Appendix J: Discretionary Public Information Centre (PIC #1)

CITY OF BARRIE
DRAINAGE MASTER PLAN

NOTICE OF STUDY COMMENCEMENT

The Study

The Corporation of the City of Barrie has initiated a Drainage Master Plan under the Municipal Class Environmental Assessment Master Planning Process to identify the existing drainage deficiencies and develop drainage solutions to address the deficiencies, reduce flooding, resolve public safety concerns and improve maintenance opportunities throughout the City. The Study Area encompasses the whole City, including the Annexation Lands, excluding the Sophia Creek watershed and Mulcaster drainage area. The existing drainage infrastructure in the study area consists of a combination of open channels, ditches, culverts, storm sewers, overland flow routes, stormwater management facilities, and Low Impact Development (LID) measures.

The Process

The Study is being completed in accordance with Approach #1 of the Master Planning Process outlined in the Municipal Engineers Association Municipal Class Environmental Assessment document (October 2000, amended in 2007, 2011 and 2015). Alternative drainage solutions will be developed and evaluated based on their natural, physical, social, cultural, and economic impacts and the opportunities and constraints of the project.

A Public Information Centre (PIC) will be scheduled for the Fall of 2017 to provide an opportunity for the public and stakeholders to review the alternatives under consideration, and to provide input and comments. Additional notices indicating the date and location of the PIC will be published in future editions of this newspaper. Project information can also be viewed on the City's website at **www.barrie.ca** (under City Hall – Drainage Master Plan) as it becomes available. Upon completion of the Study, a Final Class EA Report documenting the Preferred Solution will be prepared for public/agency review and comment.

The City has retained the consulting firm C. C. Tatham & Associates Ltd. to complete this Study. Further details on the Municipal Class EA process are available from the consultants' office.

Comments Invited

Comments or requests to receive direct notification of future project activities should be submitted to:

Tom Reeve, P.Eng.
Senior Infrastructure Planning Program Coordinator
The Corporation of the City of Barrie
70 Collier Street
Barrie, Ontario L4M 4T5
Tel: (705) 726-4242
Fax: (705) 726-4243
Email: Tom.Reeve@barrie.ca

CITY OF BARRIE

Drainage Master Plan

NOTICE OF PUBLIC INFORMATION CENTRE

The City of Barrie is undertaking a Drainage Master Plan under the Municipal Class Environmental Assessment Master Planning Process to identify the existing drainage deficiencies, develop drainage solutions to address the deficiencies, reduce flooding, resolve public safety concerns and improve maintenance opportunities throughout the City. The study area encompasses the entire City (excluding the Salem and Hewitt's Secondary Plan Areas, and the Sophia Creek watershed and Mulcaster drainage area).

This Public Information Center is to advise you of the progress that has been made on this study and the upcoming activities.

The study is being completed in accordance with Approach #1 of the Master Planning Process outlined in the Municipal Engineers Association Municipal Class Environmental Assessment document (October 2000, amended in 2007, 2011 and 2015). The Corporation has retained the consulting firm C.C. Tatham & Associates Ltd. to develop and evaluate various alternative solutions and to document the decision making process in the Drainage Master Plan. Alternative drainage solutions will be developed and evaluated based on their natural, physical, social, cultural, and economic impacts and the opportunities and constraints of the project.

The Public Information Centre has been scheduled as follows:

Date:	**Thursday November 2, 2017**
Time:	**4:00 p.m. to 8:00 p.m.**
Location:	**Dorian Parker Centre – Sunnidale Park** **227 Sunnidale Road, Barrie, ON L4M 3B9**

All interested individuals and parties are invited to attend the Public Information Centre to view project information panels and provide comments regarding the proposed alternative solutions. City staff and representatives from the consultant firm will be available to discuss issues and concerns with members of the public. Comments collected in this process will be used to develop the preferred alternative solution.

A copy of the draft documents are available on the City of Barrie web page. Go to www.barrie.ca/eastudies then select the project titled "Drainage Master Plan". A comment sheet is also available which can be returned in person at the Public Information Centre or returned via mail or email. A hard copy of the documents are available for review at the following locations:

City of Barrie
Legislative Services Branch
1st Floor City Hall
70 Collier Street
Barrie, ON L4M 4T5

City of Barrie
Engineering Department
6th Floor City Hall
70 Collier Street
Barrie, ON L4M 4T5

Barrie Public Library
Downtown Branch
Information Desk
60 Worsley Street
Barrie, ON L4M 1L6

Barrie Public Library
Painswick Branch
Information Desk
48 Dean Avenue
Barrie, ON L4N 0C2

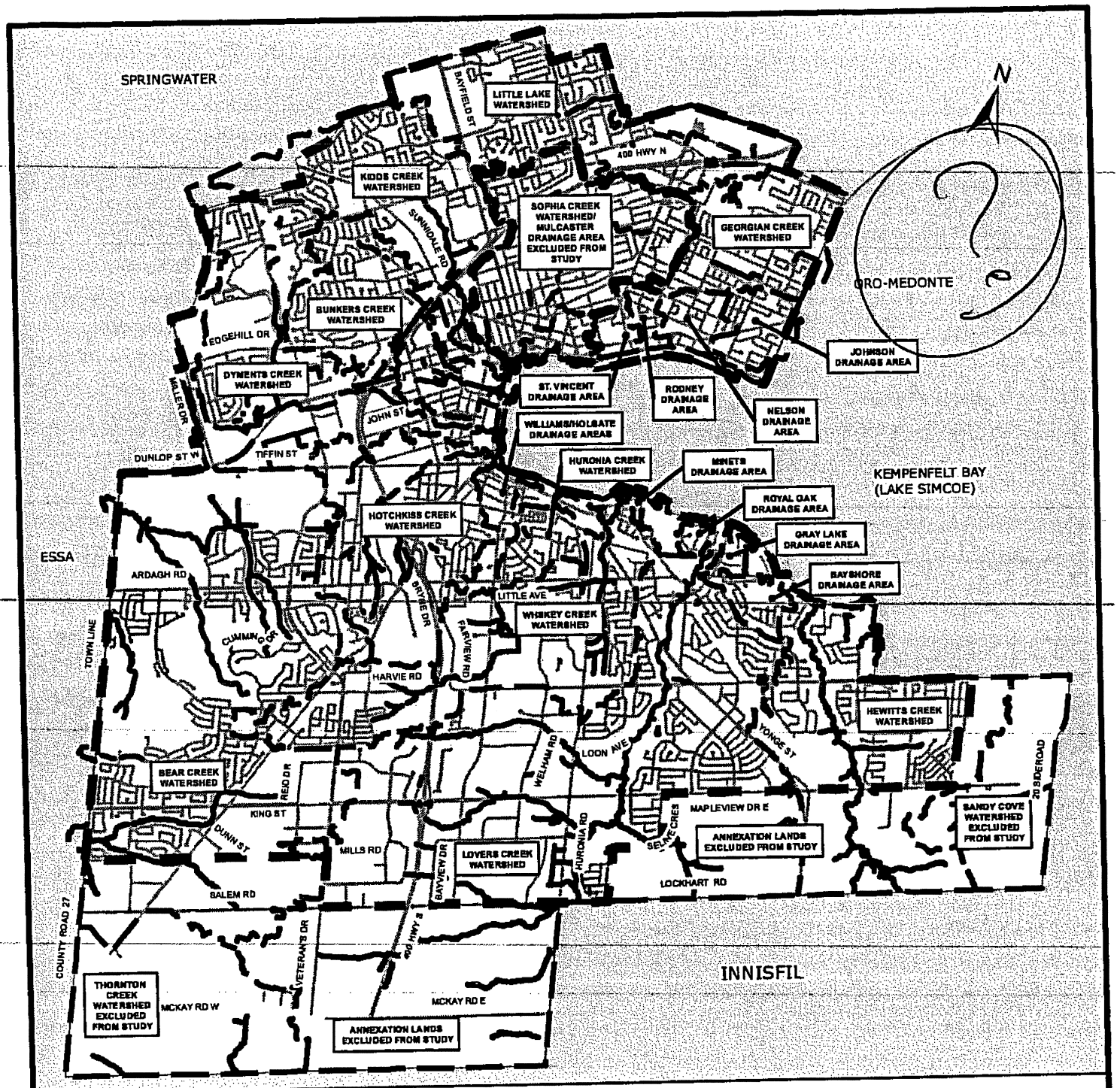
Should additional information be required or to be added to the project mailing list or to provide a comment sheet, please contact:

Mr. Tom Reeve
Senior Infrastructure Planning Program Coordinator
City of Barrie
70 Collier Street, 6th Floor
Barrie, ON L4M 4T5
Tel: (705) 739-4220 Ext. 4465
Fax: (705) 739-4247
Email: Tom.Reeve@barrie.ca

Dawn McAlpine
City Clerk/Director of Legislative & Court Services

R. Sutton, P. Eng.
Director of Engineering

Notice issued on October 26th, and October 28th, 2017.



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LEGEND

- ROADS
- WATERCOURSES
- WATERSHED BOUNDARY
- OVERALL STUDY AREA

C.C. Tatham & Associates Ltd.
Consulting Engineers
Collingwood Bracebridge Orillia Barrie

Barrie

NOT TO SCALE

DRAINAGE MASTER PLAN

FIGURE 1 - STUDY AREA LOCATION PLAN

DATE: OCTOBER 2017

CITY HALL
70 COLLIER STREET
TEL. (705) 739-4242
FAX. (705) 739-4247

The City of BARRIE

P.O. BOX 400
BARRIE, ONTARIO
L4M 4T5

THE CORPORATION OF THE CITY OF BARRIE
Engineering Department
"Committed to Total Service Excellence"

October 23, 2017

File: D27-ST

To: All Area Owners/Occupants and Agencies

Re: Drainage Master Plan
Public Information Centre

The City of Barrie is undertaking a Drainage Master Plan under the Municipal Class Environmental Assessment Master Planning Process to identify and recommend solutions to municipal drainage and flooding issues across the City. This letter is to advise you of the progress being made on this study and upcoming activities.

The existing City drainage infrastructure in the study area consists of a combination of open channels, ditches, culverts, storm sewers, overland flow routes, stormwater management facilities, and Low Impact Development (LID) measures. Through this current study and past studies, a number of deficiencies in the drainage systems across the City have been identified.

A Public Information Centre has been scheduled for Thursday November 2, 2017 and you are invited to attend to review and provide comments on the proposed alternative solutions. A notice containing further information on the Public Information Centre is attached to this letter, along with a map of the study area. At the Public Information Centre, the project team will display the study progress to date and be available to discuss and respond to questions. There will also be an opportunity to provide feedback.

A comment sheet has also been attached to this letter which contains a list of the preliminary alternatives being considered to address drainage issues. The goal of this first round of consultation is to collect feedback on the contemplated alternatives and to provide an opportunity for you to share information about drainage system problems in your area.

You are being sent this letter because your property has been identified during preliminary work as potentially being impacted by or adjacent to one or more alternatives being considered.

More information about the study and the Public Information Centre can be found on the City's website. Go to www.barrie.ca/eastudies then select the project titled "Drainage Master Plan". A copy of the comment sheet used at the Public Information Centre will also be available on the website.

Should you have any questions or concerns, please feel free to contact Tom Reeve at 705-739-4220 ext. 4465 or email Tom.Reeve@barrie.ca.

Yours truly,

Tom Reeve, P. Eng.
Senior Infrastructure Planning Program Coordinator

TR/ar

Attachments

Public Information Centre No. 1

DRAINAGE MASTER PLAN
Municipal Class Environmental Assessment - Phases 1 & 2

C.C. Tatham & Associates Ltd.
Consulting Engineers
Collingwood Bracebridge Orillia Barrie

November 2, 2017

Barrie

Welcome

The City of Barrie (City) has retained C.C. Tatham & Associates Ltd. (CCTA) to prepare a Drainage Master Plan for the City following Approach #1 of the Master Planning process outlined in the Municipal Engineers Association (MEA) Municipal Class Environmental Assessment Document (October 2000, as amended in 2007, 2011 and 2015).

This Drainage Master Plan is a broad level assessment detailing the drainage deficiencies identified in the study area, improvement options considered to address these deficiencies, and the evaluation of these alternatives to assist in the development of preferred alternative solutions to be implemented moving forward.

The project team responsible for input and the preparation of the Drainage Master Plan and the supporting documentation is comprised of the following:

- City of Barrie (City);
- C.C. Tatham & Associates Ltd. (CCTA) – Engineering;
- Lake Simcoe Region Conservation Authority (LSRCA);
- Nottawasaga Valley Conservation Authority (NVCA);
- Azimuth Environmental Consulting, Inc. (AEC) – Natural Heritage;
- Archeoworks Inc. (AW) – Archeological;
- Peto MacCallum Ltd. (Peto) - Geotechnical; and
- Rudy Mak Surveying Ltd. (RMS) – Legal Survey.

Municipal Class Environmental Assessment and Master Planning Process

What is a Class Environmental Assessment?

- Planning and design process to identify, compare, and evaluate alternative solutions to an identified problem
- Applies to all municipal road, water, and wastewater projects and significant private projects as per the Municipal Engineers Association (MEA) Municipal Class Environmental Assessment (EA) document, dated October 2000 (as amended in 2007, 2011 and 2015)
- Considers all aspects of the environment: physical, natural, social, cultural and economic

How Does a Class EA Work?

- Five Phases (see Municipal Class EA Process chart)
- This project is currently in Phase 2 and is following the Master Planning Process

This Public Information Centre will:

- Consult with the public and affected parties
- Assist in the evaluation and selection of a preferred alternative

Public & Stakeholders should:

- Sign the registry
- Review the presentation material
- Ask questions of the City and/or Consultant
- Submit a comment sheet & indicate which design alternative improvement option(s) you prefer and whether or not you want to be kept informed of the staff recommendations for the preferred alternative solution that will be presented during a second Public Information Centre.
- All comment sheets are to be returned to the City of Barrie by Friday, November 17, 2017

Public Information Centre

- Public Information Centre No. 1 is being held to collect background information, present the drainage deficiencies identified across the City, present the improvement opportunities being considered, and elicit feedback from the public and interested stakeholders to establish a set of alternative drainage solutions to be evaluated moving forward.
- Public Information Centre No. 2 will be held following the evaluation of the alternative drainage solutions to present the evaluation to the public and interested stakeholders along with the selected preferred alternative solution to elicit additional feedback prior to recommending the preferred solution to council for adoption.
- Comments and information regarding this project are being collected to assist the project team in meeting the requirement of the Municipal Class EA process. These comments will be maintained for reference throughout the project and, with the exception of personal information, may be used in the final documentation and will become a part of the public record.
- The City of Barrie continues to enhance accessibility that is inclusive of all ages and abilities. The information presented at today's Public Information Centre can be provided in alternative formats upon request. Such a request should be submitted to the City of Barrie contact provided below:

Contacts

Tom Reeve, P.Eng.
City of Barrie Engineering Dept.
70 Collier Street, P.O. Box 400
Barrie, ON L4M 4T5
t: (705) 739-4220 ext 4465
f: (705) 739-4247
e: Tom.Reeve@barrie.ca

Municipal Class EA Process

PHASE 1 — PROBLEM OR OPPORTUNITY

1. Identify problem or opportunity
2. Discretionary public consultation to review problem or opportunity

Determine applicability of master plan approach

We are Here

PHASE 2 — ALTERNATIVE SOLUTIONS

1. Identify alternative solution to problem or opportunity
2. Select Schedule
3. Inventory natural, social & economic environment
4. Identify impact of alternative solutions on the environment & mitigating measures
5. Evaluate alternative solutions: identify recommended solutions
6. Consult review agencies & public re: problem or opportunity & alternative solutions
7. Select preferred solution
8. Review & confirm choice of schedule

Schedule A / A+

Approved – may proceed

If no order*, may proceed

Order* granted, proceed with individual EA or abandon project

Opportunity for order* request to Minister within 30 days of notification

Notice of completion to review agencies & public

Schedule B

Schedule C

Individual EA

PHASE 3 — ALTERNATIVE DESIGN CONCEPTS FOR PREFERRED SOLUTION

1. Identify alternative design concepts for preferred solution
2. Detail inventory of natural, social & economic environment
3. Identify impact of alternative designs on environment & mitigating measures
4. Evaluate alternative designs: identify recommended design
5. Consult review agencies & previously interested & directly affected public
6. Select preferred design
7. Review environmental significance & choice of schedule
8. Preliminary finalization of preferred design

Discretionary public consultation to review preferred design

PHASE 4 — ENVIRONMENTAL STUDY REPORT

1. Complete environmental study report (ESR)
2. Environmental study report (ESR) placed on public record

Notice of completion to review agencies & public

Copy of notice of completion to MOE-EA branch

3. Opportunity to request Minister within 30 days of notification to request an order*

Optional formal mediation

Order* granted, proceed as per Minister's direction or abandon project

Matter referred to mediation

Order* denied with or without Minister's conditions

PHASE 5 — IMPLEMENTATION

1. Complete contract drawings & tender documents
2. Proceed to construction & operation
3. Monitor for environmental provisions & commitments

Municipal Engineers Association

Indicates possible events

Indicates mandatory events

Indicates probable events

Mandatory public contact points

Decision points on choice of schedule

Optional

Part II order

*

Study Objective & Purpose

The objective of the Drainage Master Plan is to identify drainage deficiencies across the City, develop improvements options to address the identified deficiencies, and evaluate the alternatives to develop a preferred solution to be implemented by the City moving forward.

The study includes an assessment of the existing stormwater infrastructure across the City and consideration of the following alternative drainage solutions:

- Flow reduction/water quality improvements to attenuate peak flows, improve stormwater treatment, increase infiltration, and minimize sedimentation and erosion in the watercourse
- Conveyance capacity improvements (road crossing culverts, channel improvements, trunk storm sewers, and floodway improvements)
- Minimizing encroachments into the floodplain and reducing private property affected by flood waters

The purpose of Phase 1 of this study is to:

- Identify the drainage deficiencies across the City
- Identify opportunities to address the identified deficiencies

The purpose of Phase 2 of this study is to:

- Identify alternative drainage solutions to address the problem statement
- Inventory the natural, physical, cultural, social and economic environments in the study area
- Identify the impacts the alternative drainage solutions have on the environment
- Evaluate the alternative drainage solutions considering the potential impacts
- Select a preferred alternative solution(s)
- Establish measures to mitigate the adverse impacts associated with the preferred alternative solution(s)

We are Here

Problem Statement

Currently, areas of the City experience flooding during both minor and major storm events. Frequent flooding of private and municipal property during storm events has been documented throughout the City along much of the watercourses due to insufficient culvert, stormsewer and channel capacities. The flooding has caused historic damage to both private and municipal property and causes concern for public safety. The flooding and erosion has caused historic damage to both private and municipal property and channel reaches causing concern for public dafety.

In addition to flooding and erosion, the existing storm infrastructure is reaching its service life expectancy and deteriorating. A majority of the aging storm sewers are undersized considering historic rainfall data and current climate models predict future increases in rainfall intensities and volumes. In some locations, municipal storm infrastructure is located on private property outside the municipal right-of-way making it difficult to access and maintain.

Also, there are areas absent of minor drainage systems and stretches of deficient overland flow routes across the City. Development, intensification, urbanization and growth in the City have also adversely impacted the stormwater quality and ecological health of the various creeks and Lake Simcoe. The culmination of the above noted factors results in a storm system that does not meet the City's engineering and development standards.

Study Area

- The study area for the Drainage Master Plan includes the entire City of Barrie excluding the Sophia Creek watershed, Mulcaster drainage area and Annexation Lands (which are currently being reviewed under other studies).
- The Study Area is broken into three major drainage study areas as follows:
  - Barrie Creeks Drainage Study Area
  - NVCA Watershed Drainage Study Area
  - Lovers Creek, Hewitts Creek and Sandy Cover Drainage Study Area
- The drainage study areas are further divided into watersheds and drainage areas as follows:
  - Kidd's Creek watershed (488 ha)
  - Bunkers Creek watershed (361 ha)
  - Dyments Creek watershed (580 ha)
  - Hotchkiss Creek watershed (483 ha)
  - Whiskey Creek watershed (638 ha)
  - Little Lake watershed (445 ha)
  - Bear Creek watershed (1,700 ha)
  - Georgian Creek watershed (270 ha)
  - Thornton Creek watershed (483 ha)
  - Lovers Creek watershed (2,538 ha)
  - Hewitts Creek watershed (762 ha)
  - Sandy Cove watershed (302 ha)
  - Johnson, Nelson, Rodney, St. Vincent, Williams, Holgate, Huronia, Minets, Bayshore, Gray Lane and Royal Oak drainage areas (476 ha)

The study area includes lands under the jurisdiction of both the Lake Simcoe Region Conservation Authority (LSRCA) and Nottawasaga Valley Conservation Authority (NVCA).

The study area is delineated on the Figures presented next along with the watershed and drainage area delineation.

N

SPRINGWATER

ORO-MEDONTE

KEMPENFELT BAY
(LAKE SIMCOE)

ESSA

INNISFIL

SOPHIA CREEK WATERSHED/ MULCASTER DRAINAGE AREA EXCLUDED FROM STUDY

ANNEXATION LANDS EXCLUDED FROM STUDY

ANNEXATION LANDS EXCLUDED FROM STUDY

NICKLAUS DR
ST VINCENT ST
COMPTON DR
HANMER ST E
HANMER ST W
BANFIELD ST
STANLEY ST
STOLLAR BLVD
LITTLE LAKE DR
CUNDLES RD E
SPERLING DR
GEORGIAN DR
FORD ST
LIVINGSTONE ST W
IRWIN DR
LILLIAN CRES
KOZLOW ST
CUNDLES RD W
SUNNIDALE RD
COULTER ST
FERRIS LANE
BELL FARM RD
ROSLYN RD
OTTAWAY AVE
BURNS CIR
FERNDALE DR N
BROWNING TRAIL
LETITIA ST
ANNE ST N
OWEN ST
PEEL ST
COOK ST
STEEL ST
GROVE ST E
ARTHUR AVE
MELROSE AVE
QUEEN ST
EUGENIA ST
PUGET ST
CODRINGTON ST
BLAKE ST
KEMPENFELT DR
GARRETT CRES
MARY ST
BEAUMOUSHENE RD
MOORE PL
EDGEHILL DR
RUFFET DR
KNUPP RD
LAKE ROSS DR
CEDAR POINTE DR
ANNE ST S
VESPRA ST
HART DR
SPROULE DR
LENNOX DR
PRINGLE DR
SARJEANT DR
JOHN ST
ELLEN ST
DUNLOP ST W
BROCK ST
TIFFIN ST
MILLER DR
FERNDALE DR S
BISHOP DR
SUMMERSET DR
HAWKINS DR
ARDAGH RD
GRANT'S WAY
FAWN CRES
SILVER TRAIL
CUMMING DR
BLOOM CRES
TOWN LINE
MAPLETON AVE
ALLSOP CRES
EMMS DR
ESSA RD
CAPLAN AVE
MAPLEVIEW DR W
REID DR
KING ST
LOUGHEED RD
DUNN ST
COLUMBIA RD
SALEM RD
COUNTY ROAD 27
MCKAY RD W
MCKAY RD E
PATTERSON RD
400 HWY N
400 HWY S
CAMPBELL AVE
CRAWFORD ST
MOON DR
MORROW RD
LAKESHORE DR
GABLE'S BAY LANE
WALWYN'S WAY
FOSTER DR
LITTLE AVE
CHIEFTAIN CRES
FAIRVIEW RD
TRUMAN RD
RICKETT CRES
CHERRELL AVE
GRAY LANE
JEAN ST
DOCK RD
TOLLENDAL MILL RD
HURST DR
PLUMMETT CRT
COX MILL RD
CARTER RD
BRUCE CRES
TAYLOR DR
YONGE ST
BARRE DR
NAVA RD
WARNICA RD
GOLDEN MEADOW RD
HARVIE RD
BIG BAY POINT RD
ELLIS DR
BAYVIEW DR
WARD DR
CHALMERS DR
GRACE CRES
DEAN AVE
CEDAR CRES
PINE DR
BIRKHALL PL
EMPIRE DR
PEPIN CRT
WINCHESTER TERR
CHURCHILL DR
LOON AVE
CONCERT WAY
PARK PLACE BLVD
BRYNE DR
WELHAM RD
COUNTRY LANE
CARLEY CRES
GOODWIN DR
JESSICA DR
MAPLEVIEW DR E
SELINE CRES
HURONIA RD
ST PAUL'S CRES
20 SIDEROAD
HOOPER RD
SAUNDERS RD
MILLS RD
COMMERCE PARK DR
NORRIS DR
VETERAN'S DR
RAWSON AVE
LOCKHART RD

LEGEND

- ROADS
- WATERCOURSES
- DRAINAGE STUDY AREA BOUNDARY
- OVERALL STUDY AREA
- ANNEXATION LANDS (EXCLUDED FROM STUDY)
- SOPHIA CREEK WATERSHED AND MULCASTER DRAINAGE AREA (EXCLUDED FROM STUDY)
- NVCA WATERSHED DRAINAGE STUDY AREA
- BARRIE CREEKS DRAINAGE STUDY AREA
- LOVERS CREEK, HEWITTS CREEK AND SANDY COVE DRAINAGE STUDY AREA
- MUNICIPAL BORDER

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C.C. Tatham & Associates Ltd.
Consulting Engineers
Collingwood Bracebridge Orillia Barrie

Barrie

SCALE = 1:24,000

0 305 610 1,220 1,830 2,440 Meters

DRAINAGE MASTER PLAN

FIGURE 1 - STUDY AREA LOCATION PLAN

DATE: OCTOBER 2017

N

SPRINGWATER

ORO-MEDONTE

ESSA

KEMPENFELT BAY
(LAKE SIMCOE)

INNISFIL

LITTLE LAKE WATERSHED

KIDDS CREEK WATERSHED

SOPHIA CREEK WATERSHED/ MULCASTER DRAINAGE AREA EXCLUDED FROM STUDY

GEORGIAN CREEK WATERSHED

BUNKERS CREEK WATERSHED

DYMENTS CREEK WATERSHED

JOHNSON DRAINAGE AREA

RODNEY DRAINAGE AREA

NELSON DRAINAGE AREA

ST. VINCENT DRAINAGE AREA

WILLIAMS/HOLGATE DRAINAGE AREAS

HURONIA CREEK WATERSHED

MINETS DRAINAGE AREA

ROYAL OAK DRAINAGE AREA

GRAY LANE DRAINAGE AREA

BAYSHORE DRAINAGE AREA

BEAR CREEK WATERSHED

HOTCHKISS CREEK WATERSHED

WHISKEY CREEK WATERSHED

HEWITTS CREEK WATERSHED

LOVERS CREEK WATERSHED

SANDY COVE WATERSHED EXCLUDED FROM STUDY

ANNEXATION LANDS EXCLUDED FROM STUDY

ANNEXATION LANDS EXCLUDED FROM STUDY

THORNTON CREEK WATERSHED EXCLUDED FROM STUDY

NICKLAUS DR
ST VINCENT ST
HANMER ST E
HANMER ST W
BANFIELD ST
STANLEY ST
COMPTON DR
STOLLAR BLVD
LITTLE LAKE DR
CUNDLES RD E
SPERLING DR
GEORGIAN DR
BELL FARM RD
ROSLYN RD
FERRIS LANE
OTTAWAY AVE
FORD ST
LIVINGSTONE ST W
IRWIN DR
ANNE ST N
KOZLOW ST
CUNDLES RD W
SUNNIDALE RD
COULTER ST
BURNS CIR
FERNDALE DR N
BROWNING TRAIL
LETITIA ST
SHIRLEY AVE
MOORE PL
EDGEHILL DR
RUFFET DR
ANUPP RD
CEDAR POINTE DR
LAKESIDE DR
MILLER DR
PRINGLE DR
DUNCOP ST W
HART DR
ANNE ST S
VESPRA ST
JOHN ST
BROCK ST
TIFFIN ST
LAKESHORE DR
PEEL ST
OWEN ST
QUEEN ST
EUGENIA ST
MARY ST
COOK ST
STEEL ST
ARTHUR AVE
GROVE ST E
MELROSE AVE
PUGET ST
BLAKE ST
GARRETT CRES
PERETMOUSHENE RD
FERNDALE DR S
BISHOP DR
SUMMERSET DR
HAWKINS DR
ARDAGH RD
GRANT'S WAY
FAWN CRES
SILVER TRAIL
CUMMING DR
BLOOM CRES
MAPLETON AVE
ALLSOP CRES
EMMS DR
ESSA RD
CAPLAN AVE
MAPLEVIEW DR W
LOUGHEED RD
KING ST
REID DR
DUNN ST
COLUMBIA RD
SALEM RD
TOWN LINE
COUNTY ROAD 27
MCKAY RD W
MCKAY RD E
PATTERSON RD
400 HWY N
400 HWY S
MORROW RD
CRAWFORD ST
MOON DR
HARVIE RD
CHIEFTAIN CRES
FAIRVIEW RD
TRUMAN RD
BIG BAY POINT RD
ELLIS DR
BAYVIEW DR
CHURCHILL DR
CONCERT WAY
PARK PLACE BLVD
WELHAM RD
BRYNE DR
HOOPER RD
SAUNDERS RD
HURONIA RD
MILLS RD
COMMERCE PARK DR
NORRIS DR
VETERANS DR
RAWSON AVE
FOSTER DR
LITTLE AVE
WALLACE WINS WAY
GABLES BAY LANE
GRAY LANE
TOLLENDAL MILL RD
DOCK RD
HURST DR
HERRELL AVE
COX MILL RD
CARTER RD
BRUCE CRES
TAYLOR DR
GOLDEN MEADOW RD
WARNICA RD
NAVA RD
YONGE ST
BARRIE DR
PICKETT CRES
WARD DR
CHALMERS DR
GRACE CRES
DEAN AVE
LOON AVE
CEDAR CRES
PINE DR
BIRKHALL PL
EMPIRE DR
PEPIN CRT
WINCHESTER TERR
COUNTRY LANE
CARLEY CRES
GODWIN DR
JESSICA DR
MAPLEVIEW DR E
SELINE CRES
ST PAULS CRES
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LOCKHART RD

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C.C. Tatham & Associates Ltd.
Consulting Engineers
Collingwood Bracebridge Orillia Barrie

Barrie

SCALE = 1:24,000

0 305 610 1,220 1,830 2,440 Meters

DRAINAGE MASTER PLAN

FIGURE 2 - WATERSHED/DRAINAGE AREA DELINEATION PLAN

DATE: OCTOBER 2017

Project Background

The City of Barrie previously completed Master Drainage Plans and stormwater management studies for a number of watersheds and drainage areas across the City. The Master Drainage Plans identified drainage deficiencies in the City, evaluated alternative solutions to address the deficiencies, and recommended preferred alternative solutions for implementation. Similarly, stormwater management studies were completed for some drainage areas and provide recommendations for drainage improvements required for existing infrastructure and outlined stormwater management requirements for future development.

The background Master Drainage Plans included the following general recommendations:

- Conveyance capacity improvements (culvert, channel floodway and storm sewer improvements)
- Stormwater management facility improvements (retrofits, expansion and creation)
- Watershed spill containment (eliminate interwatershed spills)
- Flood proof buildings within the floodplain
- Enhancement of natural areas
- Watercourse enhancements (remove accumulated sediment and address erosion)

N

SPRINGWATER

ORO-MEDONTE

KEMPENFELT BAY
(LAKE SIMCOE)

ESSA

INNISFIL

SOPHIA CREEK WATERSHED/ MULCASTER DRAINAGE AREA EXCLUDED FROM STUDY

ANNEXATION LANDS EXCLUDED FROM STUDY

ANNEXATION LANDS EXCLUDED FROM STUDY

NICKLAUS DR
ST VINCENT ST
HANMER ST E
HANMER ST W
BAYFIELD ST
STANLEY ST
STOLLAR BLVD
LITTLE LAKE DR
CUNDLES RD E
GEORGIAN DR
FERRIS LANE
BELL FARM RD
ROSLYN RD
BEAUMONT DR
LIVINGSTONE ST W
KOZLOW ST
CUNDLES RD W
SUNNIDALE RD
COULTER ST
DUKE CIR
FERNDALE DR N
BROWNING TRAIL
LETITIA ST
ANNE ST N
COOK ST
STEEL ST
ARTHUR AVE
MELROSE AVE
QUEEN ST
EUGENIA ST
PEEL ST
OWEN ST
MARY ST
PUGET ST
CODRINGTON ST
GARRETT CRES
BLAKE ST
KEMPENFELT DR
MOORE PL
EDGEHILL DR
RUFFET DR
KNUPP RD
JACOBSON DR
MILLER DR
SPROULE DR
PRINGLE DR
DUNLOP ST W
CEDAR POINTE DR
HART DR
SARGEANT DR
VESPRA ST
JOHN ST
ELLEN ST
TIFFIN ST
FERNDALE DR S
PATTERSON RD
400 HWY N
400 HWY S
CAMPBELL AVE
MORROW RD
CRAWFORD ST
MOON DR
SUMMERSET DR
HAWKINS DR
GRANT'S WAY
FAWN CRES
ARDAGH RD
SILVER TRAIL
BLOOM CRES
CUMMING DR
MAPLETON AVE
ALLSOP CRES
TOWN LINE
ESSA RD
CHIEFTAIN CRES
FAIRVIEW RD
HARVIE RD
TRUMAN RD
PICKETT CRES
LITTLE AVE
HERRELL AVE
WK01 AVE
BIG BAY POINT RD
ELLIS DR
BAYVIEW DR
CHURCHILL DR
WELHAM RD
CONCERT WAY
PARK PLACE BLVD
BRYNE DR
CAPLAN AVE
MAPLEVIEW DR W
KING ST
REID DR
HOOPER RD
SAUNDERS RD
MILLS RD
COMMERCE PARK DR
NORRIS DR
VETERAN'S DR
RAWSON AVE
HURONIA RD
LOUGHEED RD
DUNN ST
COLUMBIA RD
SALEM RD
COUNTY ROAD 27
MCKAY RD W
MCKAY RD E
LOCKHART RD
TOLLENDAL MILL RD
GABLE'S BAY LANE
GRAY LANE
JEAN ST
DOCK RD
FOSTER DR
COX MILL RD
CARTER RD
BRUCE CRES
TAYLOR DR
GOLDEN MEADOW RD
WARNICA RD
YONGE ST
BARRE DR
DEAN AVE
WARD DR
CEDAR CRES
PINE DR
BIRKHALL PL
EMPIRE DR
PEPIN CRT
PRINCE WILLIAM WAY
WINCHESTER TERR
GOODWIN DR
JESSICA DR
MAPLEVIEW DR E
SELINE CRES
ST PAUL'S CRES
20 SIDEROAD
BENETAWOUSHENE RD

LEGEND

- CULVERTS
- EXISTING STORM SEWER
- ROADS
- WATERCOURSES
- DRAINAGE STUDY AREA BOUNDARY
- OVERALL STUDY AREA
- STORMWATER MANAGEMENT FACILITY (SWMF)
- ANNEXATION LANDS (EXCLUDED FROM STUDY)
- SOPHIA CREEK AND MULCASTER DRAINAGE AREAS (EXCLUDED FROM STUDY)
- NVCA WATERSHED DRAINAGE STUDY AREA
- BARRIE CREEKS DRAINAGE STUDY AREA
- LOVERS CREEK, HEWITTS CREEK AND SANDY COVE DRAINAGE STUDY AREA
- MUNICIPAL BORDER

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Consulting Engineers
Collingwood Bracebridge Orillia Barrie

Barrie

SCALE = 1:24,000

0 305 610 1,220 1,830 2,440 Meters

DRAINAGE MASTER PLAN

FIGURE 5 - EXISTING STORMWATER MANAGEMENT INFRASTRUCTURE PLAN

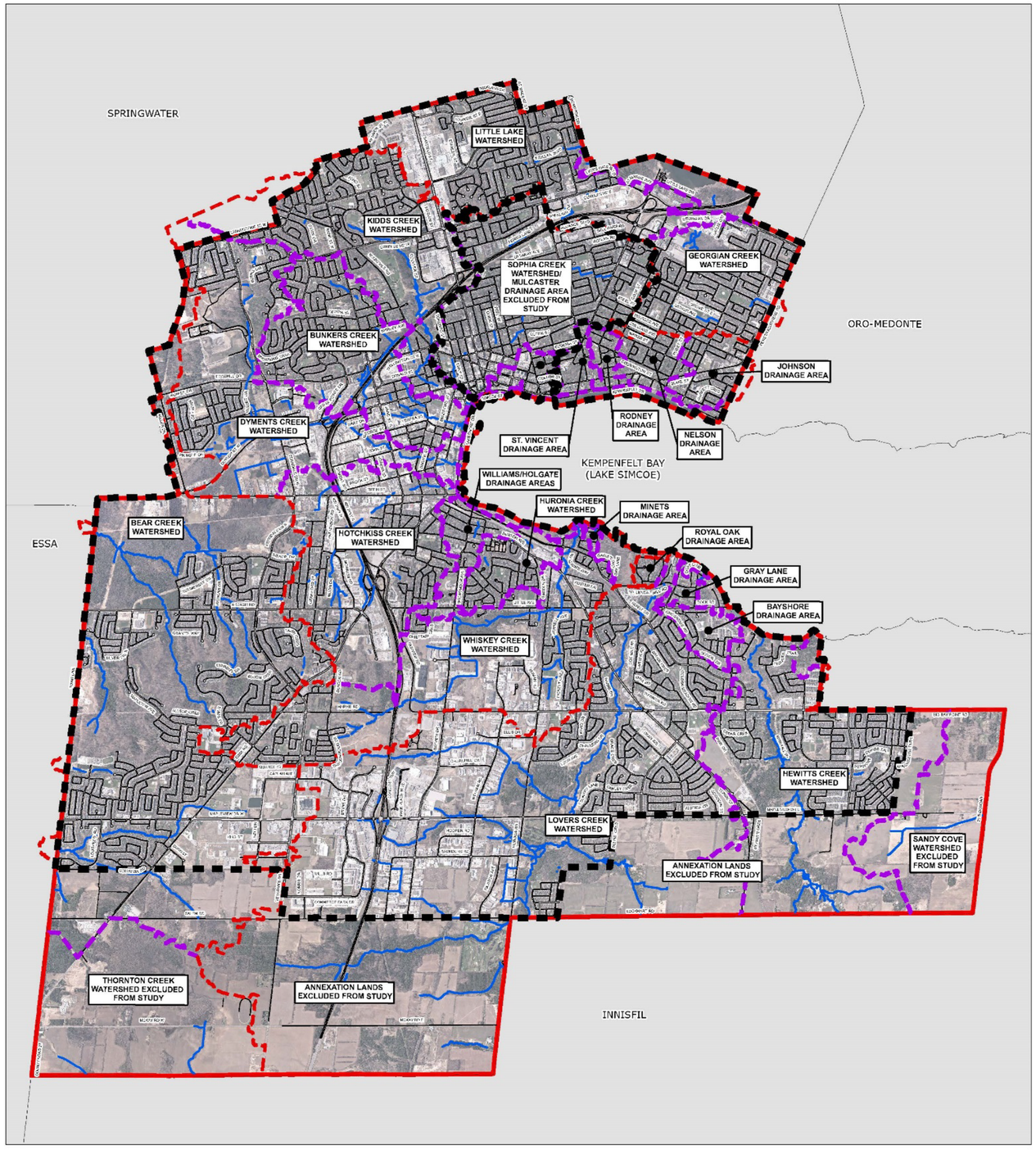
DATE: OCTOBER 2017

Project Background

To help identify all of the drainage issues in the Study Area, we would like you to consider the following:

- Are you a resident/landowner in the Study Area?
- Is there a drainage problem you are aware of or have observed?
- If so, please take a moment to review the maps available and identify to a City staff and or Consultant of the location and extent of your observations.

The information provided will be used to assist the project team establish a comprehensive list of drainage deficiencies across the City and develop alternative drainage solutions to address these deficiencies.



Existing Drainage Deficiencies

As part of the Drainage Master Plan, the background reports and the City Wide models have been reviewed to identify the existing drainage deficiencies throughout the City. The drainage deficiencies have been divided into minor and major drainage system deficiencies as follows:

Minor Drainage System Deficiencies

- The existing minor drainage system (storm sewer) deficiencies were identified where the storm sewer did not convey the 1:5 year return period design storm peak flow as per the City of Barrie Storm Drainage and Stormwater Management Policies and Design Guidelines
- Areas/streets absent of minor drainage have also been identified as deficiencies
- Existing storm sewer located outside the municipal road allowance on private property have also been identified as deficiencies

Major Drainage System Deficiencies

- The existing road culvert crossings and trunk storm sewers that do not satisfy the City's design flood frequency criteria as per the City of Barrie Drainage and Stormwater Management Policies and Design Guidelines have been identified as deficient
- Flood Frequency Criteria
  - Local and Collector Roads – 1:50 year
  - Arterial Roads – 1:100 year
- The major overland flow routes (including roadways) that do not satisfy the NVCA and LSRCA safe access/egress criteria have also been identified as deficient.

The minor and major drainage system deficiencies are illustrated on the Figures presented next

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LITTLE LAKE WATERSHED

SOPHIA CREEK WATERSHED

GEORGIAN CREEK WATERSHED

MULCASTER DRAINAGE AREA

ST. VINCENT DRAINAGE AREA

RODNEY DRAINAGE AREA

NELSON DRAINAGE AREA

JOHNSON DRAINAGE AREA

CITY OF BARRIE

KEY PLAN

LITTLE LAKE WATERSHED
GEORGIAN CREEK WATERSHED
SOPHIA CREEK WATERSHED
JOHNSON DRAINAGE AREA
NELSON DRAINAGE AREA
RODNEY DRAINAGE AREA
ST. VINCENT DRAINAGE AREA
KEMPENFELT BAY (LAKE SIMCOE)
MULCASTER DRAINAGE AREA

LEGEND

- STORM DEVICES
- CULVERT
- DITCH
- WATERCOURSE
- STORM SEWER (QMAX/QFULL FLOW > 115%)
- STORM SEWER (QMAX/QFULL FLOW 101%-115%)
- STORM SEWER (QMAX/QFULL FLOW 85%-100%)
- STORM SEWER (QMAX/QFULL FLOW < 85%)
- ABSENT OF MINOR DRAINAGE SYSTEM
- ROAD
- SWMF
- STUDY AREA
- MUNICIPAL BORDER

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Consulting Engineers
Collingwood Bracebridge Orillia Barrie

Barrie

SCALE = 1:10,000

0 125 250 500 750 1,000 Meters

DRAINAGE MASTER PLAN

SOPHIA CREEK, GEORGIAN CREEK & LITTLE LAKE WATERSHEDS;

JOHNSON, MULCASTOR, NELSON, RODNEY & ST VINCENT DRAINAGE AREAS

FIGURE 1A - MINOR DRAINAGE SYSTEM DEFICIENCIES (5 YEAR STORM)

DATE: OCTOBER 2017

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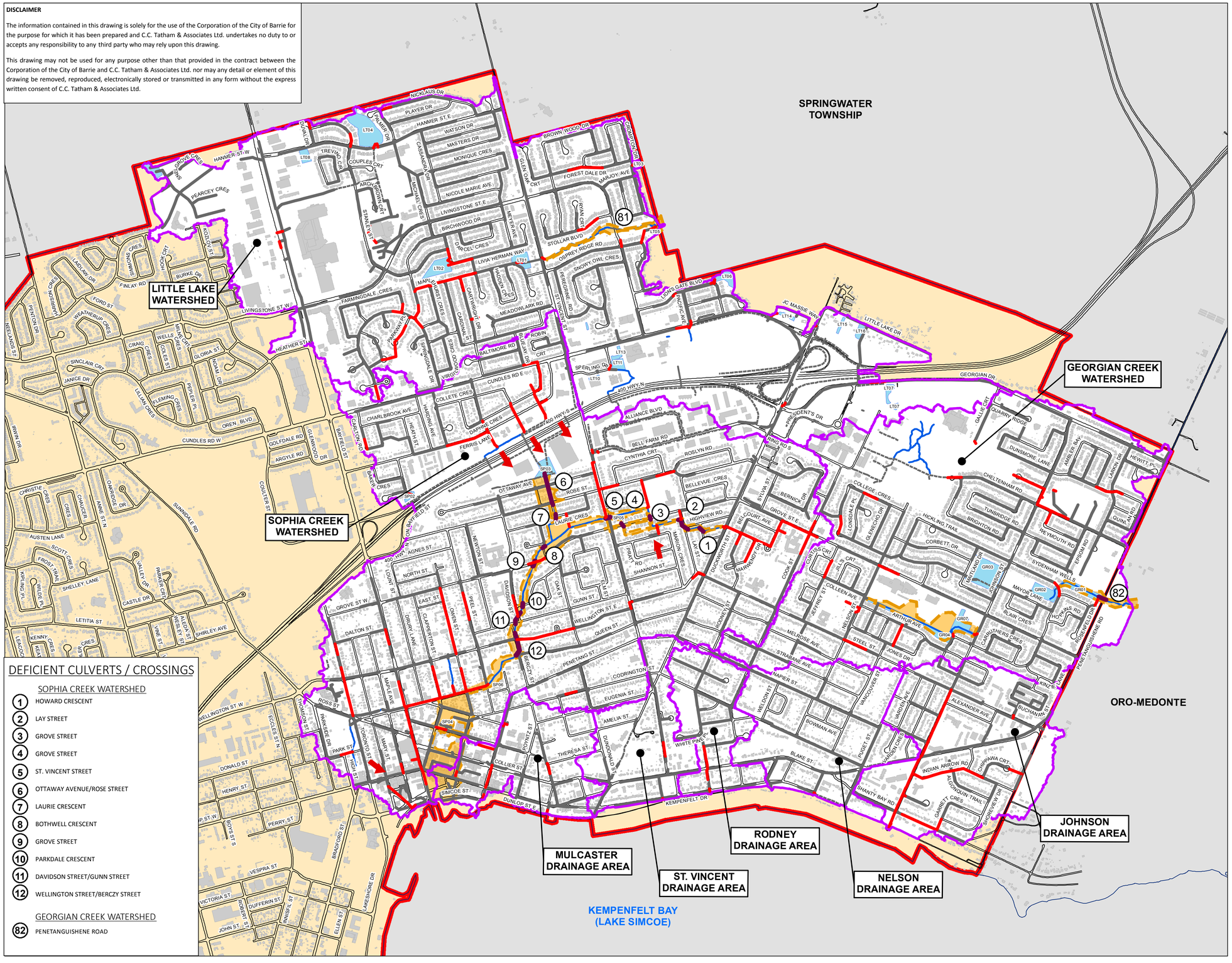


DEFICIENT CULVERTS / CROSSINGS

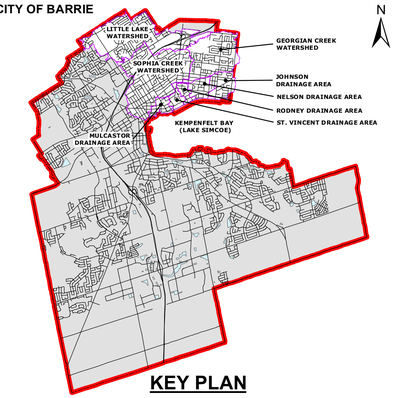
SOPHIA CREEK WATERSHED

1. HOWARD CRESCENT
2. LAY STREET
3. GROVE STREET
4. GROVE STREET
5. ST. VINCENT STREET
6. OTTAWAY AVENUE/ROSE STREET
7. LAURIE CRESCENT
8. BOTHWELL CRESCENT
9. GROVE STREET
10. PARKDALE CRESCENT
11. DAVIDSON STREET/GUNN STREET
12. WELLINGTON STREET/BERCZY STREET

GEORGIAN CREEK WATERSHED

82. PENETANGUISHENE ROAD

CITY OF BARRIE



KEY PLAN

LEGEND

- DEFICIENT CULVERTS
- MAJOR OVERLAND FLOW ROUTE DEFICIENCIES
- STORM SEWER
- CULVERT
- DITCH
- WATERCOURSE
- ROAD
- SWMF
- REGULATORY FLOODPLAIN
- REGULATORY FLOODLINE
- SHORELINE
- BUILDINGS
- STUDY AREA
- MUNICIPAL BORDER

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Collingwood Bracebridge Orillia Barrie

Barrie

SCALE = 1:10,000

0 125 250 500 750 1,000 Meters

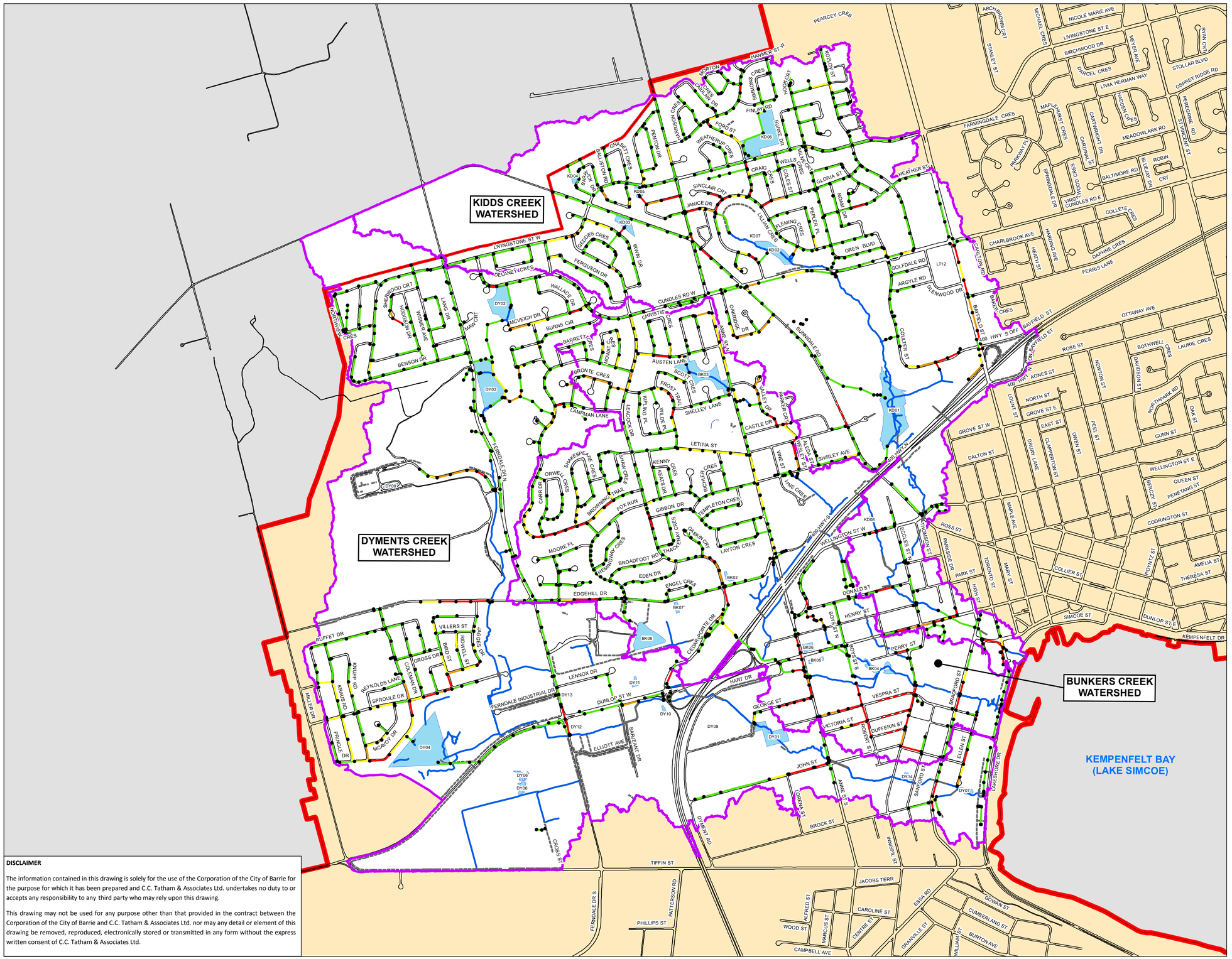
DRAINAGE MASTER PLAN

SOPHIA CREEK, GEORGIAN CREEK & LITTLE LAKE WATERSHEDS

JOHNSON, MULCASTOR, NELSON, RODNEY & ST VINCENT DRAINAGE AREAS

FIGURE 1B - MAJOR DRAINAGE SYSTEM DEFICIENCIES

DATE: OCTOBER 2017



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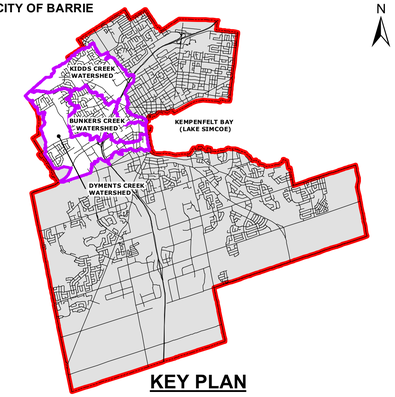
CITY OF BARRIE



KEY PLAN

LEGEND

- STORM DEVICES
- CULVERT
- DITCH
- WATERCOURSE
- STORM SEWER (QMAX/QFULL FLOW > 115%)
- STORM SEWER (QMAX/QFULL FLOW 101%-115%)
- STORM SEWER (QMAX/QFULL FLOW 85%-100%)
- STORM SEWER (QMAX/QFULL FLOW < 85%)
- ABSENT OF MINOR DRAINAGE SYSTEM
- ROADS
- SWMF
- STUDY AREA
- MUNICIPAL BORDER

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Collingwood Bracebridge Orillia Barrie

Barrie

SCALE = 1:10,000

0 125 250 500 750 1,000 Meters

DRAINAGE MASTER PLAN

BUNKERS CREEK, DYMENTS CREEK & KIDDS CREEK WATERSHEDS

FIGURE 2A - MINOR DRAINAGE SYSTEM DEFICIENCIES (5 YEAR STORM)

DATE: OCTOBER 2017

DEFICIENT CULVERTS / CROSSINGS

DYMENTS CREEK WATERSHED

27 SPROULE DRIVE
28 DUNLOP STREET WEST
29 FERNDALE DRIVE NORTH
30 SARJEANT DRIVE
31 DUNLOP STREET/HIGHWAY 400 ON-RAMP
32 HIGHWAY 400
33 HART DRIVE
34 GEORGE STREET
35 VICTORIA STREET
36 JOHN STREET
37 INNISFIL STREET
38 SANDFORD STREET
39 BRADFORD STREET
137 FERNDALE LANDFILL ACCESS ROAD

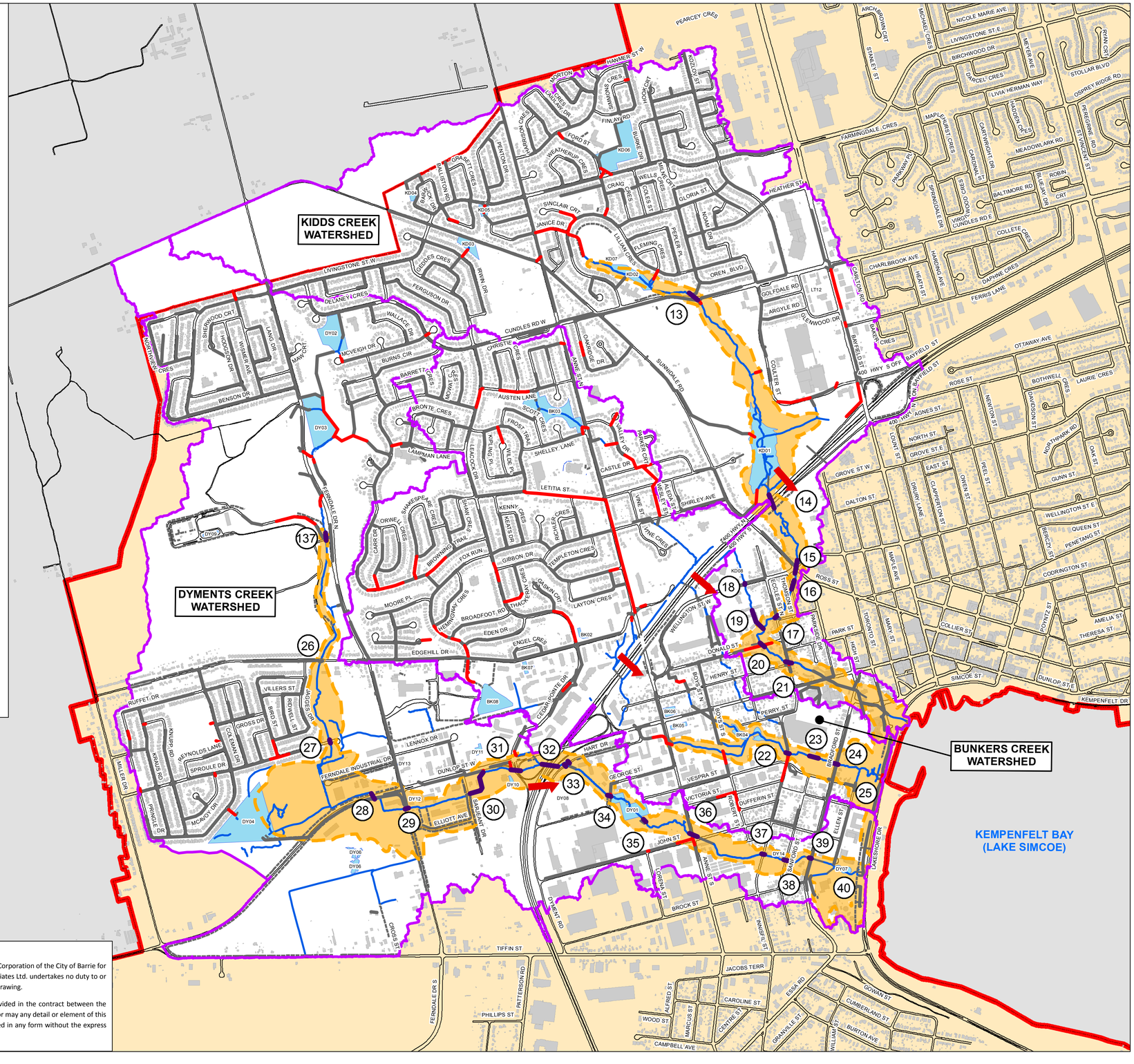
KIDDS CREEK WATERSHED

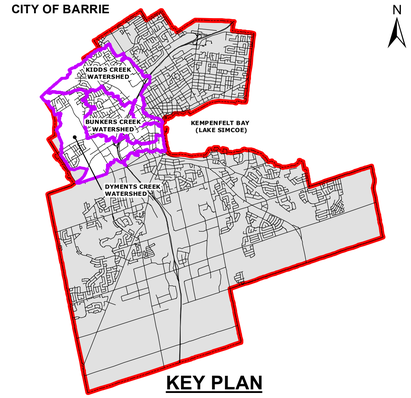
13 CUNDLES ROAD WEST
14 HIGHWAY 400
15 WELLINGTON STREET/ROSS STREET
16 THOMSON STREET
17 ECCLES STREET
18 WELLINGTON STREET
19 PARKVIEW GARDENS
20 DONALD STREET
21 ECCLES STREET

BUNKERS CREEK WATERSHED

22 INNISFIL STREET
23 COMMERCIAL PLAZA ENTRANCE ROAD
24 BRADFORD STREET

SPRINGWATER TOWNSHIP





KEY PLAN

LEGEND

- DEFICIENT CULVERTS
- MAJOR OVERLAND FLOW ROUTE DEFICIENCIES
- STORM SEWER
- CULVERT
- DITCH
- WATERCOURSE
- ROADS
- SWMF
- REGULATORY FLOODPLAIN
- REGULATORY FLOODLINE
- BUILDINGS
- STUDY AREA
- MUNICIPAL BORDER

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Collingwood Bracebridge Orillia Barrie

Barrie

SCALE = 1:10,000

0 125 250 500 750 1,000 Meters

DRAINAGE MASTER PLAN

BUNKERS CREEK, DYMENTS CREEK & KIDDS CREEK WATERSHEDS

FIGURE 2B - MAJOR DRAINAGE SYSTEM DEFICIENCIES

DATE: OCTOBER 2017

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MINETS DRAINAGE AREA

ROYAL OAK DRAINAGE AREA

GRAY LANE DRAINAGE AREA

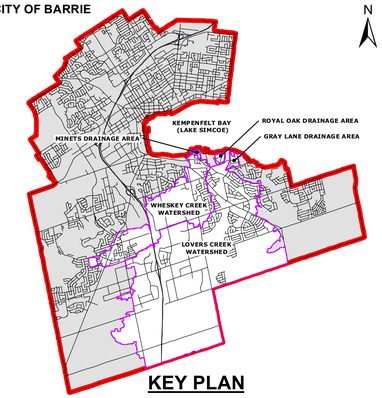
KEMPENFELT BAY (LAKE SIMCOE)

WHISKEY CREEK WATERSHED

LOVERS CREEK WATERSHED

N

CITY OF BARRIE



KEY PLAN

LEGEND

- STORM DEVICES
- CULVERT
- DITCH
- WATERCOURSE
- STORM SEWER (QMAX/QFULL FLOW > 115%)
- STORM SEWER (QMAX/QFULL FLOW 101%-115%)
- STORM SEWER (QMAX/QFULL FLOW 85%-100%)
- STORM SEWER (QMAX/QFULL FLOW < 85%)
- ROAD
- SWMF
- STUDY AREA
- MUNICIPAL BORDER

C.C. Tatham & Associates Ltd.
Consulting Engineers
Collingwood Bracebridge Orillia Barrie

Barrie

SCALE = 1:10,000

0 125 250 500 750 1,000 Meters

DRAINAGE MASTER PLAN

LOVERS CREEK & WHISKEY CREEK WATERSHEDS; MINETS, ROYAL OAK & GRAY LANE DRAINAGE AREAS

FIGURE 3A - MINOR DRAINAGE SYSTEM DEFICIENCIES (5 YEAR STORM)

DATE: OCTOBER 2017

DEFICIENT CULVERTS / CROSSINGS

LOVERS CREEK WATERSHED

88	BAYVIEW DRIVE
89	LOCKHART ROAD
90	HURONIA ROAD
91	LOCKHART ROAD
92	HURONIA ROAD
94	WELHAM ROAD
95	MAPLEVIEW DRIVE EAST
96	MAPLEVIEW DRIVE EAST
97	HURONIA ROAD
98	WELHAM ROAD
99	ELLIS DRIVE
105	TOLLENDAL MILL ROAD
108	10 SIDEROAD
110	10 SIDEROAD
123	RAIL CROSSING
125	LOCKHART ROAD
126	RAIL CROSSING
127	RAIL CROSSING
128	RAIL CROSSING
129	RAIL CROSSING

WHISKEY CREEK WATERSHED

53	HARVIE ROAD
54	HARVIE ROAD
55	HIGHWAY 400
56	FAIRVIEW ROAD
57	BAYVIEW DRIVE
59	MCCONKEY PLACE
60	HURONIA ROAD
62	LITTLE AVENUE
63	YONGE STREET
64	HURST DRIVE
65	THE BOULEVARD
66	BRENNAN AVENUE
138	RAIL CROSSING

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KEMPENFELT BAY (LAKE SIMCOE)

MINETS DRAINAGE AREA

ROYAL OAK DRAINAGE AREA

GRAY LANE DRAINAGE AREA

WHISKEY CREEK WATERSHED

LOVERS CREEK WATERSHED

ESSA TOWNSHIP

TOWN OF INNISFIL

CITY OF BARRIE

KEY PLAN

LEGEND

- DEFICIENT CULVERTS
- MAJOR OVERLAND FLOW ROUTE DEFICIENCIES
- CULVERT
- DITCH
- WATERCOURSE
- STORM SEWER
- ROAD
- RAILWAY
- SWMF
- REGULATORY FLOODPLAIN
- REGULATORY FLOODLINE
- BUILDINGS
- STUDY AREA
- MUNICIPAL BORDER

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Barrie

SCALE = 1:15,000

0 190 380 760 1,140 1,520 Meters

DRAINAGE MASTER PLAN

LOVERS CREEK & WHISKEY CREEK WATERSHEDS;
MINETS, ROYAL OAK & GRAY LANE DRAINAGE AREAS

FIGURE 3B - MAJOR DRAINAGE SYSTEM DEFICIENCIES

DATE: OCTOBER 2017

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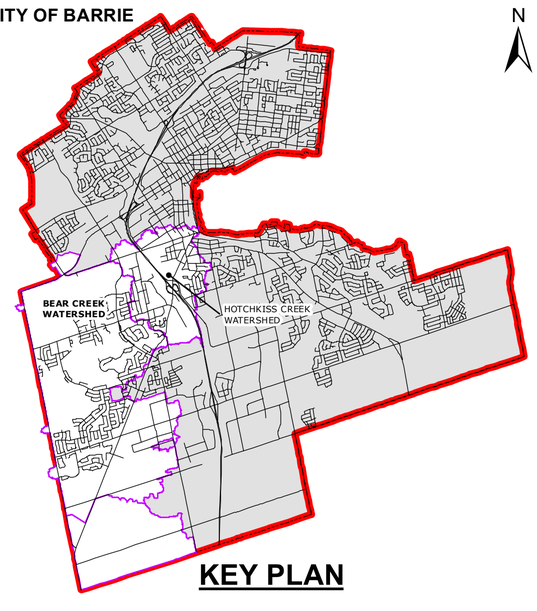
BEAR CREEK WATERSHED

HOTCHKISS CREEK WATERSHED

N

CITY OF BARRIE



KEY PLAN

LEGEND

- STORM DEVICES
- CULVERT
- DITCH
- WATERCOURSE
- STORM SEWER (QMAX/QFULL FLOW > 115%)
- STORM SEWER (QMAX/QFULL FLOW 101%-115%)
- STORM SEWER (QMAX/QFULL FLOW 85%-100%)
- STORM SEWER (QMAX/QFULL FLOW < 85%)
- ABSENT/REQUIRED STORM SEWER
- ROADS
- SWMF
- STUDY AREA
- MUNICIPAL BORDER

C.C. Tatham & Associates Ltd.
Consulting Engineers
Collingwood Bracebridge Orillia Barrie

Barrie

SCALE = 1:10,000

0 125 250 500 750 1,000 Meters

DRAINAGE MASTER PLAN

BEAR CREEK & HOTCHKISS CREEK WATERSHEDS

FIGURE 4A - MINOR DRAINAGE SYSTEM DEFICIENCIES (5 YEAR STORM)

DATE: OCTOBER 2017

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SPRINGWATER TOWNSHIP

ESSA TOWNSHIP

KEMPENFELT BAY (LAKE SIMCOE)

MINETS DRAINAGE AREA

HOTCHKISS CREEK WATERSHED

THORNTON CREEK WATERSHED

DEFICIENT CULVERTS / CROSSING

HOTCHKISS CREEK WATERSHED

41 MAYFAIR DRIVE
42 ARDAGH ROAD
43 MORROW ROAD
44 ESSA ROAD
46 HIGHWAY 400
47 WOOD STREET
48 TIFFIN STREET
49 ANNE STREET SOUTH
50 INNISFIL STREET
51 BRADFORD STREET
52 LAKESHORE DRIVE
135 RAIL CROSSING

BEAR CREEK WATERSHED

74 COUNTY ROAD 27
80 COUNTY ROAD 27
114 SALEM ROAD
133 MAPLEVIEW CHURCH ACCESS ROAD
134 RAIL CROSSING

THORNTON CREEK WATERSHED

118 MCKAY ROAD WEST

CITY OF BARRIE

KEY PLAN

LEGEND

- DEFICIENT CULVERTS
- MAJOR OVERLAND FLOW ROUTE DEFICIENCIES
- STORM SEWER
- CULVERT
- DITCH
- WATERCOURSE
- ROADS
- RAILWAY
- SWMF
- REGULATORY FLOODLINE
- REGULATORY FLOODPLAIN
- BUILDINGS
- STUDY AREA
- MUNICIPAL BORDER

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Collingwood Bracebridge Orillia Barrie

SCALE = 1:15,000

0 190 380 760 1,140 1,520 Meters

DRAINAGE MASTER PLAN

BEAR CREEK, THORNTON CREEK & HOTCHKISS CREEK WATERSHEDS

FIGURE 4B - MAJOR DRAINAGE SYSTEM DEFICIENCIES

DATE: OCTOBER 2017

WILLIAMS & HOLGATE CREEK DRAINAGE AREAS

HURONIA CREEK DRAINAGE AREA

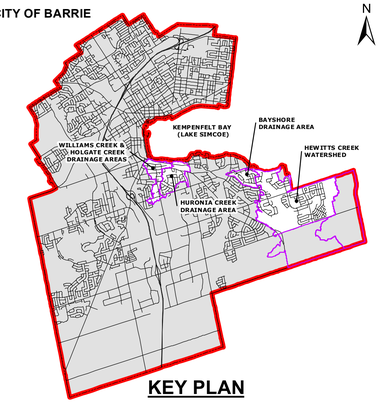
KEMPENFELT BAY
LAKE SIMCOE

BAYSHORE DRAINAGE AREA

HEWITTS CREEK WATERSHED

N

CITY OF BARRIE



KEY PLAN

LEGEND

- STORM DEVICES
- CULVERT
- DITCH
- WATERCOURSE
- STORM SEWER (QMAX/QFULL FLOW > 115%)
- STORM SEWER (QMAX/QFULL FLOW 101%-115%)
- STORM SEWER (QMAX/QFULL FLOW 85%-100%)
- STORM SEWER (QMAX/QFULL FLOW < 85%)
- ROADS
- SWMF
- STUDY AREA
- MUNICIPAL BORDER

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Barrie

SCALE = 1:10,000

0 125 250 500 750 1,000 Meters

DRAINAGE MASTER PLAN

HEWITTS CREEK WATERSHED;
BAYSHORE, WILLIAMS, HOLGATE & HURONIA CREEKS DRAINAGE AREAS

FIGURE 5A - MINOR DRAINAGE SYSTEM DEFICIENCIES (5 YEAR STORM)

DATE: OCTOBER 2017

ORO-MEDONTE

TOWN OF INNISFIL

KEMPENFELT BAY
LAKE SIMCOE

WILLIAMS & HOLGATE CREEK
DRAINAGE AREAS

HURONIA CREEK
DRAINAGE AREA

BAYSHORE
DRAINAGE AREA

SANDY COVE
WATERSHED

HEWITTS CREEK
WATERSHED

DEFICIENT CULVERTS / CROSSINGS

HEWITTS CREEK WATERSHED

- 83 MAPLEVIEW DRIVE EAST
- 84 PRINCE WILLIAM WAY
- 130 LOCKHART ROAD
- 131 LOCKHART ROAD

SANDY COVE WATERSHED

- 119 20 SIDEROAD
- 120 20 SIDEROAD

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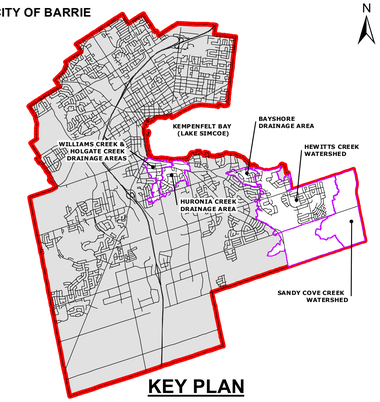
CITY OF BARRIE



KEY PLAN

LEGEND

- DEFICIENT CULVERTS
- MAJOR OVERLAND FLOW ROUTE DEFICIENCIES
- CULVERT
- DITCH
- WATERCOURSE
- ROADS
- RAILWAY
- SHORELINE
- SWMF
- REGULATORY FLOODLINE
- REGULATORY FLOODPLAIN
- BUILDINGS
- STUDY AREA
- MUNICIPAL BORDER

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Barrie

SCALE = 1:15,000

0 190 380 760 1,140 1,520 Meters

DRAINAGE MASTER PLAN

HEWITTS CREEK & SANDY COVE WATERSHEDS;
BAYSHORE, WILLIAMS, HOLGATE & HURONIA CREEKS DRAINAGE AREAS

FIGURE 5B - MAJOR DRAINAGE SYSTEM DEFICIENCIES

DATE: OCTOBER 2017

Existing Natural Hazards and Interwatershed Spills

Existing Natural Hazards

- Existing floodplains associated with each watercourse in the City have been previously delineated as part of the Background Master Drainage Plans and stormwater management studies
- A total of 555 private properties having an assessed value of approximately $350M have been identified within the existing floodplain associated with the 13 creeks in Barrie (excludes properties impacted by deficient overland flow routes)
- Flooding of private and public property results in property damage and public safety concerns
- In addition to flooding, active erosion has been identified along certain reaches of each creek within Barrie resulting in both private and public property damage and public safety concerns

Interwatershed Spills

- Interwatershed spills have also been identified between Kidd's Creek, Bunkers Creek and Dyments Creek and Whiskey Creek and Hotchkiss Creek
- The interwatershed spills occur at Highway 400 as the culverts under the highway have insufficient capacity to convey the expected peak flows and runoff backs up onto the roadway and spills into the adjacent watershed
- Kidd's Creek spills into Bunkers Creek during the Regional (Hurricane Hazel) storm event
- Bunkers Creek spills into Dyments Creek during the 1:10 year design storm and less frequent storm events
- Whiskey Creek spills into Hotchkiss Creek during the Regional (Hurricane Hazel) storm event

The existing natural hazards and interwatershed spills are illustrated on the Figures presented next

N

SPRINGWATER

ORO-MEDONTE

KEMPENFELT BAY
(LAKE SIMCOE)

ESSA

INNISFIL

NVCA WATERSHED DRAINAGE STUDY AREA

SOPHIA CREEK WATERSHED/ MULCASTER DRAINAGE AREA EXCLUDED FROM STUDY

BARRIE CREEKS DRAINAGE STUDY AREA

NVCA WATERSHED DRAINAGE STUDY AREA

LOVERS CREEK, HEWITTS CREEK AND SANDY COVE DRAINAGE STUDY AREA

ANNEXATION LANDS EXCLUDED FROM STUDY

ANNEXATION LANDS EXCLUDED FROM STUDY

NICKLAUS DR
STANLEY ST
ST VINCENT ST
COMPTON DR
HANMER ST W
HANMER ST E
BANFIELD ST
NVCA WATERSHED DRAINAGE STUDY AREA
STOLLAR BLVD
LION'S GATE BLVD
MASSIE WAY
LITTLE LAKE DR
FORD ST
CUNDLES RD E
SPERLING DR
ALLIANCE BLVD
BELL FARM RD
ROSLYN RD
GEORGIAN DR
GALLIE CRT
LIVINGSTONE ST W
IRWIN DR
KOZLOV ST
LILLIAN CRES
CUNDLES RD W
FERRIS LANE
OTTAWAY AVE
SUNNIDALE RD
COULTER ST
BURNS CIR
LETITIA ST
ANNE ST N
TORONTO ST
OWEN ST
PEEL ST
COOK ST
ARTHUR AVE
GROVE ST E
MELROSE AVE
STRABANE AVE
NAPIER ST
PUGET ST
RENE TAGUSHENE RD
QUEEN ST
EUGENIA ST
CODRINGTON ST
COLLIER ST
BLAKE ST
KEMPENFELT DR
GARRETT CRES
SIMCOE ST
BROWNING TRAIL
EDGEHILL DR
WELLINGTON ST W
DONALD ST
MARY ST
RUFFET DR
KNUPP RD
HIGGINS DR
CEDAR POINTE DR
SPROULE DR
LENNOX DR
MILLER DR
SARJEANT DR
HART DR
GEORGE ST
ANNE ST S
VESPRA ST
BRADFORD ST
JOHN ST
PRINGLE DR
DUNLOP ST W
FERNDALE DR N
DYMENT RD
BROCK ST
LORENA ST
WISSPIL ST
ELLEN ST
TIFFIN ST
LAKESHORE DR
400 HWY N
400 HWY S
PATTERSON RD
FERNDALE DR S
CAMPBELL AVE
BURTON AVE
BISHOP DR
SUMMERSET DR
HAWKINS DR
ARDAGH RD
CRAWFORD ST
MOON DR
MORROW RD
GARDEN DR
LITTLE AVE
GABLES
BAY LANE
GRAY LANE
HAWKINS WAY
FOSTER DR
TOLLENDAL MILL RD
JEAN ST
DOCK RD
HURST DR
KINGSRIDGE RD
GRANT'S WAY
FAWN CRES
CHIEFTAIN CRES
FAIRVIEW RD
HERRELL AVE
SILVER TRAIL
CUMMING DR
BLOOM CRES
BEACON RD
TRUMAN RD
PICKETT CRES
COX MILL RD
CARTER RD
BRUCE CRES
TAYLOR DR
PIONEER TRAIL
TOWN LINE
MAPLETON AVE
ALLSOP CRES
EMMS DR
HARVIE RD
BARRIE DR
WARNICA RD
GOLDEN MEADOW RD
ESSA RD
THOMPSON DR
ELLIS DR
WARD DR
DEAN AVE
PINE DR
SPRUCE CRES
BIRKHALL PL
BIG BAY POINT RD
QUANCE ST
CAPLAN AVE
CHURCHILL DR
BARYVIEW DR
CONCERT WAY
PARK PLACE BLVD
WELHAM RD
LOON AVE
CHALMERS DR
GRACE CRES
COUNTRY LANE
CARLEY CRES
EMPIRE DR
PEPIN CRT
WINCHESTER TERR
PRINCE WILLIAM WAY
MAPLEVIEW DR W
MAPLEVIEW DR E
JESSICA DR
GOODWIN DR
YONGE ST
29 SIDEROAD
LOUGHEED RD
KING ST
REID DR
DUNN ST
COLUMBIA RD
HOOPER RD
SAUNDERS RD
HURONIA RD
SELINE CRES
ST PAUL'S CRES
VETERAN'S DR
NORRIS DR
MILLS RD
COMMERCE PARK DR
RAWSON AVE
SALEM RD
LOCKHART RD
MCKAY RD W
MCKAY RD E
COUNTY ROAD 27

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LEGEND

- ROADS
- WATERCOURSES
- DRAINAGE STUDY AREA BOUNDARY
- OVERALL STUDY AREA
- WETLAND
- EROSION HAZARD
- FLOODPLAIN HAZARD
- MUNICIPAL BORDER

C.C. Tatham & Associates Ltd.
Consulting Engineers
Collingwood Bracebridge Orillia Barrie

Barrie

SCALE = 1:24,000

0 305 610 1,220 1,830 2,440 Meters

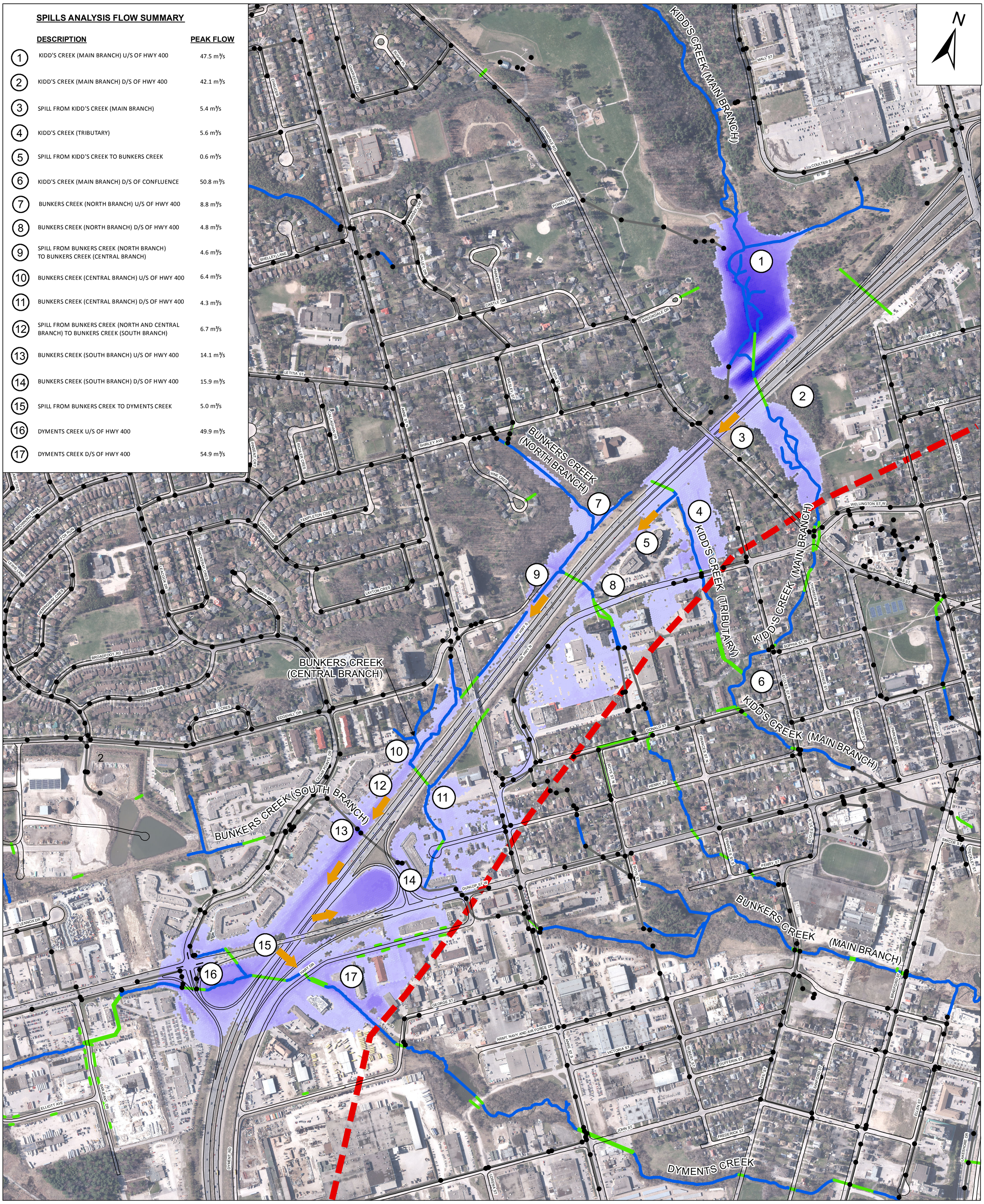
DRAINAGE MASTER PLAN

FIGURE 6 - NATURAL HAZARDS PLAN

DATE: OCTOBER 2017

SPILLS ANALYSIS FLOW SUMMARY

	DESCRIPTION	PEAK FLOW
1	KIDD'S CREEK (MAIN BRANCH) U/S OF HWY 400	47.5 m³/s
2	KIDD'S CREEK (MAIN BRANCH) D/S OF HWY 400	42.1 m³/s
3	SPILL FROM KIDD'S CREEK (MAIN BRANCH)	5.4 m³/s
4	KIDD'S CREEK (TRIBUTARY)	5.6 m³/s
5	SPILL FROM KIDD'S CREEK TO BUNKERS CREEK	0.6 m³/s
6	KIDD'S CREEK (MAIN BRANCH) D/S OF CONFLUENCE	50.8 m³/s
7	BUNKERS CREEK (NORTH BRANCH) U/S OF HWY 400	8.8 m³/s
8	BUNKERS CREEK (NORTH BRANCH) D/S OF HWY 400	4.8 m³/s
9	SPILL FROM BUNKERS CREEK (NORTH BRANCH) TO BUNKERS CREEK (CENTRAL BRANCH)	4.6 m³/s
10	BUNKERS CREEK (CENTRAL BRANCH) U/S OF HWY 400	6.4 m³/s
11	BUNKERS CREEK (CENTRAL BRANCH) D/S OF HWY 400	4.3 m³/s
12	SPILL FROM BUNKERS CREEK (NORTH AND CENTRAL BRANCH) TO BUNKERS CREEK (SOUTH BRANCH)	6.7 m³/s
13	BUNKERS CREEK (SOUTH BRANCH) U/S OF HWY 400	14.1 m³/s
14	BUNKERS CREEK (SOUTH BRANCH) D/S OF HWY 400	15.9 m³/s
15	SPILL FROM BUNKERS CREEK TO DYMENTS CREEK	5.0 m³/s
16	DYMENTS CREEK U/S OF HWY 400	49.9 m³/s
17	DYMENTS CREEK D/S OF HWY 400	54.9 m³/s



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LEGEND

- STORM STRUCTURE
- ROADS
- STORM SEWER
- DOWNSTREAM LIMIT OF SPILLS ANALYSIS
- CULVERT
- WATERCOURSE
- EXISTING FLOODPLAIN/SPILL
- SPILL FLOW DIRECTION

C.C. Tatham & Associates Ltd.
Consulting Engineers
Collingwood Bracebridge Orillia Barrie

Barrie

SCALE = 1:4,000

0 50 100 200 300 400 Meters

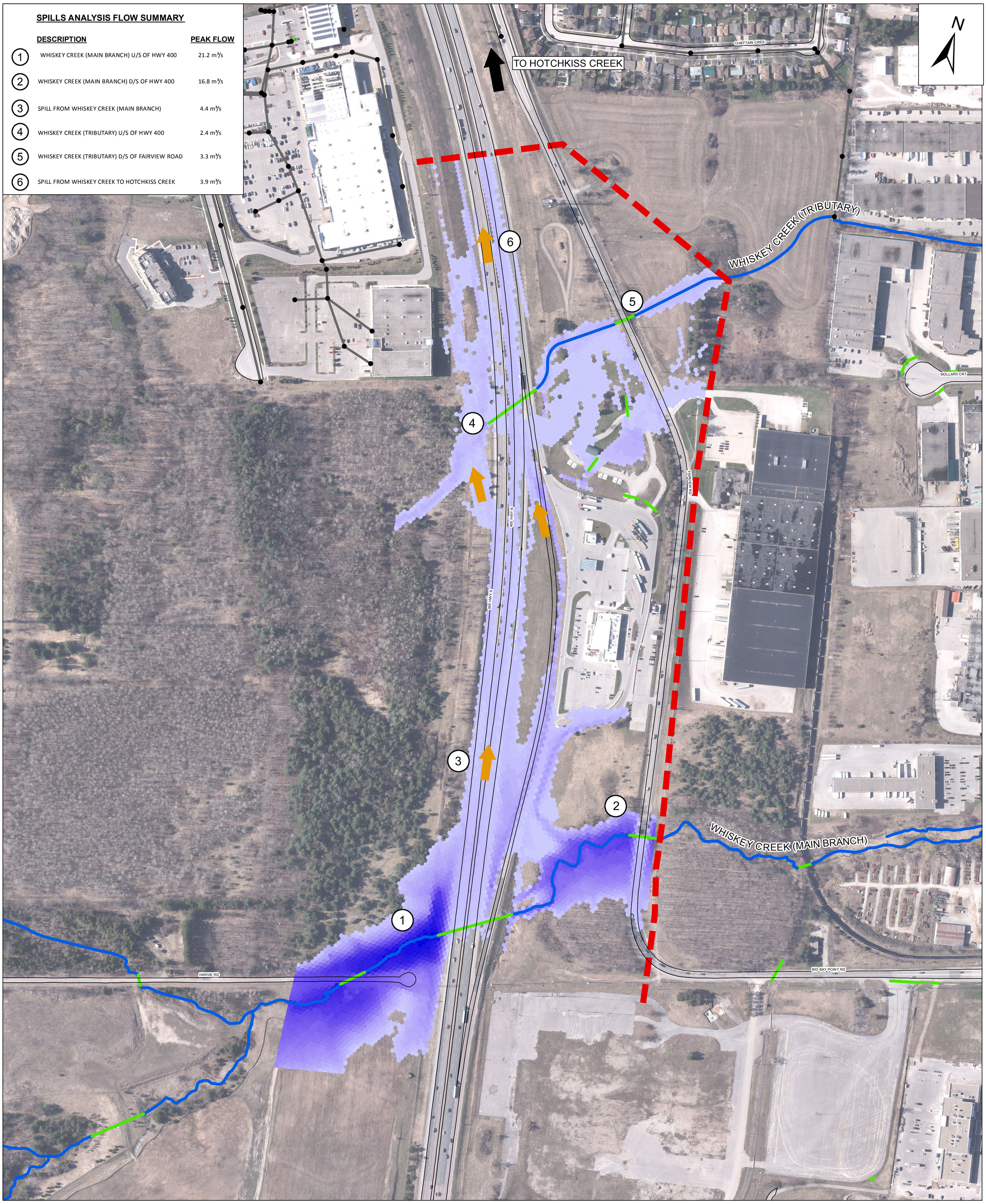
DRAINAGE MASTER PLAN

FIGURE 11 - EXISTING REGIONAL (HURRICANE HAZEL) FLOWS KIDD'S CREEK, DYMENTS CREEK AND BUNKERS CREEK SPILLS

DATE: OCTOBER 2017

SPILLS ANALYSIS FLOW SUMMARY

	DESCRIPTION	PEAK FLOW
1	WHISKEY CREEK (MAIN BRANCH) U/S OF HWY 400	21.2 m³/s
2	WHISKEY CREEK (MAIN BRANCH) D/S OF HWY 400	16.8 m³/s
3	SPILL FROM WHISKEY CREEK (MAIN BRANCH)	4.4 m³/s
4	WHISKEY CREEK (TRIBUTARY) U/S OF HWY 400	2.4 m³/s
5	WHISKEY CREEK (TRIBUTARY) D/S OF FAIRVIEW ROAD	3.3 m³/s
6	SPILL FROM WHISKEY CREEK TO HOTCHKISS CREEK	3.9 m³/s



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LEGEND

- STORM STRUCTURE
- STORM SEWER
- ROADS
- DOWNSTREAM LIMIT OF SPILLS ANALYSIS
- CULVERT
- WATER COURSE
- EXISTING FLOODPLAIN/SPILL
- SPILL FLOW DIRECTION

C.C. Tatham & Associates Ltd.
Consulting Engineers
Collingwood Bracebridge Orillia Barrie

Barrie

SCALE = 1:2,000

0 25 50 100 150 200 Meters

DRAINAGE MASTER PLAN

FIGURE 15 - EXISTING REGIONAL (HURRICANE HAZEL) FLOWS WHISKEY CREEK TO HOTCHKISS CREEK SPILL

DATE: OCTOBER 2017

Existing Natural Heritage Features and Archeological Resources

Natural Heritage Features

- Azimuth Environmental completed an existing natural heritage features evaluation in the summer of 2017 in support of this Drainage Master Plan.
- The evaluation involved general surveys of habitat types, Significant Wildlife Habitat (SWH) for Ecoregion 6E, potential habitat for Species at Risk bats, habitat for amphibians and reptiles, fish and fish habitat, and a tree species inventory.
- No plant species designated Endangered, Threatened or Special Concern federally or provincially were observed in the areas identified for potential improvement (project footprint).
- Fish species have been mapped in the creeks and the thermal regime of each watercourse has been identified.
- The terrestrial wildlife present within the project footprint have been identified.

Archeological Resources

- Archeoworks Inc. completed a Stage 1 Archeological Assessment in the summer of 2017 in support of this Drainage Master Plan.
- The assessment concluded that the study area has undergone significant changes since 1954 through urban development, roadway construction, infrastructure installation and grading/landscaping. contributing to the removal of archeological resources.
- Stage 2 test pit surveys are required within the historic Town of Barrie.
- Lands classified as uncertain archeological potential or archeological potential require a Stage 2 test pit survey within the footprint of the improvement alternatives.

The natural heritage features are illustrated on the Figure presented next

LEVEL 1 RESOURCES ARE CRITICAL COMPONENTS OF THE NATURAL HERITAGE RECOURSE NETWORK WITHIN THE CITY INCLUDING:

a) PROVINCIALLY SIGNIFICATE WETLANDS.
b) NON-PROVINCIALLY SIGNIFICANT WETLANDS GREATER THAN 0.5 HECTARES.
c) SIGNIFICANT WOODLANDS GREATER THAN 10 HECTARES.
d) SIGNIFICANT HABITAT OF ENDANGERED AND THREATENED SPECIES.
e) WATERCOURSES, MINIMUM VEGETATION PROTECTION ZONES AND CONNECTIVITY LINKAGES.
f) LANDS THROUGH THE SITE SPECIFIC PLANNING AND DEVELOPMENT PROCESS IDENTIFIED AS ENVIRONMENTAL PROTECTION.

LEVER 2 RESOURCES ARE SIGNIFICANT COMPONENTS OF THE NATURAL HERITAGE RESOURCE NETWORK WITHIN THE CITY INCLUDING:

a) SIGNIFICANT VALLEYLANDS.
b) PROVINCIALLY SIGNIFICANT LIFE SCIENCE ANSI.
c) SIGNIFICANT WILDLIFE HABITAT, INCLUDING NOT LIMITED TO CORE WINTER DEER YARDS, COLONIAL WATER-BIRD NESTING SITES, RARE VEGETATION COMMUNITIES (i.e. TALL GRASS PRAIRIES), AND SIGNIFICANT AREAS OF VERNAL POOLS.
d) WATERCOURSES, MINIMUM VEGETATION PROTECTION ZONES AND CONNECTIVITY LINKAGES.
e) WOODLANDS GREATER THAN 4 HECTARES AND LESS THEN 10 HECTARES.

LEVEL 3 RESOURCES ARE SIGNIFICANT AND SUPPORTING COMPONENTS OF NATURAL HERITAGE RESOURCE NETWORK WITHIN THE CITY INCLUDING:

a) REGIONALLY SIGNIFICANT LIFE SCIENCE ANSI.
b) WOODLANDS GREATER THAN 0.5 HECTARES AND LESS THAN 4 HECTARES.
c) WOODLANDS WITHIN 30 METRES OF A LEVEL 1 OR 2 FEATURE.
d) CULTURAL THICKET OR CULTURAL MEADOW COMMUNITIES CONTIGUOUS WITH WOODLAND OR WETLAND PATCHES.
e) CONNECTIVITY LINKAGES.

N

SPRINGWATER

ORO-MEDONTE

KEMPENFELT BAY
(LAKE SIMCOE)

ESSA

INNISFIL

NVCA WATERSHED DRAINAGE STUDY AREA

SOPHIA CREEK WATERSHED/ MULCASTER DRAINAGE AREA EXCLUDED FROM STUDY

NVCA WATERSHED DRAINAGE STUDY AREA

BARRIE CREEKS DRAINAGE STUDY AREA

LOVERS CREEK, HEWITTS CREEK AND SANDY COVE DRAINAGE STUDY AREA

ANNEXATION LANDS EXCLUDED FROM STUDY

ANNEXATION LANDS EXCLUDED FROM STUDY

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LEGEND

- ROADS
- WATERCOURSES
- DRAINAGE STUDY AREA BOUNDARY
- OVERALL STUDY AREA
- MUNICIPAL BORDER

NHS POLICY

- LEVEL 1
- LEVEL 1 WITH EXISTING DEVELOPMENT DESIGNATIONS SUBJECT TO 3.5.2.4 D
- LEVEL 2
- LEVEL 3
- NATURAL HERITAGE SYSTEM SALEM AND HEWITT'S SECONDARY PLAN AREA (ANNEXATION LANDS)

C.C. Tatham & Associates Ltd.
Consulting Engineers
Collingwood Bracebridge Orillia Barrie

Barrie

SCALE = 1:24,000

0 305 610 1,220 1,830 2,440 Meters

DRAINAGE MASTER PLAN

FIGURE 7 - NATURAL HERITAGE PLAN

DATE: OCTOBER 2017

Geotechnical Investigation and Legal Survey

Geotechnical Investigation

- Peto MacCallum undertook a geotechnical investigation in the summer of 2017 in support of the Drainage Master Plan.
- The geotechnical investigation included a review of the soils conditions at each deficient culvert crossing to identify site specific constraints (such as poor soils) associated with the culvert improvements and allow for an accurate estimate of construction costs.
- Infiltration testing was also completed within the parkland being considered for centralized low impact development (LID) measures to establish infiltration rates of the underlying soils to allow for accurate sizing of the LID's and evaluation of the alternative drainage solution.

Legal Survey

- Rudy Mak undertook a legal survey in the summer of 2017 in support of the Drainage Master Plan.
- The legal survey was completed at each deficient culvert crossing that may require land acquisition by the City or interests therein (easements over) to implement the improvements.
- The legal survey was completed to establish the legal boundaries surrounding each culvert, to accurately identify the property acquisition requirements (and cost) for each major drainage infrastructure improvement, and to properly evaluate the various options.

The SCS soils groups across the City are illustrated on the Figure presented next

N

SPRINGWATER

ORO-MEDONTE

KEMPENFELT BAY
(LAKE SIMCOE)

ESSA

INNISFIL

SOPHIA CREEK WATERSHED/ MULCASTER DRAINAGE AREA EXCLUDED FROM STUDY

ANNEXATION LANDS EXCLUDED FROM STUDY

ANNEXATION LANDS EXCLUDED FROM STUDY

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LEGEND

- ROADS
- WATERCOURSES
- DRAINAGE STUDY AREA BOUNDARY
- OVERALL STUDY AREA
- MUNICIPAL BORDER

HYDROLOGIC SOIL GROUPS

- Ans - ALLISTON SANDY LOAM (AB)
- Bl - BONDHEAD LOAM (B)
- Bs - BONDHEAD SANDY LOAM (AB)
- Bs-b - BONDHEAD SANDY LOAM - STONY PHASE (AB)
- Bs-b - BONDHEAD SANDY LOAM - STONY PHASE (AB)
- Gsl - GRANBY SANDY LOAM
- Gul - GUERIN LOAM (B)
- M - MUCK (B)
- Shsc - SCHOMBERG SILTY CLAY LOAM (C)
- Smsc - SMITHFIELD SILTY CLAY LAOM
- Stsl - SARGENT GRAVELLY SANDY LOAM (A)
- Tis - TIOGA LOAMY SAND (A)
- Tis-b
- Tisl - TIOGA SANDY LOAM (A)
- Vasl - VASEY SANDY LOAM (AB)

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Consulting Engineers
Collingwood Bracebridge Orillia Barrie

Barrie

SCALE = 1:24,000

0 310 620 1,240 1,860 2,480 Meters

DRAINAGE MASTER PLAN

FIGURE 12 - HYDROLOGIC SOIL GROUPS PLAN

DATE: OCTOBER 2017

Alternative Improvement Options – General Recommendations

Minor Drainage System Improvements

- As a general requirement for all capital projects, consideration should be given to upsizing the local storm sewers to satisfy current design standards as part of future road reconstruction projects throughout the City.
- Relocating storm sewer to the municipal road allowance from private property should also be considered as a general requirement for all capital projects throughout the City.
- Consideration should also be given to service the streets and areas absent of minor drainage systems throughout the City as part of future road reconstruction projects.

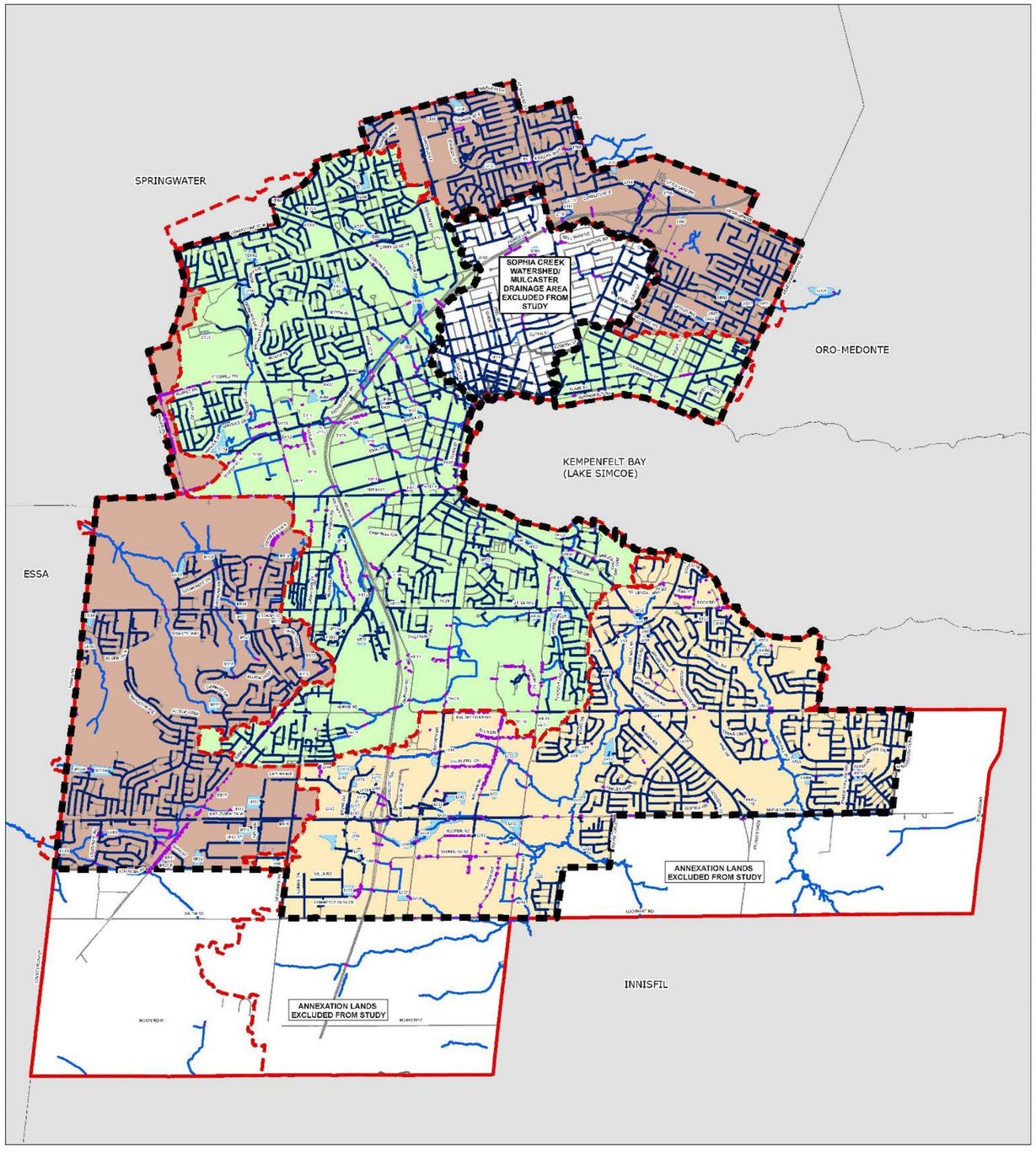
Major Drainage System Improvements

- As part of road reconstruction projects, consideration should be given to oversizing the storm sewer and/or adjusting the road profile/cross-section to address the existing major overland flow route deficiencies and provide safe access/egress throughout the City.

Alternative Improvement Options – "Do Nothing"

Alternative 1A/1B – "Do Nothing" Minor Drainage Systems / Major Drainage Systems

- The "Do Nothing" alternative allows for the consideration of not implementing any changes to the existing minor or major drainage system infrastructure within the study area. This alternative is being considered to provide a benchmark to gauge the physical, natural, social, cultural, and economic implications of the other alternatives.
- If this alternative were selected, consideration should be given by the City to acquiring the private properties or interests therein (easements) that are impacted by flooding to comply with the City of Barrie Drainage Policies.



Alternative Improvement Options – Flow Reduction/Water Quality

Alternative 2A – Retrofit/New Stormwater Management Facilities for Quantity Control

- An opportunity exists to retrofit and expand existing stormwater management facilities and construct new stormwater management facilities within the City of Barrie to improve water quantity control, attenuate peak flows and reduce downstream flooding.
- Opportunities exists to expand existing SWMF's to increase the available storage and decrease release rates into the downstream creeks and drainage systems and end-of-pipe and on-line SWMF's may be constructed at locations absent of any water quantity controls.
- The implementation of specific SWMF retrofits and creation of new SWMF's may require the purchase of private property or acquiring interest therein (easements) to accommodate the improvements

Alternative 2B – Retrofit/New Stormwater Management Facilities for Quality Control

- An opportunity exists to retrofit existing stormwater management facilities and construct new stormwater management facilities within the City of Barrie to improve watershed water quality, promote infiltration and improve the water balance.
- Opportunities existing to retrofit existing dry ponds to include an LID component or convert them into wet ponds or wetlands and end-of-pipe SWMF's may be constructed at locations absent of any water quality controls upstream of the existing creeks.
- The implementation of specific SWMF retrofits and creation of new SWMF's may require the purchase of private property or acquiring interest therein (easements) to accommodate the improvements, improve water quality and provide for maintenance access.

Alternative Improvement Options – Flow Reduction/Water Quality

Alternative 2C – Lot Level Low Impact Development

- An opportunity exists to promote the use of lot level Low Impact Development (LID) measures on private property across the City to promote infiltration, improve the water balance and watershed water quality.
- Opportunities exist to promote the use of rain barrels, implementation of soakaway pits and other LIDs by residents and property owners throughout the City of Barrie.

Alternative 2D – Linear Low Impact Development

- An opportunity exists to implement linear Low Impact Development (LID) measures to attenuate peak flows, promote infiltration, improve the water balance and watershed water quality throughout the City.
- Opportunities exist to implement perforated pipe systems or infiltration systems as part of local road reconstruction projects and intensification throughout the City of Barrie.

Alternative 2E – Centralized Impact Development

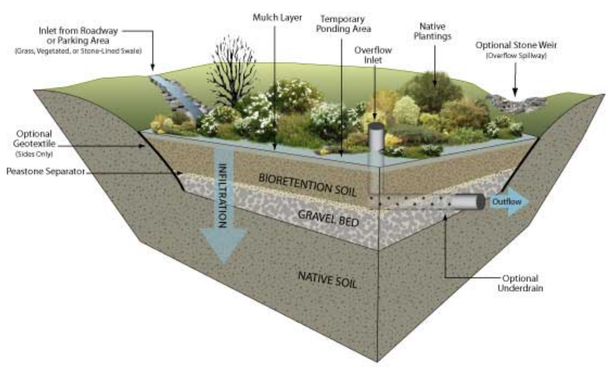
- An opportunity exists to implement centralized Low Impact Development (LID) measures throughout the City to attenuate peak flows, promote infiltration, improve the water balance and watershed water quality.
- Opportunities exist to implement bio-retention facilities and infiltration galleries within existing parkland, open space areas and at locations absent of any water quantity or quality controls throughout the City of Barrie.

Examples of Low Impact Development measures are presented next

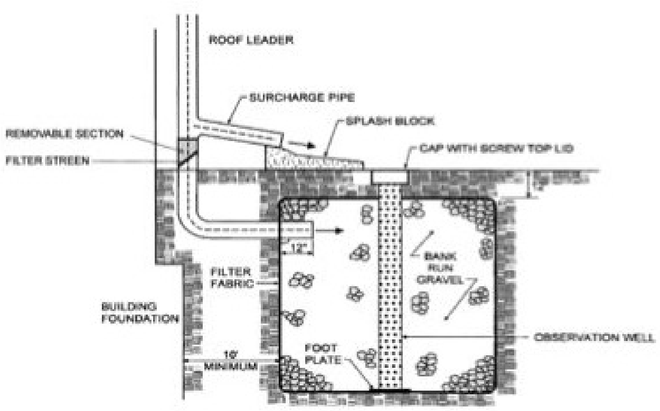
Alternative Improvement Options – LID Examples

- Rainwater Harvesting

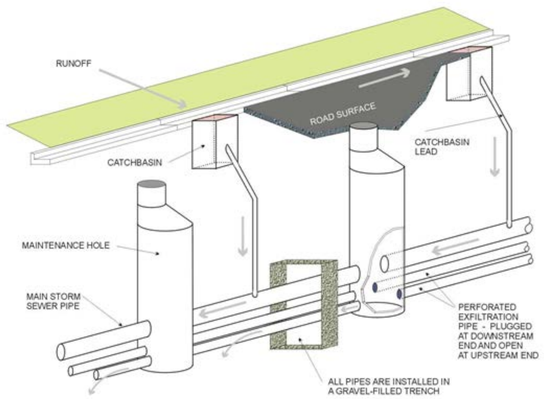
- Bioretention



- Soakaway Pits / Infiltration Trenches



- Perforated Pipe Systems / Underground Infiltration Chambers



Alternative Improvement Options – Conveyance Capacity Improvements

Alternative 3A – Culvert/Channel/Major Drainage System Improvements (MDP Recommended Design Flood Frequency Criteria)

- Culvert and channel improvements can be implemented along the various Creeks in the study area in accordance with the recommendations of the original MDP's completed for each system/watercourse.
- The culvert improvements would satisfy the 1:25 year design storm peak flow as a minimum.
- The channel improvements would reduce flooding of existing buildings and/or property where feasible.
- The implementation of specific culvert and channel improvements may require the purchase of private properties or acquiring interest therein (easements) to accommodate the improvements, reduce flooding of existing buildings, and provide for maintenance access.

Alternative 3B – Culvert/Channel/Major Drainage System Improvements (City Design Flood Frequency Criteria)

- Under this alternative, the same culvert and channel improvements can be implemented along the various Creeks as described under Alternative 3A. However, the culvert improvements would satisfy the City's design flood frequency criteria as a minimum.
- As the roads in the study area are generally classified as local urban/collector and arterial roads, the design flood frequency criteria are the 1:50 and 1:100 year design storm peak flows, respectively.
- Similarly, the channel improvements would reduce flooding of existing buildings and/or property where feasible.
- The implementation of specific culvert and channel improvements may require the purchase of private properties or acquiring interest therein (easements) to accommodate the improvements, reduce flooding of existing buildings, and provide for maintenance access.

Alternative Improvement Options – Pre-Screening Evaluation

The water quality/flow reduction improvement options have been pre-screened based on their physical, natural, social, cultural and economic impacts to narrow the options included in the alternatives evaluation. Specially, the SWMF retrofit/expansion and creation opportunities (Alternatives 2A/2B) and centralized low impact development opportunities (Alternative 2E) have been pre-screened. The conveyance capacity improvement options (Alternatives 3A and 3B) and other LID opportunities (Alternatives 2C and 2D) were all considered to be of benefit and are being carried forward as alternative improvement options to be evaluated subject to public and stakeholder input.

SWMF Retrofit/Expansion/Creation

- A pre-screening evaluation was completed for the SWMF's retrofit/expansion creation opportunities to establish those suitable to move forward as an alternative drainage solution.
- The SWMF retrofit/expansion/creation opportunities were screened based on their impact on natural heritage features, natural hazards, water quality, phosphorus removal, flooding, safety and cost.
- The SWMF retrofit/expansion/creation opportunities considered and recommended to move forward as part of Alternatives 2A and 2B are illustrated on the Figures presented next.

Centralized Low Impact Development

- A pre-screening evaluation was completed for the centralized low impact development opportunities within the City's parkland to establish those suitable to move forward as an alternative drainage solution.
- The centralized LID opportunities were screened based on their impact on site constraints, groundwater levels, soil conditions and drainage area
- The centralized LID opportunities considered and recommended to move forward as part of Alternative 2E are illustrated on the Figures presented next.

SPRINGWATER

ORO-MEDONTE

KEMPENFELT BAY
(LAKE SIMCOE)

ESSA

INNISFIL

SOPHIA CREEK WATERSHED/ MULCASTER DRAINAGE AREA EXCLUDED FROM STUDY

ANNEXATION LANDS EXCLUDED FROM STUDY

ANNEXATION LANDS EXCLUDED FROM STUDY

N

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LEGEND

- EXISTING SWMF RETROFIT OPPORTUNITY (OPPORTUNITY ID)
- PROPOSED SWMF (OPPORTUNITY ID)
- ROADS
- WATERCOURSES
- PROPOSED SWMF
- EXISTING SWMF
- ANNEXATION LANDS (EXCLUDED FROM STUDY)
- SOPHIA CREEK WATERSHED AND MULCASTER DRAINAGE AREA (EXCLUDED FROM STUDY)
- NVCA WATERSHED DRAINAGE STUDY AREA
- BARRIE CREEKS DRAINAGE STUDY AREA
- LOVERS CREEK, HEWITTS CREEK AND SANDY COVE DRAINAGE STUDY AREA
- OVERALL STUDY AREA
- MUNICIPAL BORDER

C.C. Tatham & Associates Ltd.
Consulting Engineers
Collingwood Bracebridge Orillia Barrie

Barrie

SCALE = 1:24,000

0 305 610 1,220 1,830 2,440 Meters

DRAINAGE MASTER PLAN

FIGURE 8 - SWMF RETROFIT/CREATION OPPORTUNITIES (PRE-SCREENING EVALUATION)

DATE: OCTOBER 2017

N

SPRINGWATER

ORO-MEDONTE

KEMPENFELT BAY
(LAKE SIMCOE)

ESSA

INNISFIL

SOPHIA CREEK WATERSHED/ MULCASTER DRAINAGE AREA EXCLUDED FROM STUDY

ANNEXATION LANDS EXCLUDED FROM STUDY

ANNEXATION LANDS EXCLUDED FROM STUDY

NICKLAUS DR
ST VINCENT ST
GOMPTON DR
HANMER ST E
HANMER ST W
BANFIELD ST
STANLEY ST
STOLLAR BLVD
LITTLE LAKE DR
CUNDLES RD E
GEORGIAN DR
FERRIS LANE
BELL FARM RD
ROSLYN RD
BENETAMOUSHENE RD
COOK ST
STEEL ST
MELROSE AVE
GR01
GR04
QUEEN ST
EUGENIA ST
CODRINGTON ST
BLAKE ST
KEMPENFELT DR
GARRETT CRES
OWEN ST
PEEL ST
MARY ST
LIVINGSTONE ST W
KOZLOW ST
CUNDLES RD W
SUNNIDALE RD
COULTER ST
BURNS CIR
BROWNING TRAIL
LETITIA ST
ANNE ST N
MOORE PL
EDGEHILL DR
RUFFET DR
KNUPP RD
JACOBS DR
FERNDALE DR N
CEDAR POINTE DR
SPROULE DR
MILLER DR
SARJEANT DR
HART DR
VESPRA ST
JOHN ST
ELLEN ST
DUNLOP ST W
BROCK ST
TIFFIN ST
CAMPBELL AVE
400 HWY N
400 HWY S
PATTERSON RD
FERNDALE DR S
MORROW RD
CRAWFORD ST
MOON DR
SUMMERSET DR
HAWKINS DR
GRANT'S WAY
FAWN CRES
SILVER TRAIL
BLOOM CRES
CUMMING DR
MAPLETON AVE
ALLSOP CRES
TOWN LINE
ESSA RD
CAPLAN AVE
MAPLEVIEW DR W
REID DR
KING ST
DUNN ST
LOUCHEED RD
COLUMBIA RD
VETERAN'S DR
NORRIS DR
MILLS RD
COMMERCE PARK DR
SALEM RD
COUNTY ROAD 27
MCKAY RD W
MCKAY RD E
HARVIE RD
BIG BAY POINT RD
ELLIS DR
CHURCHILL DR
FAIRVIEW RD
BAYVIEW DR
TRUMAN RD
PICKETT CRES
CONCERT WAY
PARK PLACE BLVD
WELHAM RD
HURONIA RD
BRYNE DR
HOOPER RD
SAUNDERS RD
RAWSON AVE
LOON AVE
WARD DR
CHALMERS DR
DEAN AVE
COUNTRY LANE
JESSICA DR
GODDWIN DR
SELINE CRES
ST PAUL'S CRES
MAPLEVIEW DR E
20 SIDEROAD
LOCKHART RD
LITTLE AVE
FOSTER DR
GABLE'S BAY LANE
GRAY LANE
TOLLENDAL MILL RD
JEAN ST
DOCK RD
MARY ANNE DR
DEBORAH WAY
GOLDEN MEADOW RD
TAYLOR DR
HWY 11
WARNICA RD
YONGE ST
BARRIE DR
CEDAR CRES
PINE DR
BIRKHALL PL
EMPIRE DR
PRINCE WILLIAM WAY
WINCHESTER TERR

LV01 LV03 LV05 LV07 LV12 LV13 LV18
HR01 WK01 WK04
BK03 DY01 DY02 HT06 KD01 KD03 KD06
BR08a BR08b BR13

11 13 15 10 14 17 80 83 77 LT01 75 76 79 78 38 39 81 44 28 20 25 53 34 40 68 37 69 55 03 21 82 42 26 67 24 27 61 60 31 32 45 65

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LEGEND

- RO#30 — PROPOSED SWMF CREATION OPPORTUNITY
- RO#67 — EXISTING SWMF RETROFIT OPPORTUNITY
- ROADS
- WATERCOURSES
- PROPOSED SWMF
- EXISTING SWMF
- ANNEXATION LANDS (EXCLUDED FROM STUDY)
- SOPHIA CREEK WATERSHED AND MULCASTER DRAINAGE AREA (EXCLUDED FROM STUDY)
- NVCA WATERSHED DRAINAGE STUDY AREA
- BARRIE CREEKS DRAINAGE STUDY AREA
- LOVERS CREEK, HEWITTS CREEK AND SANDY COVE DRAINAGE STUDY AREA
- OVERALL STUDY AREA
- MUNICIPAL BORDER

C.C. Tatham & Associates Ltd.
Consulting Engineers
Collingwood Bracebridge Orillia Barrie

Barrie

SCALE = 1:24,000

0 305 610 1,220 1,830 2,440 Meters

DRAINAGE MASTER PLAN

FIGURE 9 - SWMF RETROFIT/CREATION OPPORTUNITIES (TO BE EVALUATED)

DATE: OCTOBER 2017

N

SPRINGWATER

ORO-MEDONTE

KEMPENFELT BAY
(LAKE SIMCOE)

KEMPENFELT BAY
(LAKE SIMCOE)

ESSA

INNISFIL

NVCA WATERSHED DRAINAGE STUDY AREA

SOPHIA CREEK WATERSHED/ MULCASTER DRAINAGE AREA EXCLUDED FROM STUDY

BARRIE CREEKS DRAINAGE STUDY AREA

NVCA WATERSHED DRAINAGE STUDY AREA

LOVERS CREEK, HEWITTS CREEK AND SANDY COVE DRAINAGE STUDY AREA

ANNEXATION LANDS EXCLUDED FROM STUDY

ANNEXATION LANDS EXCLUDED FROM STUDY

EAST BAYFIELD PARK
CARTWRIGHT PARK
VICTORIA WOOD PARK
CLOUGHLEY PARK
SUNNIDALE PARK
GIBBON PARK
LEACOCK PARK
PRINGLE PARK
DUNSMORE PARK
CHELTENHAM PARK
STARBANE PARK
SHOREVIEW PARK
BLAIR PARK
SHEAR PARK
FERNDALE PARK
ELIZABETH PARK
ALLANDALE HEIGHTS PARK
GREENFIELD PARK
BATTEAUX PARK
ASSIKINACK PARK
CARTER PARK
GOLDEN MEADOW PARK
D' AMBROSIO PARK
KUZMICH PARK
EMMS PARK
MONTSERRAND PARK
HARVIE PARK
MAPLETON PARK
SANDRINGHAM PARK
BEAR CREEK PARK
BAYSHORE PARK
MARSELLUS PARK
WESSENGER PARK
MADELAINE PARK
QUEENSWAY/HYDE PARK
LOUGHEED PARK
CATHERINE PARK
SHALOM PARK

LEGEND

- WATERCOURSES
- ROADS
- DRAINAGE STUDY AREA BOUNDARY
- OVERALL STUDY AREA
- PARKLAND CONSIDERED FOR CENTRALIZED LID
- MUNICIPAL BORDER

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Collingwood Bracebridge Orillia Barrie

Barrie

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0 305 610 1,220 1,830 2,440 Meters

DRAINAGE MASTER PLAN

FIGURE 13 - CENTRALIZED LID OPPORTUNITIES
(PRE-SCREENING EVALUATION)

DATE: OCTOBER 2017

N

SPRINGWATER

NVCA WATERSHED DRAINAGE STUDY AREA

CARTWRIGHT PARK

FERRIS PARK

COLLEGE HEIGHTS PARK

DUNSMORE PARK

SOPHIA CREEK WATERSHED/ MULCASTER DRAINAGE AREA EXCLUDED FROM STUDY

CLOUGHLEY PARK

SUNNIDALE PARK

GIBBON PARK

STARBANE PARK

SHOREVIEW PARK

ORO-MEDONTE

BARRIE CREEKS DRAINAGE STUDY AREA

KEMPENFELT BAY (LAKE SIMCOE)

NVCA WATERSHED DRAINAGE STUDY AREA

ALLANDALE HEIGHTS PARK

GREENFIELD PARK

ESSA

ASSIKINACK PARK

CARTER PARK

GOLDEN MEADOW PARK

KUZMICH PARK

MONTSERRAND PARK

HARVIE PARK

MAPLETON PARK

SANDRINGHAM PARK

BEAR CREEK PARK

WESSENGER PARK

LOVERS CREEK, HEWITTS CREEK AND SANDY COVE DRAINAGE STUDY AREA

QUEENSWAY/HYDE PARK

MADELAINE PARK

LOUGHEED PARK

ANNEXATION LANDS EXCLUDED FROM STUDY

ANNEXATION LANDS EXCLUDED FROM STUDY

INNISFIL

LEGEND

- WATERCOURSES
- ROADS
- DRAINAGE STUDY AREA BOUNDARY
- OVERALL STUDY AREA
- PARKLAND BEING EVALUATED FOR CENTRALIZED LID
- MUNICIPAL BORDER

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Collingwood Bracebridge Orillia Barrie

Barrie

SCALE = 1:24,000

0 305 610 1,220 1,830 2,440 Meters

DRAINAGE MASTER PLAN

FIGURE 14 - CENTRALIZED LID OPPORTUNITIES (TO BE EVALUATED)

DATE: OCTOBER 2017

Next Steps

A second Public Information Centre is planned for this project. Prior to PIC#2, the following will be completed:

- The comments received from the public, City staff and interested stakeholders will be reviewed and the alternative improvement options will be revised according to your input;
- Impacts of the alternative improvements will be identified;
- The alternative improvement options will be evaluated; and
- A preferred alternative solution(s) will be selected.

The alternative improvement option evaluation and the selected preferred alternative solution will be presented at PIC#2.

Before you leave:

- Have your questions been addressed?
- Have you signed the registry?
- Have you completed a comment sheet?

All comment sheets are to be returned to the City by Friday, November 17, 2017

Please feel free to contact the City and/or their Consultant any time should you have any further questions or concerns.

For Additional Information:

Contacts

Tom Reeve, P.Eng.
City of Barrie Engineering Dept.
70 Collier Street, P.O. Box 400
Barrie, ON L4M 4T5
t: (705) 739-4220 ext 4465
f: (705) 739-4247
e: Tom.Reeve@barrie.ca

Thank you for your interest in this project

Done

(1)

ARRIE

ster Plan

ORMATION CENTRE

nder the Municipal Class Environmental Assessment eficiencies, develop drainage solutions to address the s and improve maintenance opportunities throughout luding the Salem and Hewitt's Secondary Plan Areas, rea).

ss that has been made on this study and the upcoming

ch #1 of the Master Planning Process outlined in the mental Assessment document (October 2000, amended d the consulting firm C.C. Tatham & Associates Ltd. to document the decision making process in the Drainage eloped and evaluated based on their natural, physical, ties and constraints of the project.

ws:

3B9

the Public Information Centre to view project information alternative solutions. City staff and representatives from and concerns with members of the public. Comments erred alternative solution.

of Barrie web page. Go to www.barrie.ca/eastudies then nment sheet is also available which can be returned in il or email. A hard copy of the documents are available

Barrie Public Library Downtown Branch Information Desk 60 Worsley Street Barrie, ON L4M 1L6	Barrie Public Library Painswick Branch Information Desk 48 Dean Avenue Barrie, ON L4N 0C2

d to the project mailing list or to provide a comment

Dawn McAlpine
City Clerk/Director of Legislative & Court Services

R. Sutton, P. Eng.
Director of Engineering

Notice issued on October 26th, and October 28th, 2017.

Mr. Tom Reeve,
Senior Infrastructure Planning Program Coordinator,
City of Barrie,
70 Collier Street 6th Floor
Barrie, Ont.
L4M 4T5

RECEIVED
OCT 31 2017
THE CITY OF BARRIE
ENGINEERING DEPARTMENT

Barrie

DRAINAGE MASTER PLAN
MASTER PLANNING PROCESS (APPROACH #1) – PHASES 1 & 2

Public Information Centre
Thursday, November 2, 2017
4:00 p.m. to 8:00 p.m.
Dorian Parker Center, 227 Sunnidale Road, Barrie

RECEIVED
OCT 31 2017
THE CITY OF BARRIE
ENGINEERING DEPARTMENT

COMMENT SHEET

Personal information on this form is collected under the authority of the Environmental Assessment Act, Chap. E18, Section 7, and will be used in the development of a Drainage Master Plan. Questions about this collection should be directed to the Director of Engineering, P.O. Box 400, 70 Collier Street, Barrie, Ontario, L4M 4T5, (705) 726-4242.

Please print all responses.

NAME OF RESPONDENT:

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.): Property Owner

ADDRESS (Including Postal Code & Telephone Number):

Street Address: [redacted] **Unit/Apt:**

Postal Code: [redacted] **Telephone Number:** [redacted]

Email Address:

How long have you lived at this property? 1967

The Opportunity Statement, which sets the framework for this Master Plan study, is as follows:

> "Identify drainage deficiencies and recommend solutions to improve the storm drainage systems across the City of Barrie in consideration of impacts to the natural, social, physical, cultural and economic environments."

A PDF version of the Draft Drainage Master Plan for Public Information Centre #1 is available on the City of Barrie web page at the following link: www.barrie.ca/eastudies. A paper copy of the draft report is available for review at the following locations during regular business hours:

City of Barrie Legislative Services Branch City Hall, 1st Floor 70 Collier Street Barrie, ON L4M 4T5	City of Barrie Engineering City Hall, 6th Floor 70 Collier Street Barrie, ON L4M 4T5	Barrie Public Library Downtown Branch Information Desk 60 Worsley Street Barrie, ON L4M 1L6	Barrie Public Library Painswick Branch Information Desk 48 Dean Avenue Barrie, ON L4N 0C2

Questions about Existing Flooding and Drainage Issues:

Circle the answers that apply and add further explanation below if required:

Are you aware of any creeks or City storm drainage systems (pipes, drains) on your property? **Yes / No** ✓

Are there any problems with the creek or City storm drainage systems on your property? **Yes / No ✓ / Not applicable.**

Have you ever had storm drainage from a creek or City storm drainage system damage your property? **Yes / No** ✓

Have you ever noticed flooding on your street or a major road? **Yes / No** ✓

Please list below any specific drainage concerns you have, and expand on the answers provided above:

None

Questions about Proposed Alternative Solutions:

Please select which of the following alternatives you feel best addresses the drainage problems, and generates the greatest positive impacts while producing the least negative impacts on the natural, physical, social, cultural, and economic environments. Please rate by recording either "1" (preferred) or "2" (not preferred) in each box.

Please note that each of the alternatives listed below on their own will **not** resolve all the drainage issues within the City of Barrie. The alternative drainage solutions will be evaluated and a preferred alternative will be developed after the Public Information Centre in consideration of the feedback received on these comment sheets, and as part of the Public Information Centre process.

Existing Condition

☐ **Alternative 1A – "Do Nothing" Minor Drainage System / Alternative 1B – "Do Nothing" Major Drainage System**
The "Do Nothing" alternative allows for the consideration of not implementing any changes to the existing minor (storm pipes) or major (trunk sewers, creeks, overland flow routes) drainage system infrastructure within the study area. This alternative is being considered to provide a benchmark to gauge the natural, physical, social, cultural, and economic implications of the other alternatives.

Flow Reduction / Water Quality Improvements

☐ **Alternative 2A – Retrofit / New Storm Water Management Facilities (SWMF) for Quantity Control**
Retrofit, expand, and create new stormwater management facilities in the study area for the primary purpose of improving water quantity control, attenuate peak flows, and reduce downstream flooding. The improvements could have the secondary benefit of improving watershed water quality, promoting infiltration, and improving the water balance.

☐ **Alternative 2B – Retrofit / New SWMF for Quality Control**
Retrofit, expand, and create new stormwater management facilities in the study area to improve watershed water quality, promote infiltration, and improve the water balance. The improvements will have an insignificant impact on peak flows and downstream flooding.

☐ **Alternative 2C – Lot Level Low Impact Development (LID)**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. For this alternative, the City will promote the use of lot level LID measures on private property throughout the City through the use of rain barrels, construction of soakaway pits, and other LID features.

☐ **Alternative 2D – Linear LID**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. Linear LID measures are being considered by the City for construction under local roadways, as part of road reconstruction projects.

☐ **Alternative 2E – Centralized LID**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. Centralized LID measures are being considered for construction underground within existing parkland across the City.

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OCT 3 1 2017
THE CITY OF BARRIE
ENGINEERING DEPARTMENT

Conveyance Capacity Improvements:

☐ **Alternative 3A – Culvert / Watercourse / Major Drainage System Improvements (1 in 25 year storm event, or Master Drainage Plan Recommendations)**
Culvert, watercourse, and major drainage system improvements to reduce flooding along each creek in the City of Barrie up to and including the 1 in 25 year storm event, or as previously recommended by the watersheds existing Master Drainage Plan.

☐ **Alternative 3B – Culvert / Watercourse / Major Drainage System Improvements (City Design Flood Frequency Criteria)**
Culvert, watercourse, and major drainage system improvements to reduce flooding along each creek in the City of Barrie up to and including either the 1 in 50 year storm event (for local and collector roads) or the 1 in 100 year storm event (for arterial roads) in accordance with the City's current flood frequency design criteria.

Please list below any concerns or comments you have related to any of the alternative solutions:

~~None~~
Could use Better water pressure
Because we don't have any to start with -

Please rate your satisfaction with the level of detail of the information presented herein at the Public Information Centre, and provided on the City website (www.barrie.ca/eastudies).

☐	☐	☐	☐	☐
Poor (Much Improvement Required)	**Marginal** (Some Improvement Required)	**Good**	**Very Good**	**Excellent**

Please add a comment in support of your level of satisfaction below:

Do you wish to be informed of future Public Information Centers for the Drainage Master Plan, and of staff recommendations for the Preferred Alternative Solution?

☐ Yes ☐ No

Signature:_____ Date: _____

Please submit this comment sheet by **Thursday, November 16, 2017** to:

Mr. Tom Reeve, P. Eng.
City of Barrie
Engineering Department, 6th floor
70 Collier Street, P.O. Box 400
Barrie, ON
L4M 4T5

Tel: (705) 739-4220 ext. 4465
Fax: (705) 739-4243

E-mail: Tom.Reeve@barrie.ca

Thank you for your comments.

Barrie

(2) Done Lee

DRAINAGE MASTER PLAN
MASTER PLANNING PROCESS (APPROACH #1) – PHASES 1 & 2

Public Information Centre
Thursday, November 2, 2017
4:00 p.m. to 8:00 p.m.
Dorian Parker Center, 227 Sunnidale Road, Barrie

COMMENT SHEET

Personal information on this form is collected under the authority of the Environmental Assessment Act, Chap. E18, Section 7, and will be used in the development of a Drainage Master Plan. Questions about this collection should be directed to the Director of Engineering, P.O. Box 400, 70 Collier Street, Barrie, Ontario, L4M 4T5, (705) 726-4242.

Please print all responses.

NAME OF RESPONDENT:

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

ADDRESS (Including Postal Code & Telephone Number):

Street Address: **Unit/Apt:**

Postal Code: **Telephone Number:**

Email Address:

How long have you lived at this property? INDUSTRIAL BUILDING –

The Opportunity Statement, which sets the framework for this Master Plan study, is as follows:

> "Identify drainage deficiencies and recommend solutions to improve the storm drainage systems across the City of Barrie in consideration of impacts to the natural, social, physical, cultural and economic environments."

A PDF version of the Draft Drainage Master Plan for Public Information Centre #1 is available on the City of Barrie web page at the following link: www.barrie.ca/eastudies. A paper copy of the draft report is available for review at the following locations during regular business hours:

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Questions about Existing Flooding and Drainage Issues:

Circle the answers that apply and add further explanation below if required:

Are you aware of any creeks or City storm drainage systems (pipes, drains) on your property? (Yes) / No

Are there any problems with the creek or City storm drainage systems on your property? (Yes) / No / Not applicable.

Have you ever had storm drainage from a creek or City storm drainage system damage your property? (Yes) / No

Have you ever noticed flooding on your street or a major road? (Yes) / No

ease list below any specific drainage concerns you have, and expand on the answers provided above:

DITCH AT FRONT IS PLUGGED. CALLED SEVERAL TIMES TO GET IT CLEANED OUT BUT NOTHING DONE. SINK HOLE APPEARED IN DRIVEWAY OVER CULVERT. MAJOR PROBLEM IS STORM POND BREACHING ITS BANKS & FLOODING OUR PROPERTY. OUR PARKING LOT IS BREAKING APART DUE TO BAD DRAINAGE & FLOODING

uestions about Proposed Alternative Solutions:

ease select which of the following alternatives you feel best addresses the drainage problems, and generates the greatest ositive impacts while producing the least negative impacts on the natural, physical, social, cultural, and economic environments. ease rate by recording either "1" (preferred) or "2" (not preferred) in each box.

ease note that each of the alternatives listed below on their own will **not** resolve all the drainage issues within the City of Barrie. ne alternative drainage solutions will be evaluated and a preferred alternative will be developed after the Public Information entre in consideration of the feedback received on these comment sheets, and as part of the Public Information Centre process.

xisting Condition

] **Alternative 1A – "Do Nothing" Minor Drainage System / Alternative 1B – "Do Nothing" Major Drainage System**
The "Do Nothing" alternative allows for the consideration of not implementing any changes to the existing minor (storm pipes) or major (trunk sewers, creeks, overland flow routes) drainage system infrastructure within the study area. This alternative is being considered to provide a benchmark to gauge the natural, physical, social, cultural, and economic implications of the other alternatives.

ow Reduction / Water Quality Improvements

1 **Alternative 2A – Retrofit / New Storm Water Management Facilities (SWMF) for Quantity Control**
Retrofit, expand, and create new stormwater management facilities in the study area for the primary purpose of improving water quantity control, attenuate peak flows, and reduce downstream flooding. The improvements could have the secondary benefit of improving watershed water quality, promoting infiltration, and improving the water balance.

] **Alternative 2B – Retrofit / New SWMF for Quality Control**
Retrofit, expand, and create new stormwater management facilities in the study area to improve watershed water quality, promote infiltration, and improve the water balance. The improvements will have an insignificant impact on peak flows and downstream flooding.

] **Alternative 2C – Lot Level Low Impact Development (LID)**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. For this alternative, the City will promote the use of lot level LID measures on private property throughout the City through the use of rain barrels, construction of soakaway pits, and other LID features.

] **Alternative 2D – Linear LID**
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] **Alternative 2E – Centralized LID**
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Conveyance Capacity Improvements:

☐ **Alternative 3A – Culvert / Watercourse / Major Drainage System Improvements (1 in 25 year storm event, or Master Drainage Plan Recommendations)**
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Please list below any concerns or comments you have related to any of the alternative solutions:

ease rate your satisfaction with the level of detail of the information presented herein at the Public Information Centre, and ovided on the City website (www.barrie.ca/eastudies).

☐	☐	☒	☐	☐
Poor (Much Improvement Required)	**Marginal** (Some Improvement Required)	**Good**	**Very Good**	**Excellent**

ease add a comment in support of your level of satisfaction below:

o you wish to be informed of future Public Information Centers for the Drainage Master Plan, and of staff recommendations for e Preferred Alternative Solution?

☒ Yes ☐ No

gnature: _____ Date: Oct 31/17

ease submit this comment sheet by **Thursday, November 16, 2017** to:

Mr. Tom Reeve, P. Eng.
City of Barrie
Engineering Department, 6th floor
70 Collier Street, P.O. Box 400
Barrie, ON
L4M 4T5

Tel: (705) 739-4220 ext. 4465
Fax: (705) 739-4243

E-mail: Tom.Reeve@barrie.ca

Thank you for your comments.

Barrie

(3)

DRAINAGE MASTER PLAN
MASTER PLANNING PROCESS (APPROACH #1) – PHASES 1 & 2

Public Information Centre
Thursday, November 2, 2017
4:00 p.m. to 8:00 p.m.
Dorian Parker Center, 227 Sunnidale Road, Barrie

RECEIVED
NOV 02 2017
THE CITY OF BARRIE
ENGINEERING DEPARTMENT

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Please print all responses.

NAME OF RESPONDENT:

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

ADDRESS (Including Postal Code & Telephone Number):

Street Address: **Unit/Apt:**

Postal Code: **Telephone Number:**

Email Address:

How long have you lived at this property? 3 years

The Opportunity Statement, which sets the framework for this Master Plan study, is as follows:

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Legislative Services Branch
City Hall, 1st Floor
70 Collier Street
Barrie, ON L4M 4T5

City of Barrie
Engineering
City Hall, 6th Floor
70 Collier Street
Barrie, ON L4M 4T5

Barrie Public Library
Downtown Branch
Information Desk
60 Worsley Street
Barrie, ON L4M 1L6

Barrie Public Library
Painswick Branch
Information Desk
48 Dean Avenue
Barrie, ON L4N 0C2

Questions about Existing Flooding and Drainage Issues:

Circle the answers that apply and add further explanation below if required:

Are you aware of any creeks or City storm drainage systems (pipes, drains) on your property? **Yes / (No)**

Are there any problems with the creek or City storm drainage systems on your property? **Yes / (No) / Not applicable.**

Have you ever had storm drainage from a creek or City storm drainage system damage your property? **Yes / (No)**

Have you ever noticed flooding on your street or a major road? **Yes / (No)**

Please list below any specific drainage concerns you have, and expand on the answers provided above:

The City should upgrade their stormwater treatment facilities to ensure that Kempenfelt Bay remains clear as the water front is an integral part of Barrie's identity. Urbanized re-development will clean up the core; however, proper stormwater management is to be incorporated to reduce peak flow and runoff volu

Questions about Proposed Alternative Solutions:

Please select which of the following alternatives you feel best addresses the drainage problems, and generates the greatest positive impacts while producing the least negative impacts on the natural, physical, social, cultural, and economic environments. Please rate by recording either "1" (preferred) or "2" (not preferred) in each box.

Please note that each of the alternatives listed below on their own will **not** resolve all the drainage issues within the City of Barrie. The alternative drainage solutions will be evaluated and a preferred alternative will be developed after the Public Information Centre in consideration of the feedback received on these comment sheets, and as part of the Public Information Centre process.

Existing Condition

☐ **Alternative 1A – "Do Nothing" Minor Drainage System / Alternative 1B – "Do Nothing" Major Drainage System**
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Flow Reduction / Water Quality Improvements

☑ **Alternative 2A – Retrofit / New Storm Water Management Facilities (SWMF) for Quantity Control**
Retrofit, expand, and create new stormwater management facilities in the study area for the primary purpose of improving water quantity control, attenuate peak flows, and reduce downstream flooding. The improvements could have the secondary benefit of improving watershed water quality, promoting infiltration, and improving the water balance.

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Retrofit, expand, and create new stormwater management facilities in the study area to improve watershed water quality, promote infiltration, and improve the water balance. The improvements will have an insignificant impact on peak flows and downstream flooding.

☐ **Alternative 2C – Lot Level Low Impact Development (LID)**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. For this alternative, the City will promote the use of lot level LID measures on private property throughout the City through the use of rain barrels, construction of soakaway pits, and other LID features.

☑ **Alternative 2D – Linear LID**
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☑ **Alternative 2E – Centralized LID**
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onveyance Capacity Improvements:

☑ **Alternative 3A – Culvert / Watercourse / Major Drainage System Improvements (1 in 25 year storm event, or Master Drainage Plan Recommendations)**
Culvert, watercourse, and major drainage system improvements to reduce flooding along each creek in the City of Barrie up to and including the 1 in 25 year storm event, or as previously recommended by the watersheds existing Master Drainage Plan.

☑ **Alternative 3B – Culvert / Watercourse / Major Drainage System Improvements (City Design Flood Frequency Criteria)**
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Please list below any concerns or comments you have related to any of the alternative solutions:

Alternative 2C - Lot level LID - Will be difficult to police. Reduces flexibility on opportunities for future amenity spaces. Requires large lots to separate infiltration from basements.

Please rate your satisfaction with the level of detail of the information presented herein at the Public Information Centre, and provided on the City website (www.barrie.ca/eastudies).

☐	☐	☑	☐	☐
Poor (Much Improvement Required)	**Marginal** (Some Improvement Required)	**Good**	**Very Good**	**Excellent**

Please add a comment in support of your level of satisfaction below:

Do you wish to be informed of future Public Information Centers for the Drainage Master Plan, and of staff recommendations for the Preferred Alternative Solution?

☑ Yes ☐ No

Signature: _____ Date: 27 - OCT - 2017

Please submit this comment sheet by **Thursday, November 16, 2017** to:

Mr. Tom Reeve, P. Eng.
City of Barrie
Engineering Department, 6th floor
70 Collier Street, P.O. Box 400
Barrie, ON
L4M 4T5

Tel: (705) 739-4220 ext. 4465
Fax: (705) 739-4243

E-mail: Tom.Reeve@barrie.ca

Thank you for your comments.

Barrie

(4)

DRAINAGE MASTER PLAN
MASTER PLANNING PROCESS (APPROACH #1) – PHASES 1 & 2

Public Information Centre
Thursday, November 2, 2017
4:00 p.m. to 8:00 p.m.
Dorian Parker Center, 227 Sunnidale Road, Barrie

RECEIVED
NOV 03 2017
THE CITY OF BARRIE
ENGINEERING DEPARTMENT

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Please print all responses.

NAME OF RESPONDENT:

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.): Barrie (property owner)

ADDRESS (Including Postal Code & Telephone Number):

Street Address: **Unit/Apt:**

Postal Code: **Telephone Number:**

Email Address:

How long have you lived at this property? 4 months

The Opportunity Statement, which sets the framework for this Master Plan study, is as follows:

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Questions about Existing Flooding and Drainage Issues:

Circle the answers that apply and add further explanation below if required:

Are you aware of any creeks or City storm drainage systems (pipes, drains) on your property? **Yes / (No)**

Are there any problems with the creek or City storm drainage systems on your property? **(Yes) / No / Not applicable.**

Have you ever had storm drainage from a creek or City storm drainage system damage your property? **(Yes) / No**

Have you ever noticed flooding on your street or a major road? **(Yes) / No**

Please list below any specific drainage concerns you have, and expand on the answers provided above:

My house back onto protected conservation land and swales were designed to divert the water from my property & neighbours to the protected land currently this is not effective & I have standing water along my property line

Questions about Proposed Alternative Solutions:

Please select which of the following alternatives you feel best addresses the drainage problems, and generates the greatest positive impacts while producing the least negative impacts on the natural, physical, social, cultural, and economic environments. Please rate by recording either "1" (preferred) or "2" (not preferred) in each box.

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Existing Condition

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Flow Reduction / Water Quality Improvements

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☐ **Alternative 2D – Linear LID**
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☐ **Alternative 3B – Culvert / Watercourse / Major Drainage System Improvements (City Design Flood Frequency Criteria)**
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Please list below any concerns or comments you have related to any of the alternative solutions:

There has to be a system in place to not only design effective storm water system but to also maintain these system. We can simply leave it on individual property owners to manage their storm/inground water as this depends on individual performance and any negligence will have negative impact on adjacent properties.

Please rate your satisfaction with the level of detail of the information presented herein at the Public Information Centre, and provided on the City website (www.barrie.ca/eastudies).

☐	☐	☑	☐	☐
Poor (Much Improvement Required)	**Marginal** (Some Improvement Required)	**Good**	**Very Good**	**Excellent**

Please add a comment in support of your level of satisfaction below:

I feel that my subdivision has an ineffective sewer system and the city has left the owners to deal with the problem

Do you wish to be informed of future Public Information Centers for the Drainage Master Plan, and of staff recommendations for the Preferred Alternative Solution?

☑ Yes ☐ No

Signature: _____ Date: Nov 2/2017

Please submit this comment sheet by **Thursday, November 16, 2017** to:

Mr. Tom Reeve, P. Eng.
City of Barrie
Engineering Department, 6th floor
70 Collier Street, P.O. Box 400
Barrie, ON
L4M 4T5

Tel: (705) 739-4220 ext. 4465
Fax: (705) 739-4243

E-mail: Tom.Reeve@barrie.ca

Thank you for your comments.

Barrie

(5)

RECEIVED
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THE CITY OF BARRIE
ENGINEERING DEPARTMENT

DRAINAGE MASTER PLAN
MASTER PLANNING PROCESS (APPROACH #1) – PHASES 1 & 2

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Please print all responses.

NAME OF RESPONDENT:

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

PROPERTY OWNER

ADDRESS (Including Postal Code & Telephone Number):

Street Address: **Unit/Apt:**

Postal Code: **Telephone Number:**

Email Address:

How long have you lived at this property?

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Have you ever had storm drainage from a creek or City storm drainage system damage your property? **Yes / (No)**

Have you ever noticed flooding on your street or a major road? **(Yes) / No**

Please list below any specific drainage concerns you have, and expand on the answers provided above:

NONE THAT ARE SPECIFIC.

Questions about Proposed Alternative Solutions:

Please select which of the following alternatives you feel best addresses the drainage problems, and generates the greatest positive impacts while producing the least negative impacts on the natural, physical, social, cultural, and economic environments. Please rate by recording either "1" (preferred) or "2" (not preferred) in each box.

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Existing Condition

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Please list below any concerns or comments you have related to any of the alternative solutions:

(1) HOW ARE THESE ALTERNATIVES GOING TO BE FUNDED FOR IMPLEMENTATION?

(2) WHAT RUNOFF VOLUME CAPTURE TARGETS ARE BEING IDENTIFIED AS TARGETS TO AID IN QUANTITY CONTROL?

(3) ARE INFILTRATION BASED LIDS BEING SCREENED AGAINST SOURCE WATER/GROUNDWATER/VULNERABLE AQUIFERS FOR THEIR IMPACTS?

(4) ARE THERE NEGATIVE IMPACTS ON GROUNDWATER FROM CONCENTRATED/CENTRALIZED LID FACILITIES?

(5) FOR MAJOR DRAINAGE/CONVEYANCE INFRASTRUCTURE, ARE ONLINE STORAGE FACILITIES BEING CONSIDERED TO MITIGATE AGAINST FLOODING FROM THE REGULATORY EVENT? THIS IS EITHER IN CONJUNCTION WITH PROPOSED IMPROVEMENTS, OR IN LIEU OF 3B LEVEL IMPROVEMENTS.

Please rate your satisfaction with the level of detail of the information presented herein at the Public Information Centre, and provided on the City website (www.barrie.ca/eastudies).

☐	☐	☐	☒	☐
Poor (Much Improvement Required)	**Marginal** (Some Improvement Required)	**Good**	**Very Good**	**Excellent**

Please add a comment in support of your level of satisfaction below:

GOOD VISUALS IDENTIFYING WHAT IS DEFICIENT (AND THE METRICS USED TO DETERMINE IT)

ADEQUATE STAFF ON HAND TO RESPOND TO QUESTIONS

PIC WAS CENTRALLY LOCATED AND WELL ORGANIZED.

Do you wish to be informed of future Public Information Centers for the Drainage Master Plan, and of staff recommendations for the Preferred Alternative Solution?

☒ Yes ☐ No

Signature: _____ Date: NOV. 2/2017

Please submit this comment sheet by **Thursday, November 16, 2017** to:

Mr. Tom Reeve, P. Eng.
City of Barrie
Engineering Department, 6th floor
70 Collier Street, P.O. Box 400
Barrie, ON
L4M 4T5

Tel: (705) 739-4220 ext. 4465
Fax: (705) 739-4243

E-mail: Tom.Reeve@barrie.ca

Thank you for your comments.

Barrie

(6)

DRAINAGE MASTER PLAN
MASTER PLANNING PROCESS (APPROACH #1) – PHASES 1 & 2

RECEIVED
NOV 0 3 2017
THE CITY OF BARRIE
ENGINEERING DEPARTMENT

Public Information Centre
Thursday, November 2, 2017
4:00 p.m. to 8:00 p.m.
Dorian Parker Center, 227 Sunnidale Road, Barrie

COMMENT SHEET

Personal information on this form is collected under the authority of the Environmental Assessment Act, Chap. E18, Section 7, and will be used in the development of a Drainage Master Plan. Questions about this collection should be directed to the Director of Engineering, P.O. Box 400, 70 Collier Street, Barrie, Ontario, L4M 4T5, (705) 726-4242.

Please print all responses.

NAME OF RESPONDENT:

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

ADDRESS (Including Postal Code & Telephone Number):

Street Address: **Unit/Apt:**

Postal Code: **Telephone Number:**

Email Address:

How long have you lived at this property? 31? yrs.

The Opportunity Statement, which sets the framework for this Master Plan study, is as follows:

> "Identify drainage deficiencies and recommend solutions to improve the storm drainage systems across the City of Barrie in consideration of impacts to the natural, social, physical, cultural and economic environments."

A PDF version of the Draft Drainage Master Plan for Public Information Centre #1 is available on the City of Barrie web page at the following link: www.barrie.ca/eastudies. A paper copy of the draft report is available for review at the following locations during regular business hours:

City of Barrie Legislative Services Branch City Hall, 1st Floor 70 Collier Street Barrie, ON L4M 4T5	City of Barrie Engineering City Hall, 6th Floor 70 Collier Street Barrie, ON L4M 4T5	Barrie Public Library Downtown Branch Information Desk 60 Worsley Street Barrie, ON L4M 1L6	Barrie Public Library Painswick Branch Information Desk 48 Dean Avenue Barrie, ON L4N 0C2

Questions about Existing Flooding and Drainage Issues:

Circle the answers that apply and add further explanation below if required:

Are you aware of any creeks or City storm drainage systems (pipes, drains) on your property? (Yes) / No

Are there any problems with the creek or City storm drainage systems on your property? (Yes) / No / Not applicable.

Have you ever had storm drainage from a creek or City storm drainage system damage your property? (Yes) / No

Have you ever noticed flooding on your street or a major road? (Yes) / No

Please list below any specific drainage concerns you have, and expand on the answers provided above:

HOLDING POND NO LONGER A BASIN GRADUALLY FILLING IN. STREAM RUNNING INTO LITTLE LAKE NEVER CLEANED OUT CULVERTS TOO NARROW FOR HEAVY RAINS. WORRIED EVERY TIME HEAVY STORMS ACCUR.

Questions about Proposed Alternative Solutions:

Please select which of the following alternatives you feel best addresses the drainage problems, and generates the greatest positive impacts while producing the least negative impacts on the natural, physical, social, cultural, and economic environments. Please rate by recording either "1" (preferred) or "2" (not preferred) in each box.

Please note that each of the alternatives listed below on their own will **not** resolve all the drainage issues within the City of Barrie. The alternative drainage solutions will be evaluated and a preferred alternative will be developed after the Public Information Centre in consideration of the feedback received on these comment sheets, and as part of the Public Information Centre process.

Existing Condition

☐ **Alternative 1A – "Do Nothing" Minor Drainage System / Alternative 1B – "Do Nothing" Major Drainage System**
The "Do Nothing" alternative allows for the consideration of not implementing any changes to the existing minor (storm pipes) or major (trunk sewers, creeks, overland flow routes) drainage system infrastructure within the study area. This alternative is being considered to provide a benchmark to gauge the natural, physical, social, cultural, and economic implications of the other alternatives.

Flow Reduction / Water Quality Improvements

☑ **Alternative 2A – Retrofit / New Storm Water Management Facilities (SWMF) for Quantity Control**
Retrofit, expand, and create new stormwater management facilities in the study area for the primary purpose of improving water quantity control, attenuate peak flows, and reduce downstream flooding. The improvements could have the secondary benefit of improving watershed water quality, promoting infiltration, and improving the water balance.

☐ **Alternative 2B – Retrofit / New SWMF for Quality Control**
Retrofit, expand, and create new stormwater management facilities in the study area to improve watershed water quality, promote infiltration, and improve the water balance. The improvements will have an insignificant impact on peak flows and downstream flooding.

☐ **Alternative 2C – Lot Level Low Impact Development (LID)**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. For this alternative, the City will promote the use of lot level LID measures on private property throughout the City through the use of rain barrels, construction of soakaway pits, and other LID features.

☐ **Alternative 2D – Linear LID**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. Linear LID measures are being considered by the City for construction under local roadways, as part of road reconstruction projects.

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ice Capacity Improvements:

ternative 3A – Culvert / Watercourse / Major Drainage System Improvements (1 in 25 year storm event, or Master Drainage lan Recommendations)
Culvert, watercourse, and major drainage system improvements to reduce flooding along each creek in the City of Barrie up to and including the 1 in 25 year storm event, or as previously recommended by the watersheds existing Master Drainage Plan.

☑ **Alternative 3B – Culvert / Watercourse / Major Drainage System Improvements (City Design Flood Frequency Criteria)**
Culvert, watercourse, and major drainage system improvements to reduce flooding along each creek in the City of Barrie up to and including either the 1 in 50 year storm event (for local and collector roads) or the 1 in 100 year storm event (for arterial roads) in accordance with the City's current flood frequency design criteria.

Please list below any concerns or comments you have related to any of the alternative solutions:

Please rate your satisfaction with the level of detail of the information presented herein at the Public Information Centre, and provided on the City website (www.barrie.ca/eastudies).

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Poor (Much Improvement Required)	**Marginal** (Some Improvement Required)	**Good**	**Very Good**	**Excellent**

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Signature: _____ Date: 2nd NOVEMBER 2017.

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Contact by email

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property owner

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How long have you ~~lived~~ at this property? owned by same family since 1862

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Barrie Public Library
Downtown Branch
Information Desk
60 Worsley Street
Barrie, ON L4M 1L6

Barrie Public Library
Painswick Branch
Information Desk
48 Dean Avenue
Barrie, ON L4N 0C2

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- Have you ever noticed flooding on your street or a major road? Yes / No

e list below any specific drainage concerns you have, and expand on the answers provided above:

— water draining across the Lockhart farm from the city of Barrie development is an illegal discharge of water under common law — see attached information

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uests are received by **November 11, 2017**, the City intends to proceed with detailed design and construction of the Preferred as presented in the ESR, subject to inclusion in the capital budget.

following projects are documented in the ESR.

oadway Improvements

Project Reference	Project Description		
	Roadway	**From**	**To**
1	Salem Rd (widening to 3-lanes on a 27m ROW)	County Road 27	Veteran's Dr
2	Lockhart Rd (widening to 5-lanes on a 34m ROW)	Highway 400	Barrie-Collingwood Railway – Beeton Spur
3	Lockhart Rd (widening to 5-lanes on a 34m ROW)	Barrie-Collingwood railway – Beeton Spur	Huronia Rd
4	Essa Rd (widening to 3-lanes on a 27m ROW)	Mapleview Dr W	Athabaska Rd
5	Essa Rd (widening to 3-lanes on a 27m ROW)	Athabaska Rd	Salem Rd
6	Essa Rd (widening to 3-lanes on a 27m ROW)	Salem Rd	County Road 27
7	Veteran's Dr (widening to 5-lanes on a 34m ROW)	Salem Rd	McKay Rd W
8	Veteran's Dr (widening to 5-lanes on a 34m ROW)	McKay Rd W	City of Barrie /Town of Innisfil limits
9	Huronia Rd	Lockhart Rd	City of Barrie /Town of Innisfil limits
10	McKay Rd W (widening to 3-lanes on a 27m ROW)	County Road 27	Reid Dr
11	McKay Rd W (widening to 5-lanes on a 34m ROW)	Reid Dr	Highway 400
12	McKay Rd E (widening to 5-lanes on a 34m ROW)	Highway 400	Huronia Rd

Grade Separation

Project Reference	Project Description
13	Grade separation (Underpass) widening at Lockhart Rd and Barrie-Collingwood Railway – Beeton Spur (Mile 80.13)

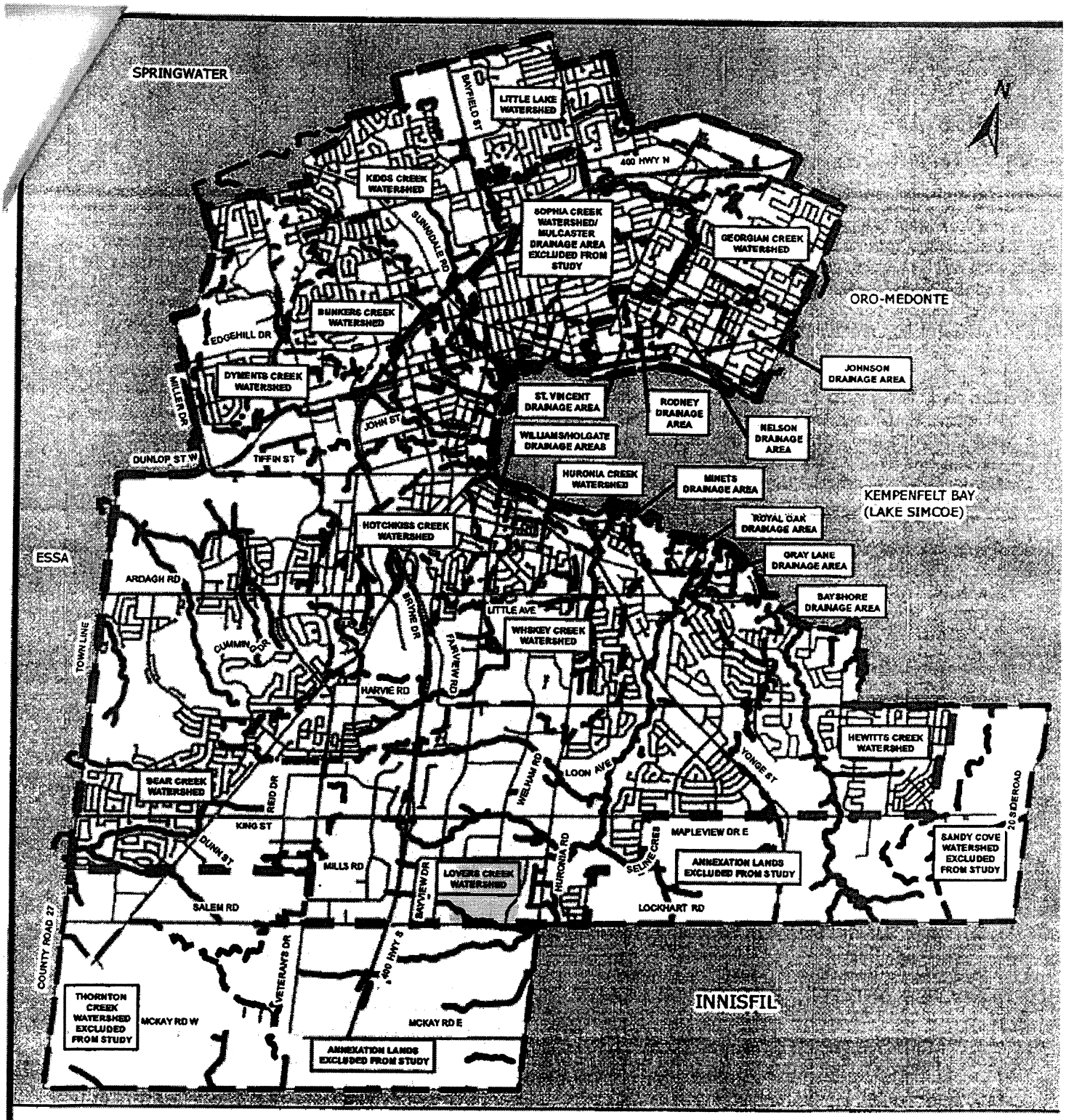
Stormwater Management

Project Reference	Project Description
14	Culvert 3: On Salem Rd 275 m east of County Road 27
15	Culvert 5: On Essa Rd 800 m north of Salem Rd
16	Culvert 10: On Salem Rd 1200 m east of Essa Rd
17	Culvert 4: On Essa Rd 400 m south of Salem Rd
18	Culvert 101: On McKay Rd W 1940 m west of Veteran's Dr.
19	Culvert 13: On McKay Rd East 850 m west of Veteran's Dr.
20	Culvert 12: On Veteran's Dr. 590 m south of Salem Rd
21	Culvert 201: On Lockhart Rd 550 m west of Huronia Rd
22	Culvert 21: On Huronia Rd 40 m south of Lockhart Rd
23	Culvert 23: On Huronia Rd 400 m north of McKay Rd E
24	Culvert 27: On Huronia Rd 300 m south of McKay Rd E
25	Combined Centralized LID Facility and Dry Pond E1: Southeast corner of Essa Rd and new McKay Rd W
26	Combined Centralized LID Facility and Dry Pond E4: On east side of Essa Rd 750 m north of Salem Rd
27	Combined Centralized LID Facility and Dry Pond S3-1: On south side of Salem Rd 680 m east of Essa Rd
28	Combined Centralized LID Facility and Dry Pond S3-2: On south side of Salem Rd 1130 m east of Essa Rd
29	Combined Centralized LID Facility and Dry Pond S4: On north side of Salem Rd 1225 m east of Essa Rd
30	Combined Centralized LID Facility and Dry Pond M1: On south side of McKay Rd W 980 m east of Essa Rd
31	Combined Centralized LID Facility and Dry Pond M3: On south side of McKay Rd W 1020 m west of Veteran's Dr.
32	Combined Centralized LID Facility and Dry Pond M4: On north side of McKay Rd W 525 m west of Veteran's Dr.
33	Combined Centralized LID Facility and Dry Pond M5: On south side of McKay Rd W 250 m east of Veteran's Dr.
34	Combined Centralized LID Facility and Dry Pond V1: On east side of Veteran's Dr. 600 m south of McKay Rd W
35	Combined Centralized LID Facility and Dry Pond V3: On west side of Veteran's Dr. 650 m north of McKay Rd W
36	Combined Centralized LID Facility and Dry Pond V4: On east side of Veteran's Dr. 425 m south of Salem Rd
37	Combined Centralized LID Facility and Dry Pond L1: On south side of Lockhart Rd 1440 m west of Huronia Rd
38	Combined Centralized LID Facility and Dry Pond L2: Northwest corner of Lockhart Rd and Huronia Rd
39	Combined Centralized LID Facility and Dry Pond H3/M6: Southwest corner of McKay Rd E and Huronia Rd
40	Combined Centralized LID Facility and Dry Pond H5: On west side of Huronia Rd 600 m south of Lockhart Rd

D. McAlpine
Director of Legislative & Court Services

R. Sutton, P. Eng.,
Director of Engineering

This Notice issued on October 12, 2017 and October 14, 2017.



DISCLAIMER

The information contained in this drawing is solely for the use of the Corporation of the City of Barrie for the purpose for which it has been prepared and C.C. Tatham & Associates Ltd. undertakes no duty to or accepts any responsibility to any third party who may rely upon this drawing.

This drawing may not be used for any purpose other than that provided in the contract between the Corporation of the City of Barrie and C.C. Tatham & Associates Ltd. nor may any detail or element of this drawing be removed, reproduced, electronically stored or transmitted in any form without the express written consent of C.C. Tatham & Associates Ltd.

LEGEND

- ROADS
- WATERCOURSES
- WATERSHED BOUNDARY
- OVERALL STUDY AREA

C.C. Tatham & Associates Ltd.
Consulting Engineers
Collingwood Bracebridge Orillia Barrie

Barrie

NOT TO SCALE

DRAINAGE MASTER PLAN

FIGURE 1 - STUDY AREA LOCATION PLAN

DATE: OCTOBER 2017

October 30, 2017

City Of Barrie Engineering Dept
City Hall
70 Collier Street
Barrie, On, L4M4T5

RE: Drainage Master Plan phase 1 & 2 to be discussed at public meeting on November 2, 2017.

CONCERN:

the map of drainage master plan done by C.C. Tatham & Assoc. Ltd shows a water course across the Lockhart farm at 140 Lockhart Rd (Con 11 Spt lot 9) with 93.43 acres. No legal water course exists across this land prior to development by the city.

PROOF OF LACK OF A PRE-EXISTING STREAM;

City of Barrie map from amendment 19, April 1982 shows no water course across the Lockhart farm.

Ontario government photos (aerial) from1953 - no stream.

Ontario government photos (aerial) from 1978 - no stream

Letter by D. Beckett, P.Eng. in 1987 found no evidence of a stream on the westerly boundary of farm.

Aerial photos from 1988 by professional photographer show no evidence of a stream.

Statement from Bowman Bros. Farms who have worked the land for 40 years did not see any erosion or stream until after city development of drainage system.

Dillon report for L.S.C.A., shows on their map no stream on the westerly boundary of the farm only a flood plain with intermittent flow across the fields.

Ground level photos in 1987 showed no evidence of a stream or erosion.

Judith Westgarth-Taylor, owner of the farm saw no evidence of a stream or erosion on the farm prior to 1990.

Both the L.S.R.C.A. and the City of Barrie engineers stated in writing that the water flow from the city development would not change post-development. If no stream existed pre-development one should not have occurred post-development.

The Winters Report which was used to construct the surrounding 500 acre industrial subdivision for the City of Barrie was used by City of Barrie engineer (D. Kirkpatrick) to state "the R.E. Winter Report actually affords more protection to the Lockhart farm".

Since we now have an erosion unto the farm to a depth of 6 - 7 feet across the fields that were previously cultivated, it appears that the Winters Report, the city engineers and the L.S.C.A. were all wrong in their assessment that the farm was protected from erosion.

CONCLUSION:

Under common law where only surface flow occurs as was the case on the westerly boundary of the Lockhart farm **"water collected in an artificial channel loses any right with respect to uncollected surface water and makes one liable to avoid venting this**

collected water unto the lands to another and must take the water to a sufficient outlet at his expense".

Before Lockhart Road is widened to 5 lanes from Hwy 400 to the railway spur the illegal discharge of water across this farm should be corrected to allow engineering to re-route the flow of water around the farm.

The statue of limitations may not apply due to a Supreme Court of Canada recent decision which upheld an Ontario Supreme Court ruling under 99(2) of E.P.A. (Midwest Properties vs. Thordarson) which states "**punitive damages may be awarded where a common law cause of action is made out and the party in control of the pollutant demonstrates wanton disregard for the environmental obligation".**

The Supreme Court of Canada ruling included compensation for remediation cost and reduction in property value.

In this case the Winters Report, the L.S.R.C.A. and the City of Barrie engineers all failed to respect common law and gave information to the owner of the property in writing that was incorrect and did not protect the farm fields from erosion.

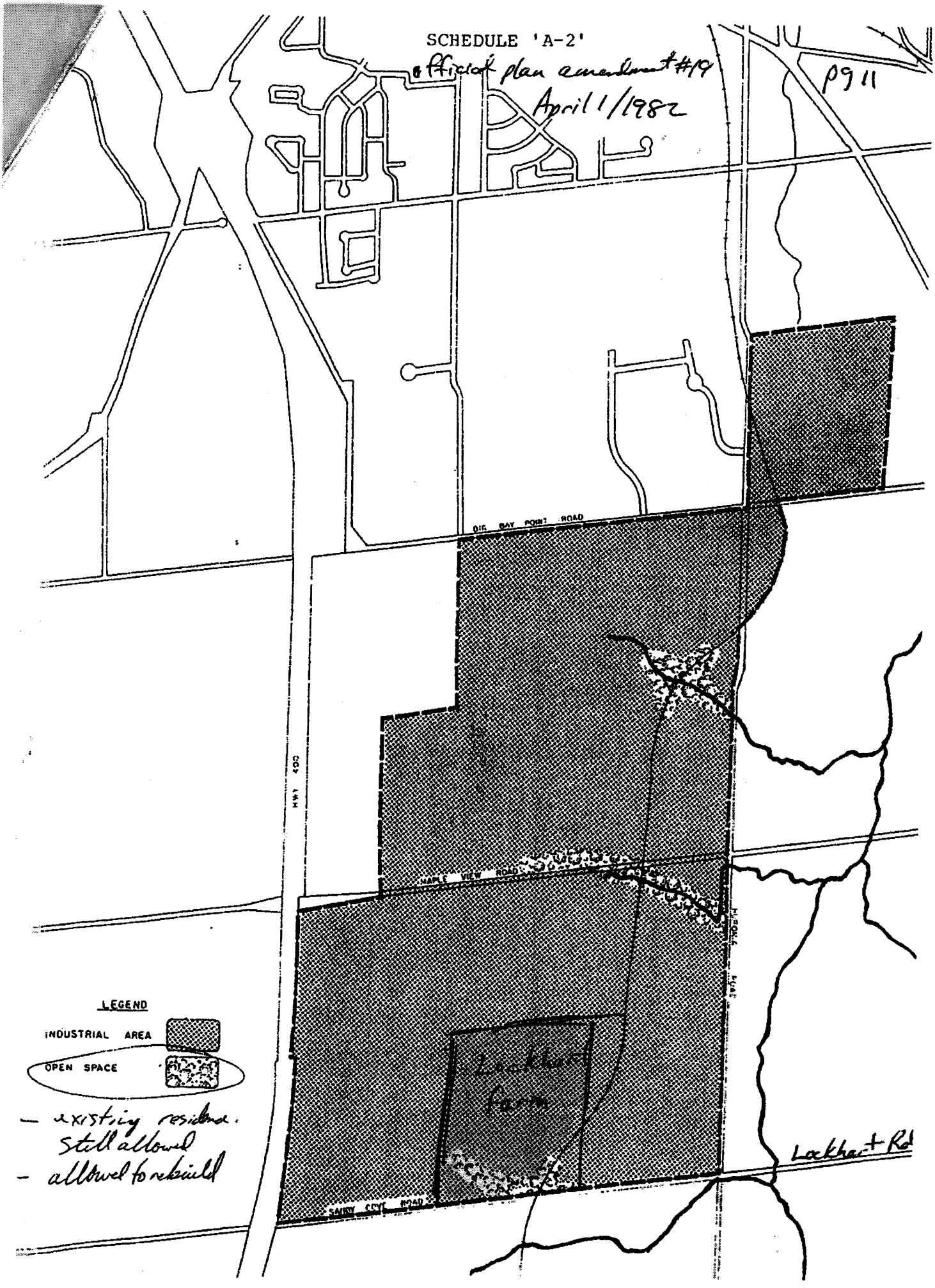
Yours truly,

SCHEDULE 'A-2'

Official plan amendment #19

April 1/1982

p911



II. THE LAW OF DRAINAGE — PAST AND PRESENT

The Common Law

In order to gain appreciation of the complex statutory scheme which governs drainage matters in Ontario today, it is useful, indeed necessary, to have some knowledge of the basic values of the common law regarding drainage and watercourses. Most of these principles are very old, and were developed by the courts before any statutory provisions regarding drainage were enacted. It must be remembered, however, that the principles of the common law continue to be in effect unless they are specifically altered or overridden by statutory enactment — thus their continuing importance.

The common law regarding drainage may essentially be divided into two parts. First, there are the rules governing the rights and obligations of riparian landowners, in other words those whose lands are immediately adjacent to natural watercourses. The second set governs the rights and obligations of landowners which relate to surface waters.

When considering the rights of riparian owners, it should be noted that a natural watercourse has been defined by the courts as a channel with banks formed by the flowing of water and must present to the eye the unmistakable evidence of running water. 1/ The courts have held that a watercourse is established if there is a sufficient natural and constant flow of water to form and maintain a distinct and definite channel. It is not necessary that the water be continuous or from a perennial living source. It is sufficient that the water rises periodically from natural causes and reaches a plainly defined channel of a permanent character. 2/

Any landowner whose lands abut upon a natural watercourse has a right to drain his lands into that watercourse. 3/

Where a landowner with lands abutting on a natural watercourse collects the rain in ditches or in proper drains, he has the perfect right to discharge it into the watercourse. And this is so even though the result is to increase the volume of the stream and to accelerate its rate of flow. He may do so without incurring any liabilities for damages to an owner of a lower land. 4/ The lower owner must live with the possibility of increase in the flow of the stream because the upper owner has the advantages of drainage reasonably used which the stream may give him. By reasonable use is meant use up to the capacity of the banks of the stream.

1/ Re Sinclair and Sharpe (1924), 26 O.W.N. 134.
2/ Beer v. Stroud (1888), 19 O.R. 10.
3/ McGillivray v. Lochiel (1904), 8 O.L.R. 446.
4/ Ibid.

But rights also call for certain obligations. A natural watercourse from its very nature must flow from higher to lower ground, and if there is a right of the high lands to drain, then there is a corresponding obligation on the owners of the low lands to accept the flow. Subject to the limitations placed upon the upstream owners that they must use the stream reasonably, their rights to drain lands which lie within the watershed is absolute. Conversely the downstream owner is under an obligation just as firm that he will accept the disadvantages which flooding brings to his low land.

It is the duty of anyone who interferes with the course of a natural stream to see that the works which he substitutes for a channel provided by natural means are adequate to carry the water which may be brought even by extraordinary rainfall. If damages result from improperly substituted works which have been provided in place of the natural stream, then the owner is liable. 5/

The second division of common law deals with water that from time to time descends in the form of rain until it finds its way by percolation or flow to the point of commencement of some natural course. To summarize the rules in respect to surface flow and percolation it may be said that as far as owners of low land are concerned, they cannot claim the assistance of the law to prevent the natural flow of surface water from adjoining high land. However, they are not obliged to receive surface water flowing upon their lands. The low landowner may without liability protect his own lands by building structures or by filling the land to a height sufficient for protection, and the upper landowner has no complaint if flooding results. 6/

The character of water changes in law when it is collected in a man made channel and therefore, a person who collects water in an artificial channel loses any right he may have had in respect to uncollected surface water. The minute he does so makes him liable to avoid venting this collected water on the lands of another, and he must at his expense take the water to a sufficient outlet. 7/ Hence the contribution in The Drainage Act by those assessed for "outlet" where the drain is so constructed to carry water off from the lands of higher owners.

The Statute Law

Drainage statute law in Ontario goes back almost 140 years. There have been many amendments to the law

5/ McArthur v. Gillies (1881), 29 Gr. 223.
6/ Ostrom v. Sills (1898), 28 S.C.R. 485.
7/ Re Orford and Aldborough (1912), 27 O.L.R. 107.

Barrie

8

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How long have you lived at this property? VARIOUS (UPTO 70 YEARS)

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Questions about Existing Flooding and Drainage Issues:

Circle the answers that apply and add further explanation below if required:

Are you aware of any creeks or City storm drainage systems (pipes, drains) on your property? (Yes) / No

Are there any problems with the creek or City storm drainage systems on your property? (Yes) / No / Not applicable.

Have you ever had storm drainage from a creek or City storm drainage system damage your property? (Yes) / No

Have you ever noticed flooding on your street or a major road? (Yes) / No

Please list below any specific drainage concerns you have, and expand on the answers provided above:

_____

_____

_____

_____

Questions about Proposed Alternative Solutions:

Please select which of the following alternatives you feel best addresses the drainage problems, and generates the greatest positive impacts while producing the least negative impacts on the natural, physical, social, cultural, and economic environments. Please rate by recording either "1" (preferred) or "2" (not preferred) in each box.

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Existing Condition

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Flow Reduction / Water Quality Improvements

☐ **Alternative 2A – Retrofit / New Storm Water Management Facilities (SWMF) for Quantity Control**
Retrofit, expand, and create new stormwater management facilities in the study area for the primary purpose of improving water quantity control, attenuate peak flows, and reduce downstream flooding. The improvements could have the secondary benefit of improving watershed water quality, promoting infiltration, and improving the water balance.

☐ **Alternative 2B – Retrofit / New SWMF for Quality Control**
Retrofit, expand, and create new stormwater management facilities in the study area to improve watershed water quality, promote infiltration, and improve the water balance. The improvements will have an insignificant impact on peak flows and downstream flooding.

☐ **Alternative 2C – Lot Level Low Impact Development (LID)**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. For this alternative, the City will promote the use of lot level LID measures on private property throughout the City through the use of rain barrels, construction of soakaway pits, and other LID features.

☐ **Alternative 2D – Linear LID**
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☐ **Alternative 2E – Centralized LID**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. Centralized LID measures are being considered for construction underground within existing parkland across the City.

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Culvert, watercourse, and major drainage system improvements to reduce flooding along each creek in the City of Barrie up to and including the 1 in 25 year storm event, or as previously recommended by the watersheds existing Master Drainage Plan.

☐ **Alternative 3B – Culvert / Watercourse / Major Drainage System Improvements (City Design Flood Frequency Criteria)**
Culvert, watercourse, and major drainage system improvements to reduce flooding along each creek in the City of Barrie up to and including either the 1 in 50 year storm event (for local and collector roads) or the 1 in 100 year storm event (for arterial roads) in accordance with the City's current flood frequency design criteria.

Please list below any concerns or comments you have related to any of the alternative solutions:

WE OWN THE FOLLOWING PROPERTIES:
39 ANNE ST, 49 ANNE ST, ARMY/NAVY AIRFORCE RD PROPERTY
181 JOHN, 75 DYMENT, 200 BLOCK, 160 BLOCK, 165 169 BLOCK
150 & 140 BLOCK, 109 & 111 BROCK, 41 SAUNDERS,
MAYES COURT

WE HAVE CONCERNS WITH PROPOSED STORM UPGRADES
79 AND # 65 ON THE STORM WATER POND
MAPPING
AND
FLOOD PLAIN ALONG BROCK ST & TIFFEN ST.
AS WELL AS BEHIND ~~75~~ 41 SAUNDERS RD
AND 39 ANNE ST (CREEK & FLOOD PLAIN)

PLEASE PROVIDE SPECIFIC DETAIL ON HOW THE DRAINAGE
MASTER PLAN WILL EFFECT OUR PROPERTIES
(SITE VISIT)

Please rate your satisfaction with the level of detail of the information presented herein at the Public Information Centre, and provided on the City website (www.barrie.ca/eastudies).

☐	☐	☐	☐	☐
Poor (Much Improvement Required)	**Marginal** (Some Improvement Required)	**Good**	**Very Good**	**Excellent**

Please add a comment in support of your level of satisfaction below:

Do you wish to be informed of future Public Information Centers for the Drainage Master Plan, and of staff recommendations for the Preferred Alternative Solution?

☐ Yes ☐ No

Signature: _____ Date: Nov 2 2017

Please submit this comment sheet by **Thursday, November 16, 2017** to:

Mr. Tom Reeve, P. Eng.
City of Barrie
Engineering Department, 6th floor
70 Collier Street, P.O. Box 400
Barrie, ON
L4M 4T5

Tel: (705) 739-4220 ext. 4465
Fax: (705) 739-4243

E-mail: Tom.Reeve@barrie.ca

Thank you for your comments.

(9)

DRAINAGE MASTER PLAN
MASTER PLANNING PROCESS (APPROACH #1) – PHASES 1 & 2

RECEIVED
NOV 0 3 2017
THE CITY OF BARRIE
ENGINEERING DEPARTMENT

Public Information Centre
Thursday, November 2, 2017
4:00 p.m. to 8:00 p.m.
Dorian Parker Center, 227 Sunnidale Road, Barrie

COMMENT SHEET

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Please print all responses.

NAME OF RESPONDENT:

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.): Property Owner

ADDRESS (Including Postal Code & Telephone Number):

Street Address: **Unit/Apt:**

Postal Code: **Telephone Number:**

Email Address:

How long have you lived at this property? ~~5 yrs~~ 5½ yrs

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Questions about Existing Flooding and Drainage Issues:

Circle the answers that apply and add further explanation below if required:

Are you aware of any creeks or City storm drainage systems (pipes, drains) on your property? **Yes / (No)**

Are there any problems with the creek or City storm drainage systems on your property? **Yes / No / Not applicable.**
Sometimes in a big rain water gushes down Irwin St hill - lawn bottom and
Have you ever had storm drainage from a creek or City storm drainage system damage your property? **Yes / (No)** water has risen slightly...

Have you ever noticed flooding on your street or a major road? **Yes / (No)**

* neighbours said about 5-yrs ago heavy rain water went up Just river like flooding on Irwin hill

Please list below any specific drainage concerns you have, and expand on the answers provided above:

-assad rain flowing deep down Irwin Drive hill pools at bottom and sometimes higher than curb
also big rain brings sand down from playground pit goes into the drainage system
~~the~~ wat especially if leaves accumulate
the downhill water brings stuff with it garbage, leaves etc

Questions about Proposed Alternative Solutions:

Please select which of the following alternatives you feel best addresses the drainage problems, and generates the greatest positive impacts while producing the least negative impacts on the natural, physical, social, cultural, and economic environments. Please rate by recording either "1" (preferred) or "2" (not preferred) in each box.

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Flow Reduction / Water Quality Improvements

☐ **Alternative 2A – Retrofit / New Storm Water Management Facilities (SWMF) for Quantity Control**
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LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. For this alternative, the City will promote the use of lot level LID measures on private property throughout the City through the use of rain barrels, construction of soakaway pits, and other LID features.

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Please list below any concerns or comments you have related to any of the alternative solutions:

We really need to be very vigilent to keep natural areas (what are left) undisturbed our wildlife/vegetation so important

No STADIUM at Waterfront — WOW that can't be helpful all that cement on a low lying area of the city

= be nice to make the drainage basins into mini wetlands

- teach help property owners to do LID need support motivation.

Please rate your satisfaction with the level of detail of the information presented herein at the Public Information Centre, and provided on the City website (www.barrie.ca/eastudies).

☐	☐	☑	☐	☐
Poor (Much Improvement Required)	**Marginal** (Some Improvement Required)	**Good**	**Very Good**	**Excellent**

Please add a comment in support of your level of satisfaction below:

- little overwhelming for a novice
- need maps labelled better as to what each map represents
- Presentation will be helpful

Do you wish to be informed of future Public Information Centers for the Drainage Master Plan, and of staff recommendations for the Preferred Alternative Solution?

☑ Yes ☐ No

Signatures _____ _____ Date: Nov 2 2017

Please submit this comment sheet by **Thursday, November 16, 2017** to:

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Engineering Department, 6th floor
70 Collier Street, P.O. Box 400
Barrie, ON
L4M 4T5

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Thank you for your comments.

Barrie

10

DRAINAGE MASTER PLAN
MASTER PLANNING PROCESS (APPROACH #1) – PHASES 1 & 2

Public Information Centre
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RECEIVED
NOV 0 3 2017
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How long have you lived at this property? 5 years

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Information Desk
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Barrie, ON L4M 1L6

Barrie Public Library
Painswick Branch
Information Desk
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Have you ever had storm drainage from a creek or City storm drainage system damage your property? **Yes / No**

Have you ever noticed flooding on your street or a major road? **Yes / No**

Please list below any specific drainage concerns you have, and expand on the answers provided above:

Flooding against my house
Entire back yard flooded
Soil erosion
Standing and pooling water

Questions about Proposed Alternative Solutions:

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Please list below any concerns or comments you have related to any of the alternative solutions:

I live in the grand view bear creek subdivision at the North east corner of Kerrland and marta Cres. this area used long swails to move ground and surface area from many homes. The properties were divided by swails. the system did not use 6" weepen* pepe or proper fill. Organic Fill was used around the houses. The system depended on sod remaning intact. Each property over 9 (see Adam Hawbadts reports) had a swail to seperate properties and to mark the property line. The sod all died due to lack of sunlight between the house. The organic fill washed away and eroded into deep culverts. The swails were clogged with organic material providing pooling of water and flooding of properties. My foundation has a moisture line indicator mark around 3/4 of my house foundation at the front level. 20' feet of my lawn off my walk out backyard all died with moss growing and it was impossible to safely transverse inside the R/W side. The city after months of time spend e-mails. Then resoded the side of the house and the swail. This is not a solution. they said now its just like it was when you moved in. Michelle MacFarlane chose to artially assume this with the developer even though i made er aware. Then Sood Mayor in 2010 Dino Lims the solution.

Please rate your satisfaction with the level of detail of the information presented herein at the Public Information Centre, and provided on the City website (www.barrie.ca/eastudies).

☐	☐	☐	☐	☐
Poor (Much Improvement Required)	**Marginal** (Some Improvement Required)	**Good**	**Very Good**	**Excellent**

Please add a comment in support of your level of satisfaction below:

Manta Curb floods and holds water in front of 45, 43, 41. The backyards are flooded at 41, 43, 39, 37 from the wetland area

Do you wish to be informed of future Public Information Centers for the Drainage Master Plan, and of staff recommendations for the Preferred Alternative Solution?

☑ Yes ☐ No

Signature _____ Date: _____

Please submit this comment sheet by **Thursday, November 16, 2017** to:

Mr. Tom Reeve, P. Eng.
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Engineering Department, 6th floor
70 Collier Street, P.O. Box 400
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L4M 4T5

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Fax: (705) 739-4243

E-mail: Tom.Reeve@barrie.ca

Thank you for your comments.

Grading and Water Management Issues

Northeast corner of Kierland Rd. & Marta Crescent

For Your Immediate Attention

Distribution List:

Mayor - Jeff Lehman

Ward Councilor – Steve Trotter

Environmental Engineering Technologist – Adam Hawboldt

Building Inspector – Michelle Macfarlane

Homeowners – 43 Marta Cres, 47 Marta Cres, 45 Kierland, 47 Kierland, 49 Kierland, 51 Kierland

Aviva Insurance

Grandview Homes

I would like to commend Adam Hawboldt and Michelle Macfarlane on the courteous and professional manner they have worked to resolve this issue. I took possession of a brand new home at 45 Marta Cres Barrie formerly lot # 9 Bear Creek on August 22 2013, from Bronco /Grandview homes. I began experiencing water issues that fall and spring which have become progressively worse over time and now are affecting my foundation, weepers and the property surrounding my home. I have in no way altered the city approved grading or swales around my home.

The excessive sump discharge from 47 Marta Crescent, along with surface water, rain from eaves trough and snow melt, began eroding and washing away the soil between my home and 47 Marta Cres. Large amounts of water began migrating and sitting against my poured walls and foundation and pooling between the two houses in the north west corner as well as flooding and soaking my back yard ten to fifteen feet off my rear north wall from the north west corner to the north east corner. The provided swale between these homes leading to a larger swale 50 feet away is ineffective as it is washed out and has large areas where water pools and stands for days,

The area between 45 and 47 Marta Crescent has progressed to a point over the last two summers where it is difficult now to navigate between the homes due to excessive erosion, deep mud, muck, and standing water. Areas of my back yard are now water soaked, with water sitting and pooling for periods of time. The grass is dead 5 -20 feet away from my rear wall into my back yard and a moss is now growing in this area which is an indicator of how wet conditions have become. Even with triple mix and seeding I have been unsuccessful in being able to grow grass.

Approved and engineered grading and swales have proven to be ineffective in successfully moving surface water and ground water from sump discharge and other sources. This approved grading and swale system is composed of two long swales designed to remove the water from 45-47-49-51 Kierland, 47-45-43-41 Marta, These swales have connecting swales from all above addresses. These long swales have eroded, been washed out, and are pooling water and causing water to be dispersed across peoples properties as the soil and material in these swales degrade.

After personal investigation and consultation from outside sources it is apparent in my estimation that the ground and surface water from 45-47 Kierland due to grading and an ineffective swale are traveling along the foundation walls and into the weepers and footings of 47 Marta Crescent. This water is then pumped out in sump discharge between 47 Marta and my home. Due to improper backfill used between these homes i.e. local organic materials instead of clay /sand material the soil between the homes and swales erode and washes away with water adversely affecting my home. My designed weepers and sump system then tries to compensate for this by discharging excess water via the sump out the east side with destructive consequences seen to the backfill and swale between my home and 43 Marta.

A visible moisture mark is present around my entire foundation at the frost level, see pictures, an unquestionable indicator of how wet my foundation walls have become. It has also become apparent that the foundation wrap around my house is completely covered by six inches to a foot of backfill rendering the protection to my house and the purpose of the wrap to protect my house ineffective. This in my estimation was an attempt to correct the grade issue off my foundation walls as also evidenced by the soil height and angle of backfill 45 degree half inch below and affecting the hanging central air conditioning unit hanging off the east wall. This issue is of consequence as this backfill placement causes ice to build up and place enough force on the a/c unit as to have almost ripped it off the house. This can be fixed I am informed at a cost of $600 by a contractor.

Please also note that during the construction of 47 Kierland contractors attempting to work between 47-45 Marta north west corner buried a construction Bobcat so deep in muck that they required a large loader /tractor owned by the masons to remove it. The process resulted in damage to my house which included replacing the concrete window sill stone work and a large section of down spout and the foundation wrap now no longer visible.

Since taking possession of this property I have payed approximately $20,000 in city taxes as well as a land transfer fee of $4300.I estimate the annual property taxes of the earlier stated houses to be $30,000 yearly translating to $120,000 in the last four years. I am the one whose house is being most adversely affected. This problem is and will continue to become worse as the swales are deteriorating and becoming more ineffective. This problem will become more compounded as owners begin placing fences down the center of these swales.

- May 8 2017 I went to Adam Hawboldt's office and spoke with staff who contacted him by phone. I was informed the area was not yet assumed but would be soon by Adam. I was told to send a detailed e-mail to Adam of which I did that day. I received an e-mail from Adam before leaving the parking lot of the works yard that he had been to my property and taken pictures. I was informed by E mail that all information had been forwarded to Michelle Macfarlane, C.E.T associate John Van Schubert, Jonie Wood, Chris Giannville. He surmised that an overactive sump pump and too steep of a slope were the causative agents.

- May 26 2017. Received an e mail from Michelle Macfarlane informing me that she had spoken with the builder and that a plumber would make an appointment to raise my sump pump. I proceeded to city hall and spoke with Michelle. I was also informed that the area had been approved for grading so no problem must exist. I politely informed her that my sump pump was doing its designed job and was not the problem. The obvious problem was excess water coming on my property. The sump and weepers were installed as per building code by professional plumbers meeting all provincial and city standards as per this development. I declined this work being done. I was informed that the builder had not yet received there deposit. This area she said was moving quickly compared to many other developments.

- June 2 2017 E-mail received from Adam informing me the subdivision had now been assumed and that the developer had a one year maintenance period.

- June 9 2017 E-mail from Adam informing me that the developer had received my e –mail and pictures. I then sent Adam and cc Michelle additional pictures and brought again attention to the severity and adverse effects to my property and house as well as information obtained independently as to the probable causes of my situation.

- July 7 2017 received an email from Michelle informing me to be patient as a site meeting was being organized to assess my concerns to be attended by City planning department, the developer, the engineering company, and the builder.

- Feb 22 2017 informed the Chinese national owner of 47 Kierland and Paul Macdonald (property manager) of Sutton group realty the designated rental representative of all concerns.

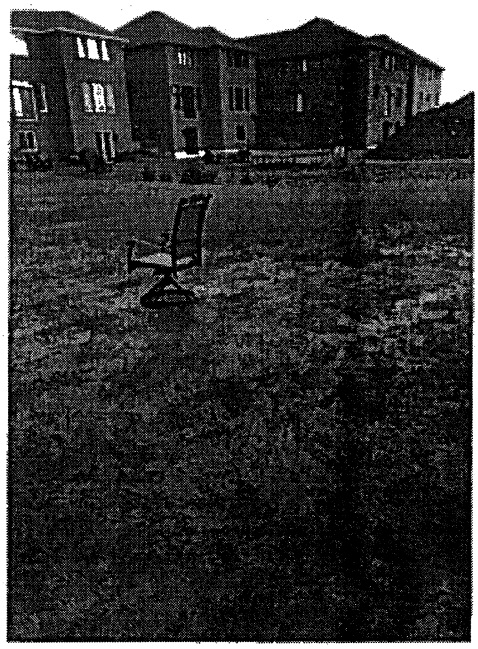
- March 2017 - had a professional estimate to correct issues .The owner of 47 Marta refused to be involved or pay his share despite visiting the property and inspecting damage to properties from these outlined issues.

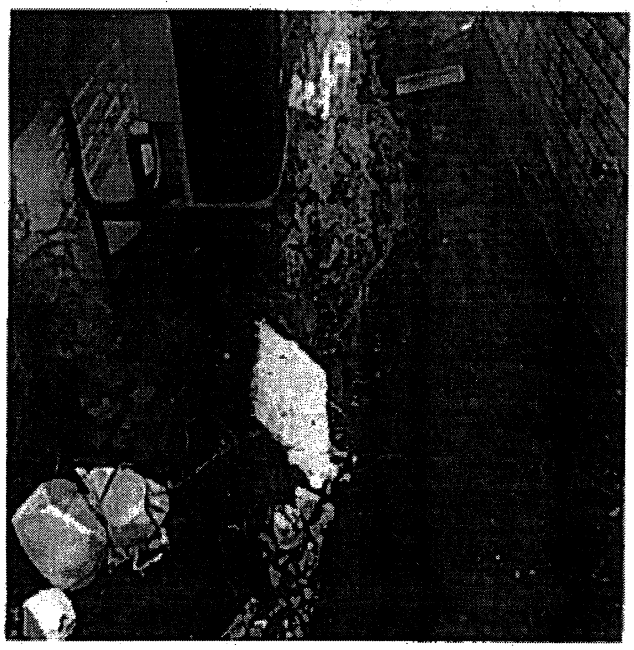
- April 22 2017 informed Grandview of this progressive and ongoing issue by e mail. I was informed that all grading **had been approved and that all water was moving away from my foundation and that this would be my responsibility.**

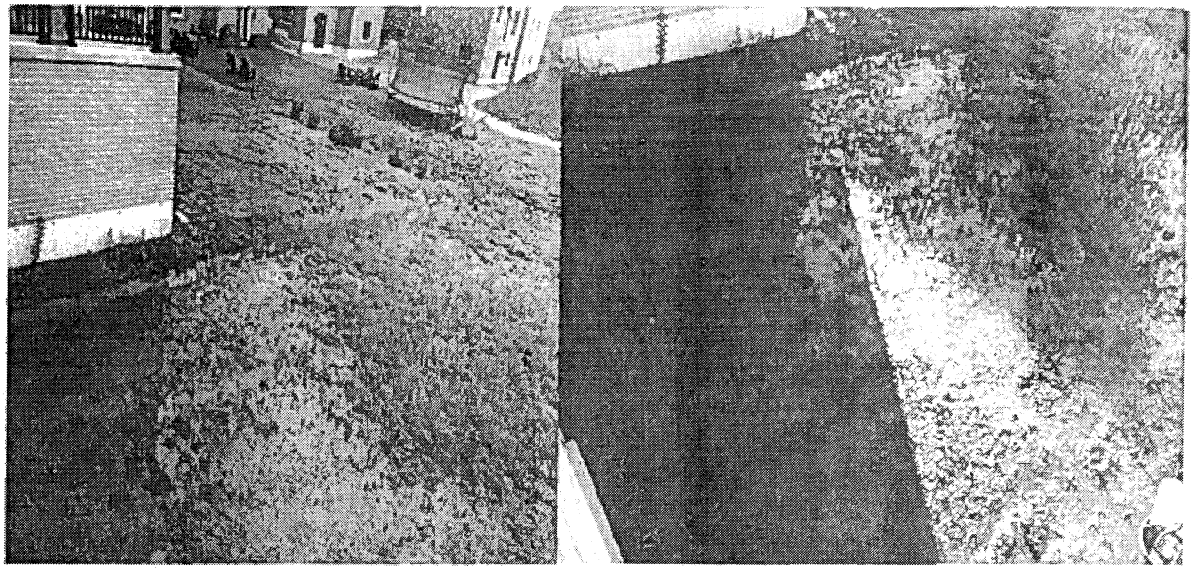
As you can plainly see from the information provided that this entire process has been frustrating to say the least and I implore all those that have received this document in a position of authority to do everything in their power to assist me and my neighbors in rectifying these crucial issues. I have spent too much time and I have lost too much sleep contemplating the long term effects of the progressive damage to my property. I have spent much time researching the causal factors involved and most importantly spent too much time playing email and phone tag on this issue with no positive results.

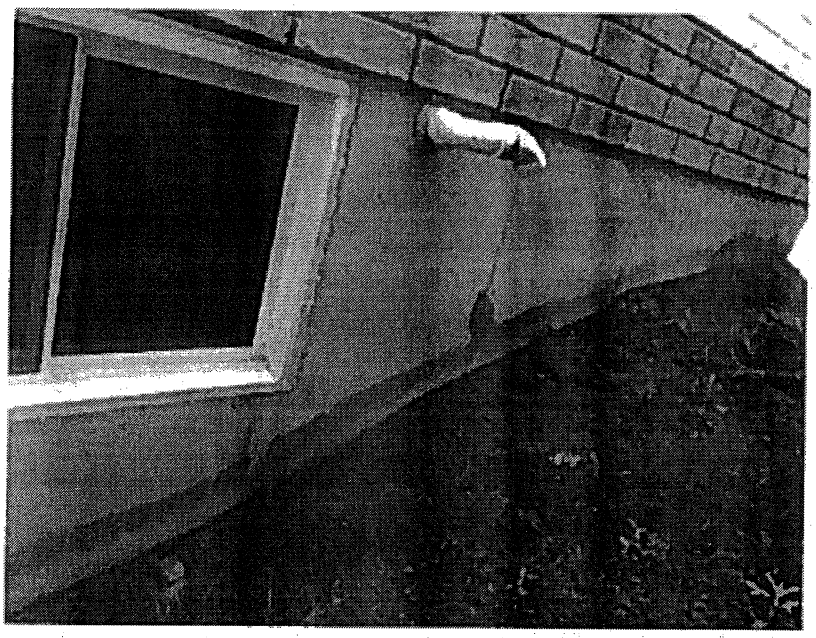
Secondarily, I have informed my insurance company of these challenges and they also will be receiving a copy of this document and all other relevant information.

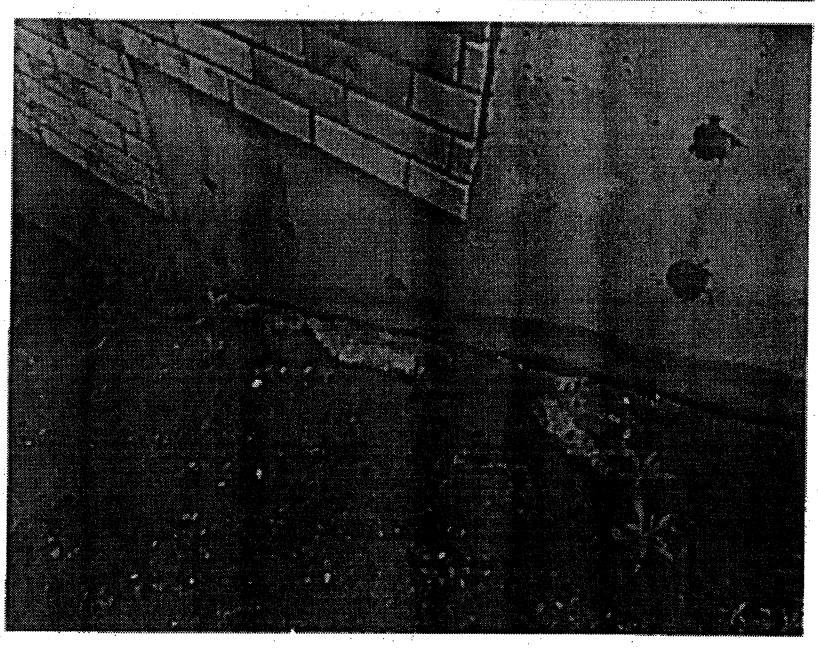
The following are pictures that back up the information presented earlier in this document:

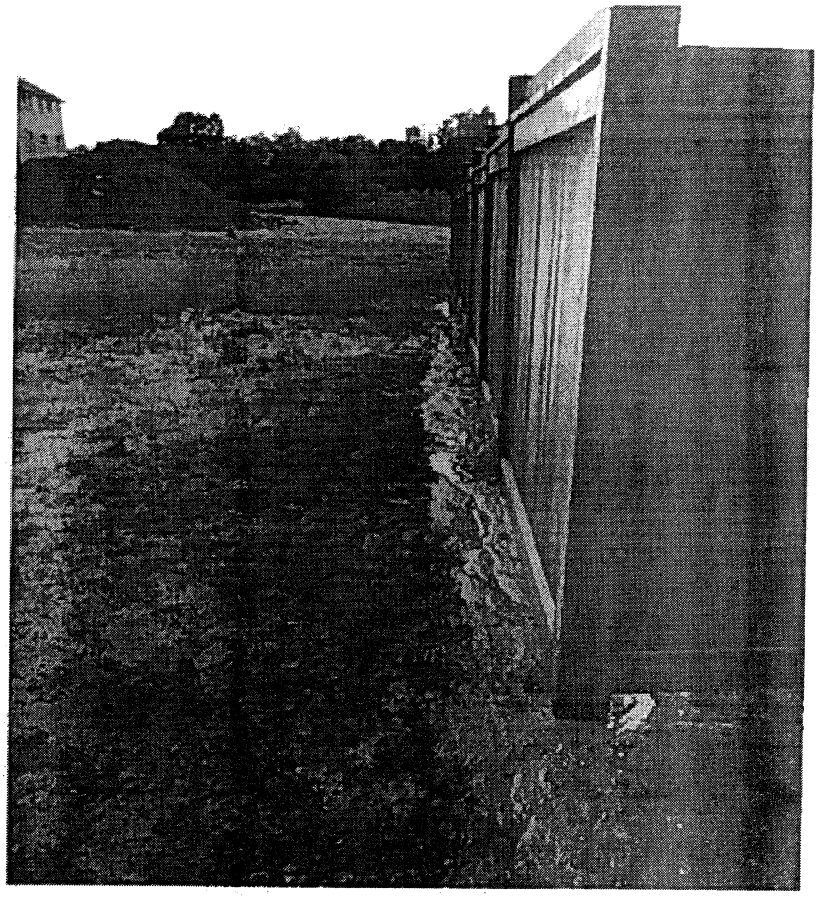


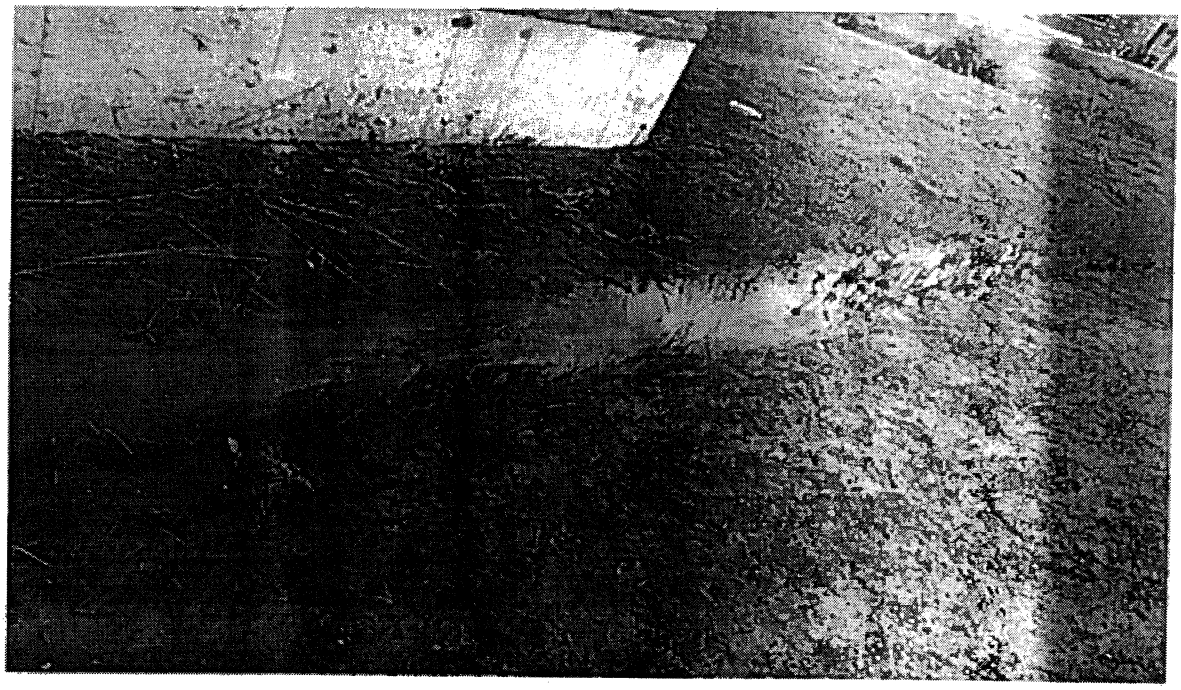












Barrie

(11)

DRAINAGE MASTER PLAN
MASTER PLANNING PROCESS (APPROACH #1) – PHASES 1 & 2

RECEIVED
NOV 03 2017
THE CITY OF BARRIE
ENGINEERING DEPARTMENT

Public Information Centre
Thursday, November 2, 2017
4:00 p.m. to 8:00 p.m.
Dorian Parker Center, 227 Sunnidale Road, Barrie

COMMENT SHEET

Personal information on this form is collected under the authority of the Environmental Assessment Act, Chap. E18, Section 7, and will be used in the development of a Drainage Master Plan. Questions about this collection should be directed to the Director of Engineering, P.O. Box 400, 70 Collier Street, Barrie, Ontario, L4M 4T5, (705) 726-4242.

Please print all responses.

NAME OF RESPONDENT:

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.): Property Owner

ADDRESS (Including Postal Code & Telephone Number):

Street Address: **Unit/Apt:**

Postal Code: **Telephone Number:**

Email Address:

How long have you lived at this property? 16 years

The Opportunity Statement, which sets the framework for this Master Plan study, is as follows:

> "Identify drainage deficiencies and recommend solutions to improve the storm drainage systems across the City of Barrie in consideration of impacts to the natural, social, physical, cultural and economic environments."

A PDF version of the Draft Drainage Master Plan for Public Information Centre #1 is available on the City of Barrie web page at the following link: www.barrie.ca/eastudies. A paper copy of the draft report is available for review at the following locations during regular business hours:

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Questions about Existing Flooding and Drainage Issues:

Circle the answers that apply and add further explanation below if required:

Are you aware of any creeks or City storm drainage systems (pipes, drains) on your property? **Yes / No**

Are there any problems with the creek or City storm drainage systems on your property? **Yes / No / Not applicable.**

Have you ever had storm drainage from a creek or City storm drainage system damage your property? **Yes / No**

Have you ever noticed flooding on your street or a major road? **Yes / No**

lease list below any specific drainage concerns you have, and expand on the answers provided above:

_____

_____

_____

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uestions about Proposed Alternative Solutions:

lease select which of the following alternatives you feel best addresses the drainage problems, and generates the greatest ositive impacts while producing the least negative impacts on the natural, physical, social, cultural, and economic environments. lease rate by recording either "1" (preferred) or "2" (not preferred) in each box.

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xisting Condition

☐ **Alternative 1A – "Do Nothing" Minor Drainage System / Alternative 1B – "Do Nothing" Major Drainage System**
The "Do Nothing" alternative allows for the consideration of not implementing any changes to the existing minor (storm pipes) or major (trunk sewers, creeks, overland flow routes) drainage system infrastructure within the study area. This alternative is being considered to provide a benchmark to gauge the natural, physical, social, cultural, and economic implications of the other alternatives.

low Reduction / Water Quality Improvements

☐ **Alternative 2A – Retrofit / New Storm Water Management Facilities (SWMF) for Quantity Control**
Retrofit, expand, and create new stormwater management facilities in the study area for the primary purpose of improving water quantity control, attenuate peak flows, and reduce downstream flooding. The improvements could have the secondary benefit of improving watershed water quality, promoting infiltration, and improving the water balance.

☐ **Alternative 2B – Retrofit / New SWMF for Quality Control**
Retrofit, expand, and create new stormwater management facilities in the study area to improve watershed water quality, promote infiltration, and improve the water balance. The improvements will have an insignificant impact on peak flows and downstream flooding.

☐ **Alternative 2C – Lot Level Low Impact Development (LID)**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. For this alternative, the City will promote the use of lot level LID measures on private property throughout the City through the use of rain barrels, construction of soakaway pits, and other LID features.

☐ **Alternative 2D – Linear LID**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. Linear LID measures are being considered by the City for construction under local roadways, as part of road reconstruction projects.

☐ **Alternative 2E – Centralized LID**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. Centralized LID measures are being considered for construction underground within existing parkland across the City.

Conveyance Capacity Improvements:

☐ **Alternative 3A – Culvert / Watercourse / Major Drainage System Improvements (1 in 25 year storm event, or Master Drainage Plan Recommendations)**
Culvert, watercourse, and major drainage system improvements to reduce flooding along each creek in the City of Barrie up to and including the 1 in 25 year storm event, or as previously recommended by the watersheds existing Master Drainage Plan.

☐ **Alternative 3B – Culvert / Watercourse / Major Drainage System Improvements (City Design Flood Frequency Criteria)**
Culvert, watercourse, and major drainage system improvements to reduce flooding along each creek in the City of Barrie up to and including either the 1 in 50 year storm event (for local and collector roads) or the 1 in 100 year storm event (for arterial roads) in accordance with the City's current flood frequency design criteria.

Please list below any concerns or comments you have related to any of the alternative solutions:

Please rate your satisfaction with the level of detail of the information presented herein at the Public Information Centre, and provided on the City website (www.barrie.ca/eastudies).

☐	☐	☐	☐	☐
Poor (Much Improvement Required)	**Marginal** (Some Improvement Required)	**Good**	**Very Good**	**Excellent**

Please add a comment in support of your level of satisfaction below:

Do you wish to be informed of future Public Information Centers for the Drainage Master Plan, and of staff recommendations for the Preferred Alternative Solution?

☐ Yes ☐ No

Signature:_____ Date: _____

Please submit this comment sheet by **Thursday, November 16, 2017** to:

Mr. Tom Reeve, P. Eng.
City of Barrie
Engineering Department, 6th floor
70 Collier Street, P.O. Box 400
Barrie, ON
L4M 4T5

Tel: (705) 739-4220 ext. 4465
Fax: (705) 739-4243

E-mail: Tom.Reeve@barrie.ca

Thank you for your comments.

Barrie

(12)

DRAINAGE MASTER PLAN
MASTER PLANNING PROCESS (APPROACH #1) – PHASES 1 & 2

RECEIVED
NOV 0 3 2017
THE CITY OF BARRIE
ENGINEERING DEPARTMENT

Public Information Centre
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ENGINEERING DEPARTMENT

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Please print all responses.

NAME OF RESPONDENT:

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

ADDRESS (Including Postal Code & Telephone Number):

Street Address: **Unit/Apt:**

Postal Code: **Telephone Number:**

Email Address:

How long have you lived at this property? 35+ years

The Opportunity Statement, which sets the framework for this Master Plan study, is as follows:

> "Identify drainage deficiencies and recommend solutions to improve the storm drainage systems across the City of Barrie in consideration of impacts to the natural, social, physical, cultural and economic environments."

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Questions about Existing Flooding and Drainage Issues:

Circle the answers that apply and add further explanation below if required:

Are you aware of any creeks or City storm drainage systems (pipes, drains) on your property? **Yes / No**

Are there any problems with the creek or City storm drainage systems on your property? **Yes / No / Not applicable.**

Have you ever had storm drainage from a creek or City storm drainage system damage your property? **Yes / No**

Have you ever noticed flooding on your street or a major road? **Yes / No**

Please list below any specific drainage concerns you have, and expand on the answers provided above:

- OPEN BOX CULVERT ABUTTING PROPERTY BETWEEN 220/222 KEMPVIEW LANE - REQUIRES MAINTENANCE REGULAR
- ROAD FLOODING ON KEMPVIEW LANE

Questions about Proposed Alternative Solutions:

Please select which of the following alternatives you feel best addresses the drainage problems, and generates the greatest positive impacts while producing the least negative impacts on the natural, physical, social, cultural, and economic environments. Please rate by recording either "1" (preferred) or "2" (not preferred) in each box.

Please note that each of the alternatives listed below on their own will **not** resolve all the drainage issues within the City of Barrie. The alternative drainage solutions will be evaluated and a preferred alternative will be developed after the Public Information Centre in consideration of the feedback received on these comment sheets, and as part of the Public Information Centre process.

Existing Condition

☐ **Alternative 1A – "Do Nothing" Minor Drainage System / Alternative 1B – "Do Nothing" Major Drainage System**
The "Do Nothing" alternative allows for the consideration of not implementing any changes to the existing minor (storm pipes) or major (trunk sewers, creeks, overland flow routes) drainage system infrastructure within the study area. This alternative is being considered to provide a benchmark to gauge the natural, physical, social, cultural, and economic implications of the other alternatives.

Flow Reduction / Water Quality Improvements

☐ **Alternative 2A – Retrofit / New Storm Water Management Facilities (SWMF) for Quantity Control**
Retrofit, expand, and create new stormwater management facilities in the study area for the primary purpose of improving water quantity control, attenuate peak flows, and reduce downstream flooding. The improvements could have the secondary benefit of improving watershed water quality, promoting infiltration, and improving the water balance.

☐ **Alternative 2B – Retrofit / New SWMF for Quality Control**
Retrofit, expand, and create new stormwater management facilities in the study area to improve watershed water quality, promote infiltration, and improve the water balance. The improvements will have an insignificant impact on peak flows and downstream flooding.

☐ **Alternative 2C – Lot Level Low Impact Development (LID)**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. For this alternative, the City will promote the use of lot level LID measures on private property throughout the City through the use of rain barrels, construction of soakaway pits, and other LID features.

☐ **Alternative 2D – Linear LID**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. Linear LID measures are being considered by the City for construction under local roadways, as part of road reconstruction projects.

☐ **Alternative 2E – Centralized LID**
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Conveyance Capacity Improvements:

☐ **Alternative 3A – Culvert / Watercourse / Major Drainage System Improvements (1 in 25 year storm event, or Master Drainage Plan Recommendations)**
Culvert, watercourse, and major drainage system improvements to reduce flooding along each creek in the City of Barrie up to and including the 1 in 25 year storm event, or as previously recommended by the watersheds existing Master Drainage Plan.

☒ **Alternative 3B – Culvert / Watercourse / Major Drainage System Improvements (City Design Flood Frequency Criteria)**
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Please list below any concerns or comments you have related to any of the alternative solutions:

Please rate your satisfaction with the level of detail of the information presented herein at the Public Information Centre, and provided on the City website (www.barrie.ca/eastudies).

☐	☐	☐	☑	☐
Poor (Much Improvement Required)	**Marginal** (Some Improvement Required)	**Good**	**Very Good**	**Excellent**

Please add a comment in support of your level of satisfaction below:

Do you wish to be informed of future Public Information Centers for the Drainage Master Plan, and of staff recommendations for the Preferred Alternative Solution?

☑ Yes ☐ No

Signature: _____ Date: NOV.02/17

Please submit this comment sheet by **Thursday, November 16, 2017** to:

Mr. Tom Reeve, P. Eng.
City of Barrie
Engineering Department, 6th floor
70 Collier Street, P.O. Box 400
Barrie, ON
L4M 4T5

Tel: (705) 739-4220 ext. 4465
Fax: (705) 739-4243

E-mail: Tom.Reeve@barrie.ca

Thank you for your comments.

Barrie

13

DRAINAGE MASTER PLAN
MASTER PLANNING PROCESS (APPROACH #1) – PHASES 1 & 2

Public Information Centre
Thursday, November 2, 2017
4:00 p.m. to 8:00 p.m.
Dorian Parker Center, 227 Sunnidale Road, Barrie

RECEIVED
NOV 0 3 2017
THE CITY OF BARRIE
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COMMENT SHEET

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Please print all responses.

NAME OF RESPONDENT:

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.): Property Owners

ADDRESS (Including Postal Code & Telephone Number):

Street Address: **Unit/Apt:**

Postal Code: **Telephone Number:**

Email Address:

How long have you lived at this property? purchased in 1968 by parents

The Opportunity Statement, which sets the framework for this Master Plan study, is as follows:

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Questions about Existing Flooding and Drainage Issues:

Circle the answers that apply and add further explanation below if required:

Are you aware of any creeks or City storm drainage systems (pipes, drains) on your property? **Yes / (No)**

Are there any problems with the creek or City storm drainage systems on your property? **Yes / No / Not applicable.**

Have you ever had storm drainage from a creek or City storm drainage system damage your property? **Yes / No**

Have you ever noticed flooding on your street or a major road? **(Yes) / No**

Please list below any specific drainage concerns you have, and expand on the answers provided above:

Major concern with flooding on Kempview Lane at property 216. This property, 216 Kempview Lane, is often a "wet hole" due to water accumulation on the road as well as water run-off from neighbouring properties. Caused by new constructions and raising their individual, over-all property levels.

Questions about Proposed Alternative Solutions:

Please select which of the following alternatives you feel best addresses the drainage problems, and generates the greatest positive impacts while producing the least negative impacts on the natural, physical, social, cultural, and economic environments. Please rate by recording either "1" (preferred) or "2" (not preferred) in each box.

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Existing Condition

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Flow Reduction / Water Quality Improvements

☐ **Alternative 2A – Retrofit / New Storm Water Management Facilities (SWMF) for Quantity Control**
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Please list below any concerns or comments you have related to any of the alternative solutions:

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☐	☐	☐	☐	☐
Poor (Much Improvement Required)	**Marginal** (Some Improvement Required)	**Good**	**Very Good**	**Excellent**

Please add a comment in support of your level of satisfaction below:

Do you wish to be informed of future Public Information Centers for the Drainage Master Plan, and of staff recommendations for the Preferred Alternative Solution?

☑ Yes ☐ No

Signature: [redacted] Date: Nov. 2, 2017

Please submit this comment sheet by **Thursday, November 16, 2017** to:

Mr. Tom Reeve, P. Eng.
City of Barrie
Engineering Department, 6th floor
70 Collier Street, P.O. Box 400
Barrie, ON
L4M 4T5

Tel: (705) 739-4220 ext. 4465
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E-mail: Tom.Reeve@barrie.ca

Thank you for your comments.

Barrie

(14)

DRAINAGE MASTER PLAN
MASTER PLANNING PROCESS (APPROACH #1) – PHASES 1 & 2

RECEIVED
NOV 03 2017
THE CITY OF BARRIE
ENGINEERING DEPARTMENT

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Thursday, November 2, 2017
4:00 p.m. to 8:00 p.m.
Dorian Parker Center, 227 Sunnidale Road, Barrie

Copied from sign in sheet

COMMENT SHEET

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NAME OF RESPONDENT:

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

ADDRESS (Including Postal Code & Telephone Number):

Street Address: **Unit/Apt:**

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How long have you lived at this property?

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Questions about Existing Flooding and Drainage Issues:

Circle the answers that apply and add further explanation below if required:

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Are there any problems with the creek or City storm drainage systems on your property? **Yes / No / Not applicable.**

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low Reduction / Water Quality Improvements

2 **Alternative 2A – Retrofit / New Storm Water Management Facilities (SWMF) for Quantity Control**
Retrofit, expand, and create new stormwater management facilities in the study area for the primary purpose of improving water quantity control, attenuate peak flows, and reduce downstream flooding. The improvements could have the secondary benefit of improving watershed water quality, promoting infiltration, and improving the water balance.

1 **Alternative 2B – Retrofit / New SWMF for Quality Control**
Retrofit, expand, and create new stormwater management facilities in the study area to improve watershed water quality, promote infiltration, and improve the water balance. The improvements will have an insignificant impact on peak flows and downstream flooding.

X **Alternative 2C – Lot Level Low Impact Development (LID)**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. For this alternative, the City will promote the use of lot level LID measures on private property throughout the City through the use of rain barrels, construction of soakaway pits, and other LID features.

SEE NOTE

X **Alternative 2D – Linear LID**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. Linear LID measures are being considered by the City for construction under local roadways, as part of road reconstruction projects.

SEE NOTE

X **Alternative 2E – Centralized LID**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. Centralized LID measures are being considered for construction underground within existing parkland across the City.

SEE NOTE

Conveyance Capacity Improvements:

☐ **Alternative 3A – Culvert / Watercourse / Major Drainage System Improvements (1 in 25 year storm event, or Master Drainage Plan Recommendations)**
Culvert, watercourse, and major drainage system improvements to reduce flooding along each creek in the City of Barrie up to and including the 1 in 25 year storm event, or as previously recommended by the watersheds existing Master Drainage Plan.

☐ **Alternative 3B – Culvert / Watercourse / Major Drainage System Improvements (City Design Flood Frequency Criteria)**
Culvert, watercourse, and major drainage system improvements to reduce flooding along each creek in the City of Barrie up to and including either the 1 in 50 year storm event (for local and collector roads) or the 1 in 100 year storm event (for arterial roads) in accordance with the City's current flood frequency design criteria.

Please list below any concerns or comments you have related to any of the alternative solutions:

2C - ADD TREE PLANTING

2D + 2E - Consider high impact LID registry, to be impactful long term the LID's will need to be monitored.

- Storm drainage with sediment catch basins should be up graded, wher road construction is identified. ↓ to current specifications

⊛ Stormwater retention ponds & where wetland features & native vegitation allows for a natural environment is always a pleasant alternative

⊛ re opening natural water channels that have been burried

Thank-you for Keeping us informed

Please rate your satisfaction with the level of detail of the information presented herein at the Public Information Centre, and provided on the City website (www.barrie.ca/eastudies).

☐	☐	☐	☒	☐
Poor (Much Improvement Required)	**Marginal** (Some Improvement Required)	**Good**	**Very Good**	**Excellent**

Please add a comment in support of your level of satisfaction below:

Do you wish to be informed of future Public Information Centers for the Drainage Master Plan, and of staff recommendations for the Preferred Alternative Solution?

☑ Yes ☐ No

Signature: _____ Date: Nov 2, 2017

Please submit this comment sheet by **Thursday, November 16, 2017** to:

Mr. Tom Reeve, P. Eng.
City of Barrie
Engineering Department, 6th floor
70 Collier Street, P.O. Box 400
Barrie, ON
L4M 4T5

Tel: (705) 739-4220 ext. 4465
Fax: (705) 739-4243

E-mail: Tom.Reeve@barrie.ca

Thank you for your comments.

Barrie

15

DRAINAGE MASTER PLAN
MASTER PLANNING PROCESS (APPROACH #1) – PHASES 1 & 2

Public Information Centre
Thursday, November 2, 2017
4:00 p.m. to 8:00 p.m.
Dorian Parker Center, 227 Sunnidale Road, Barrie

RECEIVED
NOV 0 3 2017
THE CITY OF BARRIE
ENGINEERING DEPARTMENT

COMMENT SHEET

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Please print all responses.

NAME OF RESPONDENT:

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

ADDRESS (Including Postal Code & Telephone Number):

Street Address: **Unit/Apt:**

Postal Code: **Telephone Number:**

Email Address:

How long have you lived at this property? 4 yrs

The Opportunity Statement, which sets the framework for this Master Plan study, is as follows:

> "Identify drainage deficiencies and recommend solutions to improve the storm drainage systems across the City of Barrie in consideration of impacts to the natural, social, physical, cultural and economic environments."

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City of Barrie
Legislative Services Branch
City Hall, 1st Floor
70 Collier Street
Barrie, ON L4M 4T5

City of Barrie
Engineering
City Hall, 6th Floor
70 Collier Street
Barrie, ON L4M 4T5

Barrie Public Library
Downtown Branch
Information Desk
60 Worsley Street
Barrie, ON L4M 1L6

Barrie Public Library
Painswick Branch
Information Desk
48 Dean Avenue
Barrie, ON L4N 0C2

Questions about Existing Flooding and Drainage Issues:

Circle the answers that apply and add further explanation below if required:

Are you aware of any creeks or City storm drainage systems (pipes, drains) on your property? Yes / (No) There are none should be.

Are there any problems with the creek or City storm drainage systems on your property? (Yes) / No / (Not applicable.)

Have you ever had storm drainage from a creek or City storm drainage system damage your property? (Yes) / No No pipes. Erosion.

Have you ever noticed flooding on your street or a major road? (Yes) / No

Please list below any specific drainage concerns you have, and expand on the answers provided above:

No drainage on entire section of street. Flooding from neighbooring homes (sompp pumps) flooding between houses & eroding grass sod & soil. Flooding in backyards. Sitting water on curbsides on Marta Street. Need proper drainage "pipes" to stop erosion & flooding between houses & in back yard.

Questions about Proposed Alternative Solutions:

Please select which of the following alternatives you feel best addresses the drainage problems, and generates the greatest positive impacts while producing the least negative impacts on the natural, physical, social, cultural, and economic environments. Please rate by recording either "1" (preferred) or "2" (not preferred) in each box.

Please note that each of the alternatives listed below on their own will **not** resolve all the drainage issues within the City of Barrie. The alternative drainage solutions will be evaluated and a preferred alternative will be developed after the Public Information Centre in consideration of the feedback received on these comment sheets, and as part of the Public Information Centre process.

Existing Condition

☐ **Alternative 1A – "Do Nothing" Minor Drainage System / Alternative 1B – "Do Nothing" Major Drainage System**
The "Do Nothing" alternative allows for the consideration of not implementing any changes to the existing minor (storm pipes) or major (trunk sewers, creeks, overland flow routes) drainage system infrastructure within the study area. This alternative is being considered to provide a benchmark to gauge the natural, physical, social, cultural, and economic implications of the other alternatives.

Flow Reduction / Water Quality Improvements

☐ **Alternative 2A – Retrofit / New Storm Water Management Facilities (SWMF) for Quantity Control**
Retrofit, expand, and create new stormwater management facilities in the study area for the primary purpose of improving water quantity control, attenuate peak flows, and reduce downstream flooding. The improvements could have the secondary benefit of improving watershed water quality, promoting infiltration, and improving the water balance.

☐ **Alternative 2B – Retrofit / New SWMF for Quality Control**
Retrofit, expand, and create new stormwater management facilities in the study area to improve watershed water quality, promote infiltration, and improve the water balance. The improvements will have an insignificant impact on peak flows and downstream flooding.

☐ **Alternative 2C – Lot Level Low Impact Development (LID)**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. For this alternative, the City will promote the use of lot level LID measures on private property throughout the City through the use of rain barrels, construction of soakaway pits, and other LID features.

☐ **Alternative 2D – Linear LID**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. Linear LID measures are being considered by the City for construction under local roadways, as part of road reconstruction projects.

☐ **Alternative 2E – Centralized LID**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. Centralized LID measures are being considered for construction underground within existing parkland across the City.

I'm not sure any solution listed here would fix the issue.

Conveyance Capacity Improvements:

☐ **Alternative 3A – Culvert / Watercourse / Major Drainage System Improvements (1 in 25 year storm event, or Master Drainage Plan Recommendations)**
Culvert, watercourse, and major drainage system improvements to reduce flooding along each creek in the City of Barrie up to and including the 1 in 25 year storm event, or as previously recommended by the watersheds existing Master Drainage Plan.

☐ **Alternative 3B – Culvert / Watercourse / Major Drainage System Improvements (City Design Flood Frequency Criteria)**
Culvert, watercourse, and major drainage system improvements to reduce flooding along each creek in the City of Barrie up to and including either the 1 in 50 year storm event (for local and collector roads) or the 1 in 100 year storm event (for arterial roads) in accordance with the City's current flood frequency design criteria.

Please list below any concerns or comments you have related to any of the alternative solutions:

Please rate your satisfaction with the level of detail of the information presented herein at the Public Information Centre, and provided on the City website (www.barrie.ca/eastudies).

☐	☐	☐	☑	☐
Poor (Much Improvement Required)	**Marginal** (Some Improvement Required)	**Good**	**Very Good**	**Excellent**

Please add a comment in support of your level of satisfaction below:

Do you wish to be informed of future Public Information Centers for the Drainage Master Plan, and of staff recommendations for the Preferred Alternative Solution?

☑ Yes ☐ No

Signature: _____ Date: Nov 2, 2017

Please submit this comment sheet by **Thursday, November 16, 2017** to:

Mr. Tom Reeve, P. Eng.
City of Barrie
Engineering Department, 6th floor
70 Collier Street, P.O. Box 400
Barrie, ON
L4M 4T5

Tel: (705) 739-4220 ext. 4465
Fax: (705) 739-4243

E-mail: Tom.Reeve@barrie.ca

Thank you for your comments.

Barrie

16

DRAINAGE MASTER PLAN
MASTER PLANNING PROCESS (APPROACH #1) – PHASES 1 & 2

Public Information Centre
Thursday, November 2, 2017
4:00 p.m. to 8:00 p.m.
Dorian Parker Center, 227 Sunnidale Road, Barrie

RECEIVED
NOV 0 3 2017
THE CITY OF BARRIE
ENGINEERING DEPARTMENT

COMMENT SHEET

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Please print all responses.

NAME OF RESPONDENT:

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

ADDRESS (Including Postal Code & Telephone Number):

Street Address: **Unit/Apt:**

Postal Code: **Telephone Number:**

Email Address:

How long have you lived at this property? 26 yrs.

The Opportunity Statement, which sets the framework for this Master Plan study, is as follows:

> "Identify drainage deficiencies and recommend solutions to improve the storm drainage systems across the City of Barrie in consideration of impacts to the natural, social, physical, cultural and economic environments."

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Questions about Existing Flooding and Drainage Issues:

Circle the answers that apply and add further explanation below if required:

Are you aware of any creeks or City storm drainage systems (pipes, drains) on your property? **Yes / No**

Are there any problems with the creek or City storm drainage systems on your property? **Yes / No / Not applicable.**

Have you ever had storm drainage from a creek or City storm drainage system damage your property? **Yes / No**

Have you ever noticed flooding on your street or a major road? **Yes / No**

Please list below any specific drainage concerns you have, and expand on the answers provided above:

the creek bed is eroding

Questions about Proposed Alternative Solutions:

Please select which of the following alternatives you feel best addresses the drainage problems, and generates the greatest positive impacts while producing the least negative impacts on the natural, physical, social, cultural, and economic environments. Please rate by recording either "1" (preferred) or "2" (not preferred) in each box.

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Existing Condition

☐ **Alternative 1A – "Do Nothing" Minor Drainage System / Alternative 1B – "Do Nothing" Major Drainage System**
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Flow Reduction / Water Quality Improvements

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LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. For this alternative, the City will promote the use of lot level LID measures on private property throughout the City through the use of rain barrels, construction of soakaway pits, and other LID features.

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LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. Linear LID measures are being considered by the City for construction under local roadways, as part of road reconstruction projects.

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nveyance Capacity Improvements:

☒ **Alternative 3A – Culvert / Watercourse / Major Drainage System Improvements (1 in 25 year storm event, or Master Drainage Plan Recommendations)**
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Please list below any concerns or comments you have related to any of the alternative solutions:

Please visit the property to see the erosion

Please rate your satisfaction with the level of detail of the information presented herein at the Public Information Centre, and provided on the City website (www.barrie.ca/eastudies).

☐	☐	☑	☐	☐
Poor (Much Improvement Required)	**Marginal** (Some Improvement Required)	**Good**	**Very Good**	**Excellent**

Please add a comment in support of your level of satisfaction below:

Do you wish to be informed of future Public Information Centers for the Drainage Master Plan, and of staff recommendations for the Preferred Alternative Solution?

☒ Yes ☐ No

Signature: _____ Date: Nov 2 2017

Please submit this comment sheet by **Thursday, November 16, 2017** to:

Mr. Tom Reeve, P. Eng.
City of Barrie
Engineering Department, 6th floor
70 Collier Street, P.O. Box 400
Barrie, ON
L4M 4T5

Tel: (705) 739-4220 ext. 4465
Fax: (705) 739-4243

E-mail: Tom.Reeve@barrie.ca

Thank you for your comments.

Barrie

(17)

DRAINAGE MASTER PLAN
MASTER PLANNING PROCESS (APPROACH #1) – PHASES 1 & 2

Public Information Centre
Thursday, November 2, 2017
4:00 p.m. to 8:00 p.m.
Dorian Parker Center, 227 Sunnidale Road, Barrie

RECEIVED
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Please print all responses.

NAME OF RESPONDENT:

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.): Property Owner

ADDRESS (Including Postal Code & Telephone Number):

Street Address: **Unit/Apt:**

Postal Code: **Telephone Number:**

Email Address:

How long have you lived at this property? 10+ yrs.

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Questions about Existing Flooding and Drainage Issues:

Circle the answers that apply and add further explanation below if required:

Are you aware of any creeks or City storm drainage systems (pipes, drains) on your property? **(Yes) / No**

Are there any problems with the creek or City storm drainage systems on your property? **(Yes) / No / Not applicable.**

Have you ever had storm drainage from a creek or City storm drainage system damage your property? **(Yes) / No**

Have you ever noticed flooding on your street or a major road? **(Yes) / No**

Please list below any specific drainage concerns you have, and expand on the answers provided above:

Spring Flooding / Lake Simcoe water levels rise causing flooding through storm sewer at end of my driveway. Causes significant flooding of the road which creeks up my driveway & on Fort Lgun. Many Vehicles race through the Puddle causing further flooding, erosion & aggravation.

Questions about Proposed Alternative Solutions:

Please select which of the following alternatives you feel best addresses the drainage problems, and generates the greatest positive impacts while producing the least negative impacts on the natural, physical, social, cultural, and economic environments. Please rate by recording either "1" (preferred) or "2" (not preferred) in each box.

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Please list below any concerns or comments you have related to any of the alternative solutions:

For my neighbourhood, I realize the issue is Lake Simcoe water levels. Since development has already been approved & completed throughout the watershed, I believe through better management of high water levels should be practical. This past year was an example of very high & very long period of flooding. But flooding happens every year to some degree in the Spring.

I.e. h. Simcoe levels will not be maintained at a maximum level that prevents this kind of flooding. Why was Minets Point ever allowed to be developed into roadways & residential dwellings?

Please come fix the cracked curb, pot holes & heaving interlocking stones that have shifted in our driveways as a result of this repeated & prolonged flooding...

I am open to hearing proposed solutions to the Minets Point problem.

Please rate your satisfaction with the level of detail of the information presented herein at the Public Information Centre, and provided on the City website (www.barrie.ca/eastudies).

☐	☐	☐	☐	☐
Poor (Much Improvement Required)	**Marginal** (Some Improvement Required)	**Good**	**Very Good**	**Excellent**

Please add a comment in support of your level of satisfaction below:

Do you wish to be informed of future Public Information Centers for the Drainage Master Plan, and of staff recommendations for the Preferred Alternative Solution?

☑ Yes ☐ No

Signature:___ Date: October 28/17

Please submit this comment sheet by **Thursday, November 16, 2017** to:

Mr. Tom Reeve, P. Eng.
City of Barrie
Engineering Department, 6th floor
70 Collier Street, P.O. Box 400
Barrie, ON
L4M 4T5

Tel: (705) 739-4220 ext. 4465
Fax: (705) 739-4243

E-mail: Tom.Reeve@barrie.ca

Thank you for your comments.

Barrie

DRAINAGE MASTER PLAN
MASTER PLANNING PROCESS (APPROACH #1) – PHASES 1 & 2

Public Information Centre
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COMMENT SHEET

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Please print all responses.

NAME OF RESPONDENT:

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

ADDRESS (Including Postal Code & Telephone Number):

Street Address: **Unit/Apt:**

Postal Code: **Telephone Number:**

Email Address:

How long have you lived at this property? 14 Years.

The Opportunity Statement, which sets the framework for this Master Plan study, is as follows:

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Questions about Existing Flooding and Drainage Issues:

Circle the answers that apply and add further explanation below if required:

Are you aware of any creeks or City storm drainage systems (pipes, drains) on your property? (Yes) / No

Are there any problems with the creek or City storm drainage systems on your property? (Yes) / No / Not applicable.

Have you ever had storm drainage from a creek or City storm drainage system damage your property? (Yes) / No

Have you ever noticed flooding on your street or a major road? (Yes) / No

ENGINEERING DEPARTMENT

File: D27-ST

Drainage Master Plan

November 2, 2017

Please list below any specific drainage concerns you have, and expand on the answers provided above:

STREET Floods Regularly during heavy RAINS / which Causes My yard to Flood as well as my garage. My home was built 1 Foot below the water table so the Basement Floods (I have 2 sump-pumps)

Questions about Proposed Alternative Solutions:

Please select which of the following alternatives you feel best addresses the drainage problems, and generates the greatest positive impacts while producing the least negative impacts on the natural, physical, social, cultural, and economic environments. Please rate by recording either "1" (preferred) or "2" (not preferred) in each box.

Please note that each of the alternatives listed below on their own will **not** resolve all the drainage issues within the City of Barrie. The alternative drainage solutions will be evaluated and a preferred alternative will be developed after the Public Information Centre in consideration of the feedback received on these comment sheets, and as part of the Public Information Centre process.

Existing Condition

2 **Alternative 1A – "Do Nothing" Minor Drainage System / Alternative 1B – "Do Nothing" Major Drainage System**
The "Do Nothing" alternative allows for the consideration of not implementing any changes to the existing minor (storm pipes) or major (trunk sewers, creeks, overland flow routes) drainage system infrastructure within the study area. This alternative is being considered to provide a benchmark to gauge the natural, physical, social, cultural, and economic implications of the other alternatives.

Flow Reduction / Water Quality Improvements

1 **Alternative 2A – Retrofit / New Storm Water Management Facilities (SWMF) for Quantity Control**
Retrofit, expand, and create new stormwater management facilities in the study area for the primary purpose of improving water quantity control, attenuate peak flows, and reduce downstream flooding. The improvements could have the secondary benefit of improving watershed water quality, promoting infiltration, and improving the water balance.

2 **Alternative 2B – Retrofit / New SWMF for Quality Control**
Retrofit, expand, and create new stormwater management facilities in the study area to improve watershed water quality, promote infiltration, and improve the water balance. The improvements will have an insignificant impact on peak flows and downstream flooding.

2 **Alternative 2C – Lot Level Low Impact Development (LID)**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. For this alternative, the City will promote the use of lot level LID measures on private property throughout the City through the use of rain barrels, construction of soakaway pits, and other LID features.

2 **Alternative 2D – Linear LID**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. Linear LID measures are being considered by the City for construction under local roadways, as part of road reconstruction projects.

2 **Alternative 2E – Centralized LID**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. Centralized LID measures are being considered for construction underground within existing parkland across the City.

ENGINEERING DEPARTMENT

File: D27-ST

Drainage Master Plan

Novombor 2, 2017

Conveyance Capacity Improvements:

☑ **Alternative 3A – Culvert / Watercourse / Major Drainage System Improvements (1 in 25 year storm event, or Master Drainage Plan Recommendations)**
Culvert, watercourse, and major drainage system improvements to reduce flooding along each creek in the City of Barrie up to and including the 1 in 25 year storm event, or as previously recommended by the watersheds existing Master Drainage Plan.

☑ **Alternative 3B – Culvert / Watercourse / Major Drainage System Improvements (City Design Flood Frequency Criteria)**
Culvert, watercourse, and major drainage system improvements to reduce flooding along each creek in the City of Barrie up to and including either the 1 in 50 year storm event (for local and collector roads) or the 1 in 100 year storm event (for arterial roads) in accordance with the City's current flood frequency design criteria.

Please list below any concerns or comments you have related to any of the alternative solutions:

I would like to know what restrictions are on my property for future Home improvements or the future Sale of my Land and home.

ENGINEERING DEPARTMENT

File: D27-ST

Drainage Master Plan

November 2, 2017

Please rate your satisfaction with the level of detail of the information presented herein at the Public Information Centre, and provided on the City website (www.barrie.ca/eastudies).

☐	☑	☐	☐	☐
Poor (Much Improvement Required)	**Marginal** (Some Improvement Required)	**Good**	**Very Good**	**Excellent**

Please add a comment in support of your level of satisfaction below:

More communication for residents like myself who have a creek running through there yard.

Do you wish to be informed of future Public Information Centers for the Drainage Master Plan, and of staff recommendations for the Preferred Alternative Solution?

☑ Yes ☐ No

Signature: _____ Date: Nov 2/2017.

Please submit this comment sheet by **Thursday, November 16, 2017** to:

Mr. Tom Reeve, P. Eng. City of Barrie Engineering Department, 6th floor 70 Collier Street, P.O. Box 400 Barrie, ON L4M 4T5	Tel: (705) 739-4220 ext. 4465 Fax: (705) 739-4243 E-mail: Tom.Reeve@barrie.ca

Thank you for your comments.

Barrie

DRAINAGE MASTER PLAN
MASTER PLANNING PROCESS (APPROACH #1) – PHASES 1 & 2

Public Information Centre
Thursday, November 2, 2017
4:00 p.m. to 8:00 p.m.
Dorian Parker Center, 227 Sunnidale Road, Barrie

COMMENT SHEET

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Please print all responses.

NAME OF RESPONDENT:

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

ADDRESS (Including Postal Code & Telephone Number):

Street Address: **Unit/Apt:**

Postal Code: **Telephone Number:**

Email Address:

How long have you lived at this property?

The Opportunity Statement, which sets the framework for this Master Plan study, is as follows:

> "Identify drainage deficiencies and recommend solutions to improve the storm drainage systems across the City of Barrie in consideration of impacts to the natural, social, physical, cultural and economic environments."

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Questions about Existing Flooding and Drainage Issues:

Circle the answers that apply and add further explanation below if required:

Are you aware of any creeks or City storm drainage systems (pipes, drains) on your property? **Yes / No**

Are there any problems with the creek or City storm drainage systems on your property? **Yes / No / Not applicable.**

Have you ever had storm drainage from a creek or City storm drainage system damage your property? **Yes / No**

Have you ever noticed flooding on your street or a major road? **Yes / No**

Please list below any specific drainage concerns you have, and expand on the answers provided above:

_____

_____

_____

_____

Questions about Proposed Alternative Solutions:

Please select which of the following alternatives you feel best addresses the drainage problems, and generates the greatest positive impacts while producing the least negative impacts on the natural, physical, social, cultural, and economic environments. Please rate by recording either "1" (preferred) or "2" (not preferred) in each box.

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Existing Condition

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Flow Reduction / Water Quality Improvements

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LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. For this alternative, the City will promote the use of lot level LID measures on private property throughout the City through the use of rain barrels, construction of soakaway pits, and other LID features.

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Conveyance Capacity Improvements:

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Please list below any concerns or comments you have related to any of the alternative solutions:

Please rate your satisfaction with the level of detail of the information presented herein at the Public Information Centre, and provided on the City website (www.barrie.ca/eastudies).

☐	☐	☐	☐	☐
Poor (Much Improvement Required)	**Marginal** (Some Improvement Required)	**Good**	**Very Good**	**Excellent**

Please add a comment in support of your level of satisfaction below:

Do you wish to be informed of future Public Information Centers for the Drainage Master Plan, and of staff recommendations for the Preferred Alternative Solution?

☑ Yes ☐ No

Signature: [redacted] Date: November 8, 2017

Please submit this comment sheet by **Thursday, November 16, 2017** to:

Mr. Tom Reeve, P. Eng.
City of Barrie
Engineering Department, 6th floor
70 Collier Street, P.O. Box 400
Barrie, ON
L4M 4T5

Tel: (705) 739-4220 ext. 4465
Fax: (705) 739-4243

E-mail: Tom.Reeve@barrie.ca

Thank you for your comments.

Barrie

DRAINAGE MASTER PLAN
MASTER PLANNING PROCESS (APPROACH #1) – PHASES 1 & 2

Public Information Centre
Thursday, November 2, 2017
4:00 p.m. to 8:00 p.m.
Dorian Parker Center, 227 Sunnidale Road, Barrie

COMMENT SHEET

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Please print all responses.

NAME OF RESPONDENT:

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

ourselves- property owners

ADDRESS (Including Postal Code & Telephone Number):

Street Address: **Unit/Apt:**

Postal Code: **Telephone Number:**

Email Address:

How long have you lived at this property? 20 years

The Opportunity Statement, which sets the framework for this Master Plan study, is as follows:

> "Identify drainage deficiencies and recommend solutions to improve the storm drainage systems across the City of Barrie in consideration of impacts to the natural, social, physical, cultural and economic environments."

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Questions about Existing Flooding and Drainage Issues:

Circle the answers that apply and add further explanation below if required:

Are you aware of any creeks or City storm drainage systems (pipes, drains) on your property? **Yes / (No)**

Are there any problems with the creek or City storm drainage systems on your property? **Yes / (No) / Not applicable.**

Have you ever had storm drainage from a creek or City storm drainage system damage your property? **Yes / (No)**

Have you ever noticed flooding on your street or a major road? **(Yes) / No**

Conveyance Capacity Improvements:

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Please list below any concerns or comments you have related to any of the alternative solutions:

none of the above.
Dredge the creek
put in stones along the creek edge
Replace culverts with larger appropriate sized culverts.
as a property owner in the area for 27 years and at current address for 20 years this is all that is required.

Please list below any specific drainage concerns you have, and expand on the answers provided above:

_____

_____

_____

_____

Questions about Proposed Alternative Solutions:

Please select which of the following alternatives you feel best addresses the drainage problems, and generates the greatest positive impacts while producing the least negative impacts on the natural, physical, social, cultural, and economic environments. Please rate by recording either "1" (preferred) or "2" (not preferred) in each box.

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Existing Condition

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Flow Reduction / Water Quality Improvements

☐ **Alternative 2A – Retrofit / New Storm Water Management Facilities (SWMF) for Quantity Control**
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☐ **Alternative 2C – Lot Level Low Impact Development (LID)**
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☐	☐	☐	☐	☐
Poor (Much Improvement Required)	**Marginal** (Some Improvement Required)	**Good**	**Very Good**	**Excellent**

Please add a comment in support of your level of satisfaction below:

Letter issued on oct 23/17 for meeting on Nov 2-17. We work and are active, more notice would have been preferred!

Do you wish to be informed of future Public Information Centers for the Drainage Master Plan, and of staff recommendations for the Preferred Alternative Solution?

☑ Yes ☐ No

Signature: _____ Date: Nov. 7. 17.

Please submit this comment sheet by **Thursday, November 16, 2017** to:

Mr. Tom Reeve, P. Eng.
City of Barrie
Engineering Department, 6th floor
70 Collier Street, P.O. Box 400
Barrie, ON
L4M 4T5

Tel: (705) 739-4220 ext. 4465
Fax: (705) 739-4243

E-mail: Tom.Reeve@barrie.ca

Thank you for your comments.

Barrie

AR entered

(21)

DRAINAGE MASTER PLAN
MASTER PLANNING PROCESS (APPROACH #1) – PHASES 1 & 2

Public Information Centre
Thursday, November 2, 2017
4:00 p.m. to 8:00 p.m.
Dorian Parker Center, 227 Sunnidale Road, Barrie

RECEIVED
NOV 0 8 2017
THE CITY OF BARRIE
ENGINEERING DEPARTMENT

COMMENT SHEET

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Please print all responses.

NAME OF RESPONDENT:

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

ADDRESS (Including Postal Code & Telephone Number):

Street Address: **Unit/Apt:**

Postal Code: **Telephone Number:**

Email Address:

How long have you lived at this property? 42 years

The Opportunity Statement, which sets the framework for this Master Plan study, is as follows:

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Questions about Existing Flooding and Drainage Issues:

Circle the answers that apply and add further explanation below if required:

Are you aware of any creeks or City storm drainage systems (pipes, drains) on your property? **Yes / No** – ajacent

Are there any problems with the creek or City storm drainage systems on your property? **Yes / (No) / Not applicable.**

Have you ever had storm drainage from a creek or City storm drainage system damage your property? **Yes / (No)**

Have you ever noticed flooding on your street or a major road? **Yes / No** minor under R.R. bridge on COXHILL RD

Please list below any specific drainage concerns you have, and expand on the answers provided above:

IN VERY HEAVY RAINFALL, CATCHMENT POND BEHIND HOUSE OVERFLOWS TO BOTTOM of LAWN ADJACENT TO RAISED GO TRAIN LINE.

Questions about Proposed Alternative Solutions:

Please select which of the following alternatives you feel best addresses the drainage problems, and generates the greatest positive impacts while producing the least negative impacts on the natural, physical, social, cultural, and economic environments. Please rate by recording either "1" (preferred) or "2" (not preferred) in each box.

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Barrie

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DRAINAGE MASTER PLAN
MASTER PLANNING PROCESS (APPROACH #1) – PHASES 1 & 2

Public Information Centre
Thursday, November 2, 2017
4:00 p.m. to 8:00 p.m.
Dorian Parker Center, 227 Sunnidale Road, Barrie

RECEIVED
NOV 09 2017
THE CITY OF BARRIE
ENGINEERING DEPARTMENT

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ADDRESS (Including Postal Code & Telephone Number):

Street Address: **Unit/Apt:**

Postal Code: **Telephone Number:**

Email Address:

How long have you lived at this property? 1 year

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Questions about Existing Flooding and Drainage Issues:

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Are you aware of any creeks or City storm drainage systems (pipes, drains) on your property? (Yes) / No

Are there any problems with the creek or City storm drainage systems on your property? (Yes) / No / Not applicable.
I'm unsure if the drainage systems on property are City's or Condominium

Have you ever had storm drainage from a creek or City storm drainage system damage your property? Yes / (No)

Have you ever noticed flooding on your street or a major road? (Yes) / No

Please list below any specific drainage concerns you have, and expand on the answers provided above:

There is often water after a heavy rain on Innisfil St. approx ½km away from the intersection at Innisfil/Tiffin, towards downtown

Questions about Proposed Alternative Solutions:

Please select which of the following alternatives you feel best addresses the drainage problems, and generates the greatest positive impacts while producing the least negative impacts on the natural, physical, social, cultural, and economic environments. Please rate by recording either "1" (preferred) or "2" (not preferred) in each box.

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☐ **Alternative 2D – Linear LID**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. Linear LID measures are being considered by the City for construction under local roadways, as part of road reconstruction projects.

☐ **Alternative 2E – Centralized LID**
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Conveyance Capacity Improvements:

☐ **Alternative 3A – Culvert / Watercourse / Major Drainage System Improvements (1 in 25 year storm event, or Master Drainage Plan Recommendations)**
Culvert, watercourse, and major drainage system improvements to reduce flooding along each creek in the City of Barrie up to and including the 1 in 25 year storm event, or as previously recommended by the watersheds existing Master Drainage Plan.

☐ **Alternative 3B – Culvert / Watercourse / Major Drainage System Improvements (City Design Flood Frequency Criteria)**
Culvert, watercourse, and major drainage system improvements to reduce flooding along each creek in the City of Barrie up to and including either the 1 in 50 year storm event (for local and collector roads) or the 1 in 100 year storm event (for arterial roads) in accordance with the City's current flood frequency design criteria.

Please list below any concerns or comments you have related to any of the alternative solutions:

Please rate your satisfaction with the level of detail of the information presented herein at the Public Information Centre, and provided on the City website (www.barrie.ca/eastudies).

☐	☐	☑	☐	☐
Poor (Much Improvement Required)	**Marginal** (Some Improvement Required)	**Good**	**Very Good**	**Excellent**

Please add a comment in support of your level of satisfaction below:

Do you wish to be informed of future Public Information Centers for the Drainage Master Plan, and of staff recommendations for the Preferred Alternative Solution?

☑ Yes ☐ No

Signature: _____ Date: November 6/2017

Please submit this comment sheet by **Thursday, November 16, 2017** to:

Mr. Tom Reeve, P. Eng.
City of Barrie
Engineering Department, 6th floor
70 Collier Street, P.O. Box 400
Barrie, ON
L4M 4T5

Tel: (705) 739-4220 ext. 4465
Fax: (705) 739-4243

E-mail: Tom.Reeve@barrie.ca

Thank you for your comments.

DRAINAGE MASTER PLAN
MASTER PLANNING PROCESS (APPROACH #1) – PHASES 1 & 2

Public Information Centre
Thursday, November 2, 2017
4:00 p.m. to 8:00 p.m.
Dorian Parker Center, 227 Sunnidale Road, Barrie

RECEIVED
NOV 0 9 2017
THE CITY OF BARRIE
ENGINEERING DEPARTMENT

COMMENT SHEET

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Please print all responses.

NAME OF RESPONDENT:

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

ADDRESS (Including Postal Code & Telephone Number):

Street Address: **Unit/Apt:**

Postal Code: **Telephone Number:**

Email Address:

How long have you lived at this property? 18yrs.

The Opportunity Statement, which sets the framework for this Master Plan study, is as follows:

> "Identify drainage deficiencies and recommend solutions to improve the storm drainage systems across the City of Barrie in consideration of impacts to the natural, social, physical, cultural and economic environments."

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Questions about Existing Flooding and Drainage Issues:

Circle the answers that apply and add further explanation below if required:

Are you aware of any creeks or City storm drainage systems (pipes, drains) on your property? **Yes / (No)**

Are there any problems with the creek or City storm drainage systems on your property? **Yes / No / (Not applicable.)**

Have you ever had storm drainage from a creek or City storm drainage system damage your property? **(Yes) / No**

Have you ever noticed flooding on your street or a major road? **(Yes) / No**

Please list below any specific drainage concerns you have, and expand on the answers provided above:

_____

_____

_____

_____

Questions about Proposed Alternative Solutions:

Please select which of the following alternatives you feel best addresses the drainage problems, and generates the greatest positive impacts while producing the least negative impacts on the natural, physical, social, cultural, and economic environments. Please rate by recording either "1" (preferred) or "2" (not preferred) in each box.

Please note that each of the alternatives listed below on their own will **not** resolve all the drainage issues within the City of Barrie. The alternative drainage solutions will be evaluated and a preferred alternative will be developed after the Public Information Centre in consideration of the feedback received on these comment sheets, and as part of the Public Information Centre process.

Existing Condition

☐ **Alternative 1A – "Do Nothing" Minor Drainage System / Alternative 1B – "Do Nothing" Major Drainage System**
The "Do Nothing" alternative allows for the consideration of not implementing any changes to the existing minor (storm pipes) or major (trunk sewers, creeks, overland flow routes) drainage system infrastructure within the study area. This alternative is being considered to provide a benchmark to gauge the natural, physical, social, cultural, and economic implications of the other alternatives.

Flow Reduction / Water Quality Improvements

☐ **Alternative 2A – Retrofit / New Storm Water Management Facilities (SWMF) for Quantity Control**
Retrofit, expand, and create new stormwater management facilities in the study area for the primary purpose of improving water quantity control, attenuate peak flows, and reduce downstream flooding. The improvements could have the secondary benefit of improving watershed water quality, promoting infiltration, and improving the water balance.

☐ **Alternative 2B – Retrofit / New SWMF for Quality Control**
Retrofit, expand, and create new stormwater management facilities in the study area to improve watershed water quality, promote infiltration, and improve the water balance. The improvements will have an insignificant impact on peak flows and downstream flooding.

☐ **Alternative 2C – Lot Level Low Impact Development (LID)**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. For this alternative, the City will promote the use of lot level LID measures on private property throughout the City through the use of rain barrels, construction of soakaway pits, and other LID features.

☐ **Alternative 2D – Linear LID**
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☐ **Alternative 2E – Centralized LID**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. Centralized LID measures are being considered for construction underground within existing parkland across the City.

Conveyance Capacity Improvements:

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Culvert, watercourse, and major drainage system improvements to reduce flooding along each creek in the City of Barrie up to and including the 1 in 25 year storm event, or as previously recommended by the watersheds existing Master Drainage Plan.

☐ **Alternative 3B – Culvert / Watercourse / Major Drainage System Improvements (City Design Flood Frequency Criteria)**
Culvert, watercourse, and major drainage system improvements to reduce flooding along each creek in the City of Barrie up to and including either the 1 in 50 year storm event (for local and collector roads) or the 1 in 100 year storm event (for arterial roads) in accordance with the City's current flood frequency design criteria.

Please list below any concerns or comments you have related to any of the alternative solutions:

Well I have lived on this street for 18yrs. The street has flooded every year, but this year was the worst. I had water ¾ the way up my yard. It was there well into summer. I wasn't able to cut the grass until well into June. And even then it was still wet, and I had to wear boots. All of ~~it~~ my gardens were flooded. Some plants didn't survive. The silt that came with the water was on the driveway. It was very slippery and smelled awful. My frontyard is now home to some kind of flying insect. You can't walk on it without them getting in your face.
Because I had to drive through the water every day my brakes had to be replaced.
My neighbours garage was totally flooded. She parked on the street and ended up getting a parking ticket. She's 85yrs old.
Young drivers think it's fun to speed through the water and splash the cars in the driveways.
There are only about 5 houses that are affected with what we on the street call "Lake Brennan." I don't know what the solution is, but we would appreciate some workable fix.

P.S.
If the water next year is the same as this year, I would like to see speed bumps put in before and ~~after~~ after the "Lake".

Thank you

Please rate your satisfaction with the level of detail of the information presented herein at the Public Information Centre, and provided on the City website (www.barrie.ca/eastudies).

☐	☐	☐	☐	☐
Poor (Much Improvement Required)	**Marginal** (Some Improvement Required)	**Good**	**Very Good**	**Excellent**

Please add a comment in support of your level of satisfaction below:

Do you wish to be informed of future Public Information Centers for the Drainage Master Plan, and of staff recommendations for the Preferred Alternative Solution?

☒ Yes ☐ No

Signature: _____ Date: Nov 4/2017

Please submit this comment sheet by **Thursday, November 16, 2017** to:

Mr. Tom Reeve, P. Eng.
City of Barrie
Engineering Department, 6th floor
70 Collier Street, P.O. Box 400
Barrie, ON
L4M 4T5

Tel: (705) 739-4220 ext. 4465
Fax: (705) 739-4243

E-mail: Tom.Reeve@barrie.ca

Thank you for your comments.

Barrie

DRAINAGE MASTER PLAN
MASTER PLANNING PROCESS (APPROACH #1) – PHASES 1 & 2

Public Information Centre
Thursday, November 2, 2017
4:00 p.m. to 8:00 p.m.
Dorian Parker Center, 227 Sunnidale Road, Barrie

RECEIVED
NOV 09 2017
THE CITY OF BARRIE
ENGINEERING DEPARTMENT

COMMENT SHEET

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Please print all responses.

NAME OF RESPONDENT:

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

ADDRESS (Including Postal Code & Telephone Number):

Street Address: **Unit/Apt:**

Postal Code: **Telephone Number:**

Email Address:

How long have you lived at this property? 12 1/2 yrs.

The Opportunity Statement, which sets the framework for this Master Plan study, is as follows:

> "Identify drainage deficiencies and recommend solutions to improve the storm drainage systems across the City of Barrie in consideration of impacts to the natural, social, physical, cultural and economic environments."

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Questions about Existing Flooding and Drainage Issues:

Circle the answers that apply and add further explanation below if required:

Are you aware of any creeks or City storm drainage systems (pipes, drains) on your property? **(Yes) / No**

Are there any problems with the creek or City storm drainage systems on your property? **Yes / (No) / Not applicable.**

Have you ever had storm drainage from a creek or City storm drainage system damage your property? **Yes / (No)** Not yet!

Have you ever noticed flooding on your street or a major road? **(Yes) / No** Ward/Chalmers intersection.

Please list below any specific drainage concerns you have, and expand on the answers provided above:

The Chalmers/Ward corner intersection storm sewer is frequently closed due to massive leaf accumulation, and so the rain water does not drain but flood across the road!

Questions about Proposed Alternative Solutions:

Please select which of the following alternatives you feel best addresses the drainage problems, and generates the greatest positive impacts while producing the least negative impacts on the natural, physical, social, cultural, and economic environments. Please rate by recording either "1" (preferred) or "2" (not preferred) in each box.

Please note that each of the alternatives listed below on their own will **not** resolve all the drainage issues within the City of Barrie. The alternative drainage solutions will be evaluated and a preferred alternative will be developed after the Public Information Centre in consideration of the feedback received on these comment sheets, and as part of the Public Information Centre process.

Existing Condition

[2] **Alternative 1A – "Do Nothing" Minor Drainage System / Alternative 1B – "Do Nothing" Major Drainage System**
The "Do Nothing" alternative allows for the consideration of not implementing any changes to the existing minor (storm pipes) or major (trunk sewers, creeks, overland flow routes) drainage system infrastructure within the study area. This alternative is being considered to provide a benchmark to gauge the natural, physical, social, cultural, and economic implications of the other alternatives.

Flow Reduction / Water Quality Improvements

[1] **Alternative 2A – Retrofit / New Storm Water Management Facilities (SWMF) for Quantity Control**
Retrofit, expand, and create new stormwater management facilities in the study area for the primary purpose of improving water quantity control, attenuate peak flows, and reduce downstream flooding. The improvements could have the secondary benefit of improving watershed water quality, promoting infiltration, and improving the water balance.

[2] **Alternative 2B – Retrofit / New SWMF for Quality Control**
Retrofit, expand, and create new stormwater management facilities in the study area to improve watershed water quality, promote infiltration, and improve the water balance. The improvements will have an insignificant impact on peak flows and downstream flooding.

[2] **Alternative 2C – Lot Level Low Impact Development (LID)**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. For this alternative, the City will promote the use of lot level LID measures on private property throughout the City through the use of rain barrels, construction of soakaway pits, and other LID features. gardens etc.

[1] **Alternative 2D – Linear LID**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. Linear LID measures are being considered by the City for construction under local roadways, as part of road reconstruction projects.

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Conveyance Capacity Improvements:

☐ **Alternative 3A – Culvert / Watercourse / Major Drainage System Improvements (1 in 25 year storm event, or Master Drainage Plan Recommendations)**
Culvert, watercourse, and major drainage system improvements to reduce flooding along each creek in the City of Barrie up to and including the 1 in 25 year storm event, or as previously recommended by the watersheds existing Master Drainage Plan.

☒ **Alternative 3B – Culvert / Watercourse / Major Drainage System Improvements (City Design Flood Frequency Criteria)**
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Please list below any concerns or comments you have related to any of the alternative solutions:

Our property backs on to the 'Retention Ponds on Loon Ave. It was helpful to see city staff maintain the fenced area and clear garbage (or let volunteers do that! :) This area is a great place for migrating birds - swans, herons, and the usual geese + ducks too! Our sump pump does run frequently once snow melts!

Thanks for having this info session.

Please rate your satisfaction with the level of detail of the information presented herein at the Public Information Centre, and provided on the City website (www.barrie.ca/eastudies).

☐	☐	☐	☐	☐
Poor (Much Improvement Required)	**Marginal** (Some Improvement Required)	**Good**	**Very Good**	**Excellent**

Please add a comment in support of your level of satisfaction below:

Do you wish to be informed of future Public Information Centers for the Drainage Master Plan, and of staff recommendations for the Preferred Alternative Solution?

☒ Yes ☐ No

Signature: [signature] Date: 29 Nov. 2017

Please submit this comment sheet by **Thursday, November 16, 2017** to:

Mr. Tom Reeve, P. Eng.
City of Barrie
Engineering Department, 6th floor
70 Collier Street, P.O. Box 400
Barrie, ON
L4M 4T5

Tel: (705) 739-4220 ext. 4465
Fax: (705) 739-4243

E-mail: Tom.Reeve@barrie.ca

Thank you for your comments.

Barrie

DRAINAGE MASTER PLAN
MASTER PLANNING PROCESS (APPROACH #1) – PHASES 1 & 2

Public Information Centre
Thursday, November 2, 2017
4:00 p.m. to 8:00 p.m.
Dorian Parker Center, 227 Sunnidale Road, Barrie

RECEIVED
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CITY OF BARRIE
ENGINEERING DEPARTMENT

COMMENT SHEET

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Please print all responses.

NAME OF RESPONDENT:

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

ADDRESS (Including Postal Code & Telephone Number):

Street Address: **Unit/Apt:**

Postal Code: **Telephone Number:**

Email Address:

How long have you lived at this property? 30+

The Opportunity Statement, which sets the framework for this Master Plan study, is as follows:

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Questions about Existing Flooding and Drainage Issues:

Circle the answers that apply and add further explanation below if required:

Are you aware of any creeks or City storm drainage systems (pipes, drains) on your property? **Yes / No**

Are there any problems with the creek or City storm drainage systems on your property? **Yes / No / Not applicable.**

Have you ever had storm drainage from a creek or City storm drainage system damage your property? **Yes / No**

Have you ever noticed flooding on your street or a major road? **Yes / No**

Please list below any specific drainage concerns you have, and expand on the answers provided above:

Questions about Proposed Alternative Solutions:

Please select which of the following alternatives you feel best addresses the drainage problems, and generates the greatest positive impacts while producing the least negative impacts on the natural, physical, social, cultural, and economic environments. Please rate by recording either "1" (preferred) or "2" (not preferred) in each box.

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Please list below any concerns or comments you have related to any of the alternative solutions:

Im AT Minets Point My Land HAS eroded mainly BECAUSE OF A BADLY INSTALLED CULVERT WHICH DIRECTED WATER AT my EMBANKMENT. WITH THE LARGE Amount of Construction THAT HAS TAKEN PLACE OVER THE YRS THE SILT HAS RAISED THE FLOOR LEVEL OF THE CREEK AT MY DESTINATION THIS PART OF THE CREEK NEED TO BE DREDGED. I KNOW THAT WONT HAPPEN BECAUSE OF THE ENVIROMENTO NUT JOBS' I'VE BEEN ON THIS ISSUE FORECLOSE TO 30 YRS AND HAVE HAD PROMISES, PROMISES, PROMISES, NEXT YR, NEXT YR, NEXT YR.

Please rate your satisfaction with the level of detail of the information presented herein at the Public Information Centre, and provided on the City website (www.barrie.ca/eastudies).

☐	☐	☒	☐	☐
Poor (Much Improvement Required)	**Marginal** (Some Improvement Required)	**Good**	**Very Good**	**Excellent**

Please add a comment in support of your level of satisfaction below:

THIS SERVICE WAS PRESENTED SOME 17yr BEFORE. I'VE SEEN NOTHING THAT HAS CHANGED

Do you wish to be informed of future Public Information Centers for the Drainage Master Plan, and of staff recommendations for the Preferred Alternative Solution?

☒ Yes ☐ No

Signature: _____ Date: NOV 5 17

Please submit this comment sheet by **Thursday, November 16, 2017** to:

Mr. Tom Reeve, P. Eng.
City of Barrie
Engineering Department, 6th floor
70 Collier Street, P.O. Box 400
Barrie, ON
L4M 4T5

Tel: (705) 739-4220 ext. 4465
Fax: (705) 739-4243

E-mail: Tom.Reeve@barrie.ca

Thank you for your comments.

Barrie

DRAINAGE MASTER PLAN
MASTER PLANNING PROCESS (APPROACH #1) – PHASES 1 & 2

Public Information Centre
Thursday, November 2, 2017
4:00 p.m. to 8:00 p.m.
Dorian Parker Center, 227 Sunnidale Road, Barrie

COMMENT SHEET

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Please print all responses.

NAME OF RESPONDENT:

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

Owners

ADDRESS (Including Postal Code & Telephone Number):

Street Address: **Unit/Apt:**

Postal Code: **Telephone Number:**

Email Address:

How long have you lived at this property? 11 yrs

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Barrie, ON L4M 4T5

City of Barrie
Engineering
City Hall, 6th Floor
70 Collier Street
Barrie, ON L4M 4T5

Barrie Public Library
Downtown Branch
Information Desk
60 Worsley Street
Barrie, ON L4M 1L6

Barrie Public Library
Painswick Branch
Information Desk
48 Dean Avenue
Barrie, ON L4N 0C2

Questions about Existing Flooding and Drainage Issues:

Circle the answers that apply and add further explanation below if required:

Are you aware of any creeks or City storm drainage systems (pipes, drains) on your property? **Yes / (No)**

Are there any problems with the creek or City storm drainage systems on your property? **Yes / (No) / Not applicable.**

Have you ever had storm drainage from a creek or City storm drainage system damage your property? **Yes / (No)**

Have you ever noticed flooding on your street or a major road? **(Yes) / No** June 24, 2014
videos submitted

Please list below any specific drainage concerns you have, and expand on the answers provided above:

1. Whiskey Creek solutions - if widened were concerned about privacy from the park
2. Whiskey creek delta being created by silt from upstream
3. Preservation of wildlife areas when widening & replacing culverts

Questions about Proposed Alternative Solutions:

Please select which of the following alternatives you feel best addresses the drainage problems, and generates the greatest positive impacts while producing the least negative impacts on the natural, physical, social, cultural, and economic environments. Please rate by recording either "1" (preferred) or "2" (not preferred) in each box.

Please note that each of the alternatives listed below on their own will **not** resolve all the drainage issues within the City of Barrie. The alternative drainage solutions will be evaluated and a preferred alternative will be developed after the Public Information Centre in consideration of the feedback received on these comment sheets, and as part of the Public Information Centre process.

Existing Condition

☐ **Alternative 1A – "Do Nothing" Minor Drainage System / Alternative 1B – "Do Nothing" Major Drainage System**
The "Do Nothing" alternative allows for the consideration of not implementing any changes to the existing minor (storm pipes) or major (trunk sewers, creeks, overland flow routes) drainage system infrastructure within the study area. This alternative is being considered to provide a benchmark to gauge the natural, physical, social, cultural, and economic implications of the other alternatives.

Flow Reduction / Water Quality Improvements

☐ **Alternative 2A – Retrofit / New Storm Water Management Facilities (SWMF) for Quantity Control**
Retrofit, expand, and create new stormwater management facilities in the study area for the primary purpose of improving water quantity control, attenuate peak flows, and reduce downstream flooding. The improvements could have the secondary benefit of improving watershed water quality, promoting infiltration, and improving the water balance.

☐ **Alternative 2B – Retrofit / New SWMF for Quality Control**
Retrofit, expand, and create new stormwater management facilities in the study area to improve watershed water quality, promote infiltration, and improve the water balance. The improvements will have an insignificant impact on peak flows and downstream flooding.

☐ **Alternative 2C – Lot Level Low Impact Development (LID)**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. For this alternative, the City will promote the use of lot level LID measures on private property throughout the City through the use of rain barrels, construction of soakaway pits, and other LID features.

☐ **Alternative 2D – Linear LID**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. Linear LID measures are being considered by the City for construction under local roadways, as part of road reconstruction projects.

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LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. Centralized LID measures are being considered for construction underground within existing parkland across the City.

Conveyance Capacity Improvements:

☐ **Alternative 3A – Culvert / Watercourse / Major Drainage System Improvements (1 in 25 year storm event, or Master Drainage Plan Recommendations)**
Culvert, watercourse, and major drainage system improvements to reduce flooding along each creek in the City of Barrie up to and including the 1 in 25 year storm event, or as previously recommended by the watersheds existing Master Drainage Plan.

☐ **Alternative 3B – Culvert / Watercourse / Major Drainage System Improvements (City Design Flood Frequency Criteria)**
Culvert, watercourse, and major drainage system improvements to reduce flooding along each creek in the City of Barrie up to and including either the 1 in 50 year storm event (for local and collector roads) or the 1 in 100 year storm event (for arterial roads) in accordance with the City's current flood frequency design criteria.

Please list below any concerns or comments you have related to any of the alternative solutions:

Whichever solution is used at the mouth of Whiskey Creek at Kempenfelt Bay our concerns are as follows:

- Privacy screen between Minet's Point Park and homes # 58, 64, 68 White Oaks Rd. Our enjoyment is impacted by visability from the park. In changing whiskey creek, it is important to provide privacy to the residents for enjoyment of their properties. A fence would be preferred, as it provides optimal privacy from viewers and explorers.

- Control of sand/silt from upstream being deposited at the mouth creating a delta. This is encroaching on the waterlots owned and changing the access to water.

- Preserving wildlife habitat when changing culverts + creeks. There are nesting ducks, mink, muskrats, herons etc using whiskey creek. Care needs to be taken not to lose their habitats.

Please rate your satisfaction with the level of detail of the information presented herein at the Public Information Centre, and provided on the City website (www.barrie.ca/eastudies).

☐	☐	☑	☐	☐
Poor (Much Improvement Required)	**Marginal** (Some Improvement Required)	**Good**	**Very Good**	**Excellent**

Please add a comment in support of your level of satisfaction below:

Do you wish to be informed of future Public Information Centers for the Drainage Master Plan, and of staff recommendations for the Preferred Alternative Solution?

☑ Yes ☐ No

Signature: _____ Date: Nov 8/2017

Please submit this comment sheet by **Thursday, November 16, 2017** to:

Mr. Tom Reeve, P. Eng.
City of Barrie
Engineering Department, 6th floor
70 Collier Street, P.O. Box 400
Barrie, ON
L4M 4T5

Tel: (705) 739-4220 ext. 4465
Fax: (705) 739-4243

E-mail: Tom.Reeve@barrie.ca

Thank you for your comments.

Barrie

DRAINAGE MASTER PLAN
MASTER PLANNING PROCESS (APPROACH #1) – PHASES 1 & 2

Public Information Centre
Thursday, November 2, 2017
4:00 p.m. to 8:00 p.m.
Dorian Parker Center, 227 Sunnidale Road, Barrie

RECEIVED
NOV 10 2017
THE CITY OF BARRIE
ENGINEERING DEPARTMENT

COMMENT SHEET

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Please print all responses.

NAME OF RESPONDENT:

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

Property Owner

ADDRESS (Including Postal Code & Telephone Number):

Street Address: **~~Unit/Apt:~~**

Postal Code: **Telephone Number:**

Email Address:

How long have you lived at this property? Fifty-three years. (53 yrs)

The Opportunity Statement, which sets the framework for this Master Plan study, is as follows:

> "Identify drainage deficiencies and recommend solutions to improve the storm drainage systems across the City of Barrie in consideration of impacts to the natural, social, physical, cultural and economic environments."

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Questions about Existing Flooding and Drainage Issues:

Circle the answers that apply and add further explanation below if required:

Are you aware of any creeks or City storm drainage systems (pipes, drains) on your property? **Yes / (No)**

Are there any problems with the creek or City storm drainage systems on your property? **Yes / (No) / Not applicable.**

Have you ever had storm drainage from a creek or City storm drainage system damage your property? **(Yes) / No**

Have you ever noticed flooding on your street or a major road? **(Yes) / No**

Please list below any specific drainage concerns you have, and expand on the answers provided above:

The Creek across the street. Whenever there is a Large Rain Storm, it floods my Property. Also it runs down the hill. Down Brennan their is a big water problem. The Creek never gets cleaned out, due to run offs of Debric

Questions about Proposed Alternative Solutions:

Please select which of the following alternatives you feel best addresses the drainage problems, and generates the greatest positive impacts while producing the least negative impacts on the natural, physical, social, cultural, and economic environments. Please rate by recording either "1" (preferred) or "2" (not preferred) in each box.

Please note that each of the alternatives listed below on their own will **not** resolve all the drainage issues within the City of Barrie. The alternative drainage solutions will be evaluated and a preferred alternative will be developed after the Public Information Centre in consideration of the feedback received on these comment sheets, and as part of the Public Information Centre process.

Existing Condition

☐ **Alternative 1A – "Do Nothing" Minor Drainage System / Alternative 1B – "Do Nothing" Major Drainage System**
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Flow Reduction / Water Quality Improvements

☒ **Alternative 2A – Retrofit / New Storm Water Management Facilities (SWMF) for Quantity Control**
Retrofit, expand, and create new stormwater management facilities in the study area for the primary purpose of improving water quantity control, attenuate peak flows, and reduce downstream flooding. The improvements could have the secondary benefit of improving watershed water quality, promoting infiltration, and improving the water balance.

☒ **Alternative 2B – Retrofit / New SWMF for Quality Control**
Retrofit, expand, and create new stormwater management facilities in the study area to improve watershed water quality, promote infiltration, and improve the water balance. The improvements will have an insignificant impact on peak flows and downstream flooding.

☐ **Alternative 2C – Lot Level Low Impact Development (LID)**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. For this alternative, the City will promote the use of lot level LID measures on private property throughout the City through the use of rain barrels, construction of soakaway pits, and other LID features.

☐ **Alternative 2D – Linear LID**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. Linear LID measures are being considered by the City for construction under local roadways, as part of road reconstruction projects.

☐ **Alternative 2E – Centralized LID**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. Centralized LID measures are being considered for construction underground within existing parkland across the City.

Conveyance Capacity Improvements:

☐ **Alternative 3A – Culvert / Watercourse / Major Drainage System Improvements (1 in 25 year storm event, or Master Drainage Plan Recommendations)**
Culvert, watercourse, and major drainage system improvements to reduce flooding along each creek in the City of Barrie up to and including the 1 in 25 year storm event, or as previously recommended by the watersheds existing Master Drainage Plan.

☒ **Alternative 3B – Culvert / Watercourse / Major Drainage System Improvements (City Design Flood Frequency Criteria)**
Culvert, watercourse, and major drainage system improvements to reduce flooding along each creek in the City of Barrie up to and including either the 1 in 50 year storm event (for local and collector roads) or the 1 in 100 year storm event (for arterial roads) in accordance with the City's current flood frequency design criteria.

Please list below any concerns or comments you have related to any of the alternative solutions:

Please rate your satisfaction with the level of detail of the information presented herein at the Public Information Centre, and provided on the City website (www.barrie.ca/eastudies).

☒	☐	☐	☐	☐
Poor (Much Improvement Required)	**Marginal** (Some Improvement Required)	**Good**	**Very Good**	**Excellent**

Please add a comment in support of your level of satisfaction below:

Do you wish to be informed of future Public Information Centers for the Drainage Master Plan, and of staff recommendations for the Preferred Alternative Solution?

☒ Yes ☐ No

Signature: _____ Date: Nov. 2/17

Please submit this comment sheet by **Thursday, November 16, 2017** to:

Mr. Tom Reeve, P. Eng.
City of Barrie
Engineering Department, 6th floor
70 Collier Street, P.O. Box 400
Barrie, ON
L4M 4T5

Tel: (705) 739-4220 ext. 4465
Fax: (705) 739-4243

E-mail: Tom.Reeve@barrie.ca

Thank you for your comments.

Barrie

(29)

DRAINAGE MASTER PLAN
MASTER PLANNING PROCESS (APPROACH #1) – PHASES 1 & 2

RECEIVED
NOV 14 2017
THE CITY OF BARRIE
ENGINEERING DEPARTMENT

Public Information Centre
Thursday, November 2, 2017
4:00 p.m. to 8:00 p.m.
Dorian Parker Center, 227 Sunnidale Road, Barrie

COMMENT SHEET

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Please print all responses.

NAME OF RESPONDENT:

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

ADDRESS (Including Postal Code & Telephone Number):

Street Address: **Unit/Apt:**

Postal Code: **Telephone Number:**

Email Address:

How long have you lived at this property? 20 + years

The Opportunity Statement, which sets the framework for this Master Plan study, is as follows:

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Questions about Existing Flooding and Drainage Issues:

Circle the answers that apply and add further explanation below if required:

Are you aware of any creeks or City storm drainage systems (pipes, drains) on your property? **Yes / No**

Are there any problems with the creek or City storm drainage systems on your property? **Yes / No / Not applicable.**

Have you ever had storm drainage from a creek or City storm drainage system damage your property? **Yes / No**

Have you ever noticed flooding on your street or a major road? **Yes / No**

Please list below any specific drainage concerns you have, and expand on the answers provided above:

Brennan Ave. has flooding every Spring - this has been the worst (2017)

Questions about Proposed Alternative Solutions:

Please select which of the following alternatives you feel best addresses the drainage problems, and generates the greatest positive impacts while producing the least negative impacts on the natural, physical, social, cultural, and economic environments. Please rate by recording either "1" (preferred) or "2" (not preferred) in each box.

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Existing Condition

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Flow Reduction / Water Quality Improvements

☑ **Alternative 2A – Retrofit / New Storm Water Management Facilities (SWMF) for Quantity Control**
Retrofit, expand, and create new stormwater management facilities in the study area for the primary purpose of improving water quantity control, attenuate peak flows, and reduce downstream flooding. The improvements could have the secondary benefit of improving watershed water quality, promoting infiltration, and improving the water balance. (Not sure if this would work on Brennan Ave. as the water table is under the Street.

☑ **Alternative 2B – Retrofit / New SWMF for Quality Control**
Retrofit, expand, and create new stormwater management facilities in the study area to improve watershed water quality, promote infiltration, and improve the water balance. The improvements will have an insignificant impact on peak flows and downstream flooding.

☑ **Alternative 2C – Lot Level Low Impact Development (LID)**
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☑ **Alternative 2E – Centralized LID**
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Conveyance Capacity Improvements:

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Please list below any concerns or comments you have related to any of the alternative solutions:

Minet's Point is on a flood plain; each property has dry areas and wet areas. For example #'s 11 + 13 (currently dormant) Brennan Ave have returned to a "bog" (houses were demolished a few years ago) – I understand the plan is to build 2 homes, but in its dormancy, it has returned to its natural "bog" / marsh - which is great. It would be interesting if the City kept this as a natural / marsh environment.

- We had major flooding on Brennan and the Blvd. 2 summers ago - I understand the flow Through Culvert didn't do the job - probably most / all culverts were installed around 1986 (when Septic Systems were replaced) and probably need to be looked at.

Please rate your satisfaction with the level of detail of the information presented herein at the Public Information Centre, and provided on the City website (www.barrie.ca/eastudies).

☐	☐	☐	☑	☐
Poor (Much Improvement Required)	**Marginal** (Some Improvement Required)	**Good**	**Very Good**	**Excellent**

Please add a comment in support of your level of satisfaction below:

Comprehensive, ~~Em~~ knowledgeable staff. Well layed out; good detail.

I am appreciative that we are included in this planning process and will look forward to continued Communications.

Do you wish to be informed of future Public Information Centers for the Drainage Master Plan, and of staff recommendations for the Preferred Alternative Solution?

☑ Yes ☐ No

Signature: [redacted] Date: Nov. 13, 2017

Please submit this comment sheet by **Thursday, November 16, 2017** to:

Mr. Tom Reeve, P. Eng.
City of Barrie
Engineering Department, 6th floor
70 Collier Street, P.O. Box 400
Barrie, ON
L4M 4T5

Tel: (705) 739-4220 ext. 4465
Fax: (705) 739-4243

E-mail: Tom.Reeve@barrie.ca

Thank you for your comments.

Barrie

30

DRAINAGE MASTER PLAN
MASTER PLANNING PROCESS (APPROACH #1) – PHASES 1 & 2

Public Information Centre
Thursday, November 2, 2017
4:00 p.m. to 8:00 p.m.
Dorian Parker Center, 227 Sunnidale Road, Barrie

RECEIVED
NOV 14 2017
THE CITY OF BARRIE
ENGINEERING DEPARTMENT

COMMENT SHEET

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Please print all responses.

NAME OF RESPONDENT:

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

ADDRESS (Including Postal Code & Telephone Number):

Street Address: **Unit/Apt:**

Postal Code: **Telephone Number:**

Email Address:

How long have you lived at this property? 17 years

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Questions about Existing Flooding and Drainage Issues:

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Have you ever had storm drainage from a creek or City storm drainage system damage your property? **Yes / (No)**

Have you ever noticed flooding on your street or a major road? **(Yes) / No**

Please list below any specific drainage concerns you have, and expand on the answers provided above:

_____

_____

_____

_____

Questions about Proposed Alternative Solutions:

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Please list below any concerns or comments you have related to any of the alternative solutions:

It is preferable to respect the integrity of the natural landscape as much as possible while designing solutions to

An opportunity exists for the City of Barrie to acquire the 2 vacant lots on the south side of Brennan Ave. These 2 lots are adjacent to Minet's Pt Park. An easement to Cliff Rd + North Rd would enable an expansion of Minet's Pt park for the ~~use~~ extended use of the community.

The current configuration of the bridge on Brennan Ave serves as a quieter traffic (ie slow traffic). It is requested that traffic quieting measures be introduced with the proposed bridge widening.

Please rate your satisfaction with the level of detail of the information presented herein at the Public Information Centre, and provided on the City website (www.barrie.ca/eastudies).

☐	☐	☐	☑	☐
Poor (Much Improvement Required)	**Marginal** (Some Improvement Required)	**Good**	**Very Good**	**Excellent**

Please add a comment in support of your level of satisfaction below:

It would be preferable (ie excellent) to have a presentation designed for our area (ie Minet's Point) only. A specific Minet's Pt presentation would provide full details on all design considerations for the Minet's Pt area.

Do you wish to be informed of future Public Information Centers for the Drainage Master Plan, and of staff recommendations for the Preferred Alternative Solution?

☑ Yes ☐ No

Signature: _____ Date: Nov 12/2017

Please submit this comment sheet by **Thursday, November 16, 2017** to:

Mr. Tom Reeve, P. Eng.
City of Barrie
Engineering Department, 6th floor
70 Collier Street, P.O. Box 400
Barrie, ON
L4M 4T5

Tel: (705) 739-4220 ext. 4465
Fax: (705) 739-4243

E-mail: Tom.Reeve@barrie.ca

Thank you for your comments.

Barrie

(31) entered

RECEIVED
NOV 15 2017
THE CITY OF BARRIE
ENGINEERING DEPARTMENT

DRAINAGE MASTER PLAN
MASTER PLANNING PROCESS (APPROACH #1) – PHASES 1 & 2

Public Information Centre
Thursday, November 2, 2017
4:00 p.m. to 8:00 p.m.
Dorian Parker Center, 227 Sunnidale Road, Barrie

RECEIVED
NOV 15 2017
THE CITY OF BARRIE
ENGINEERING DEPARTMENT

COMMENT SHEET

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Please print all responses.

NAME OF RESPONDENT:

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

ADDRESS (Including Postal Code & Telephone Number):

Street Address: **Unit/Apt:**

Postal Code: **Telephone Number:**

Email Address:

How long have you lived at this property? 16 YRS.

The Opportunity Statement, which sets the framework for this Master Plan study, is as follows:

> "Identify drainage deficiencies and recommend solutions to improve the storm drainage systems across the City of Barrie in consideration of impacts to the natural, social, physical, cultural and economic environments."

A PDF version of the Draft Drainage Master Plan for Public Information Centre #1 is available on the City of Barrie web page at the following link: www.barrie.ca/eastudies. A paper copy of the draft report is available for review at the following locations during regular business hours:

City of Barrie Legislative Services Branch City Hall, 1st Floor 70 Collier Street Barrie, ON L4M 4T5	City of Barrie Engineering City Hall, 6th Floor 70 Collier Street Barrie, ON L4M 4T5	Barrie Public Library Downtown Branch Information Desk 60 Worsley Street Barrie, ON L4M 1L6	Barrie Public Library Painswick Branch Information Desk 48 Dean Avenue Barrie, ON L4N 0C2

Questions about Existing Flooding and Drainage Issues:

Circle the answers that apply and add further explanation below if required:

Are you aware of any creeks or City storm drainage systems (pipes, drains) on your property? **(Yes) / No**

Are there any problems with the creek or City storm drainage systems on your property? **Yes / (No) / Not applicable.**

Have you ever had storm drainage from a creek or City storm drainage system damage your property? **Yes (No)**

Have you ever noticed flooding on your street or a major road? **(Yes) / No**

Please list below any specific drainage concerns you have, and expand on the answers provided above:

KIDDS CREEK - PREVIOUS FLOODING - UNTIL WORK DONE ON BRIDGE ~~DO~~ UNDER DONALD ST. SEEMED TO FIX PROBLEM.

Questions about Proposed Alternative Solutions:

Please select which of the following alternatives you feel best addresses the drainage problems, and generates the greatest positive impacts while producing the least negative impacts on the natural, physical, social, cultural, and economic environments. Please rate by recording either "1" (preferred) or "2" (not preferred) in each box.

Please note that each of the alternatives listed below on their own will **not** resolve all the drainage issues within the City of Barrie. The alternative drainage solutions will be evaluated and a preferred alternative will be developed after the Public Information Centre in consideration of the feedback received on these comment sheets, and as part of the Public Information Centre process.

Existing Condition

1A **Alternative 1A – "Do Nothing" Minor Drainage System / Alternative 1B – "Do Nothing" Major Drainage System**
The "Do Nothing" alternative allows for the consideration of not implementing any changes to the existing minor (storm pipes) or major (trunk sewers, creeks, overland flow routes) drainage system infrastructure within the study area. This alternative is being considered to provide a benchmark to gauge the natural, physical, social, cultural, and economic implications of the other alternatives.

Flow Reduction / Water Quality Improvements

☐ **Alternative 2A – Retrofit / New Storm Water Management Facilities (SWMF) for Quantity Control**
Retrofit, expand, and create new stormwater management facilities in the study area for the primary purpose of improving water quantity control, attenuate peak flows, and reduce downstream flooding. The improvements could have the secondary benefit of improving watershed water quality, promoting infiltration, and improving the water balance.

☐ **Alternative 2B – Retrofit / New SWMF for Quality Control**
Retrofit, expand, and create new stormwater management facilities in the study area to improve watershed water quality, promote infiltration, and improve the water balance. The improvements will have an insignificant impact on peak flows and downstream flooding.

☐ **Alternative 2C – Lot Level Low Impact Development (LID)**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. For this alternative, the City will promote the use of lot level LID measures on private property throughout the City through the use of rain barrels, construction of soakaway pits, and other LID features.

☐ **Alternative 2D – Linear LID**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. Linear LID measures are being considered by the City for construction under local roadways, as part of road reconstruction projects.

☐ **Alternative 2E – Centralized LID**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. Centralized LID measures are being considered for construction underground within existing parkland across the City.

Barrie

DRAINAGE MASTER PLAN
MASTER PLANNING PROCESS (APPROACH #1) – PHASES 1 & 2

Public Information Centre
Thursday, November 2, 2017
4:00 p.m. to 8:00 p.m.
Dorian Parker Center, 227 Sunnidale Road, Barrie

COMMENT SHEET

Personal information on this form is collected under the authority of the Environmental Assessment Act, Chap. E18, Section and will be used in the development of a Drainage Master Plan. Questions about this collection should be directed to the D of Engineering, P.O. Box 400, 70 Collier Street, Barrie, Ontario, L4M 4T5, (705) 726-4242.

Please print all responses.

NAME OF RESPONDENT: [redacted]

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.): Property Owner

ADDRESS (Including Postal Code & Telephone Number):

Street Address: [redacted] **Unit/Apt:**

al Code: [redacted] **Telephone Number:** [redacted]

Address: [redacted]

long have you lived at this property? 15 years.

The Opportunity Statement, which sets the framework for this Master Plan study, is as follows:

"Identify drainage deficiencies and recommend solutions to improve the storm drainage systems across the City of Barrie in consideration of impacts to the natural, social, physical, cultural and economic environments."

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Downtown Branch
Information Desk
60 Worsley Street
Barrie, ON L4M 1L6

Barrie Public Library
Painswick Branch
Information Desk
48 Dean Avenue
Barrie, ON L4N 0C2

Questions about Existing Flooding and Drainage Issues:

Circle the answers that apply and add further explanation below if required.

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Are there any problems with the creek or City storm drainage systems on your property? **(Yes) / No / Not applicable**

Have you ever had storm drainage from a creek or City storm drainage system damage your property? **Yes / (No)**

Have you ever noticed flooding on your street or a major road? **(Yes) / No**

lease list below any specific drainage concerns you have, and expand on the answers provided above:

The culvert at the end of my driveway is full of debris/leaves etc so no water can flow through it.

Questions about Proposed Alternative Solutions:

Please select which of the following alternatives you feel best addresses the drainage problems, and generates the greatest positive impacts while producing the least negative impacts on the natural, physical, social, cultural, and economic environments. Please rate by recording either "1" (preferred) or "2" (not preferred) in each box.

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duction / Water Quality Improvements

☐ **Alternative 2A – Retrofit / New Storm Water Management Facilities (SWMF) for Quantity Control**
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☐ **Alternative 2B – Retrofit / New SWMF for Quality Control**
Retrofit, expand, and create new stormwater management facilities in the study area to improve watershed water quality, promote infiltration, and improve the water balance. The improvements will have an insignificant impact on peak flows and downstream flooding.

☐ **Alternative 2C – Lot Level Low Impact Development (LID)**
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☐ **Alternative 2E – Centralized LID**
LID is an innovative approach that mimics the natural movement of water in order to manage stormwater (rainwater and urban runoff) close to where it falls. LIDs infiltrate, filter, store, evaporate, and detain stormwater. These techniques are based on the principle of using stormwater as a resource. Centralized LID measures are being considered for construction underground within existing parkland across the City.

ENGINEERING DEPARTMENT

Drainage Master Plan

Conveyance Capacity Improvements:

☒ **Alternative 3A – Culvert / Watercourse / Major Drai**
Plan Recommendations)
Culvert, watercourse, and major drainage system impro
including the 1 in 25 year storm event, or as previously r

☐ **Alternative 3B – Culvert / Watercourse / Major Draina**
Culvert, watercourse, and major drainage system improv
including either the 1 in 50 year storm event (for local a
accordance with the City's current flood frequency design

Please list below any concerns or comments you have relat

...nage Master Plan

File: D

November ...

...se rate your satisfaction with the level of detail of the information presented herein at the Public Information Cer... added on the City website (www.barrie.ca/eastudies).

☐	☐	☐	☐	☐
Poor (Much Improvement Required)	Marginal (Some Improvement Required)	Good	Very Good	Excelle...

...se add a comment in support of your level of satisfaction below:

Do you wish to be informed of future Public Information Centers for the Drainage Master Plan, and of staff recommen... the Preferred Alternative Solution?

☒ Yes ☐ No

Signature: [redacted]

Date: Nov. 15 20...

Please submit this comment sheet by **Thursday, November 16, 2017** to:

Mr. Tom Reeve, P. Eng.
City of Barrie
Engineering Department, 6th floor
70 Collier Street, P.O. Box 400
Barrie, ON
L4M 4T5

Tel: (705) 739-4220 ext. 4465
Fax: (705) 739-4243

E-mail: Tom.Reeve@barrie.ca

Thank you for your comments.

November 16, 2017.

City of Barrie Engineering Department
70 Collier Street, 6th Floor
Barrie, Ontario
L4M 4T5
Att: Mr. Tom Reeve, Senior Infrastructure Planning Program Coordinator

RE: City of Barrie Drainage Master Plan – November 2, 2017 Public Information Centre Comments

Dear Mr. Reeve,

Fortress Kempenfelt Bay Developments Inc. is the owner of 51, 53, 55 and 75 Bradford Street (the project) within the City of Barrie (see Figure 1 – Location Map). We are writing you as a result of our visit to the Public Information Centre that was scheduled on November 2, 2017.

As you may be aware, the project is located within the City of Barrie's Downtown core, which has been designated as an Urban Growth Centre (UGC) by the Province of Ontario. The Provincial Growth Plan identifies that UGC's will be planned to accommodate significant population and employment growth, and in the case of Barrie's UGC's, Downtown Barrie is planned to achieve a minimum density of 150 residents and jobs combined per hectare.

The City's Official Plan accordingly provides for policies for growth and development in the UGC. The OP designates the property as "City Centre" in its entirety. The City Centre designation provides for a broad range of urban land uses. The project is also identified as an Intensification Area which is planned to achieve a minimum gross density of 150 residents and jobs combined per hectare (see Figure 2 – Intensification Area).

The project is divided into four zones within the City of Barrie Zoning By-law. Three of the zones are site-specific Transition Centre Commercial (C2-2) zonings with special exceptions and the fourth zone is an Environmental Protection Zone. The minimum residential densities for the three commercial zones range from 90, 196, and 220 dwelling units/ hectare and maximum height provisions range from 14, 77, and 78 metres (see Figure 3-

Given all of this information above we would like schedule a meeting with you to discuss how the Environmental Assessment will protect the current planning objects and as of right zoning permissions which currently exist on the project.

Regards,

FIGURE 1 – LOCATION MAP

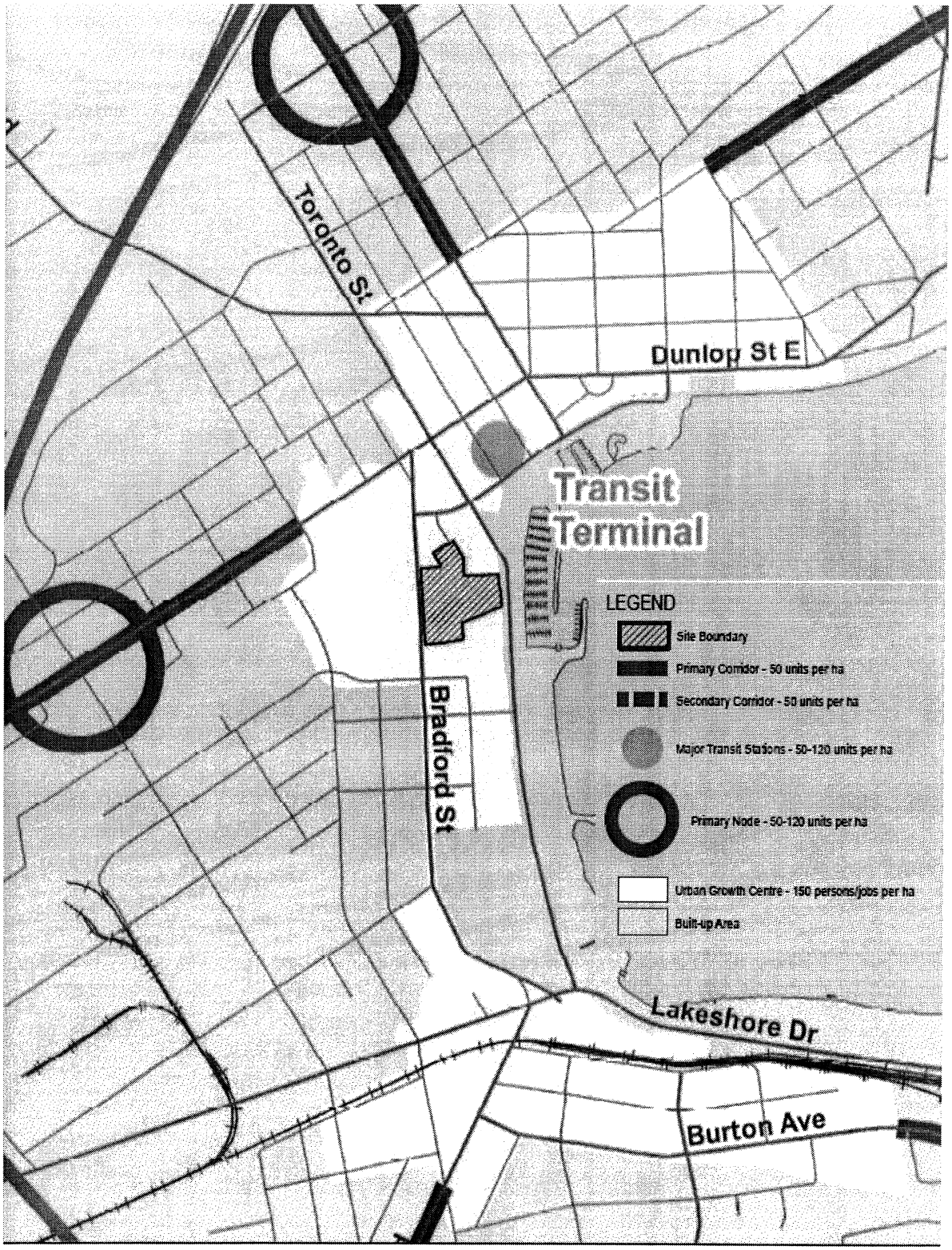

FIGURE 2 – INTENSIFICATION AREA

FIGURE 3 – SITE SPECIFIC ZONING