

# Implementing Green Infrastructure: Building a Community of Practice

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# Kitchener's SWM System



## City of Kitchener Stormwater Management Master Plan

### Legend

- Municipal Boundary
- Study Area
- Watercourses
- Stormwater OGS
- Stormwater Facility
- Stormwater Drainage Area**
- OGS
- SWM Facility
- SWM Facility/OGS

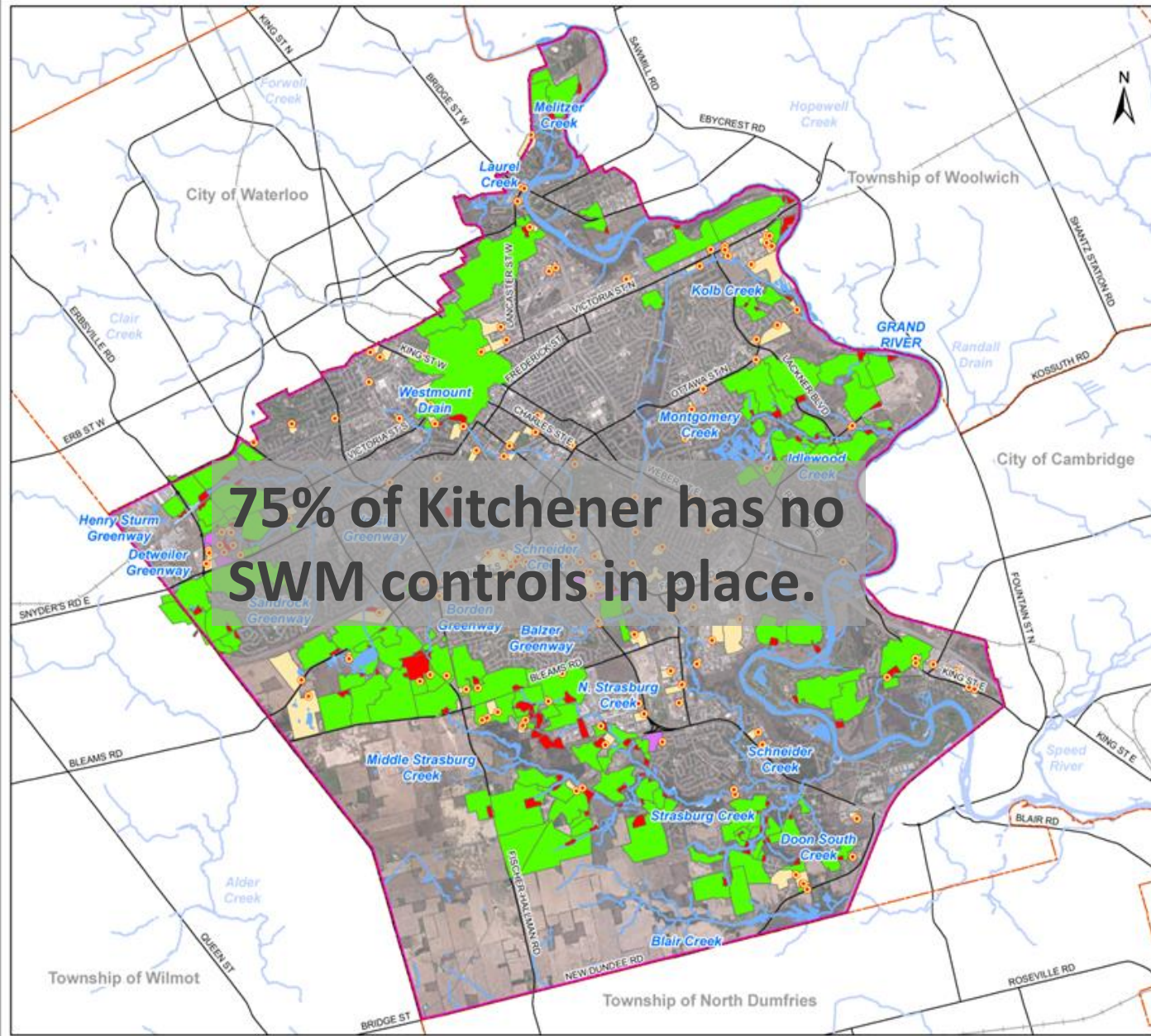
Source: City of Kitchener

**FIGURE 1.1**  
Stormwater Facility and OGS  
Drainage Areas



Date: December 2015

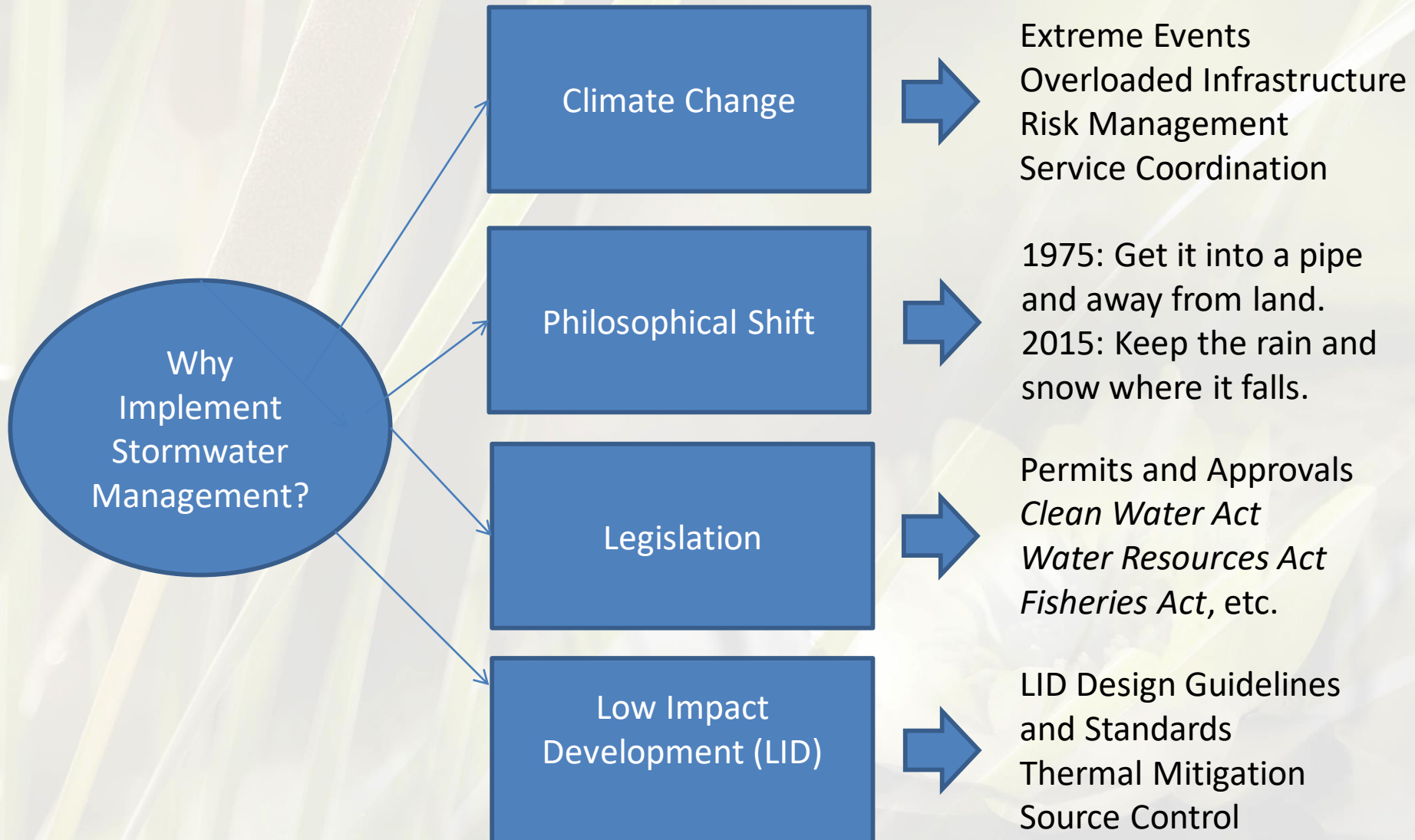
**75% of Kitchener has no  
SWM controls in place.**



# Lack of Stormwater Management



# Why Implement Stormwater Controls?



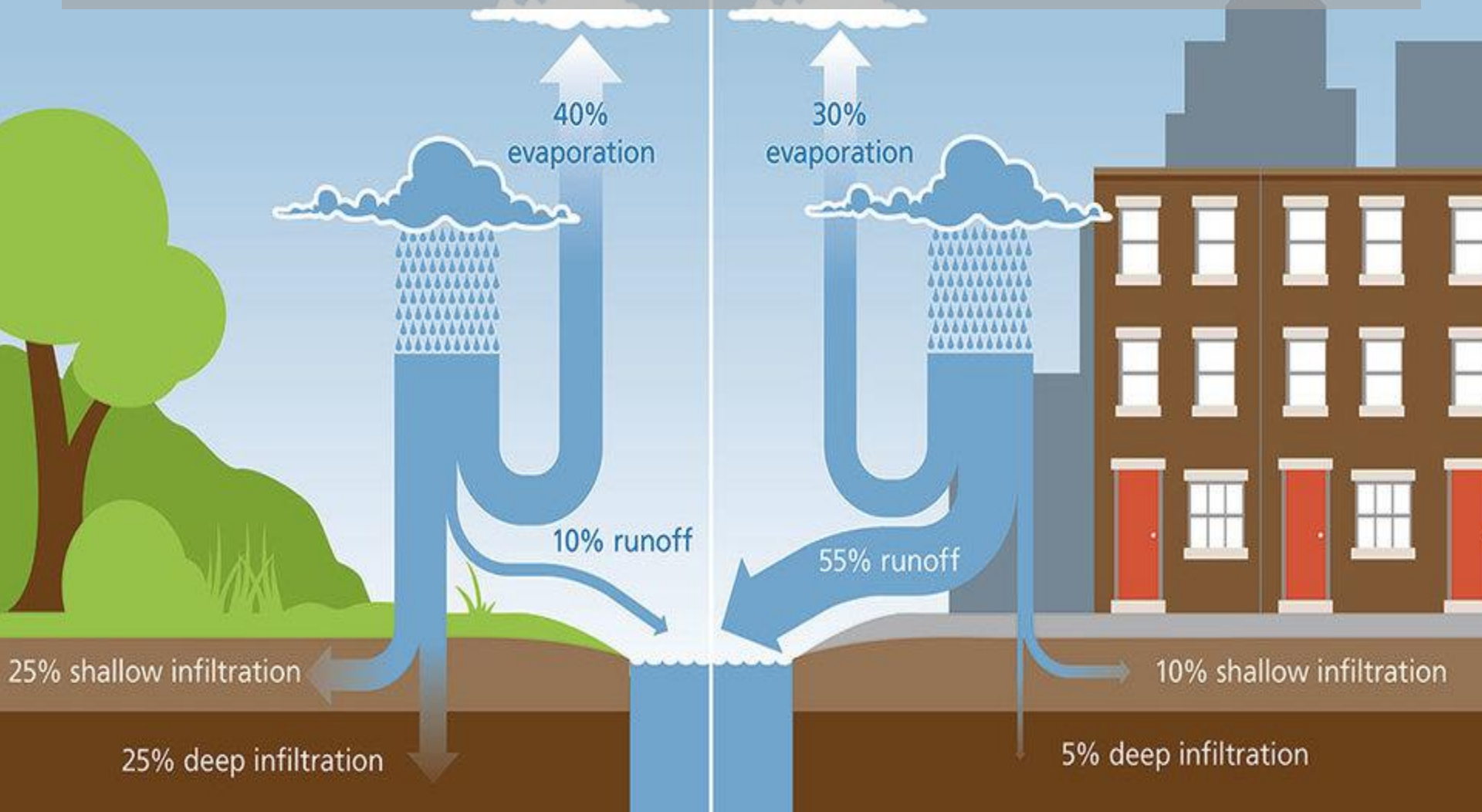
# Hydrological Cycle



NATURAL ENVIRONMENT

URBAN ENVIRONMENT

Our region is 80% dependent on groundwater for drinking water.



# Municipal Direction



The Integrated Stormwater Management Master Plan was approved by Council in November 2016 as policy MUN-UTI-2003.

## Policy Elements and Changes from Historical Practices

Stormwater Infiltration in the Context of Source Protection Planning Policy

**Dictates where infiltration is allowed.**

*No change.*

Stormwater Targets and Volume Criteria

Requires **retention of 12.5mm** of stormwater where it lands on a property to the maximum extent possible (MEP).

*New.* Applies to entire City except downtown.

SWM Control Fee

Started in 2001 at \$15,000/ha.  
2009 study determined \$25,000/ha too low.  
Fee increased by 25% until 2016.  
Current **fee is \$96,670/ha**. In User Fee schedule.

*Modified.* Renamed "SWM Control Fee".

# Policy Implementation Mechanisms



## Historical

- Stormwater criteria was required to be met as established by existing subwatershed studies, design guidelines, agency requirements and the previous Council policies established between 1996 and 2001
- *It **continues** to be a requirement to control site runoff for flood control, erosion, infiltration targets and water quality targets in accordance with existing guidance documentation and agency requirements*
- Under certain conditions, Cash-in-Lieu would be accepted for the water quality component

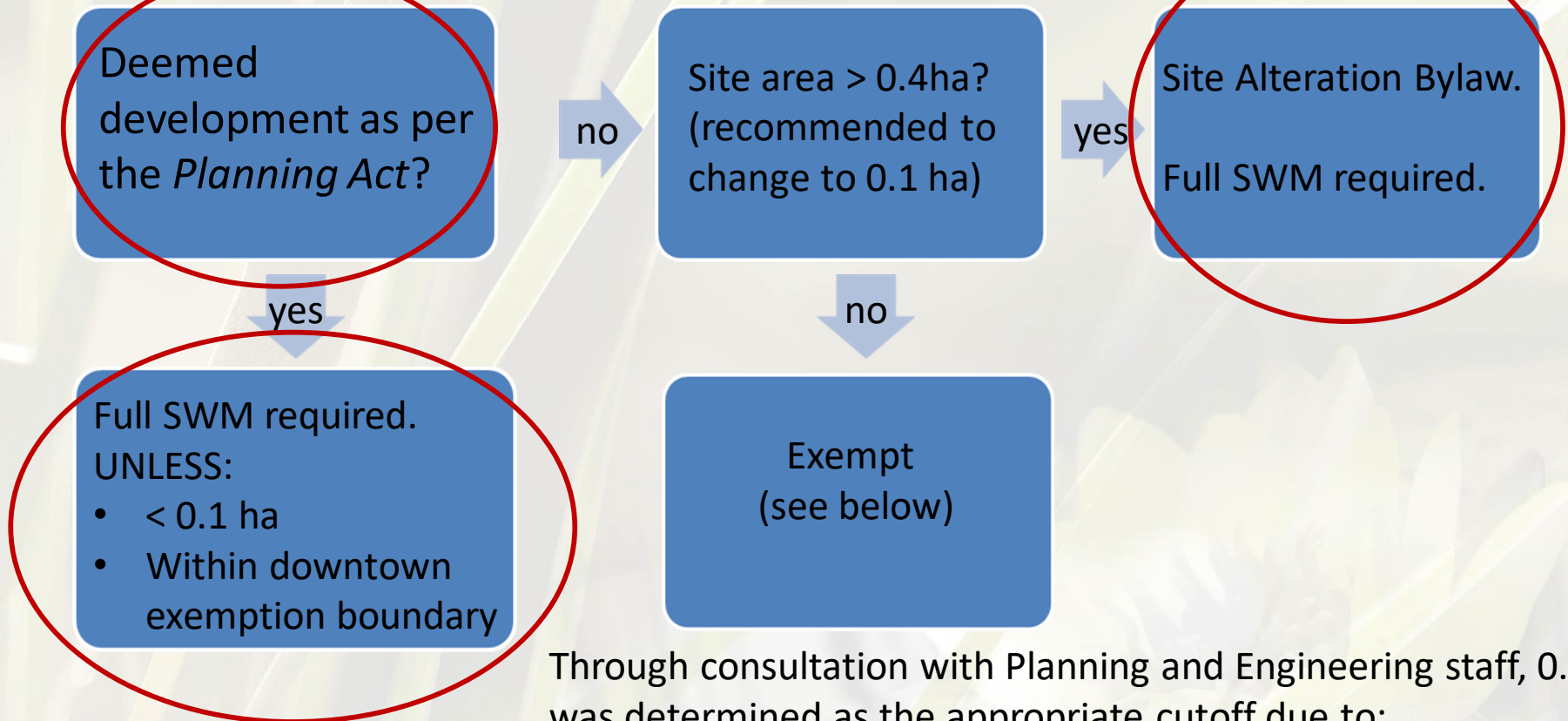
## NEW – Retention Target

- A minimum of 12.5mm of runoff from the all surfaces on the entire site must be retained
- This is accomplished using a combination of infiltration, evapotranspiration and/or rain water re-use on a site-by-site basis; all methods previously accepted, now emphasized
- Enrollment in the City of Kitchener Stormwater Utility Credit Program is **mandatory**
- **SWM Control Fee (formerly Cash-in-Lieu) pay \$96,670/ha for entire site and the municipality will use the funds to implement SWM controls in priority subwatersheds.**
  - SWM Control Fee applies separately to both the retention and the water quality requirements
  - **Last resort** and only when it is proven **technically** non-feasible to meet SWM requirements

# How does SWM Policy Affect Development?



Planning applications are received for development and assigned a status as per the *Planning Act*. Based on a review by staff the following process is applied:



Through consultation with Planning and Engineering staff, 0.1 ha was determined as the appropriate cutoff due to:

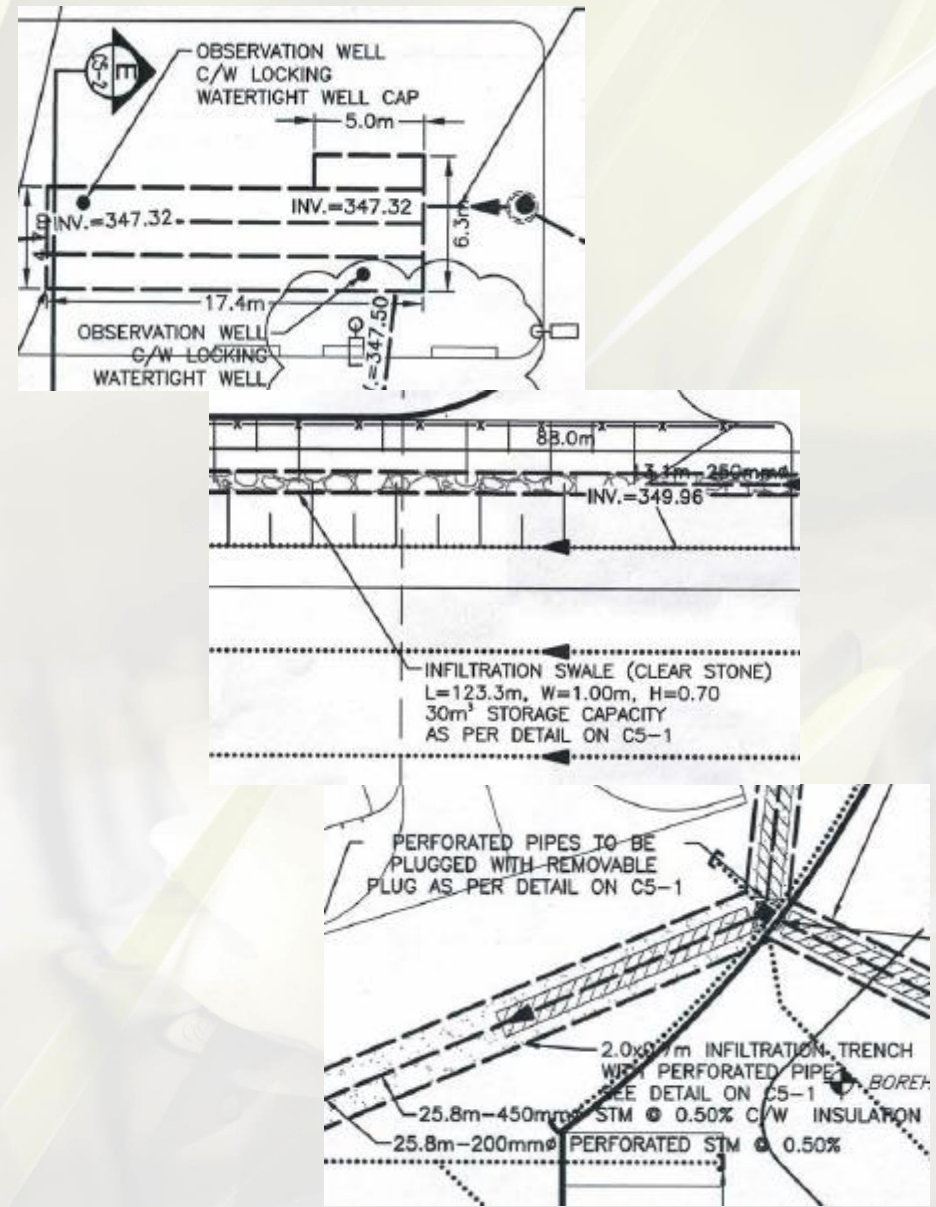
- Established in the 2001 SWM Policy
- Overall, such a small site area has negligible impact to SWM
- Some notable sites have evaded the Site Alteration Bylaw
- Exempts smaller temporary installations such as Sales Trailers



# Development Example

## Seabrook

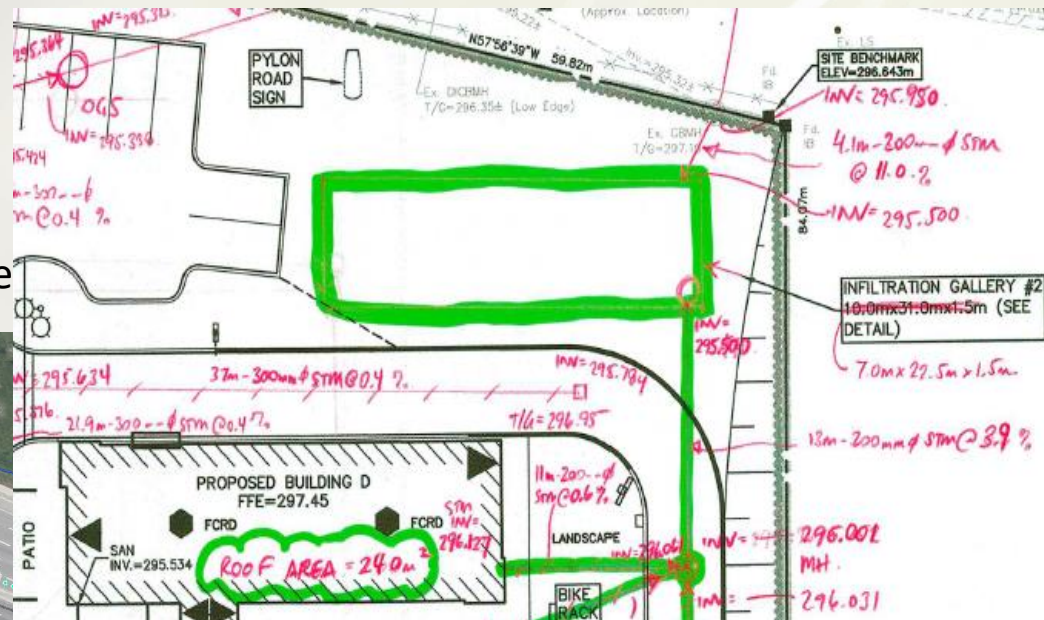
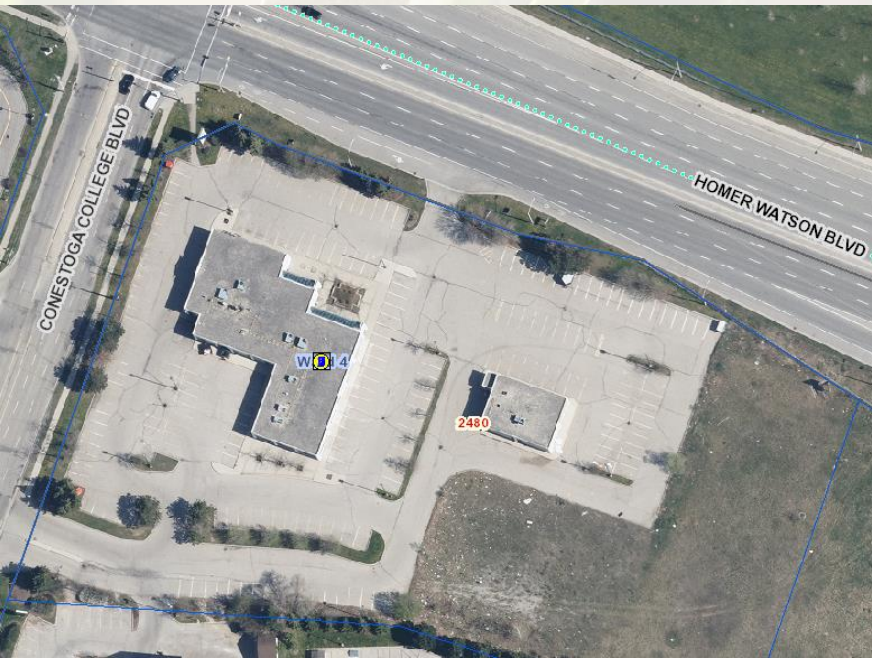
- Greenfield Development
- Public School
- 2.90 ha site area
- 20.0 mm rainfall retained on-site
- Infiltration galleries, soccer field infiltration trench, perforated pipe storm sewers
- SWM Construction Costs: \$142,049
- No SWM Fee



# Development Example

## Homer Watson

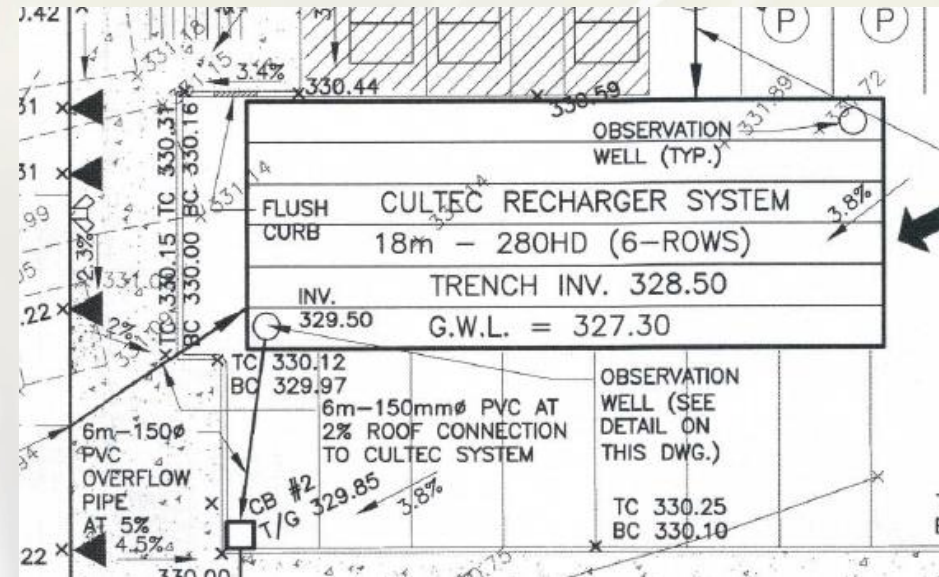
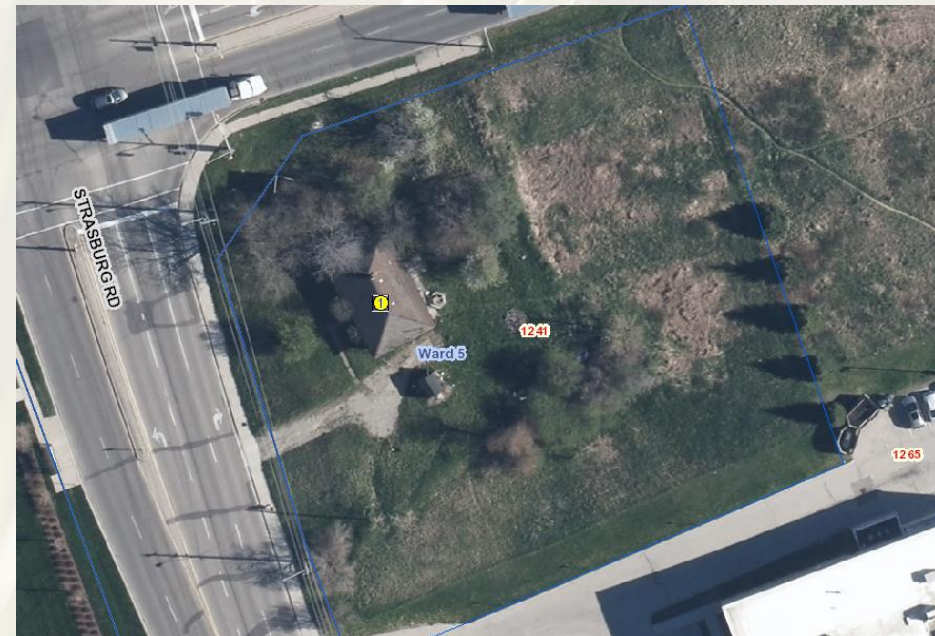
- Re-Development
- Addition to existing restaurant, new gas station, restaurant and retail building
- 1.77 ha site area
- 8.75mm rainfall retained on-site (MEP)
- OGS and infiltration galleries
- \$51,500 SWM Fee (MEP)
- SWM Costs (OGS and gallery): not available



# Development Example

## 1241 Strasburg Road

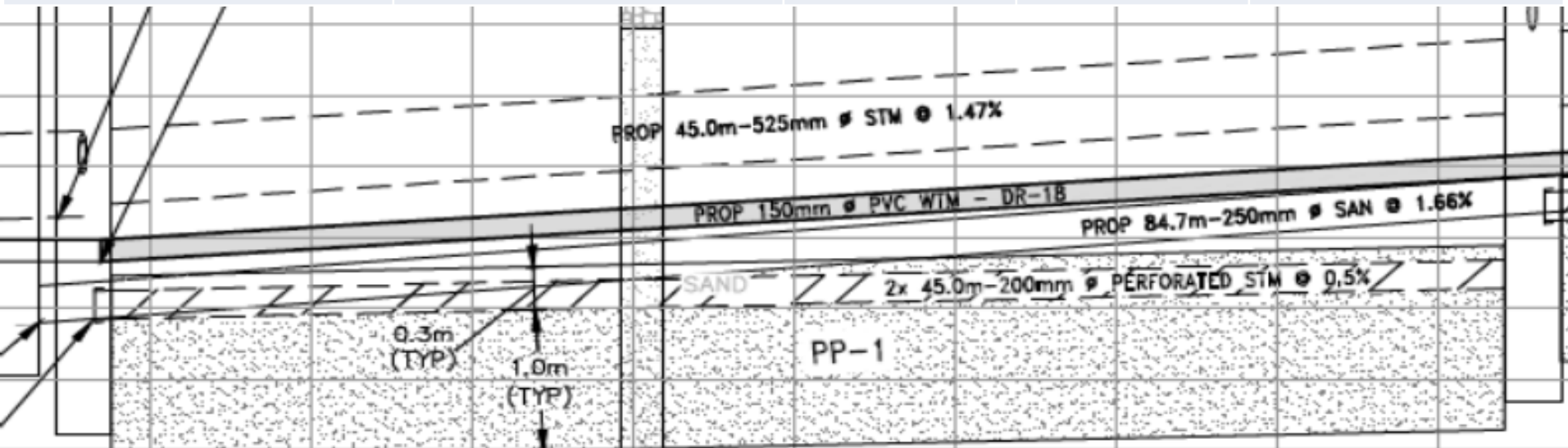
- Re-Development
- Two Story Plaza Complex
- 0.41 ha site area
- 12.5mm rainfall retained on-site
- OGS and infiltration gallery
- SWM Construction Costs: \$64,880
- No SWM Fee



# 2018 Municipal Reconstruction Examples



Road	Total Cost (\$)	LID (type and \$)		Incremental (%)
Guelph	3,117,444	Porous concrete parking	100,081	3
Patricia	5,566,372	Exfiltration system	253,056	5
Hillview	3,708,587	Exfiltration system	179,730	5
Oxford	2,558,311	Exfiltration system	77,822	3



# Thank you!



*The more you pave...  
the more you pay*

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[www.kitchener.ca/stormwatermasterplan](http://www.kitchener.ca/stormwatermasterplan)

