

**Water Systems Management
Council Workshop
Presentation #3**

**Stormwater Strategy
and Funding**

May 15, 2012

Agenda

- **Introduction**
- **Review Stormwater Strategy Funding**
- **Don Mills Channel Study Area**
- **Review Water Focus Group Results**
- **Flood Control Strategy and Funding Options**
- **Discussion / Next steps**

Introduction

- **To provide Council with a more in-depth review of several key policy and project initiatives introduced at the September 23, 2011 workshop on Water Systems in Markham.**
- **Workshop #3 explores Town policies for flood protection and flood control funding considering public opinion (Water Focus Group results) and expected levels of service.**

Markham Water Principles

1. Community Health & Safety

Markham's community can trust that their health and safety will be our first priority. We will actively engage the community through outreach and education to help us in leading water stewardship.

2. Environmental Health

We will take an integrated planning approach to minimize the environmental impact of our drinking water, wastewater and stormwater systems.

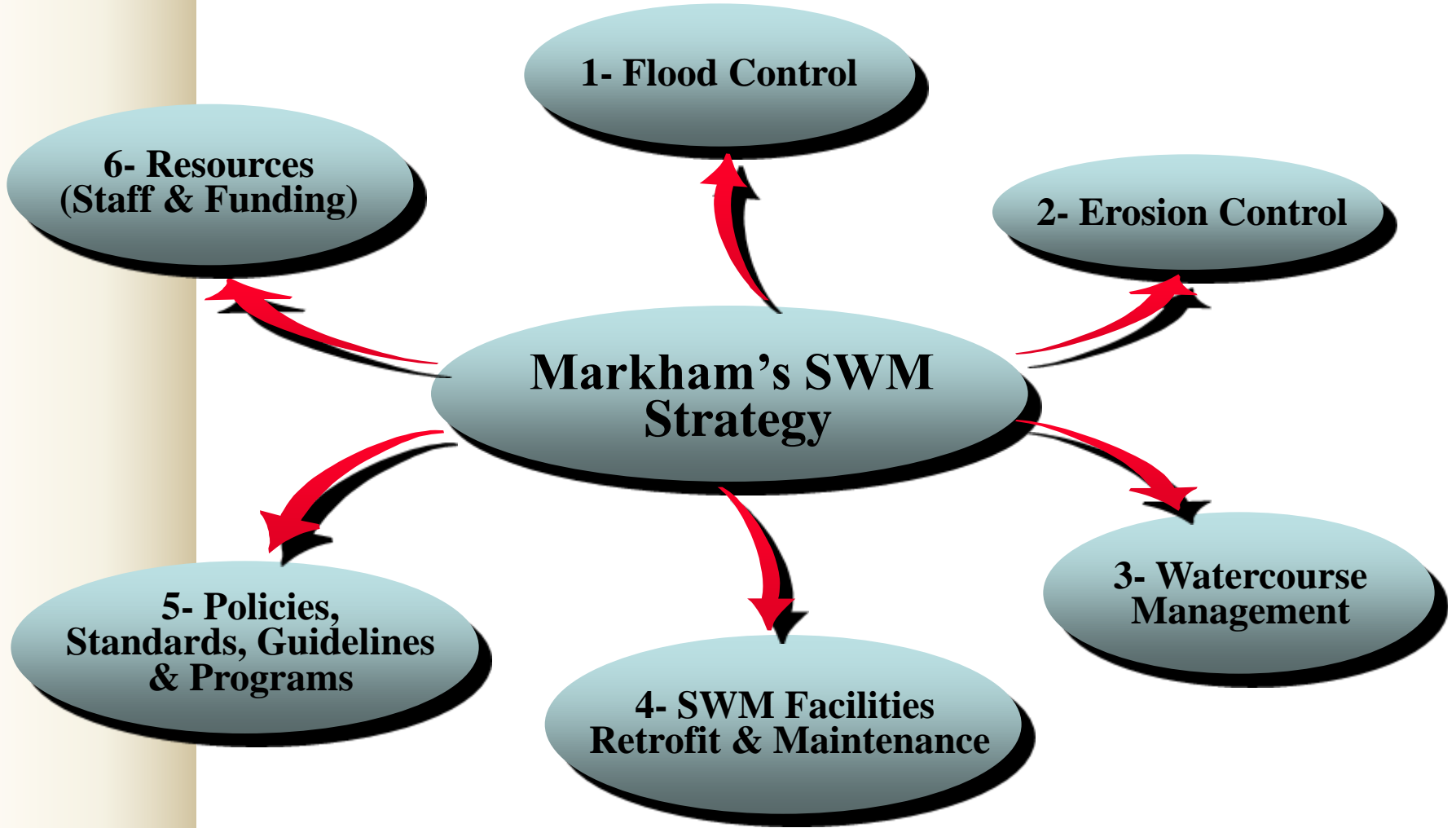
3. Financial Sustainability

We will develop and continually refine transparent and accessible funding mechanisms to provide continuous and stable funding while encouraging behaviour that values water as a resource.

Agenda

- Introduction
- **Review Stormwater Strategy Funding**
- Don Mills Channel Study Area
- Review Water Focus Group Results
- Flood Control Strategy and Funding Options
- Discussion / Next steps

Components of SWM Strategy

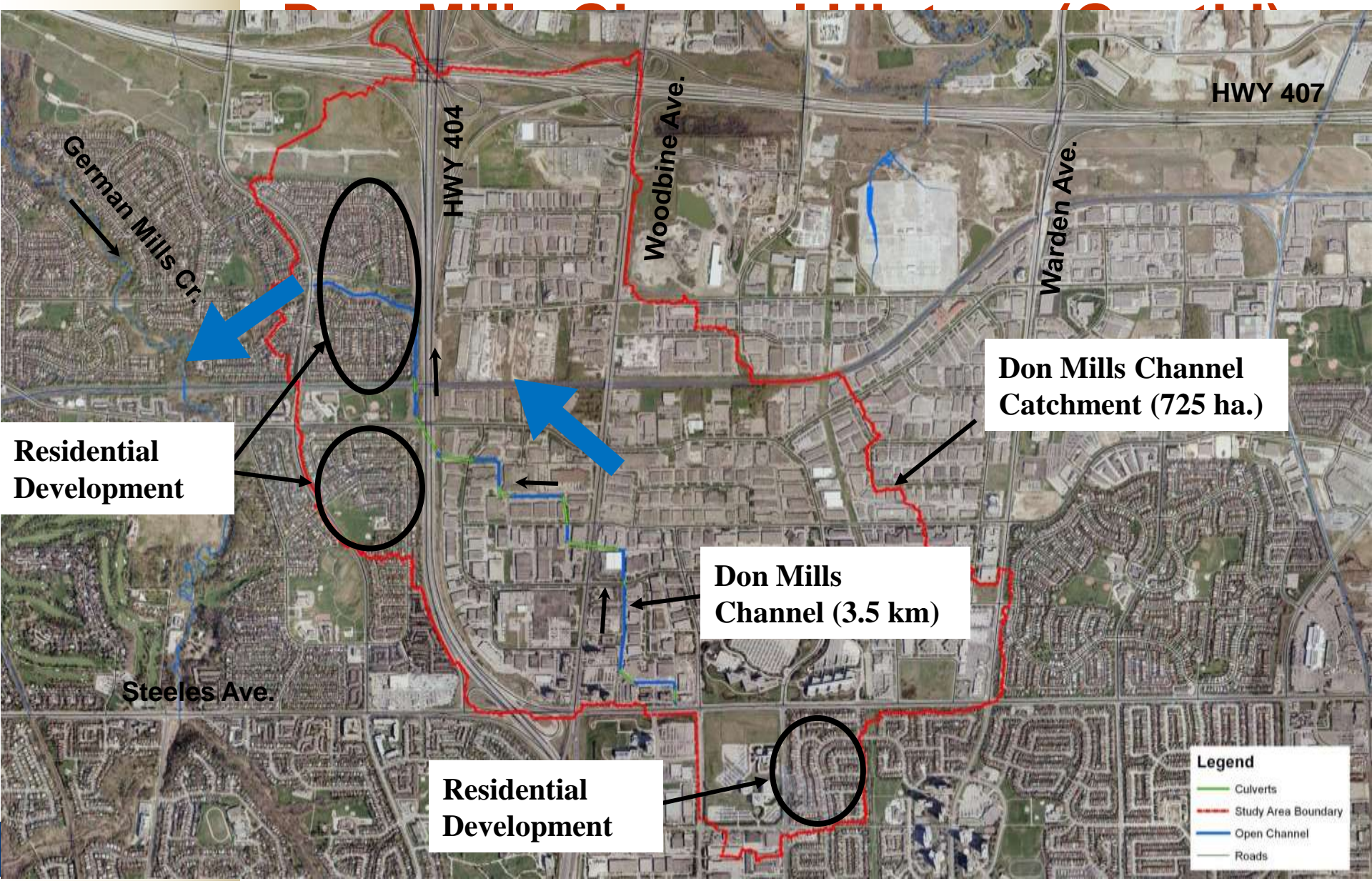


Costs and Funding

Type of Work	Estimated Cost		Funding Identified
1- Flood Control Allowances a) Don Mills Channel b) West Thornhill c) Town-wide	5-year Protection \$42M \$17M \$33M	100-year Protection \$112M <u>\$40M</u> \$77M	\$0 \$4M – Gas Tax \$0
Total Flood Control	<u>\$92M</u>	<u>\$229M</u>	<u>Total \$4M</u>
2- Town-wide Watercourse Erosion Control	\$30M (25yr program addressing 75 of 300 sites)		\$7.5M – Developer \$12M – DCs <u>\$8.4M – LC</u> Total \$27.9M
3- Watercourse Management	\$19M (over 27 year program)		\$2M – LC
4- Stormwater Assets Management (Including rehabilitation of aging SWM infrastructure)	\$24M (over 25 year program)		\$24M – LC

Agenda

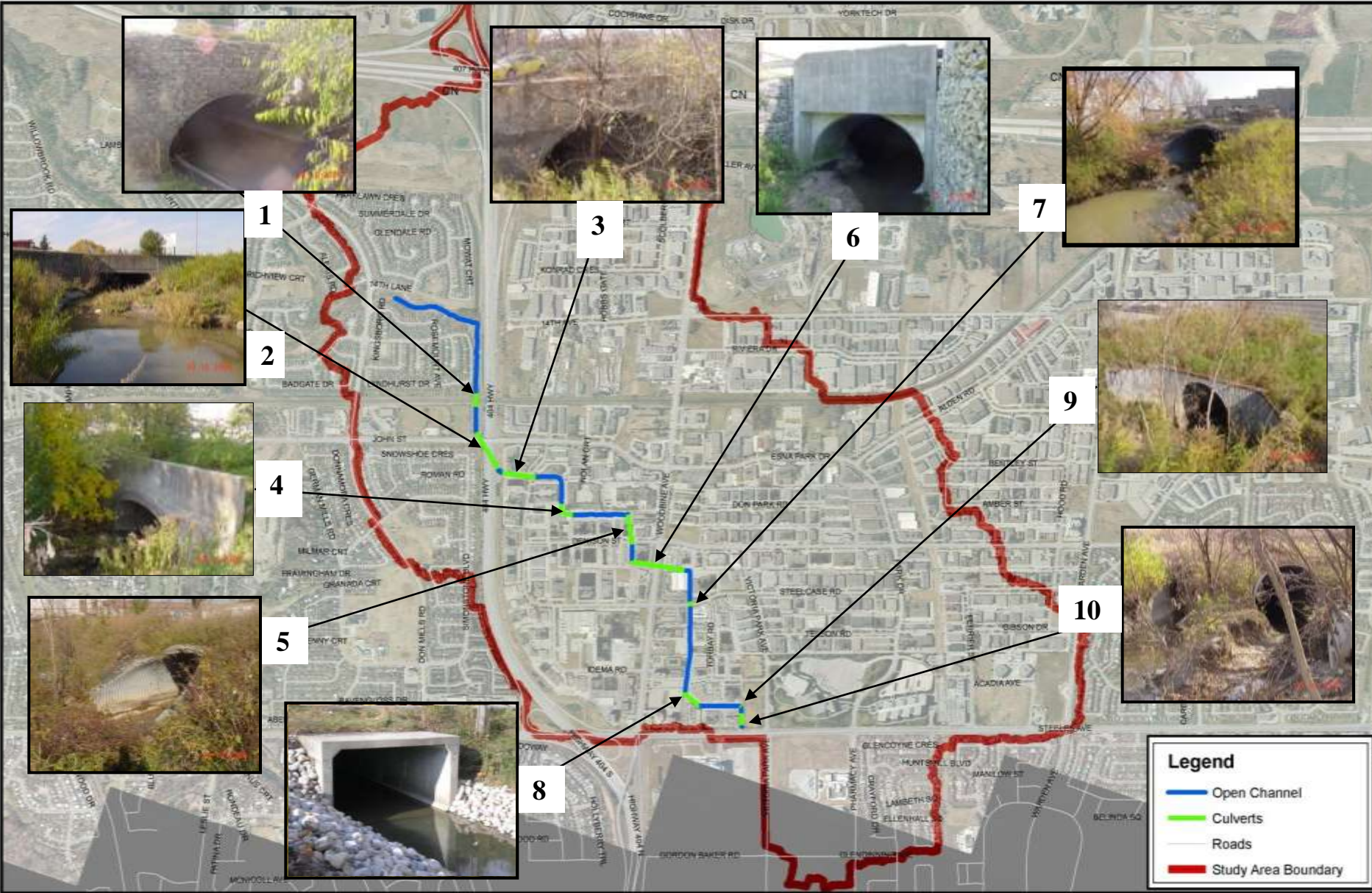
- Introduction
- Review Stormwater Strategy Funding
- **Don Mills Channel Study Area**
- Review Water Focus Group Results
- Flood Control Strategy and Funding Options
- Discussion / Next steps



Don Mills Channel History

- **A shallow watercourse through farmlands was channelized in the 1960's to support development. A 5-year storm channel capacity was intended.**
- **Town has easements for maintenance of the channel which is located on private properties.**
- **Development advanced in the 1960's and 1970's before drainage master plans and stormwater management were common.**
- **Flooding reported in 1985 after a 25-year storm. Capacity was underestimated using 1960's methods and long culverts reduced capacity. Town study recommended measures to educate owners of risks and provide 2-year capacity.**

Water Systems Management



Existing flood proofing in low area

- Permanent flood-proofing around low entrance:



Existing flood proofing in low area

- Permanent flood-proofing around low entrance:



Existing flood proofing in low area

- Temporary flood-proofing around entrance:



Don Mills Channel Class EA

- **Extensive flooding was reported August 19, 2005 due to the extreme rainfall with over a 100-year return period.**
- **This initiated the Class EA study to identify remedial measures to mitigate flooding over a range of levels of service (flood return periods).**
- **Estimated costs to eliminate flooding are significant (\$112M for 100-year) and technical solutions may be impractical to implement.**
- **As per the September 29, 2009 Council resolution, this Class EA Study is on hold pending the completion of the Stormwater Funding Study.**

Start of in-camera slides

End of in-camera slides

Costs and Funding

Type of Work	Estimated Cost		Funding Identified
1- Flood Control Allowances	5-year Protection	100-year Protection	
a) Don Mills Channel	\$42M	\$112M	\$0
b) West Thornhill	\$17M	\$40M	\$4M – Gas Tax
c) Town-wide	\$33M	\$77M	\$0
Total Flood Control	\$115M	\$229M	Total \$4M

5-year level of service for channel system



Agenda

- Introduction
- Review Stormwater Strategy Funding
- Don Mills Channel Legal Opinion
- **Review Water Focus Group Results**
- Flood Control Strategy and Funding Options
- Discussion / Next steps

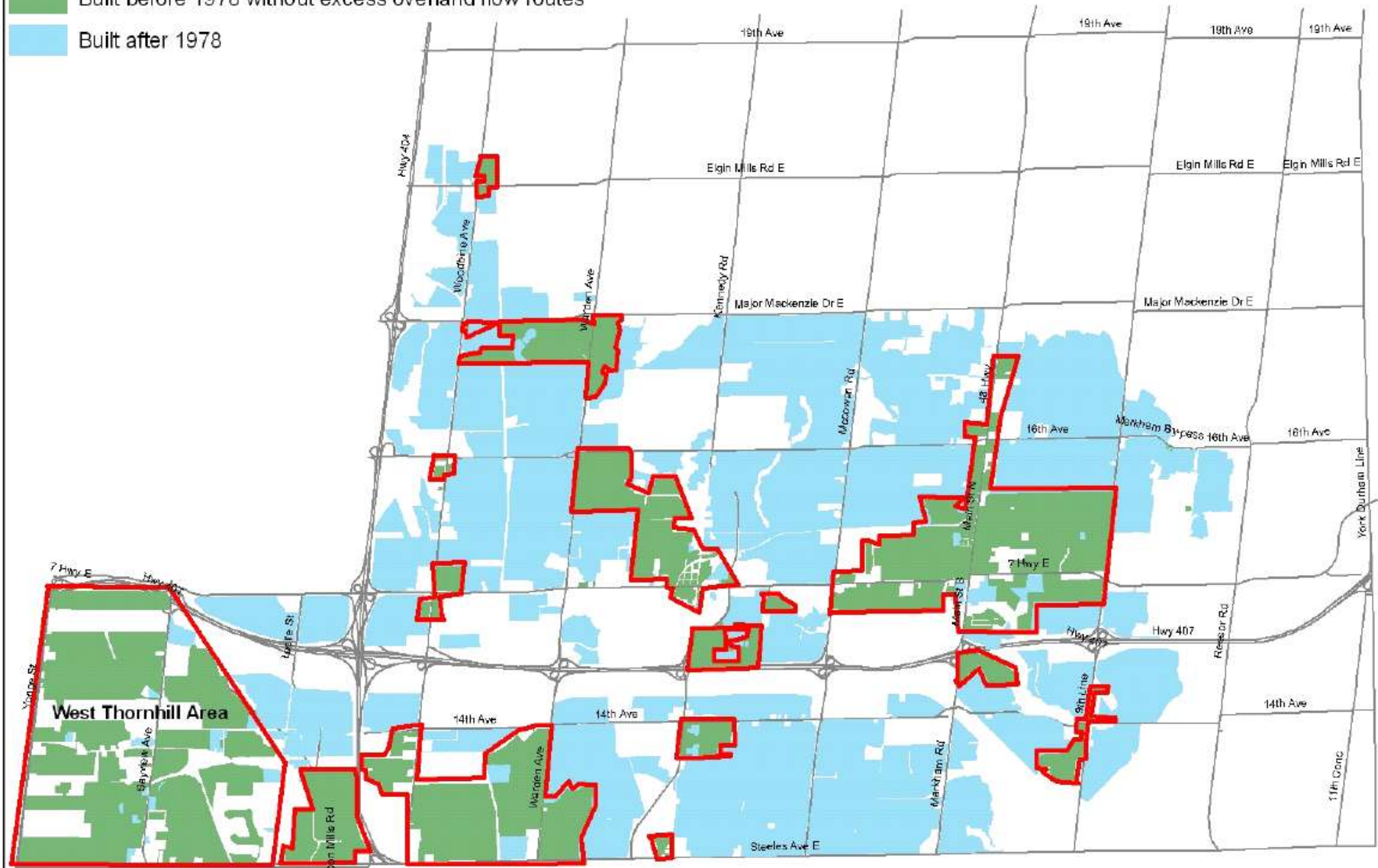
Water Focus Group

- **Two focus group sessions held in June 2011 to explore opinions on water systems including stormwater.**
- **Participants endorsed storm sewer upgrades for flood control, and the same level of protection for all residents and businesses.**
- **Participants accepted that costs should be equally borne by all property taxpayers (residential and business).**
- **Participants judged that an additional nominal sum (\$10/month per household) to the property bill would be the most logical route for funding.**

Flood Control – Town-wide design standards and study areas

Legend

- Built before 1978 without excess overland flow routes
- Built after 1978



Water Focus Group

Stormwater Statements:	Agree	Disagree	Don't Know
I never really thought very much about Markham's stormwater system until this focus group.	10	9	-
➔ I think that all Markham residents should have the same level of protection from flooding, regardless of the cost.	17	-	1
Instead of upgrading Markham's stormwater system, I think it makes sense to accept that there could be flooding from time to time and that we have to learn to live with the consequences.	2	16	-
➔ I think that all Markham residents should share in the cost of upgrading the stormwater system.	14	4	2
I am interested in learning more about the things that I can do on my property to reduce the flooding impacts of heavy rainfall events.	17	1	-

Costs and Funding

Type of Work	Estimated Cost		Funding Identified
1- Flood Control Allowances a) Don Mills Channel b) West Thornhill c) Town-wide	5-year Protection \$42M \$17M \$33M	100-year Protection \$112M \$40M \$77M	\$0 \$4M – Gas Tax \$0
Total Flood Control	\$92M	\$229M	Total \$4M

100-year storm sewer capacity Town-wide

Costs and Funding

Type of Work	Estimated Cost		Funding Identified
	5-year Protection	100-year Protection	
1- Flood Control Allowances			
a) Don Mills Channel	\$42M	\$112M	\$0
b) West Thornhill	\$17M	\$40M	\$4M – Gas Tax
c) Town-wide	\$33M	\$77M	\$0
Total Flood Control	\$92M	\$229M	Total \$4M

\$ 159 M Flood Control Cost

\$ 155 M Funding Gap



Agenda

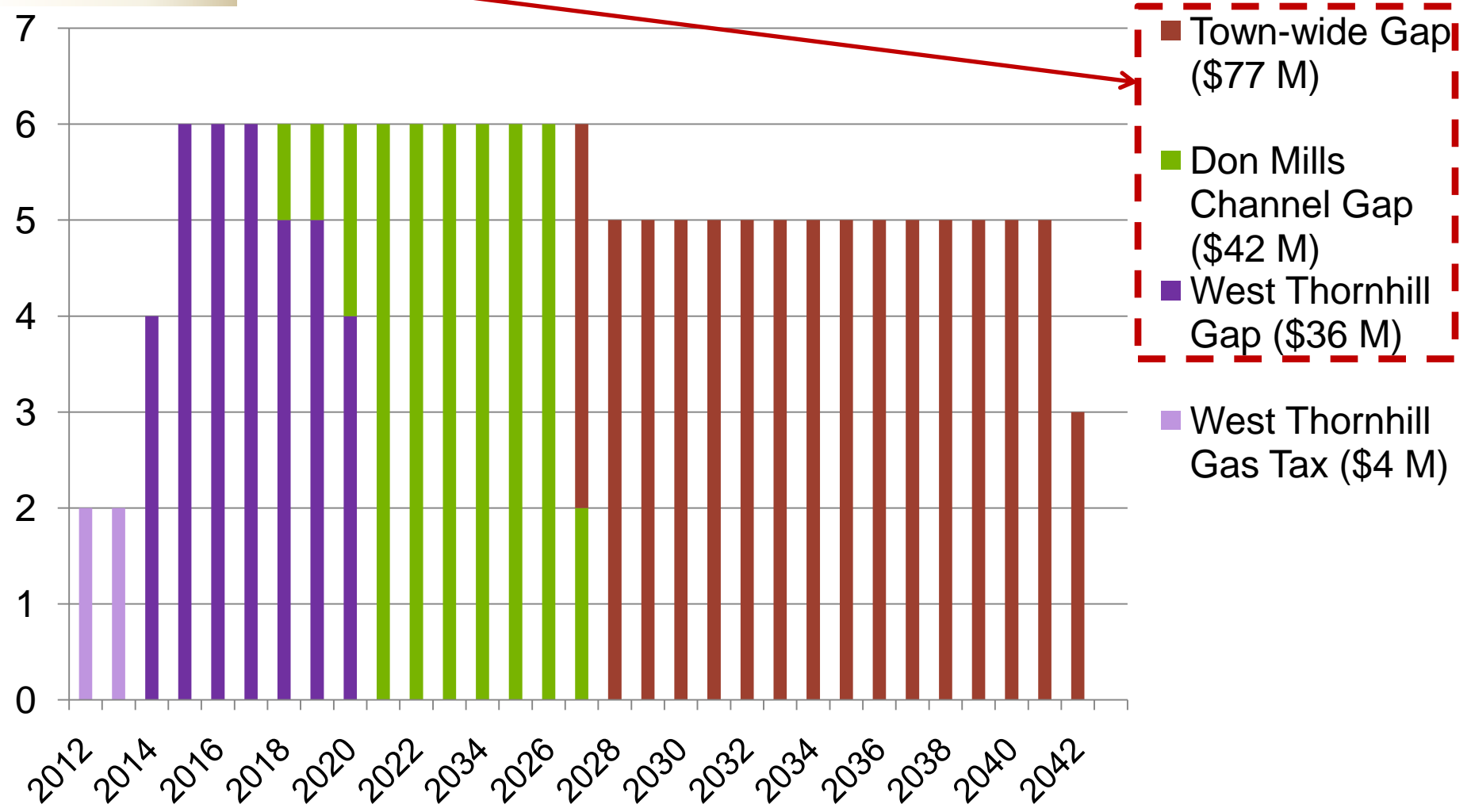
- Introduction
- Review Stormwater Strategy Funding
- Review Water Focus Group Results
- Don Mills Channel Legal Opinion
- **Flood Control Strategy and Funding Options**
- Discussion / Next steps

Strategy and Funding Discussion

- **Town-wide implementation of flood control requires a strategy including:**
 - **level of service (affects total cost),**
 - **implementation timeframe (affects annual cost), and**
 - **funding option.**
- **For discussion consider:**
 - **5-year level of service for Don Mills Channel, 100-year level of service for West Thornhill, 100-year level of service for Town-wide storm sewers (\$155 M flood control funding gap)**
 - **30 year implementation timeframe (\$5 to 6 M annual funding gap)**

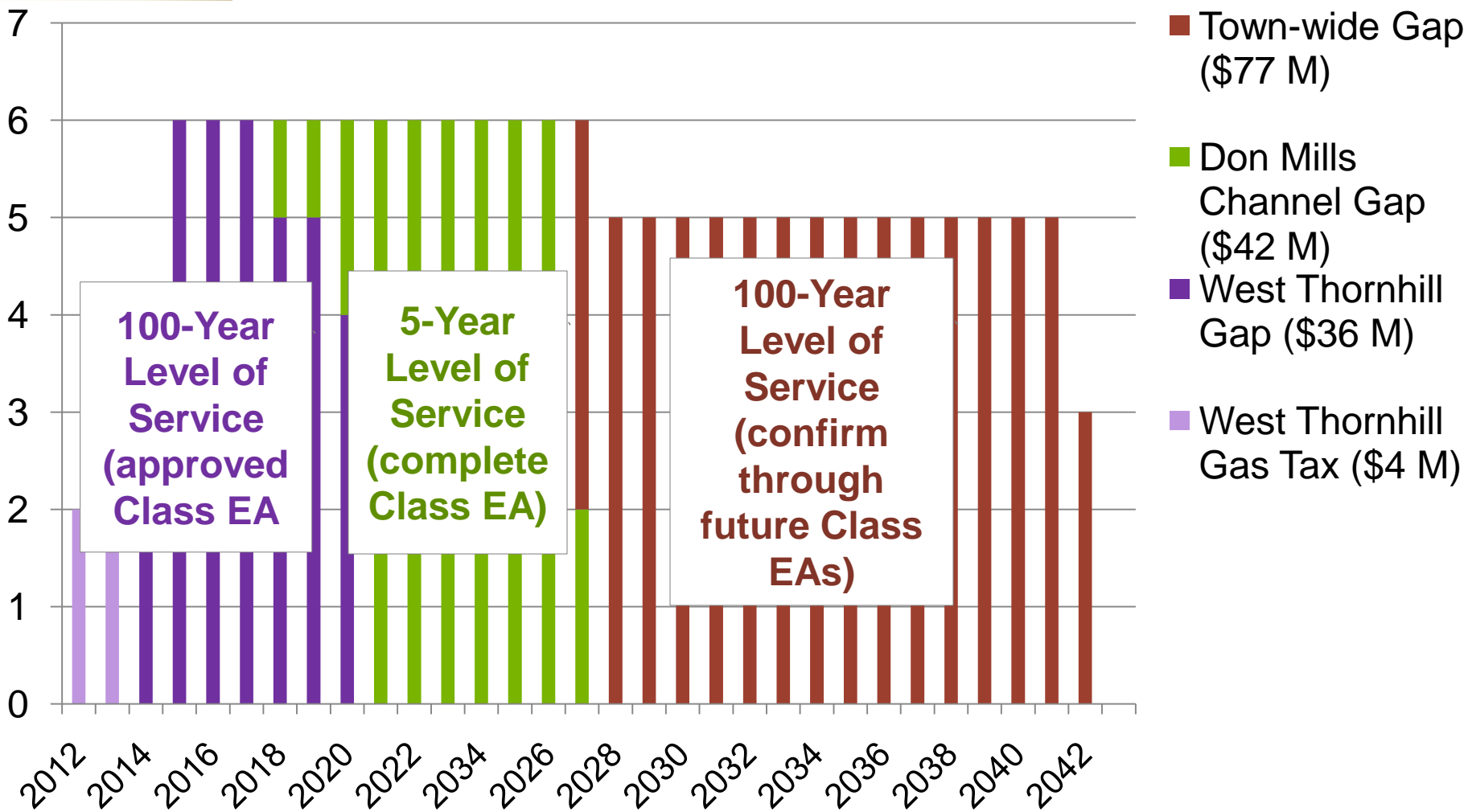
Example Implementation Strategy: \$155M flood control over 30 years

Cost (\$M)



Example Implementation Strategy: \$155M flood control over 30 years

Cost (\$M)



Funding Source Options

- **#1 - Stormwater Flat Fee on the Water Bill**
- **#2 - Water Rate Surcharge**
- **#3 - Property Tax Rate Increase**
- **#4 - Local Property Owners only – A charge under Section 391 of the Municipal Act, 2001**
- **#5 - Stormwater Utility – Fees based on runoff potential considering hard surfaces on lots**
- **Assistance by Provincial/Federal Funds**

Funding Source Examples

- **#1: Stormwater Flat Fee** – Aurora, London, St.Thomas, Saskatoon, Calgary, St. Albert, Strathcona County, Richmond, Surrey
- **#2: Water/sewer rate surcharge**– Toronto, Regina, Hamilton, Peterborough
- **#3: Property Tax Rate Increase** – Hamilton, Peterborough, Stratford
- **#4: Local Property Owners only** – A charge under Section 391 of the Municipal Act, 2001
- **#5: Stormwater Utility** – Kitchener, Waterloo, Edmonton, approximately 700 US municipalities
- **Assistance by Provincial/Federal Funds** – Stratford, Saskatoon

Flood Control Funding Source Discussion

Option	Pros	Cons
#1: Flat Fee	Easy to implement, aligned with focus group on sharing costs. Transparent.	Relates flood control costs to property size Town-wide, or water use.
#2: Water Rate Surcharge	Easy to implement, aligned with focus group on sharing costs.	Relevant in municipalities with combined storm / sanitary sewers (not appropriate in Markham)
#3: Property Tax Rate Increase	Easiest to implement, aligned with focus group on sharing costs, similar to non-flood stormwater funding.	Not apparent where funding goes (requires education on strategy and benefits). Relates flood control costs to property value Town-wide.
#4: Local Property Owners Charge	Consistent with user pay principle.	Contrary to focus group opinion on sharing costs Town-wide. High local costs are a barrier to advancing projects (projects with preferred level of service would not proceed in Class EAs)
#5: Stormwater Utility	Aligned with focus group on sharing costs.	Relates flood control costs to property hard surfaces Town-wide. Extensive effort/resources required.

Funding Source

Option #1 – Flat Fee (per water account)

- Constant fee to be applied on the water bill
- One flat fee for residential accounts and one for non-residential accounts

Assumptions:

- Based on number of water accounts
- The ratio on water consumption between residential and non-residential is 1:15. This ratio is applied in the rate structure
- Assumes growth of approximately 3% per year based on historic growth
- Based on 30 year collection period

Estimated financial implications:

- Residential : approximately \$3/month
- Non-residential : approximately \$50/month

Funding Source

Option #1 – Flat Fee (per property)

- Constant fee to be applied on the water bill
- Based on size of properties and contribution to runoff
- One flat fee for residential properties and a tiered flat fee for non-residential properties

Assumptions:

- Based on 2011 Town-wide distribution of runoff areas of 61% residential and 39% non-residential
- Based on 30 year collection period

Estimated financial implications:

- Residential : approximately \$4/month
- Non-residential : approximately \$25/month on average per parcel
*(Note: some addresses may have multiple parcels.
Impact for typical sized parcel would be comparable to the flat fee per water account .)*

Funding Source

Option #2 – Water Rate Surcharge

- A surcharge to be applied on the water bill
- Charges will be based on water consumption

Assumptions:

- Based on 2011 actual water consumption
- Based on average household water consumption of 288m³
- Assumes growth of approximately 2% per year based on historic growth
- Based on 30 year collection period

Estimated financial implications:

- Surcharge of approximately \$0.14/m³
- Residential : approximately an average of \$3/month
- Non-residential : ranges from \$25/month to \$1,000/month

Funding Source

Option #3 – Tax Rate Increase

- Increase in property taxes
- Taxes vary based on current value of the property

Assumptions:

- Based on a 30 year collection period
- Based on average current value of \$478,000 for a residential property in Markham

Estimated financial implications:

- 1 time tax rate increase of 4.41%:
 - o Residential : approximately \$4/month
 - o Non residential: Varies according to value of the property
- Phase in over 5 years, increase of approximately 1% per year for 5 years

Funding Source

Option #4 –Local Property Owners Charge

- Applies to properties in specific areas only (West Thornhill, Don Mills Channel and other areas), no charges outside these specific areas

Assumptions:

- Based on a 30 year collection period
- Based on the estimated number of benefiting properties in the identified improvement areas
- Based on interest rate of 5%

Estimated financial implications:

- West Thornhill: 1 time payment of approximately \$5,400/property, or \$58/month/property for 10 years
- Don Mills Channel: 1 time payment of approximately \$114,000/property, or \$1,230/month/property for 10 years
- Other Specific Areas: 1 time payment of approximately \$6,000/property, or \$64/month/property for 10 years

Funding Source

Option #5 – Stormwater Utility

- Fee based on size of properties and contribution to runoff
- Constant fee for different sizes of residential and variable fee based on runoff for non-residential

Assumptions:

- Based on 2011 Town-wide distribution of runoff areas of 61% residential and 39% non-residential
- Based on 30 year collection period

Estimated financial implications:

- Residential : approximately \$4/month on average
- Non-residential : varies with hard surfaces, averages 6 to 7 times residential, on average \$ 25 / month
: example large properties, e.g., shopping centre \$1000/month, school \$500/month, church \$120/month

Summary of Town-wide Funding Options

- **Option #1 – Flat Fee**
 - Residential : approximately \$3-4/month *per water account or property*
 - Non-residential : approximately \$50/month *per water account*
Or average \$ 25 / month *per property (can vary by size)*
- **Option #2 – Water Rate Surcharge**
 - Residential : average of approximately \$3/month
 - Non-residential : ranges from \$25/month to \$1,000/month
- **Option #3 – Property Tax Rate Increase**
 - Residential : approximately \$4/month (average single family)
 - Non-residential : varies according to current value assessment
- **Option #5 – Stormwater Utility**
 - Residential : approximately \$ 4 / month *per property (can vary by size)*
 - Non-residential : varies with hard surfaces, averages 6 to 7 times residential, on average \$ 25 / month *per property*
: example large properties, e.g., shopping centre \$1000/month, school \$500/month, church \$120/month

Combination of Sources

- Funding can be distributed between sources, for example, 50% Option #1 Flat Fee (per property) and 50% Option #4 Local Property Owners Charge

Estimated financial implications:

Town-wide Property Flat Fee:

- Residential : approximately \$2/month
- Non-residential : approximately \$13/month

Local Property Charge Areas only add:

- West Thornhill: 1 time payment of approximately \$2,700/property, or \$29/month/property for 10 years
- Don Mills Channel: 1 time payment of approximately \$57,000/property, or \$620/month/property for 10 years
- Other Specific Areas: 1 time payment of approximately \$3,000/property, or \$32/month/property for 10 years

Agenda

- Introduction
- Review Stormwater Strategy Funding
- Don Mills Channel Legal Opinion (in-camera)
- Review Water Focus Group Results
- Flood Control Strategy and Funding Options
- **Discussion / Next steps**

Next Steps – Key Decisions

- **Confirm Level of Service**
 - 100-year for Town-wide storm sewers (target, assuming technically feasible, for future Class EAs)
 - 5-year for Don Mills Channel (exception for private system, to be assessed through completion of Class EA)

(Note: 100-year for West Thornhill (approved Class EA))

Next Steps – Key Decisions

- **Confirm 30-year implementation time**
 - Year 1-5 : continue West Thornhill design and construction, complete Don Mills Channel Class EA (define capital works), implement low-cost risk reduction measures, and continue channel maintenance
 - Year 6-10 : complete West Thornhill implementation, initiate Don Mills capital works, and initiate other Town-wide Class EAs on a priority basis
 - Year 11+ : complete Don Mills capital works, priority Class EA implementation, and remaining Class EA studies and implementation

Next Steps – Key Decisions

- **Confirm Funding Source, or combination of sources, and timing/phasing of funding**
 - to continue West Thornhill Implementation, funding is required by 2014 to continue works to be initiated in 2012-2013
 - funding can be phased in with minor impact to implementation schedule

Next Steps

- **Public Information process on Flood Control Strategy and preferred Funding Option – to be discussed**
- **General Committee report on Town-wide Flood Control Strategy and Funding Option and Council Approval**
- **Implementation of flood control fee / tax rate (2013-2014) to support 2014 construction**