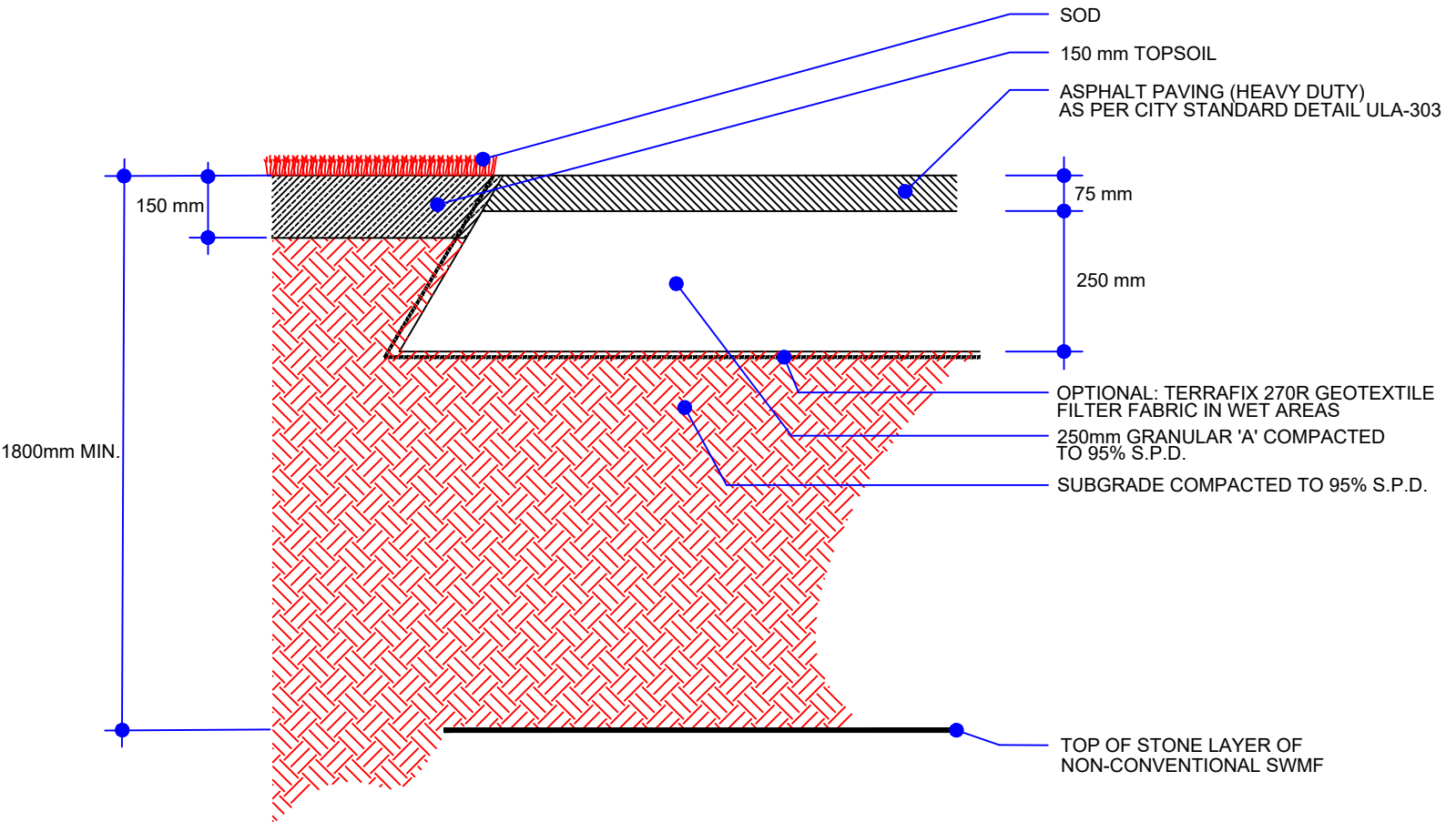




**NOTE**

1. THIS TYPICAL DETAIL IS INTENDED TO CONVEY INTENT AND IS FOR REFERENCE ONLY. IT SHALL NOT BE USED AS PART OF THE CONSTRUCTION DRAWING PACKAGE OR SITE PLAN APPLICATION
2. THIS TYPICAL DETAIL IS INTENDED TO DISPLAY DETAILS WITH RESPECT TO PEDESTRIAN/BICYCLE HANDRAILS ABOVE NON-CONVENTIONAL SWMF. REFER TO CITY STANDARD DETAIL FRW 105 FOR ADDITIONAL SPECIFICATIONS ON HANDRAILS
3. THIS STANDARD TO BE USED IN PLACE OF OPSD 980.101 WHERE ADDITIONAL RAIL HEIGHT IS REQUIRED (SUCH AS BICYCLE TRAIL).

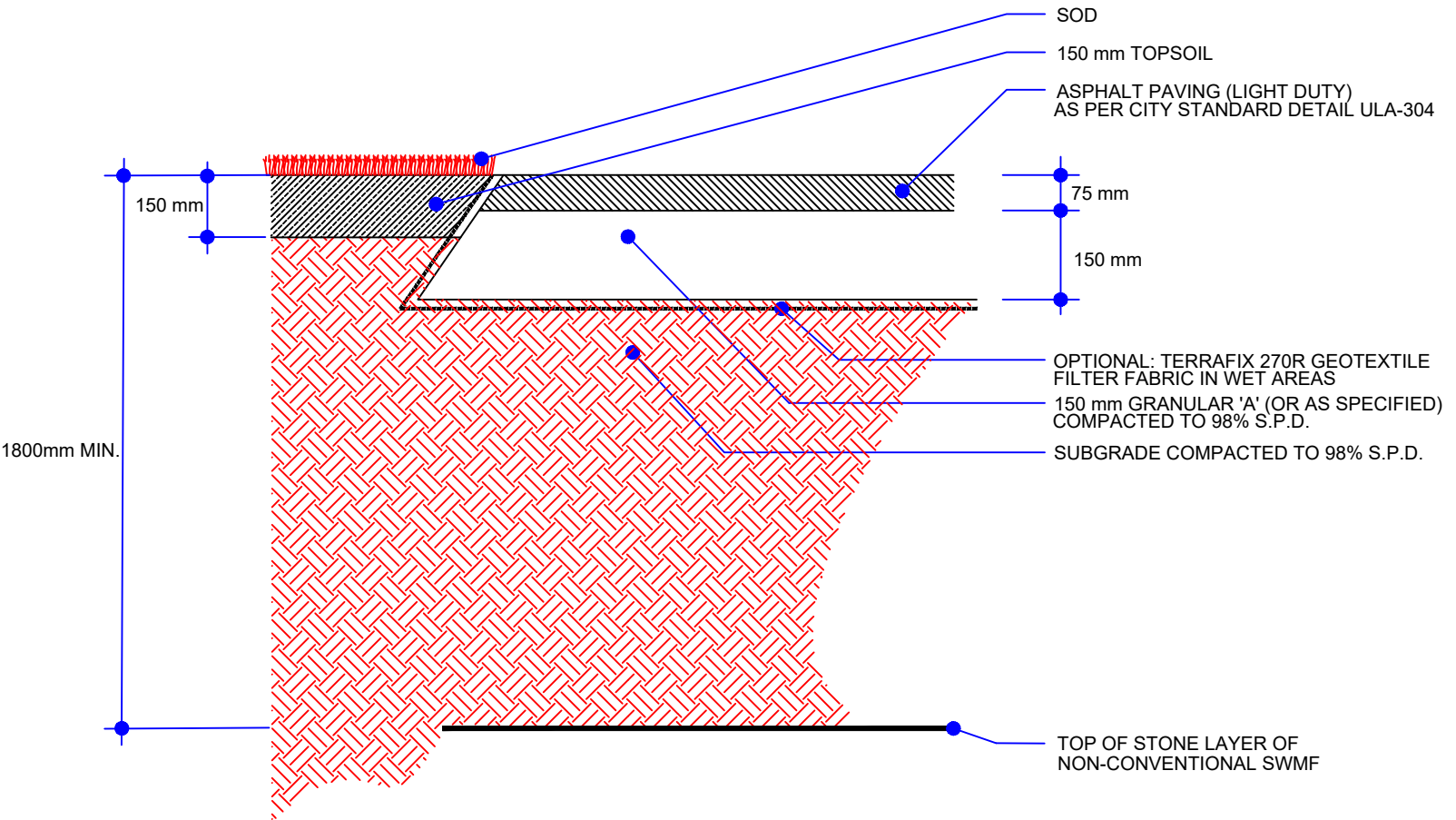
**PEDESTRIAN / BICYCLE HAND RAIL (TYP.)  
DETAIL ABOVE A NON-CONVENTIONAL SWMF**



**NOTES:**

1. ALL DIMENSIONS ARE IN MILLIMETERS
2. THIS TYPICAL DETAIL IS INTENDED TO CONVEY INTENT AND IS FOR REFERENCE ONLY. IT SHALL NOT BE USED AS PART OF THE CONSTRUCTION DRAWING PACKAGE OR SITE PLAN APPLICATION
3. THIS TYPICAL DETAIL IS INTENDED TO DISPLAY DETAILS WITH RESPECT TO PATHWAYS ABOVE NON-CONVENTIONAL SWMF. REFER TO CITY STANDARD DETAIL ULA-303 FOR HEAVY-DUTY PAVING DETAILS

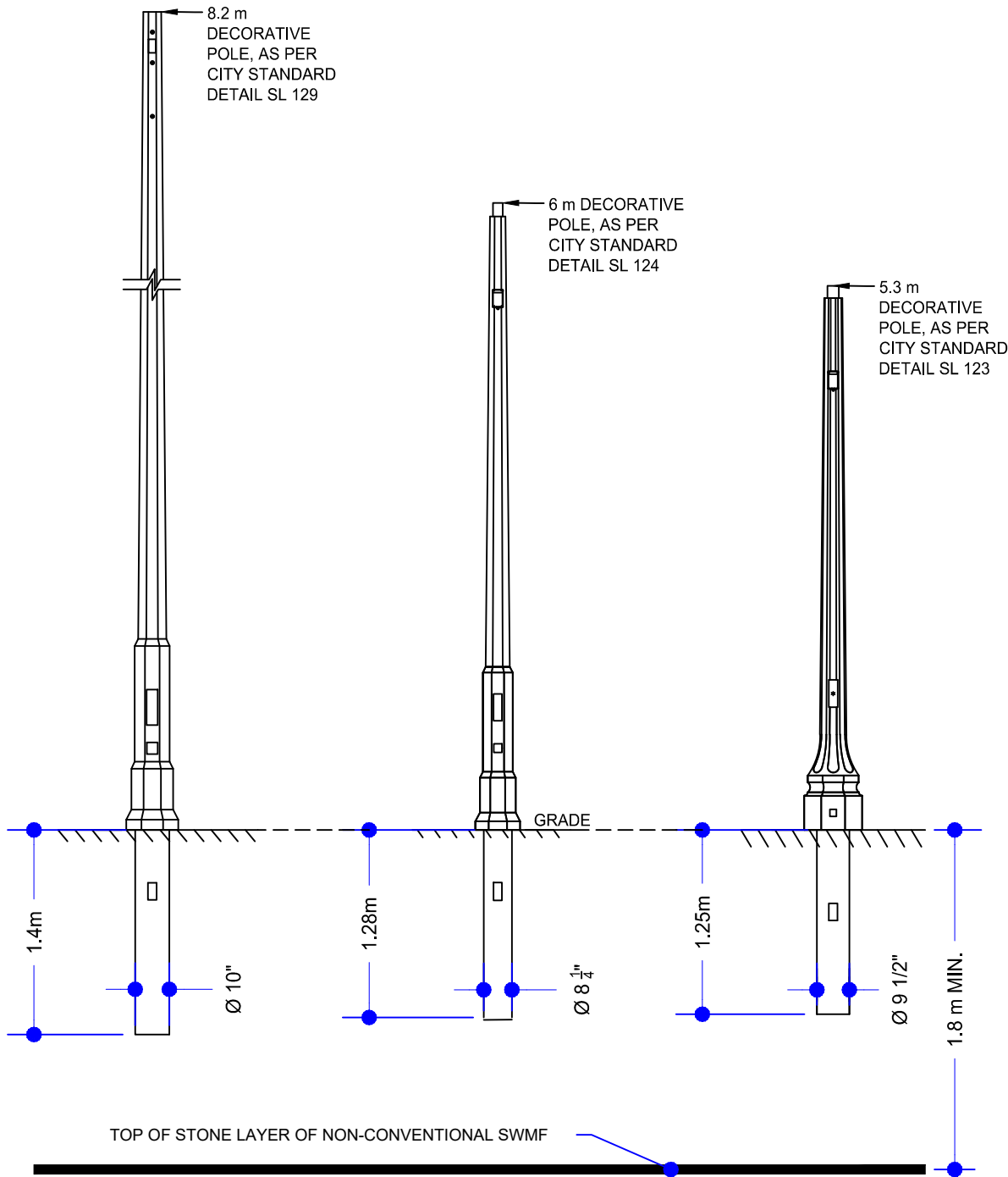
**ASPHALT PAVING (HEAVY DUTY) (TYP.)  
ABOVE A NON-CONVENTIONAL SWMF**



**NOTES:**

1. ALL DIMENSIONS ARE IN MILLIMETERS
2. THIS TYPICAL DETAIL IS INTENDED TO CONVEY INTENT AND IS FOR REFERENCE ONLY. IT SHALL NOT BE USED AS PART OF THE CONSTRUCTION DRAWING PACKAGE OR SITE PLAN APPLICATION
3. THIS TYPICAL DETAIL IS INTENDED TO DISPLAY DETAILS WITH RESPECT TO PATHWAYS ABOVE NON-CONVENTIONAL SWMF. REFER TO CITY STANDARD DETAIL ULA 304 FOR LIGHT-DUTY PAVING DETAILS

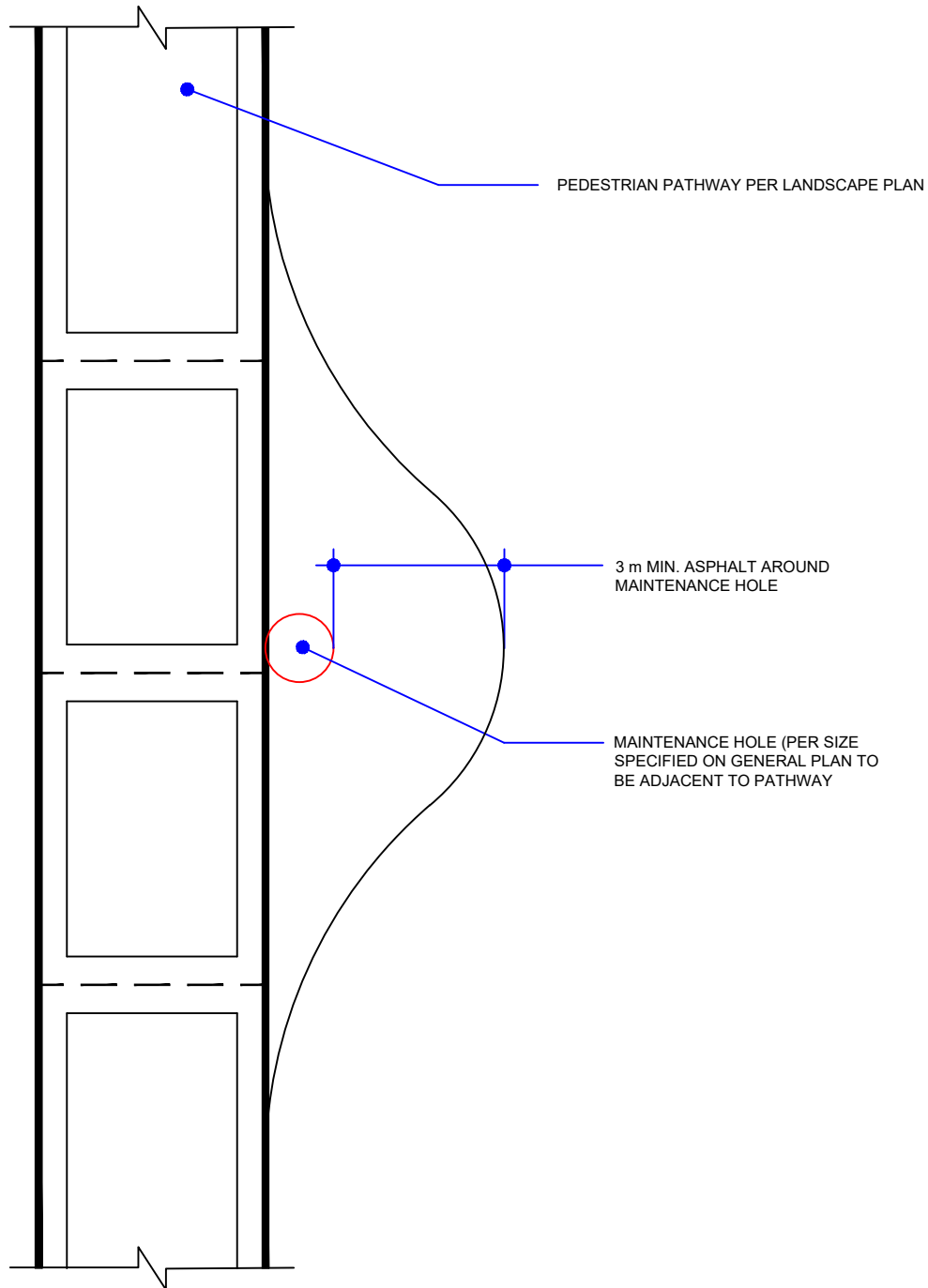
ASPHALT PAVING (LIGHT DUTY) (TYP.)  
ABOVE A NON-CONVENTIONAL SWMF



NOTES:

1. THIS TYPICAL DETAIL IS INTENDED TO CONVEY INTENT AND IS FOR REFERENCE ONLY. IT SHALL NOT BE USED AS PART OF THE CONSTRUCTION DRAWING PACKAGE OR SITE PLAN APPLICATION
2. THIS TYPICAL DETAIL IS INTENDED TO DISPLAY DETAILS WITH RESPECT TO DECORATIVE POLES ABOVE NON-CONVENTIONAL SWMF. REFER TO CITY STANDARD DETAILS SL 123, 124 AND 129 FOR POLE DETAILS

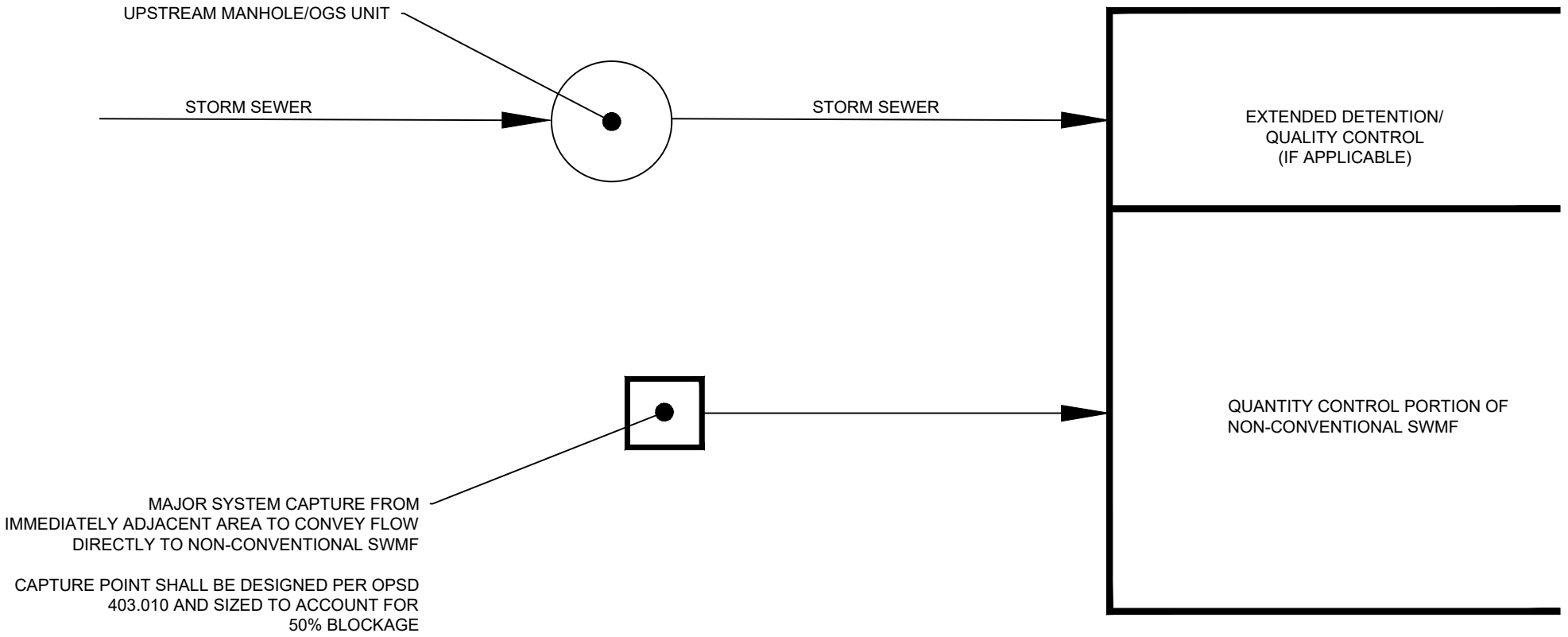
DECORATIVE POLE (TYP.) ABOVE  
A NON-CONVENTIONAL SWMF



NOTES:

1. PATHWAY TYPE SHALL BE SPECIFIED IN LANDSCAPE PLAN
2. THIS TYPICAL DETAIL IS INTENDED TO CONVEY INTENT AND IS FOR REFERENCE ONLY. IT SHALL NOT BE USED AS PART OF THE CONSTRUCTION DRAWING PACKAGE OR SITE PLAN APPLICATION
3. THIS TYPICAL DETAIL IS INTENDED TO DISPLAY DETAILS WITH RESPECT TO MAINTENANCE HOLES FOR NON-CONVENTIONAL SWMF. REFER TO RELEVANT CITY STANDARDS FOR PAVING/PATHWAY DETAILS

MAINTENANCE HOLE BUMP OUT FROM PEDESTRIAN PATH FOR NON-CONVENTIONAL SWMF DETAIL

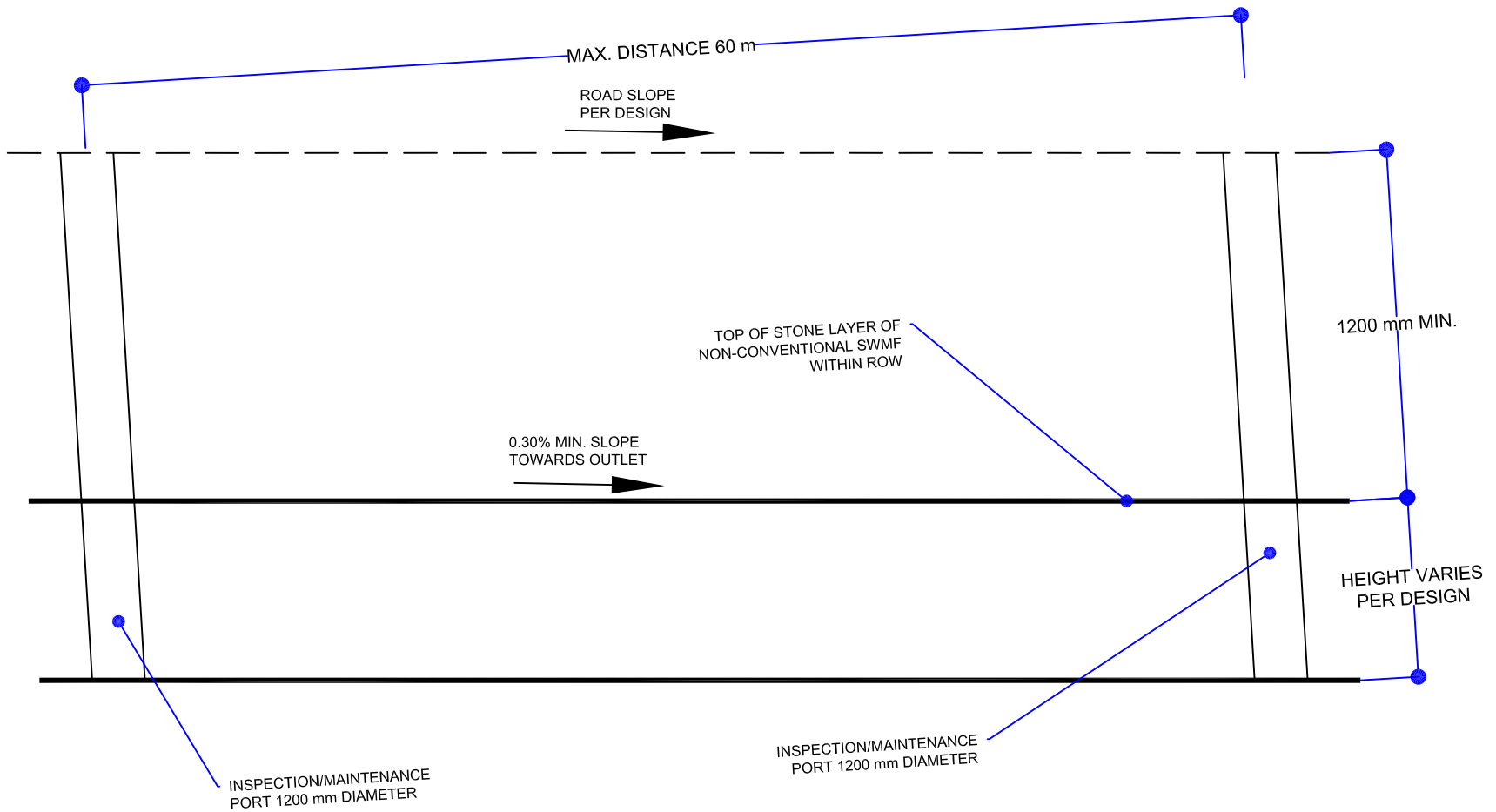


PLAN VIEW - NON-CONVENTIONAL SWMF  
INLET SAMPLE CONFIGURATION

NOTES:

1. DETAIL REPRESENTS POTENTIAL CONCEPTUAL INLET CONFIGURATION TO NON-CONVENTIONAL SWMF

CONCEPTUAL STORM SEWER  
CONNECTION TO NON-CONVENTIONAL  
SWMF DETAIL

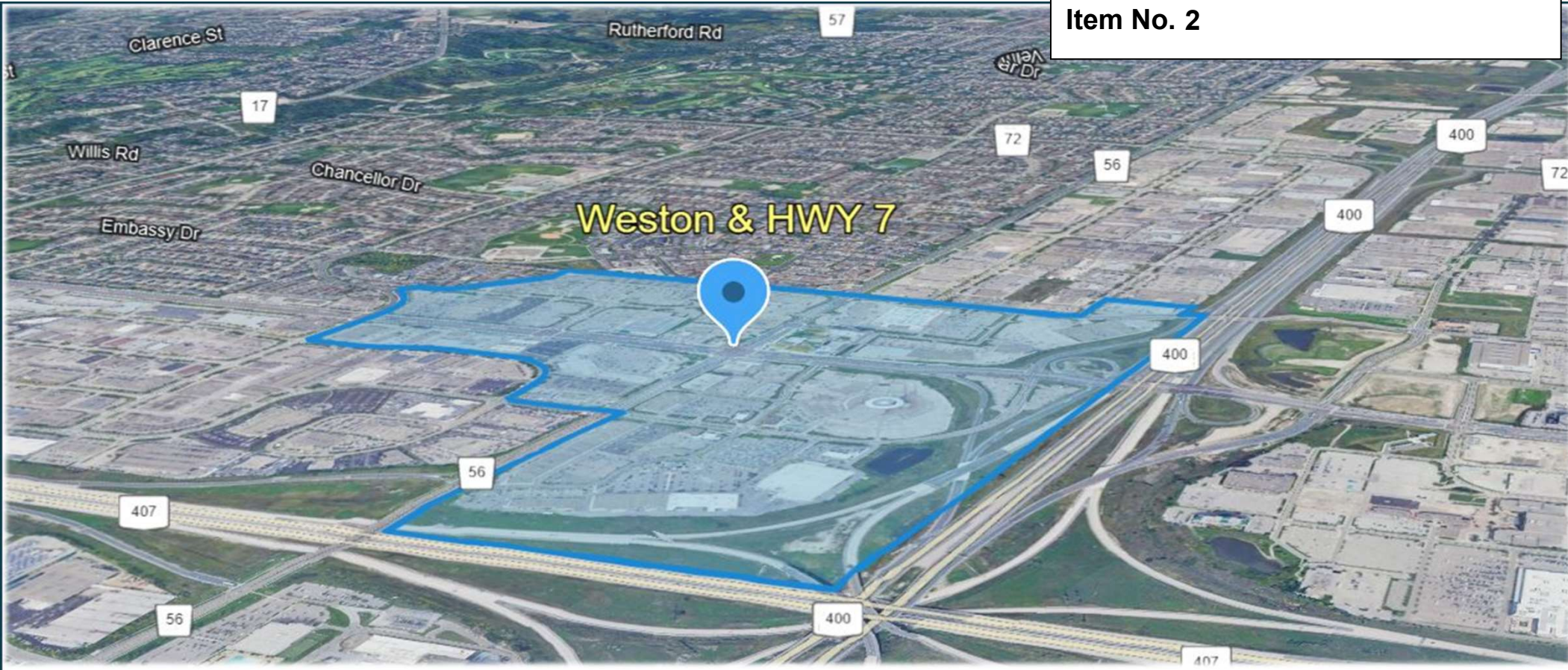


NOTES:

1. DETAIL REPRESENTS MAXIMUM DEPTH TO NON-CONVENTIONAL SWMF'S WITHIN PROPOSED ROW'S AND MAXIMUM INSPECTION/MAINTENANCE PORT SPACING

CONCEPTUAL NON-CONVENTIONAL  
SWMF WITHIN ROW LAYOUT  
SWMF - 17

C 9  
Communication  
CW(WS) – June 5, 2024  
Item No. 2



# Weston 7 Landowners Group

June 5, 2024





# TABLE OF CONTENTS



Introduction – Delta Urban Inc.



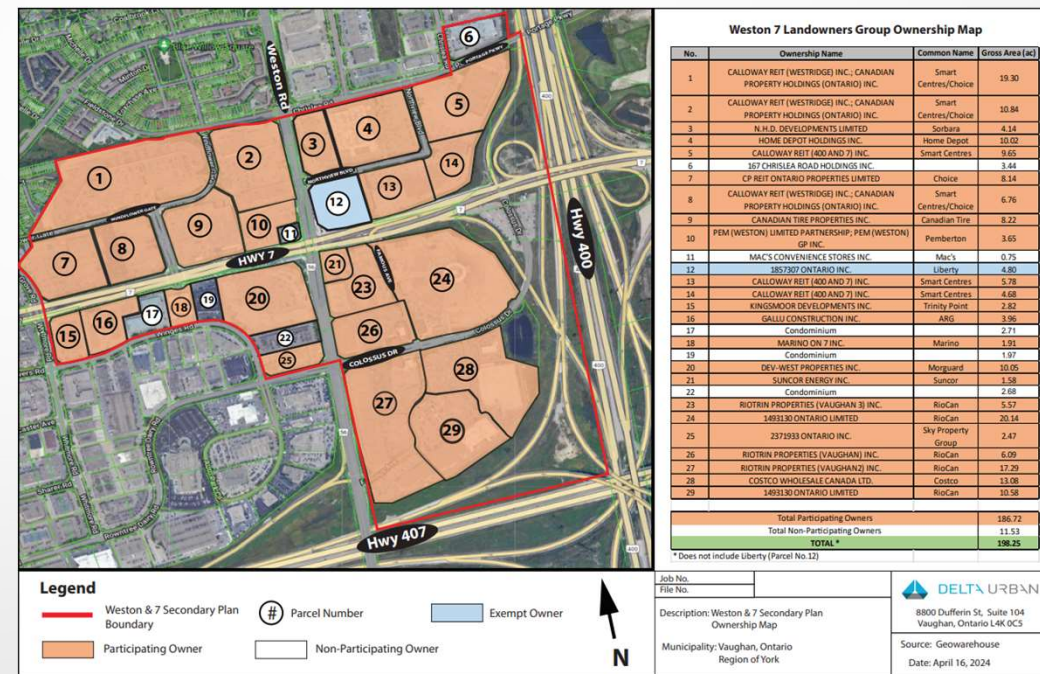
About Weston 7 Landowners Group Inc.



City Engagement on Secondary Plan

# About Weston 7 Landowners Group Inc.

- Organized at the Request of the City
- Incorporated January 2024
- 14 Distinct Participating Owners
- 94% Participation
  - 186.72 acres out of ~200 acres





**Weston 7 Landowners Group Ownership Map**

No.	Ownership Name	Common Name	Gross Area (ac)
1	CALLOWAY REIT (WESTRIDGE) INC.; CANADIAN PROPERTY HOLDINGS (ONTARIO) INC.	Smart Centres/Choice	19.30
2	CALLOWAY REIT (WESTRIDGE) INC.; CANADIAN PROPERTY HOLDINGS (ONTARIO) INC.	Smart Centres/Choice	10.84
3	N.H.D. DEVELOPMENTS LIMITED	Sorbara	4.14
4	HOME DEPOT HOLDINGS INC.	Home Depot	10.02
5	CALLOWAY REIT (400 AND 7) INC.	Smart Centres	9.65
6	167 CHRISLEA ROAD HOLDINGS INC.		3.44
7	CP REIT ONTARIO PROPERTIES LIMITED	Choice	8.14
8	CALLOWAY REIT (WESTRIDGE) INC.; CANADIAN PROPERTY HOLDINGS (ONTARIO) INC.	Smart Centres/Choice	6.76
9	CANADIAN TIRE PROPERTIES INC.	Canadian Tire	8.22
10	PEM (WESTON) LIMITED PARTNERSHIP; PEM (WESTON) GP INC.	Pemberton	3.65
11	MAC'S CONVENIENCE STORES INC.	Mac's	0.75
12	1857307 ONTARIO INC.	Liberty	4.80
13	CALLOWAY REIT (400 AND 7) INC.	Smart Centres	5.78
14	CALLOWAY REIT (400 AND 7) INC.	Smart Centres	4.68
15	KINGSMOOR DEVELOPMENTS INC.	Trinity Point	2.82
16	GALLU CONSTRUCTION INC.		3.96
17	Condominium		2.71
18	MARINO ON 7 INC.		1.91
19	Condominium		1.97
20	DEV-WEST PROPERTIES INC.	Morguard	10.05
21	SUNCOR ENERGY INC.	Suncor	1.58
22	Condominium		2.68
23	RIOTRIN PROPERTIES (VAUGHAN 3) INC.	RioCan	5.57
24	1493130 ONTARIO LIMITED	RioCan	20.14
25	2371933 ONTARIO INC.	Sky Property Group	2.47
26	RIOTRIN PROPERTIES (VAUGHAN) INC.	RioCan	6.09
27	RIOTRIN PROPERTIES (VAUGHAN2) INC.	RioCan	17.29
28	COSTCO WHOLESALE CANADA LTD.	Costco	13.08
29	1493130 ONTARIO LIMITED	RioCan	10.58
Total Participating Owners			184.81
Total Non-Participating Owners			13.45
<b>TOTAL *</b>			<b>198.25</b>

\* Does not include Liberty (Parcel No.12)

**Legend**

- Weston & 7 Secondary Plan Boundary
- Participating Owner
- # Parcel Number
- Exempt Owner
- Non-Participating Owner



Job No. \_\_\_\_\_  
 File No. \_\_\_\_\_  
 Description: Weston & 7 Secondary Plan Ownership Map  
 Municipality: Vaughan, Ontario  
 Region of York

**DELTA URBAN**  
 8800 Dufferin St, Suite 104  
 Vaughan, Ontario L4K 0C5  
 Source: Geowarehouse  
 Date: May 13, 2024

# City Engagement on Secondary Plan

- *10 meetings with City staff since February 2024*
  - *Positive Staff Engagement*
  - *City Servicing Modelling (in Progress)*
- *Appreciation from LOG to Haiqing Xu and City Staff*
- *Redlining Exercise*

# City Engagement on Secondary Plan

- Meeting with Ron Palmer (May 22<sup>nd</sup>, 2024)
  - Expectation vs. Reality

May 1<sup>st</sup>, 2024

## Weston 7 Landowners Group Inc.

Section	W7SP Draft #2 10/12/2023 Text	Suggested Modifications	Notes/ Rationale
	considered and appropriate transitions between the built forms and uses shall be ensured;	characteristics of nearby properties, <b>including their planned context</b> , are properly considered and appropriate transitions between the built forms and uses <b>shall be ensured considered</b> ;	planned context.
3.5 a) ii.	On-site amenity space is provided and is reflective of, or enhances, the existing patterns of private and public amenity space in the vicinity; and	<b>On-site amenity space is provided and is reflective of, or enhances, the existing patterns of private and public amenity space in the vicinity; and</b>  <b>An appropriate level of on-site amenity space is provided for each development.</b>	Revised policy as it is not clear why site-specific amenity areas should be tied to those on other sites or what this means in practice.
3.5 a) iii.	Appropriate streetscape patterns, including block lengths, setbacks and building separations are implemented.		
3.5 b)	The transition between different building types, both within WESTON 7 and adjacent to it, will be a key consideration in determining compatible development. This Plan will provide guidance on the various planning and design tools to be implemented to ensure compatible development and an appropriate transition between different building types, heights and land uses.	The <b>transition interaction</b> between different building types, both within WESTON 7 and adjacent to it, will be a <b>key</b> consideration in determining compatible development. This Plan will provide guidance on the various planning and design tools to be implemented to ensure compatible development, <b>including and</b> an appropriate transition between different building types, heights and land uses, <b>taking into account both the existing and planned context.</b>	Stating that transition between different building types will be a "key" consideration in determining compatible development. We note that the OLT has confirmed through a number of decisions that compatibility is achieved where development can co-exist without adverse impacts of a planning nature (see addition to the previous policy). While transition between different building types can aid in compatibility, it is just one aspect of how compatibility can be achieved. We therefore request that the term "key" be removed from this policy.
3.5 c)	All new plans and development applications shall be consistent with the Vaughan City-Wide Urban Design Guidelines, to the satisfaction of the City. To demonstrate consistency, the City may require the submission of an Urban Design Report in support of any development application.	All new plans and development applications shall be <b>encouraged to have appropriate regard for consistency</b> with the Vaughan City-Wide Urban Design Guidelines, to the satisfaction of the City. To demonstrate <b>consistency regard for the guidelines</b> , the City may require the submission of an Urban Design Report in support of any development application.	Acknowledging the planned context. Urban Design Guidelines are meant to guide development, not to enforce it. As such, flexibility in the wording is required.
3.5 d)	The policies of this Plan shall be further implemented through the Zoning By-law and through the Plans of Subdivision/Condominium and/or Site Plan Approval process, where applicable. In addition, the City will continue to utilize the Design Review Panel in its evaluation of proposals for development.	The policies of this Plan shall be further implemented through the Zoning By-law and through the Plans of Subdivision/Condominium and/or Site Plan Approval process, where applicable. In addition, the City will continue to utilize the Design Review Panel in its evaluation of proposals for development, <b>where appropriate.</b>	Additional language added for flexibility as some applications may not need to go to the DRP.
3.5 e)	All development, with a focus on the Pedestrian Realm Network, parking lots and other publicly accessible areas, shall be evaluated for consistency/adequacy of achieving the following Crime Prevention Through Environmental Design (CPTED) considerations:	<b>All development, with a focus on the Pedestrian Realm Network, parking lots and other publicly accessible areas, shall be evaluated for consistency/adequacy of achieving the following Crime Prevention Through Environmental Design (CPTED) considerations:</b>	Suggest removing these policies – unnecessary level of detail for a Secondary Plan. Reference to CPTED above is sufficient.
3.5 e) i.	Adequate lighting - designed, where possible, with regard for vehicular, cyclist, and pedestrian requirements so that the size, height, and style of lighting reflects and complements the character of the community;	<b>Adequate lighting - designed, where possible, with regard for vehicular, cyclist, and pedestrian requirements so that the size, height, and style of lighting reflects and complements the character of the community;</b>	Suggest removing these policies – unnecessary level of detail for a Secondary Plan. Reference to CPTED above is sufficient.
3.5 e) ii.	Clear sight lines, allowing views from one end of the walkway to the other;	<b>Clear sight lines, allowing views from one end of the walkway to the other;</b>	Suggest removing these policies – unnecessary level of detail for a Secondary Plan. Reference to CPTED above is sufficient.

# Concluding Remarks

- Weston 7 LOG vs. City Secondary Plan Draft
- Confidence in City Engagement
- Approval date for Secondary Plan

*Thank you*

Christopher J. Tanzola  
Partner  
Direct 416-730-0645  
Cell 416-428-7493  
ctanzola@overlandllp.ca

Overland LLP  
5255 Yonge St, Suite 1101  
Toronto, ON M2N 6P4  
Tel 416-730-0337  
overlandllp.ca

**C 10**  
**Communication**  
**CW(WS) – June 5, 2024**  
**Item No. 2 & 3**

June 4, 2024

**VIA EMAIL**

Mayor and Members of City Council  
City of Vaughan  
2141 Major Mackenzie Drive  
Vaughan, Ontario L6A 1T1

**Attention: City Clerk**

Your Worship and Members of City Council:

**RE: Weston 7 Secondary Plan: File No. 26.2 (Item 5.2)**  
**Weston 7 Transportation Master Plan (Item 5.3)**  
**Committee of the Whole (Working Session) – June 5, 2024**

We are the lawyers for N.H.D. Developments Limited (“**NHD**”), the registered owner of the property located at 7887 Weston Road (the “**property**”) in the proposed Weston 7 Secondary Plan area. We also represented Wedgewood Columbus Limited (“**Wedgewood**”), the predecessor in title to NHD. NHD took title to the property on February 1, 2023 via a name change application. NHD and Wedgewood are related companies.

NHD/Wedgewood has participated extensively in the Weston 7 Secondary Plan process and continues to do so. As part of this participation, our client’s planning consultants have made two written submissions to the City regarding the proposed Secondary Plan. These submissions were made on April 15, 2019 and February 23, 2021. Given the change in the registered owner’s name, we are submitting these letters again here on behalf of NHD out of an abundance of caution.

NHD intends to make further comments on the draft Weston 7 Secondary Plan in due course.

Our client has active development applications that are currently before the Ontario Land Tribunal (Official Plan and Zoning By-law Amendments) and the City of Vaughan (Site Plan Approval). The outcome of the Weston 7 Secondary Plan process should not prejudice the determination of those applications and should not implement policies that would otherwise restrict the optimization of the property for intensified forms of development that are consistent with provincial planning objectives.

Please include this correspondence on the Committee of the Whole’s agenda for June 5, 2024 and with any subsequent consideration of this matter by City Council.

Additionally, **please provide us with written notice** of City Council's decision in the matter of the Weston 7 Secondary Plan and the Weston 7 Transportation Master Plan. Our address for notice is provided herein.

Yours truly,

**Overland LLP**



Per: Christopher J. Tanzola

Encl.

c. J. Bujak/N. Shurigina





April 15, 2019

Mr. Frank Marzo  
Senior Planner, Policy  
Planning and Environmental  
Sustainability Department  
City of Vaughan  
2141 Major Mackenzie Drive  
Vaughan, Ontario L6A 1T1

Dear Mr. Marzo,

**Re: *Weston Road and Highway 7  
Secondary Plan***

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We are planning consultants to Wedgewood Columbus Limited owners of lands located at southeast corner of Weston Road and Chrislea Road (the "Subject Lands"). The Subject Lands have a frontage of 156 metres along Weston Road, 53 metres along Chrislea Road and 66 metres along Northview Boulevard.

Our client has been closely monitoring and participating in the development of the Weston Road and Highway 7 Secondary Plan and has participated in several meetings with consultants retained on behalf of the City of Vaughan and has monitored public meetings that have occurred to date including a Landowners Workshop that was held on March 18, 2019 and the public open house held on March 25, 2019. The purpose of this letter is to provide feedback on what has been presented to date.

## **1. Planning Policy**

Our client recognizes that the Secondary Plan study essentially assumes, as a point of departure, the underlying land use designations wholly contained within the Vaughan Official Plan (VOP) as summarized in Appendix 5 (Planning Policy Analysis) of the background materials for the Secondary Plan review. This point of departure, however, is of fundamental concern as it has been used to predetermine planning outcomes which should, as an intrinsic part of the planning analysis, be openly evaluated as an appropriate starting point.

The City of Vaughan land use designation for the subject lands is currently Mid-Rise Mixed Use which does not, in our view, allow for a contextual appropriate gradation of heights from the High-Rise Mixed-Use land use designation that applies south of Northview Boulevard.

The reliance on underlying land use designations does not, in our view, allow for the optimization of lands that are within a future Major Transit Station Area(s).

The presentation materials for the public open house held on March 25, 2019 recognizes that “the Scenarios will use the Official Plan land use designations as a basis for height throughout the study area”. It is our opinion that there should be more latitude given consideration noted above that there are opportunities to provide transition from what is recognized as the only area corner with “established height and density within the study area”, namely, the northeast quadrant of Weston Road and Highway 7.

## **2. Commentary on Draft Land Use Scenarios**

We have reviewed the draft land use scenarios presented at the public open house on March 25, 2019 and offer the following commentary:

- (a) One of the base assumptions used in the creation of the three scenarios appears to be strongly influenced by the existing development south of our client’s lands (known as Centro). Specifically, the height of development incorporated into the base assumptions is clearly linked to the existing Centro development. In this regard, we think it is appropriate to recognize the time and context used to justify the height and density of the Centro development and consider whether or not it is truly reflective of the current planning framework;
- (b) Another base assumption used in the study appears to include an observation that the Active Together Master Plan establishes a target provision rate of 2.0 ha/1,000 residents and point to the possibility that “the City may consider applying a unique parkland provision target for intensification areas to reflect the challenges of land assembly and economic realities of development.” Our client is fully supportive of this latter approach and would welcome additional opportunities for input and consultation on this very important subject;
- (c) The location of parks and schools and required community facilities is noted in the presentation materials as to be “refined through detailed analysis in Phase 2.” We would appreciate being provided with the input received to date from the School Boards and relevant community service providers in this regard;
- (d) Land Use Scenario 2 provides for a Community Hub/School and Parkland in the northwest quadrant of the study area. This potential location would represent the location closest to the existing concentration of low-density single-family residential development and, in our view, the logical location for such facilities. The placement of the Community Hub/School and Parkland

adjacent to the established neighbourhood would contribute a logical buffer and transitional area to the existing low-rise residential area further north and west while maintaining appropriate walking distances to planned higher density residential uses;

- (e) None of the three scenarios identifies our client's lands as a potential location for "Neighbourhood Transition" which, in our view, reinforces the fact that there are distinguishing circumstances that apply and would support further consideration for re-visiting the underlying land use designations and the achievement of an appropriate level of intensification. The fundamental recognition that our client's lands fall outside of the 70-metre zone from designated low rise residential reinforces this fundamental distinguishing characteristic of our client's lands; and
- (f) There needs to be a mechanism that allows for further scenarios to be studied. The level of existing development on all four quadrants would make the achievement of any of the identified scenarios difficult to achieve in the medium to long term. Without wholesale re-consideration of the existing underlying land use designations the identified three scenarios may not represent the optimization of lands within planned major transit areas.

These comments represent our initial thoughts on the land use scenarios advanced to date. Our client looks forward to further participating in future stakeholder meetings.

Yours truly,

**Bousfields Inc.**



Tony Volpentesta, MCIP, RPP

TJV/kah:jobs

cc: *Bill Kiru*  
*James Bujak - Wedgewood Columbus Limit*



February 23, 2021

Ms. Michelle Moretti  
Senior Planner, Policy  
Planning and Environmental  
Sustainability Department  
City of Vaughan  
2141 Major Mackenzie Drive  
Vaughan, Ontario L6A 1T1

Dear Ms. Moretti,

**Re: 7887 Weston Road  
Weston Road and Highway 7  
Secondary Plan Phase 2 – Demonstration Plan**

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We are planning consultants to Wedgewood Columbus Limited owners of lands located on the east side of Weston Road between Northview Boulevard and Chrislea Road on the vicinity of Weston Road and Highway 7 (the "Subject Lands"). The Subject Lands have a frontage of 156 metres along Weston Road, 53 metres along Chrislea Road and 66 metres along Northview Boulevard.

Bousfields Inc. and our client have been closely monitoring and participating in the development of the Weston Road and Highway 7 Secondary Plan. We have participated in several meetings with The Planning Partnership, retained on behalf of the City of Vaughan, to complete the 'Weston 7' Secondary Plan. We have also continued to monitor and attend public meetings and consultations, including most recently a Landowners Meeting that was held on January 28, 2021. The purpose of this letter is to provide feedback on what was presented at that meeting, including the Planning Partnership's Weston 7 Draft Demonstration Plan.

### **APPLICATION HISTORY**

Following a PAC meeting with City staff on July 11, 2019, development applications for an Official Plan Amendment (OP.19.015) and Zoning By-law Amendment (Z.19.039) were submitted on December 23, 2019. The applications were deemed incomplete on January 22, 2020. The applications were subsequently deemed complete on July 27, 2020.

The proposal includes 4 high-rise mixed-use buildings atop two podiums with tower heights ranging from 40 to 49-storeys. The proposal features 2,003 dwelling units and a floor space index of 9.61 times the area of the lot and retail spaces.

On September 15, 2020 a staff report was presented to the Committee of the Whole (Public Hearing). Council approval was required for City staff to continue to process the applications in advance of the completion of the Weston Road and Highway 7 Secondary Plan, however, Council approval was not granted. A final recommendation was given that indicated no development applications are to proceed in advance of the Weston 7 Secondary Plan being completed.

The following represents our understanding of the planning policy framework as it applies to the subject lands. The points below set the framework and basis for our commentary on the Weston 7 Secondary Plan Phase 2 – Draft Demonstration Plan as provided by The Planning Partnership on January 28, 2021.

### **POLICY FRAMEWORK**

#### ***Region of York Official Plan***

The subject lands are designated “Urban Area” in the York Region Official Plan 2010 (“YROP”) but as importantly they are located one block north of Highway 7 which is identified as a Regional Rapid Transit Corridor. In support of transit-infrastructure, the YROP establishes a policy framework that encourages intensification within efficient and compact communities at an overall transit supportive density.

Section 5.3 of the YROP outlines policies that guide intensification throughout the Region and provides that by the year 2015 and each year after, a minimum target of 40% of all residential development should occur within the built-up area (5.3.1). The YROP provides that transit stops in the Urban Area be located so that 90 percent of residents are within 500 metres of a stop and 50 percent of residents are within 200 metres of a stop. With respect to built form in intensification areas, Policy 5.3.10 indicates that retail, commercial, office and institutional structures shall be well designed, pedestrian and street orientated, including, where appropriate, mixed-use multi-storey buildings.

Map 1 of the YROP identifies Highway 7 as a Regional Corridor while Map 11 – Transit Network, identifies Highway 7 as a Regional Rapid Transit Corridor. Section 5.4 of the York Region Official Plan (Regional Centres and Corridors) identifies that Regional Corridors as an appropriate area for intensification. Furthermore, Policy 5.4.1 of the YROP directs Regional Corridors to be the location for the most intensive and greatest mix of development in the Region.

In addition, Weston Road is identified as part of the Regional Transit Priority Network on Map 11 of the YROP. According to Policy 7.2.24, Regional streets identified as part of the Regional Transit Priority Network will be planned for high-occupancy-vehicle lanes, dedicated transit lines, transit signal priority and other transit priority measures. Policy

7.2.35 provides that local municipalities will include policies in the local OP to implement the Transit Network.

Policy 5.4.28 further provides that Regional Corridors function as urban main streets (our emphasis), containing compact, mixed-use, well-designed, pedestrian-friendly, and transit-orientated built form.

Section 7.1 sets out policies for reducing demand for services through maximizing the use of existing infrastructure and reducing automobile dependence through providing more compact, mixed-use urban forms of development. Policy 7.1.7 requires development applications to demonstrate how the proposed development is transit-oriented, taking direction from the York Region Transit Oriented Design Guidelines document. Policies 7.2.23 and 7.2.25 provide that communities should be planned with early integration of transit and that high-density development should be directed to rapid transit corridors.

### ***York Region Municipal Comprehensive Review***

The Region of York has initiated a Municipal Comprehensive Review (the “MCR”) in order to review and update its Official Plan to ensure that its policies conform with updated Provincial Plans. The MCR also includes the identification and delineation of Major Transit Station Areas (“MTSAs”) within the Region.

The definition of a *Major Transit Station Area* in the Growth Plan (amended in 2017 to include a reference to 800 m radius) generally defines it as “the area within an approximate 500 to 800 metre radius of a transit station representing about a 10-minute walk”.

In this case, the subject site falls within the delineated MTSA area as defined for the Weston BRT (MTSA 11) Station. The MTSA includes a proposed density target of 250 people and jobs per hectare compared to the current density of 11 jobs and people per hectare. This proposed density is also greater than the 160 residents and jobs per hectare that the Growth Plan provides as a minimum target. The proposed MTSA and density targets provide an opportunity for new mixed-use developments that will contribute to the proposed increase in density within the area. The subject site is located within approximately 175 metres (representing a 2 – 3 minute walk) of the Weston BRT and provides a unique opportunity for high-rise mixed-use development in proximity to this MTSA.

### **Vaughan Planning Policy**

#### *Weston 7 Secondary Plan*

The City of Vaughan’s Urban Structure is comprised of both Stable Areas and Intensification Areas. The subject site is located within an Intensification Area and is

identified as within a Primary Centre on Schedule -1 Urban Structure and is designated *Mid-Rise Mixed Use* on Schedule 13 Land Use within the City of Vaughan Official Plan (the “VOP 2010”). The subject site is also identified to be within the required Secondary Plan Area of Weston Road and Highway 7 (Weston 7), as shown on Schedule 14-A of VOP 2010.

As noted above, the subject site is located within the Weston 7 Secondary Plan boundary as shown on Schedule 14-A. On June 5, 2019, the Weston 7 Secondary Plan Phase 1 Report was completed and received at the Committee of the Whole Working Session. The vision statement for the Weston 7 Secondary Plan, as developed through Phase 1, states:

*“As one of the city’s primary growth centres, it will be a distinct urban place with a variety of commercial, cultural, and entertainment destinations providing housing options and jobs within a walking distance to the Highway 7 rapidway. The area will evolve into a place that is universally accessible; providing convenient options for everyone to comfortably and safely get around by walking, biking, taking transit or driving. Weston 7 will strive to be a low-carbon, healthy community defined by a network of pedestrian-oriented, well-connected streets, parks and gathering places that becomes a distinguished, landmark destination of choice in Vaughan.”*

Primary Centres, as per VOP 2010, *are to be developed as transit-oriented, pedestrian-friendly places that support residents of the Primary Centre while facilitating an appropriate transition to the neighbouring community areas.* They are intended to provide uses that will serve the Community Areas of the City, including retail, institutional, office and human service uses.

Policy 2.2.5 within VOP 2010 provides that that Intensification Areas will accommodate the intensification target of 45%, with Primary Centres providing a wide range of uses and building types, including tall buildings, with appropriate transition to neighbouring areas. Policy 2.2.5 further states that Intensification Areas are to make efficient use of underutilized sites served with a high-level of existing or planned transit and be developed with a mix of uses and appropriate densities to support transit use, walking and cycling.

### **Commentary on Draft Demonstration Plan**

We have reviewed the draft land use scenarios presented to the landowner group on January 28, 2021 and offer the following commentary:

#### **General Comments**

- (a) **Site development-** We are of the opinion that the subject site can provide a mix of uses along Weston Road that reinforces the importance of the subject site as a key intensification within a Primary Centre and within the proposed Weston MTSA.

- (b) **Existing Mixed-Use Context-** One of the base assumptions used in the creation of the demonstration plan appears to be strongly influenced by the existing development at 7777 Weston Road (known as Centro Square) and the existing Official Plan land use structure within the Weston 7 Secondary Plan area (VOP 2010 Schedule 13). Specifically, the height of development incorporated into the base assumptions is clearly linked to the existing Centro development. In this regard, we think it is appropriate to recognize the time and context used to justify the height and density of the Centro development and consider whether or not it is truly reflective of the current planning framework. It is worth noting that the Centro Square development was approved in a planning framework where MTSA's were required to be planned in a transit-supportive manner but prior to the 2017 Growth Plan assigning minimum density targets for MTSA's.

Accordingly, while the Centro Square development is a helpful benchmark in establishing the evolving mixed-use context of the area, the height and density afforded to that development reflects an older planning policy framework. Therefore, we are fully supportive of the draft land use approach that recognizes the potential for one land use within the secondary plan that provides flexibility for accommodating a range of residential, commercial, limited office, parks/open spaces and institutional uses at varying heights and densities that are considered transit-supportive and contributing to the complete community that will become Weston 7.

- (c) **Weston 7 Structuring Elements-** With respect to the 7 structuring elements that frame the Weston 7 demonstration plan, we are in support of the overall themes of connectivity, buffers, bridges and seams, quadrant-based neighbourhood character, placemaking, flexible blocks and phasing. However, we do not agree with the Planning Partnership's emerging structure and building height transition elements. While we are supportive of taller buildings along both Weston Road and Highway 7 and specifically at the key intersection of Weston and Highway 7, the height schedule is heavily influenced by the existing built-form context which limits the growth of key sites along Weston Road, Highway 7 and within the Weston MTSA especially those sites closest to the station.
- (d) **MTSA analysis-** Vaughan has identified a wide range of density targets for its MTSA's. There are a total of 23 MTSA's in Vaughan. There are six MTSA's designated Primary Centres of which only four – the Steeles MTSA (subway), the Pioneer Village MTSA (subway), the Weston MTSA (BRT) and the Disera MTSA (BRT) - are also MTSA's. Accordingly, we are supportive of densities higher than the minimum densities afforded in the Growth Plan, but it is unclear if the proposed heights provided in the demonstration plan can support the Region's proposed target of 250 people and jobs per hectare for the Weston MTSA and the City's



proposed target of 600 people and jobs per hectare for the Weston 7 Secondary Plan area.

Additionally, based on the approved and proposed residential developments through mid-2020, close to 48,300 residents in almost 24,400 residential units are moving into the VMC, achieving 203% of the residential units and 193% of the population targets identified for the 2031 planning horizon. As these numbers have been achieved far earlier than expected and given that this growth trend is expected to continue, an update of the VMC Secondary Plan is being undertaken. As the Weston 7 'ultimate' build out condition to 2051 and beyond assumes an ultimate of 600 persons and jobs per hectare, we would like to better understand how that determination was arrived at and what will be done to ensure Weston 7 receives its fair share of growth and not at the expense of overdevelopment in the VMC.<sup>1</sup>

### **Site Specific Comments**

- a) **Height/Built Form** – The subject site is located approximately 160 metres from the intersection of Highway 7 and Weston Road but is assigned heights in the range of 8 to 34 storeys in the demonstration plan. As mentioned previously, this is based on the notion that Centro Square must function as a peak and that heights to the north must be lower to respect the proposed 'tent pole' planning structure shown on the demonstration plan. It should be noted that the height of the towers for the subject site in the demonstration plan and emerging height schedule suggests the highest heights at the southern limits of 7887 Weston Road of 19+ storeys, transitioning north to 18 storeys. The proposed height for the northerly towers need to consider the previously submitted studies for the subject site related to neighbourhood impact, shadow and wind, as well as urban design indicating that the site is appropriate for tall buildings. Furthermore, the subject site is not within immediate close proximity to the existing stable low-density neighbourhood to the northwest and therefore can accommodate heights and densities greater than 18 storeys.

As it relates to built form, the subject site is located 150 metres from a higher order transit line and within a major node (Weston 7 Primary Centre) 1 km west of the City's Vaughan Metropolitan Centre (VMC). Within the VMC, the tallest buildings are planned within the centre and include buildings of up to 55-storeys. Building

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<sup>1</sup> In order to understand and fully comprehend how the initially proposed 600 person and jobs density target was established, we respectfully request a detailed methodology and accounting of the proposed Weston 7 Secondary Plan density target

heights are planned to tier down along Highway 7 as you move away from the city centre.

In our opinion, the subject site can contribute to a dynamic skyline within the Weston 7 Secondary Plan and the VMC. This would be in keeping with a range of taller, prominent buildings along , and within close proximity to Highway 7 within both the VMC and Weston 7, as contextually appropriate.

- b) Parkland-** Another base assumption used in the presentation is an equitable distribution of parkland within the 4 quadrants of the Weston 7 secondary Plan. It is our understanding that the City may consider applying a unique parkland provision target for intensification areas to reflect the challenges of land assembly and economic realities of development.

We support the need for parkland for current and future residents of the area. While access to the park and open space is an integral and critical part of a complete community, size, location and type of the open space should be fit into the context.

In that respect, the subject lands are located adjacent to a proposed 0.5 hectare park and include an east-west pedestrian connection between the proposed park and Weston Road. We are supportive of the proposed pedestrian realm plan and recognize that the proposed development on the subject lands will support the implementation of the plan through cash-in-lieu of parkland, the provision of on-site parkland through POPS and potentially through future community benefit contributions.

- c) Retail Foci-** The Weston 7 Planning Partnership Demonstration Plan highlights areas of 'Retail Foci' for the Weston 7 Secondary Plan, including along the north side of Northveiw Boulevard immediately east of Weston Road. We recommend there be flexibility within the subject site to provide retail focus elements in addition to those shown in the presentation, subject to the development application process moving forward. This would provide flexibility for retail spaces to complement the proposed residential development and adjacent uses, as appropriate. We look forward to future discussions with City staff as we work towards a resubmission of the active development application for 7887 Weston Road.

## **Conclusion**

We want to stress that we have every intention of working with City on the Weston 7 Secondary Plan and aligning our active development application with the ongoing Secondary Plan. Our client intends to create a high-quality mixed-use development on this site for the Weston 7 Secondary Plan area that is along a priority intensification corridor and will complement the Vaughan Metropolitan Centre. This will not only serve future

residents of this development, but also the surrounding community in creating a destination of choice for residents in Vaughan.

These comments represent our initial thoughts on the Weston 7 Demonstration Plan advanced to date. Our client looks forward to further participating in future stakeholder meetings. Should there be an opportunity for our client to meet with City staff to discuss the comments herein, we kindly request a meeting be set up at your earliest convenience.

Yours truly,

**Bousfields Inc.**



Tony Volpentesta, MCIP, RPP

Frank Marzo MCIP, RPP

**TJV/kah:jobs**

*cc: Tony Iacobelli, Acting Director, Policy Planning and Environmental Sustainability, City of Vaughan  
Bill Kiru, Director, Development Planning, City of Vaughan  
James Bujak - Wedgewood Columbus Limited*

C 11

Communication

CW(WS) – June 5, 2024

Item No. 1

NON-CONVENTIONAL SWMF POLICY, PROCEDURE,  
ENGINEERING AND PARKS DESIGN CRITERIA:

**PRESENTATION TO COMMITTEE OF THE  
WHOLE (WORKING SESSION)**

June 5<sup>th</sup>, 2024



# Presentation Overview

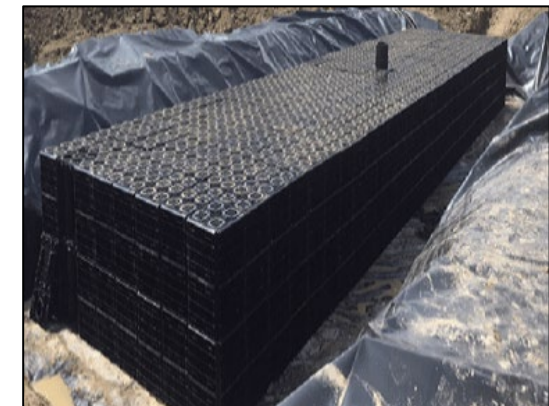
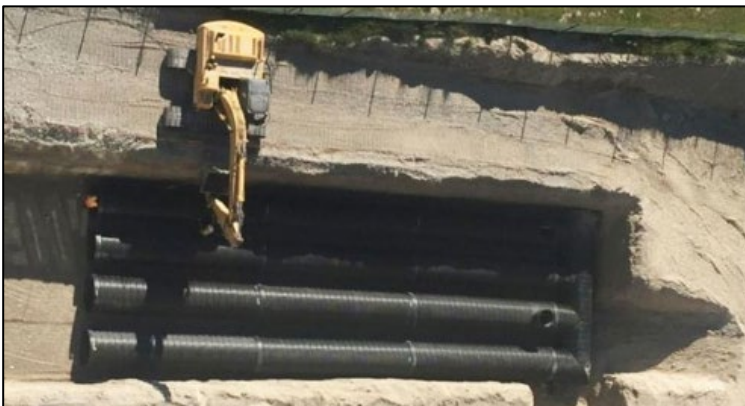
- Project Background and Goals
- Deliverables
- Policy Outline
- Procedure Outline
- Design Criteria
- Financial Requirements
- Questions/Discussion

# Project Background

- The City of Vaughan, in response to development pressure on land use planning, increased land costs and potential for dual-use of Park lands, developed an interim policy for approval of non-conventional municipal stormwater management facilities in June 2022.
- Non-Conventional SWM Facilities = Underground Stormwater Management Facilities (not wet/dry ponds, wetlands etc.).
- General intent of non-conventional SWM facilities is to increase yield of development land through “dual-use” of land for park and stormwater functions
- Focus is on municipally assumed facilities, typically designed and approved through subdivision approval process (private sites not in scope of project).
- The Interim Policy was put in place with the intent of eventually developing a more fulsome policy and including development procedures, criteria and standards.

# Non-Conventional SWMFs

- Underground stormwater management facilities can utilize many different technologies, with the general intent of temporary storage of water
- Here are some examples – not all are acceptable as municipal facilities

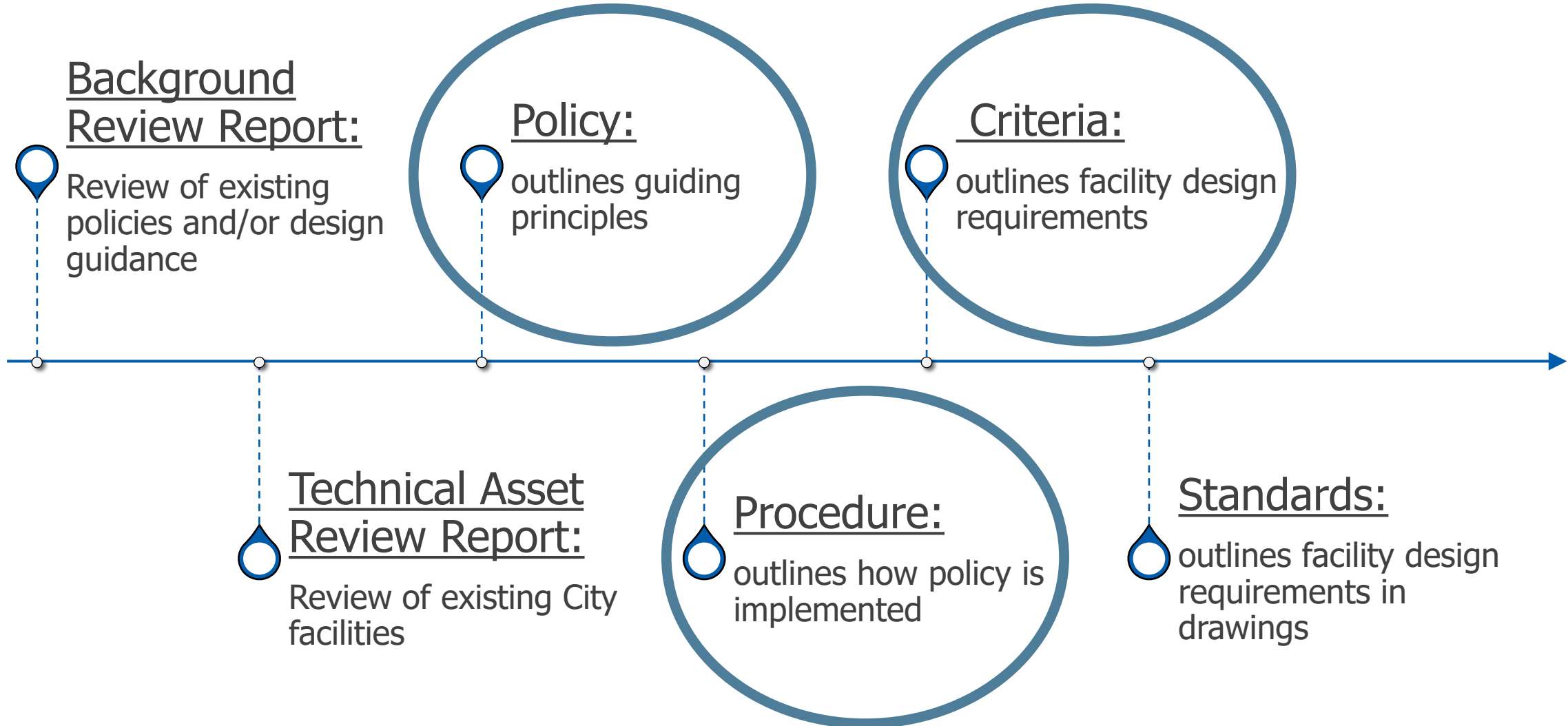


# Project Goals

- Goals of Policy, Procedure, Design Criteria and Standards:
  - *To provide a decision framework to determine where new non-conventional SWMFs may be accepted, and under what conditions;*
  - *To streamline the evaluation and acceptance process for non-conventional SWMFs;*
  - *To provide a list of allowable stormwater management technologies/facility configurations that can be accepted as municipal facilities; and,*
  - *To provide a formula to calculate an Offset Fee intended to supplement the increased cost of Operations & Maintenance to the City, to ensure long term viability of facilities.*
- Will allow for implementation in ROW's and Parkland and will provide direction to achieve 100% parkland dedication credit.



# Deliverables



# Policy Outline

- General Consideration: Greenfield and infill, must meet all applicable criteria, implementation in parks and ROW's
- Technical Considerations: No standing water, gravity draining, quantity control and extended detention only
- Parkland Considerations: References By-Law 168-2022, must not encumber park space
- Right-of-way Considerations: No ROW widening permitted to accommodate Non-Conventional SWMF, typical separations/offsets/setbacks must be met
- Operations & Maintenance: Typical O&M Manual requirements, Maintenance Cost analysis over 50 years
- Cost-Recovery: Offset Fee Calculation
- Assumption: Facility must be clean, certificate of conformance, sealed record drawings

# Procedure Outline

- Outlines the process of how City will review and approve facilities, provides checklist for reviewers, as well as approval process flowchart for guidance.
- Step 1 – Initial Submission & Justification Report
  - *Includes justification, costing, and conceptual design of NC SWMF*
- Step 2 – Draft Plan/Functional Servicing Submission
  - *Demonstrates all criteria is satisfied. Warranty must be disclosed at this time*
- Step 3 – Detailed Design Submission
  - *Includes sealed design, O&M Manual, Offset Fee Calculation, Extended Warranty*
- Step 4 – Assumption & Final Offset Fee Collection
  - *Satisfies City requirements for assumption, PEO Record Drawings and collection of offset fee*

# Design Criteria

- Outlines technical details, submission requirements, offset fee calculation requirements.
- Fits into existing City Engineering Criteria as a new section and incorporates existing City/MECP SWM Criteria.
- Refers to Schedule D and E of Consolidated Linear Infrastructure Environmental Compliance Approval (CLI-ECA) where applicable.
- Criteria Examples:
  - *Must drain by gravity (no pumps).*
  - *Appropriate loading capabilities (CHBDC CL-6250NT).*
  - *Minimum cover of 1.8 m for Park programming flexibility.*
  - *No standing water/permanent pool permitted.*
  - *Outlines permitted uses above SWMFs*

# Financial Requirements



- Final Offset Fee is calculated as the differential between a Conventional and Non-Conventional SWMF of similar size and function.
- Calculated over a 50-year period, with no maximum.
- Extended warranties (25 year) to be provided for SWMFs. SWMF rehabilitation costs to be added to Offset Fee if warranty not provided/accepted.
- Infill Developments with drainage areas less than 2 ha using a superpipe facility are exempt from replacement/rehabilitation regardless of warranty.

# Financial Requirements

- Unit rates are current estimates that will change with indexing.
- Inspections/Monitoring – covers the costs for regular inspections & monitoring of the SWMF.
  - *Non-conventional SWMFs and OGS units require more frequent inspections*
  - *Conventional SWMFs require more involved inspections (\$2000/inspection) vs surface inspections of non-conventional SWMFs (\$500/inspection/component)*
- Maintenance – covers the cost to maintain these underground facilities
  - Sediment Removal
    - *Cost to remove sediment from conventional - \$200 per m<sup>3</sup>*
    - *Cost to remove sediment from non-conventional - \$500 per m<sup>3</sup>*
    - *Fee is differential (\$300 per m<sup>3</sup>) multiplied by total loading over 50 years*
  - Increased Maintenance
    - *Includes cost for structural inspection (ie. confined space entry)*
    - *Includes component replacement costs for key SWM features (ie. treatment train approach)*
    - *Includes rehabilitation cost if warranty not provided or accepted.*

# Questions & Discussion