Implementing Green Infrastructure: Building a Community of Practice

Welcome to the Green Infrastructure Workshop!

Our shared challenge is to:

1. Identify design opportunities (and challenges) and explore methods for implementing green infrastructure solutions.

2. Develop a specific creative design solution to produce a specific, effective, and innovative green infrastructure response in one of two different land use scenarios.

3. Identify the considerations for successful implementation (i.e. ecosystem services, community outreach strategies, institutional processes, business models, educational opportunities) to facilitate the adoption of green infrastructure solutions.

Here's how the working sessions have been set up:

Participants are provided with two different land use scenarios for review beforehand. Upon arrival, you will each be assigned to a specific table and assigned one scenario to work on.

Each table is one team. Each team should feel free to rename your table as a team name. While the workshop is intended to be a learning tool for professional development, it's also going to be a fun and friendly competition among teams, so naming helps to builds your team!

The Challenge

Each team should endeavour to address all three aspects of the workshop challenge above: You are asked to develop a specific plan and/or design for a green infrastructural solution for your scenario, while also identifying and considering challenges that may impede implementation. Please also include possible solutions for these challenges!

Remember, the design solution is one outcome, but teams are specifically encouraged to consider the "implementation ecosystem" for green infrastructure and therefore, to consider ecological services, business

models, community outreach strategies, and education opportunities for their design solution. All disciplines at the table are needed for this challenge!

The deliverables can include any type of detailed representation as long as you use ALL disciplines at your table, and do not confine yourself to lists of words! Remember, the goal is to design a green infrastructure solution— so your team's **deliverables** should include any of the following:

1. concept drawings (such as freehand sketches, diagrams, tables, site plans, sections, views.

2. written considerations for the successful implementation of your plan (e.g. procurement challenges, performance metrics, operational and maintenance, triple bottom line and stackable benefits, a policy roadmap, etc.)

3. three recommendations minimum to move green infrastructure forward (e.g. procurement issues, challenges, opportunities, total life cycle costing, creating more livable spaces, a policy roadmap, etc.)

DO...

- Speculate, create, explore; take liberties, jump fences, imagine!
- Work towards design concepts in the absence of perfect information
- Pursue common understanding / bridge gaps between professional disciplines and expertise
- Develop several concepts – don't wait for a single best design resolution if it's not apparent
- Allow tangents, emergent possibilities, new directions
- Keep track of questions that arise
- Note challenges and opportunities that emerge
- SHOW: Draw, sketch, diagram, map, make lists

But DON'T...

- Ignore novelty
- Avoid untested, different ideas or strategies simply because they are new to you
- Constrain ideas to those that are readily realizable (given current conventions, procedures, methods, disciplines)
- Force immediate conclusions
- Get fixated on the cheapest, fastest option (although these factors should be noted)
- Be dominated by one discipline or professional voice

- Don't get hung up on imperfect data!
- TELL: don't talk instead of producing a concept

You will be provided

Each team's table will be provided with tracing paper or poster-sized post-its, small post-its, sharpies, access to WiFi.

The Solutions

On Day 2, each team's design solutions will be displayed on the wall with a view that all tables will circulate to view each others' table solutions during the lunch break. With this in mind, consider that your team's design solution should speak for itself — your drawings and notes should demonstrate your team's solution and vision.

Finally, each team will be provided 2 min to pitch their solution to the room, after which we will have a group discussion of lessons learned and challenges ahead.

Retrofit Scenario

This case study is for the re-development of a site to a mixed-use development with residential, commercial and a significant public space requirement in downtown Toronto.

Existing Conditions

Location:

- The site is a corner lot abutting a four lane road to the west and a local road to the south.
- Existing low rise commercial development flanks the westerly half portion of the north property line and a park for the remaining half. (see map)
- The general topography is flat with gentle fall (0.5%) from north to south. A high point in the side street aligns just east of the site's east property line.

Dimensions:

- 39m deep (north -south) and 56 m wide (east -west).

Use:

- Paved parking lot.

Soil:

- Uncontaminated
- Fissured clay
- No ground water issues.

Public Realm:

- Achieves 2.1 m pedestrian clearway for the sidewalk
- Street light and hydro poles within the right of way bordering the site.
- Telecommunication lines, gas and water lines are located under sidewalk.
- No underground transit lines under road

Stormwater:

- Existing storm service connection into a combine sewer system west of the site.
- No external storm run-off entering the site.
- All minor storm run-off drains through the storm connection and major storms sheet flows off the site.

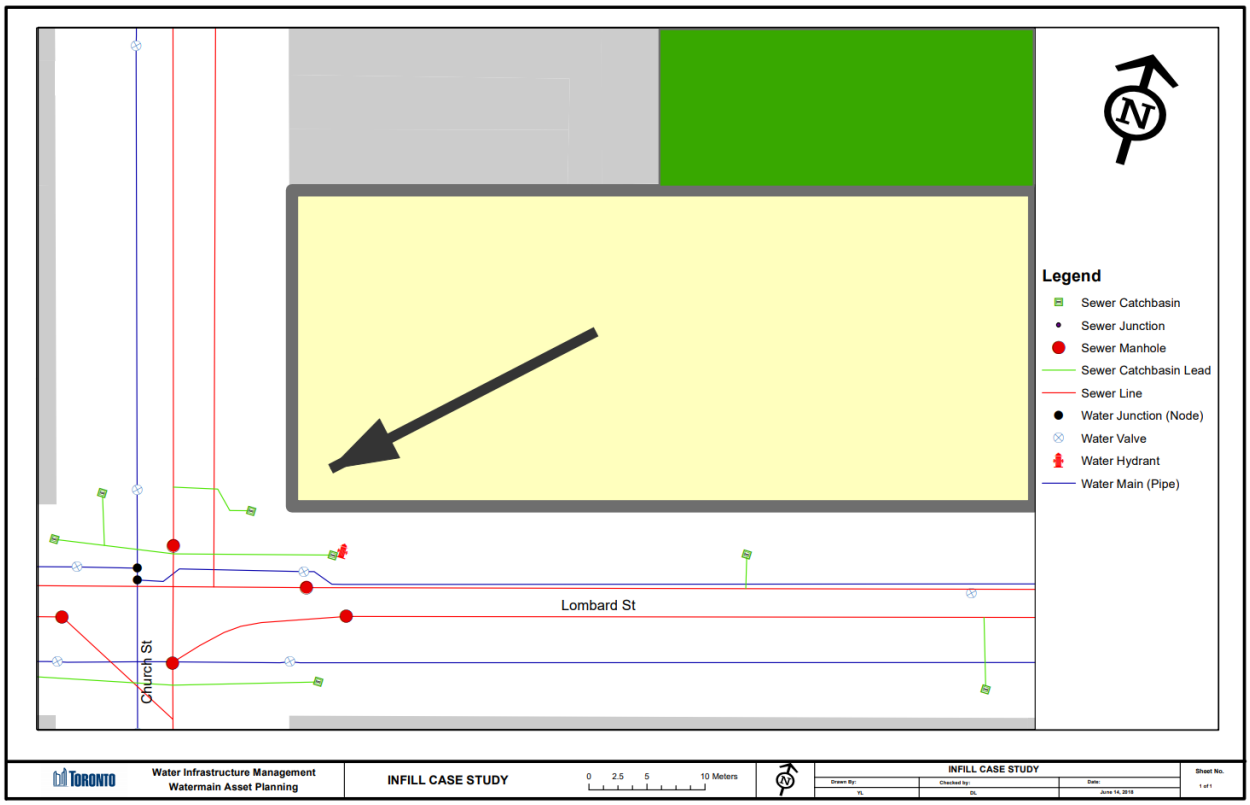
Development proposal

- Single residential condominium
- 468 residential units and a population of 955 people.
- Commercial/retail gross floor area is 1 times the site area

Design Requirements

- 18 at-grade metered public parking spaces are to be provided for the adjacent park
- 60 at-grade controlled parking spaces are required for the commercial/retail units
- Separate residential parking is required for 50% of the residential units plus parking for visitors and commercial unit tenants.
- Bicycle storage and lockers are required for each residential unit and commercial units' tenants.
- Residential and commercial can use the same building entrance for designated interior loading docks and refuse areas.
- One single private driveway is to be located at the east end of the site. It must be wide enough to accommodate all traffic in and out of the site. Daylight triangle are required to safe traffic movement.
- Privately-Owned-Public space (exterior) must cover 25% of the site area and connect to the adjacent park and parking.
- Although the building is allowed to be built with a zero lot line, a continuous face fronting the street is not allowed on both streets. A portion of the building must be set back of 3m for 5m length.
- Stormwater Management Parameters (for this exercise only):
    - Retain initial rainfall up to 27 mm from all storms.
    - The pre-development run-off coefficient is a maximum of 0.35 and the 90th percentile of all storms must be retain on site.
    - Average annual rainfall is 840 mm.

- The expected sanitary peak flow is 0.01 cu. m / sec for the site
- Pre-Development storm flows are 0.05 cu. m /sec with a run-off co-efficient of 0.5 (a maximum allowed in Toronto)


Legend
Sewer Catchbasin
Sewer Junction
Sewer Manhole
Sewer Catchbasin Lead
Sewer Line
Water Junction (Node)
Water Valve
Water Hydrant
Water Main (Pipe)
Lombard St
Church St
TORONTO
Water Infrastructure Management
Watermain Asset Planning
INFILL CASE STUDY
0 2.5 5 10 Meters
INFILL CASE STUDY
Drawn By: YL
Checked by: DL
Date: June 14, 2018
Sheet No. 1 of 1

Greenfield Scenario

Development Overview

- Located in East Gwillimbury, ON
- Fronts primary arterial road – Green Lane – York Region Road
- Full sewer and water services with fixed service points (refer to figures)
- Secondary Plan approved – all higher level planning aspects confirmed
- Primary planning instrument will be draft plan of subdivision for the entire site

Development Aspects

- Property being developed will contain a mix of commercial (fronting Green Lane) and residential for remainder
- Commercial to be developed as four separate blocks – subject to future site plan approval / design
- Residential is to be traditional mix with following breakdown:
- 40% Singles
- 40% Towns/Semis
- 20% Medium Intensity (i.e. stacked towns or similar)
- All internal roads in residential to be assumed and maintained by municipality
- 4% of developable lands to be developed / transferred into park/s
- Sidewalks only allowed on one side of all residential streets

Property Constraints / Applicable Requirements

- Property falls in the WHPA-Q2 and therefore must maintain post to pre water budget
- VPZ is 30 meters from significant features (wetlands, woodlands, top of bank, etc.)
- 4% of developable lands to be developed / transferred into park/s
- Must include minor stormwater flows originating from subdivision at southern boundary which is presently uncontrolled
- Fixed intersections and water / wastewater points of access
- assume a 5 mm/hr infiltration rate which is typical of the soils (Newmarket Till)

Stormwater Guidelines

- First 25mm of rainfall must be captured and treated on site
- Must control peak flow conditions from site
- Post to pre water budget must be maintained
- No “wet” stormwater pond will be allowed
- Private property may be utilised for stormwater but must include mechanisms / legal requirements for protection and maintenance
- Stormwater features may be included in park/s and VPZ’s