



# Public Information Centre No. 1

## Haldimand County

### Caledonia Master Servicing Plan Update

June 23, 2016



# Study Overview and Purpose



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- The Caledonia Master Servicing Plan (MSP) for storm drainage, wastewater conveyance, water distribution and transportation servicing was completed in 2005.
- The intent of the MSP was to document the existing servicing conditions, identify future servicing needs and recommend a servicing plan for implementation by Haldimand County
- The update to the MSP is required to address all of its servicing needs in light of a series of initiatives, projects, and development proposals conducted by the County, the Province and other stakeholders in and around the community of Caledonia.
- The County intends on proceeding with numerous developments in and around Caledonia.



# Objective of the MSP

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The key objectives of the MSP update include:

- In-Depth review and update of all relevant planning data;
- Comprehensive data collection, review and update into the current 2005 MSP as it pertains to all existing infrastructures;
- Verification of all existing servicing models for analysis and development of servicing alternatives;
- Evaluation of the servicing requirements for the existing condition (2016) and identification of the future servicing needs over the next 20 years based upon full development in accordance with Haldimand County Official Plan, dated June 2009, and
- Development of an implementation plan of prioritized, scheduled infrastructure projects including infrastructure capital cost estimates in collaboration with County staff.



# Study Area



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The Study Area for the MSP encompasses the community of Caledonia.





# Municipal Class EA Process: Master Plan

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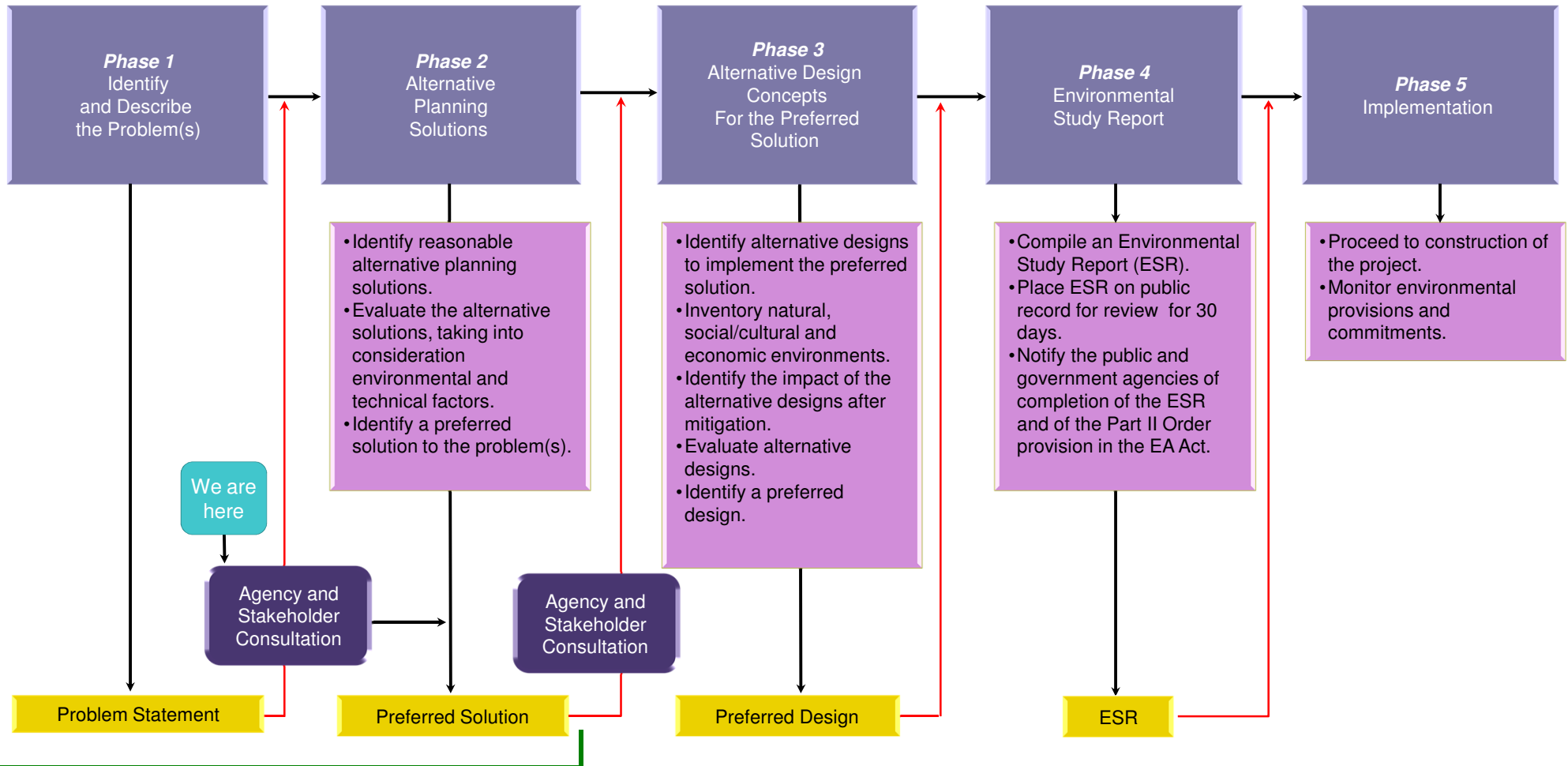


- The study will be conducted in compliance with the Master Servicing Approach 2, as defined in the Municipal Engineers Association “Municipal Class Environmental Assessment,” (October 2000, as amended June 2007, 2011 and 2015), which is approved under the Ontario Environmental Assessment Act. This study will address Phases 1 and 2 of the Class Environmental Assessment Process and will be sufficient to fulfill the requirements for Schedule B projects.
- A Master Plan is defined as a Long Range Plan which integrates infrastructure requirements for existing and future land use with environmental planning principles. These Plans examine the whole infrastructure system or group of related projects, in order to outline a framework for planning subsequent projects and/or developments.
- Master Plans are completed at the broad level of assessment and requires more detailed investigations at the project-specific level.

# Municipal Class EA Process



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The Master Plan Process will include Phases 1 and 2 of the Municipal Class EA Process. Future projects depending on their complexity (i.e. Schedule) would need to conduct subsequent phases and additional consultation.



# Existing Conditions – Transportation

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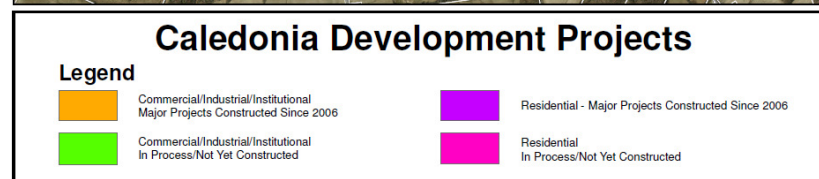
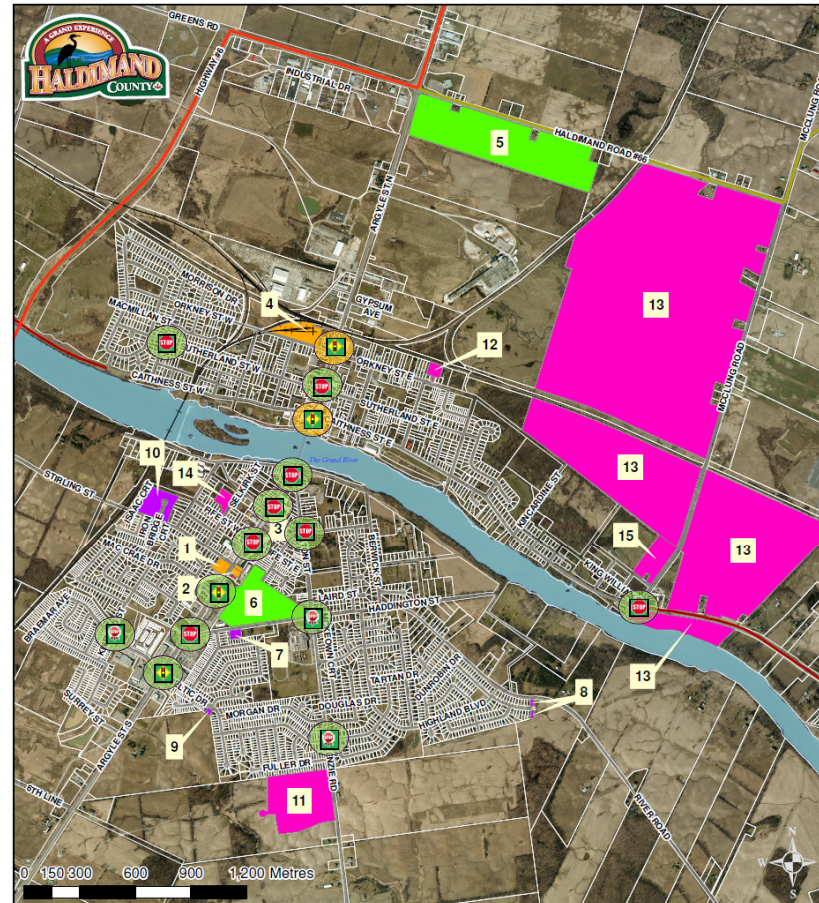


- Traffic turning movements collected at several locations by Haldimand County were used to evaluate existing traffic conditions.
  - The intersection of Argyle Street and Caithness Street services the greatest number of vehicles in the study area, with approximately 1579 and 1915 vehicles during the a.m. and p.m. peak hours respectively.
  - Overall intersection volumes at Argyle Street intersections typically range between 750 and 1900 vehicles per peak hour.
  - Overall intersection volumes at intersections not situated on Argyle Street typically range between 85 and 800 vehicles per peak hour.
- Estimated volume to capacity ratios at the intersections of Argyle Street at Caithness Street and Orkney Street suggested that Level of Service at these intersections is starting to decrease during both the AM and PM peak.

# Existing Conditions – Transportation



	Intersection	Control	AM Peak Hour	PM Peak Hour
			Volume/ Capacity Ratio	Volume/ Capacity Ratio
1	Argyle St at Caithness Street	Signal	0.52	0.60
2	Argyle St at Celtic Drive / Braemar Avenue	Signal	0.48	0.35
3	Argyle Street at Fife Street	TWSC	0.32	0.41
4	Argyle Street at Haddington Street	TWSC	0.35	0.42
5	Argyle Street at Kinross Street	Signal	0.38	0.47
6	Argyle Street at Orkney Street	Signal	0.54	0.44
7	Argyle Street at Renfrew Street	TWSC	0.36	0.42
8	Argyle Street at Sutherland Street	TWSC	0.62	0.51
9	Argyle Street at Wigton Street	TWSC	0.56	0.49
10	Kinross Street at Braemar Avenue	AWSC	0.24	0.30
11	Caithness Street at McClung Road	TWSC	0.31	0.39
12	McKenzie Road at Caledonia Avenue	AWSC	0.24	0.31
13	Wigton Street at Haddington Street	AWSC	0.50	0.44
14	Ross Street at Sutherland Street	TWSC	0.16	0.26
15	Wigton Street at Renfrew Street	TWSC	0.29	0.53
TWSC: Two-way Stop Control				
AWSC: All-way Stop Control				



- Signalized Intersection**
- Stop-Controlled Intersection**
- Stop-Controlled Intersection (All-Way)**



# Existing Conditions – Storm Drainage



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Update to determination of existing (2004 to 2016) land use storm drainage:

- Incorporates 12 years of development
- Used improved modelling techniques (determination of storm runoff and flows)

Community divided into drainage areas for:

- South Grand
- Douglas Drain
- Seneca Creek
- Lindsey Creek
- North Grand

Key Findings:

Argyle Street Culvert on South Douglas Drain only has a 2 year flow capacity

Other crossings deficient are not owned by the County

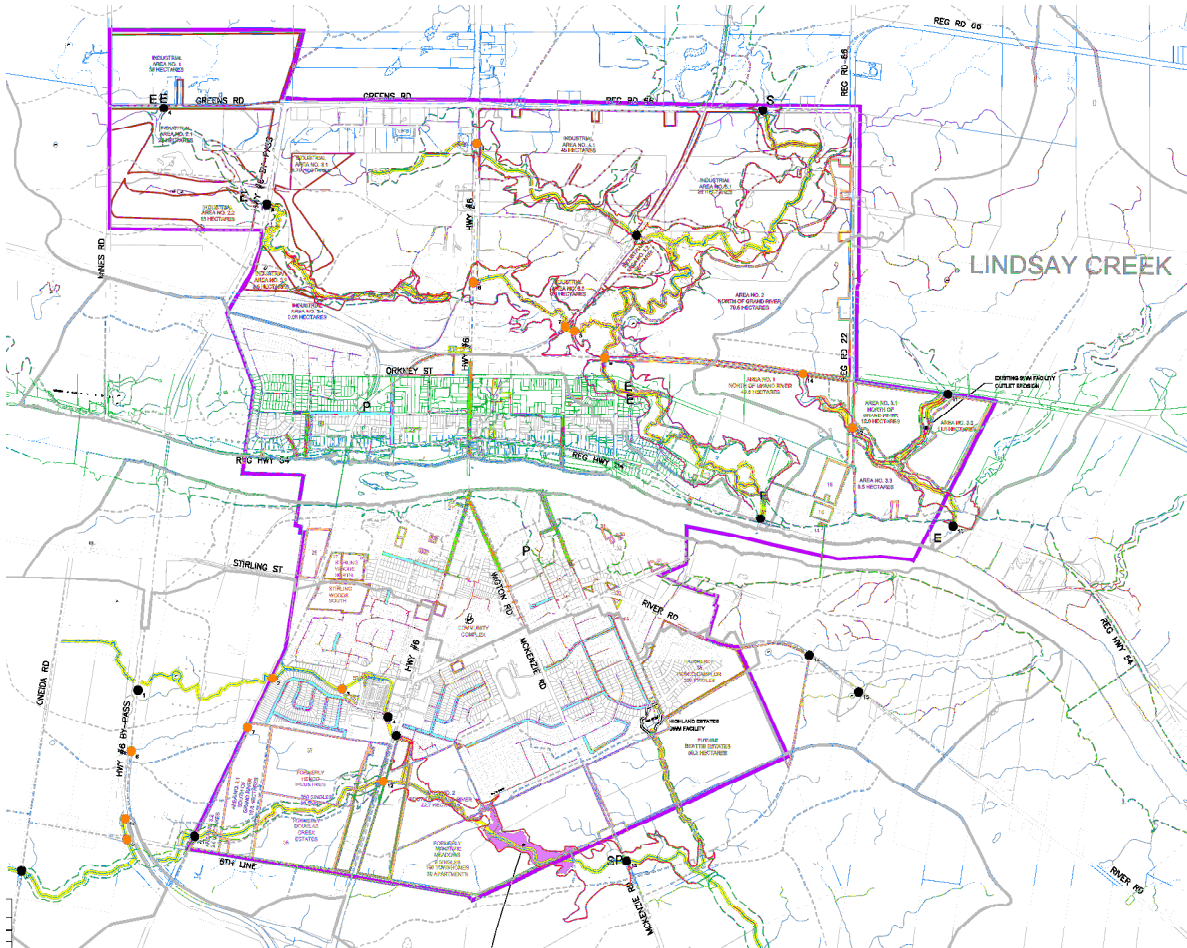
No significant drainage system deficiencies just localized issues (i.e. ponding)



# Existing Conditions – Storm Drainage



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LEGEND	
●	CROSSING LOCATION AND IDENTIFICATION
○	DEFICIENT CROSSING LOCATION AND IDENTIFICATION
○	FROSION SIFTS
○	SEDIMENTATION SITES
○	PONDING SITES
—	APPROXIMATE REGIONAL FLOODLINE
—	GRCA REGIONAL FLOODLINE
—	WATERCOURSE TO REMAIN OPEN
—	EXISTING STORM SEWER
—	FLOODING REPORTED JULY 18, 2002
—	SUBWATERSHED BOUNDARY
—	SUBCATCHMENT BOUNDARY
—	URBAN BOUNDARY
—	INFILL DEVELOPMENT AREAS
—	FUTURE RESIDENTIAL DEVELOPMENT AREAS
—	FUTURE INDUSTRIAL DEVELOPMENT AREAS
—	COMPLETED DEVELOPMENTS SINCE 2006 MASTER SERVICING PLAN
—	FUTURE COMMERCIAL DEVELOPMENT AREAS
—	ASSESSED TRUNK STORM SEWER
—	SURCHARGED TRUNK STORM SEWER
—	SURCHARGED STORM SEWER

CULVERT SUMMARY				
NORTH OF THE GRAND RIVER				
Number	Location	Type	Size	Capacity
1	RR 66	Span	11m x 4.1m	100 Year
2	Hwy 6	Box	1.5m x 1m	2 Year
3	CNR N/S	Box	1.9m x 2.5m	Regional
4	Greens Road	Box	1.8 x 0.95m	25 Year
5	Hwy 6 By-Pass	Box	2.4m x 1.25m	Regional
6	Hwy 6	Box	1.8m x 1.0m est.	5 Year
7	CNR N/S-W	Box	1.8m x 1.65m	50 Year
8	CNR N/S-E	Elliptical CSP	1.5m x 1.7m	50 Year
9	CNR E/W	Bridge	10.6m x 8.0m est.	100 Year
10	Reg Hwy 54	Arch Span	Unknown	N/A
11	CNR E/W	Stone Arch	2.3m x 2.5m	100 Year
12	RR 22	CSP	900mm est.	10 Year
13	Reg Hwy 54	Box	3m x 2m	25 Year
14	CNR E/W	CSP	600mm	5 Year
SOUTH OF THE GRAND RIVER				
Number	Location	Type	Size	Capacity
1	Hwy 6 By-Pass	CSP	1,080m	Regional
	Hwy 6 By-Pass	CSP	900mm	Regional
2	CN Rail	CSP	900mm	10 Year
3	Kinross St.	Conc. Box	1.5m x 3.0m	Regional
4	Braemer Ave/Canadian Tire	Conc. Box	4.0m x 1.8m	Regional
5	Argyle Ave.	Conc. Box	3.0m x 1.8m, 1.52m x 1.25m	Regional
6	Hwy 6 By-Pass	CSP	900mm	10 Year
7	CN Rail	Conc. Pipe	825mm	100 Year
8	Oneida Road	Unknown	Unknown	N/A
9	Hwy 6 By-Pass	Conc. Box	1.8m x 1.35m	5 Year
10	Hwy 6 By-Pass	Conc. Pipe	1.5m	Regional
11	CN Rail	CSP	1.5m	10 Year
12	Argyle St.	Conc. Box	1.5m x 1.2m	2 Year
13	McKenzie Rd.	Plate Arch	3.9m x 2.4m	25 Year
14	River Rd.	Unknown	Unknown	N/A
15	River Rd.	Unknown	Unknown	N/A

Note: Regional Storm is Hurricane Hazel



# Existing Conditions Summary– Water



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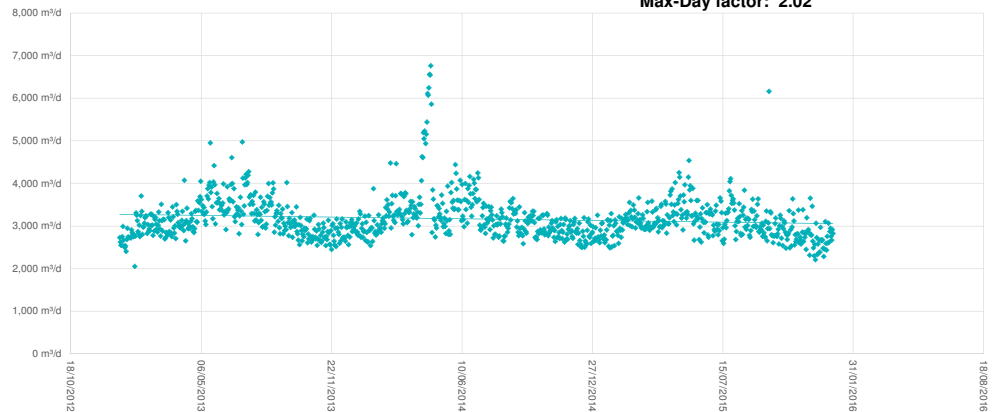
- Single Water Supply Source from City of Hamilton - Supply Agreement allows for 13,800 m<sup>3</sup>/day, which meets current max day demand of 6,380 m<sup>3</sup>/day
- Water Distribution System services Caledonia, Cayuga & York – 2011 Population 12,100 (Source: Watson & Associates Economists 2014)
- Caledonia Booster Pumps (4 pumps – total capacity of 22,070 m<sup>3</sup>/day)
- Existing distribution system consists of over 60 km of watermains 100 mm to 450 mm diameter (installed from 1960's to today – mix of Cast Iron, Ductile Iron, PVC and HDPE)
- Total System Storage 4,420 m<sup>3</sup> (Standpipe)+ 2,004 m<sup>3</sup> (Caledonia Reservoir) = 6,424 m<sup>3</sup> (Standpipe storage function impacted by system pumping and elevation limitations)
- Variable System pressures 300 – 600 kPa (40-90 psi), within acceptable range

## Existing Conditions Model

Hydraulic Model (InfoWater) with pipe network and system elements to simulate average day demands, max day demands, peak hourly demands and fire demands in the system and evaluate system pressures under design conditions.

DAILY FLOW OUT OF CALEDONIA RESERVOIR (2013-2015)

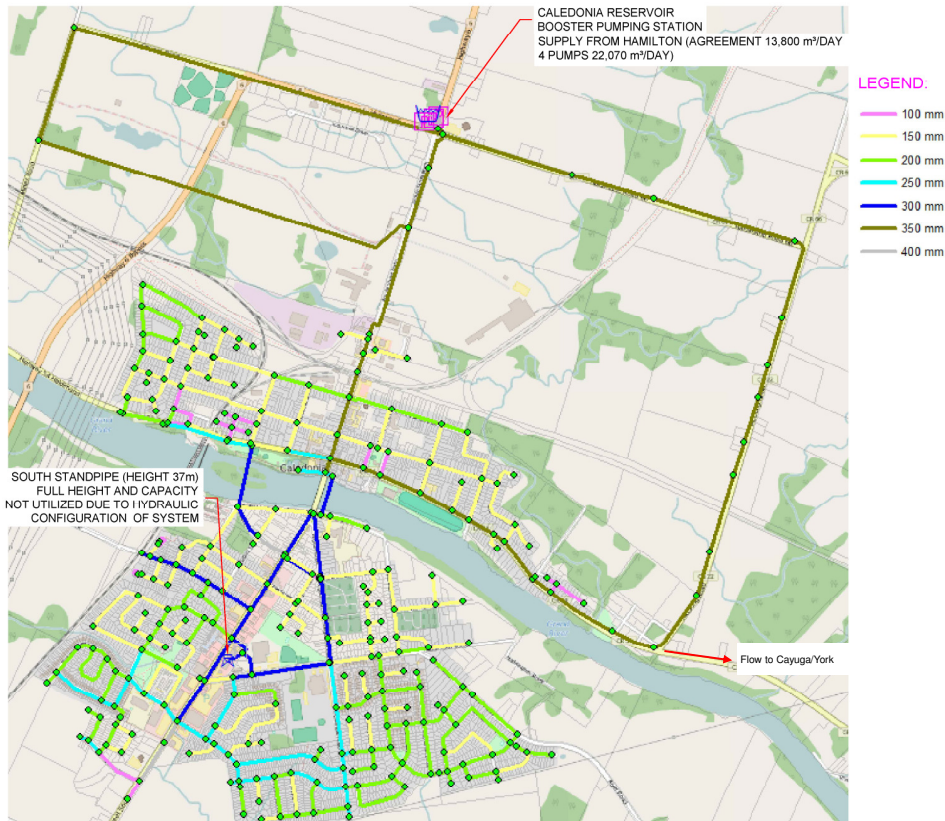
Average Day Demand (2013-2015): 3,166 m<sup>3</sup>/day  
Max Day Demand (2013-2015) 6,380 m<sup>3</sup>/day  
Max-Day factor: 2.02



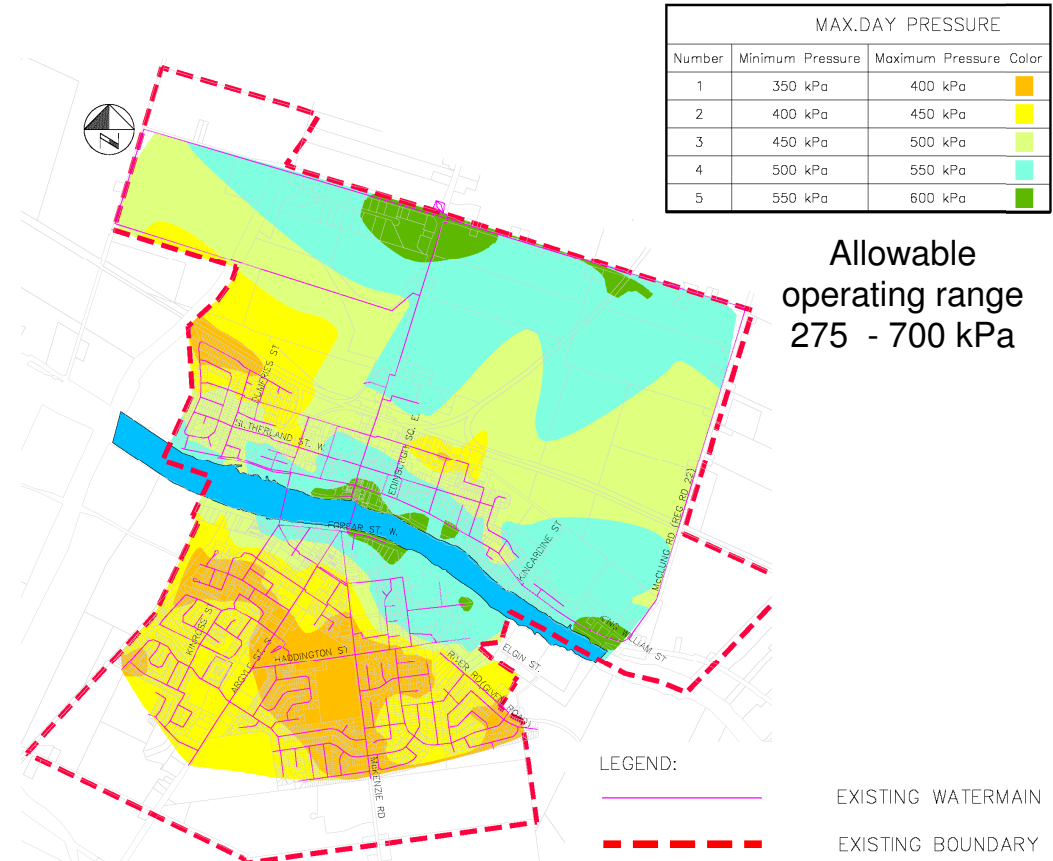
# Existing Conditions Summary– Water



## Existing Watermains



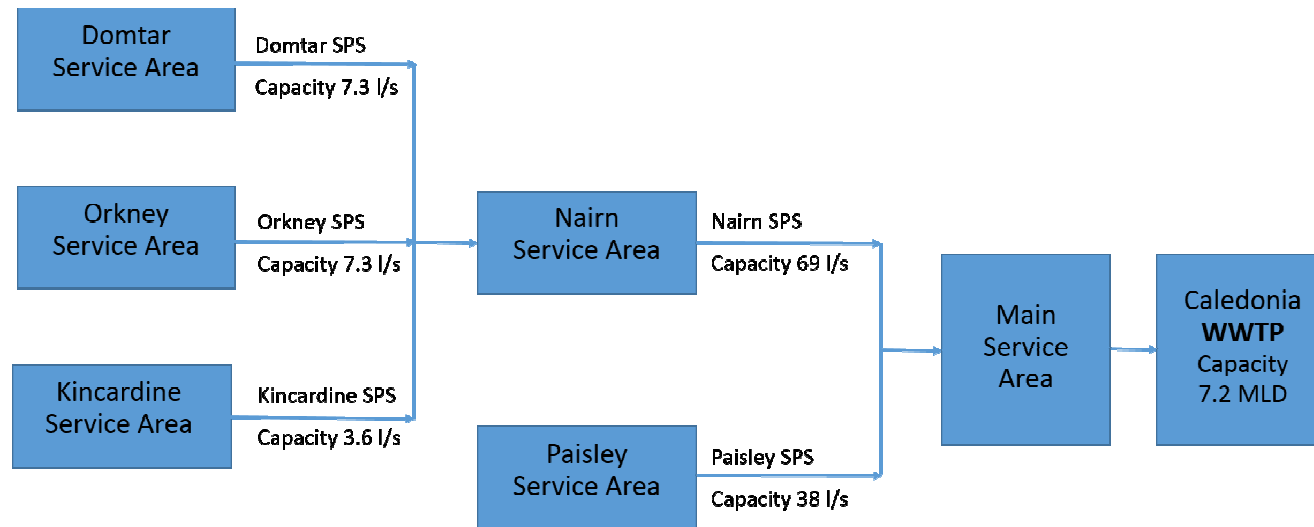
## Max. Day Pressure Distribution



# Existing Conditions Summary– Wastewater



- The Urban Collection System services Caledonia – 2011 Population 10,400 (Source: Watson & Associates Economists 2014)
- Collection System is serviced by a wastewater treatment plant with a capacity of 7.2 Millions Litres/Day (MLD)
- The maximum daily dry weather flow is estimated at 6.0 MLD based on Max Day Water Demands
- Existing Collection system consists of approximately 50 km of sewers 100 mm to 600 mm in diameter (installed from 1960's to today – mix of concrete, asbestos cement, and PVC pipe), and
- 5 pumping stations and forcemain systems.



(see next board for service areas)

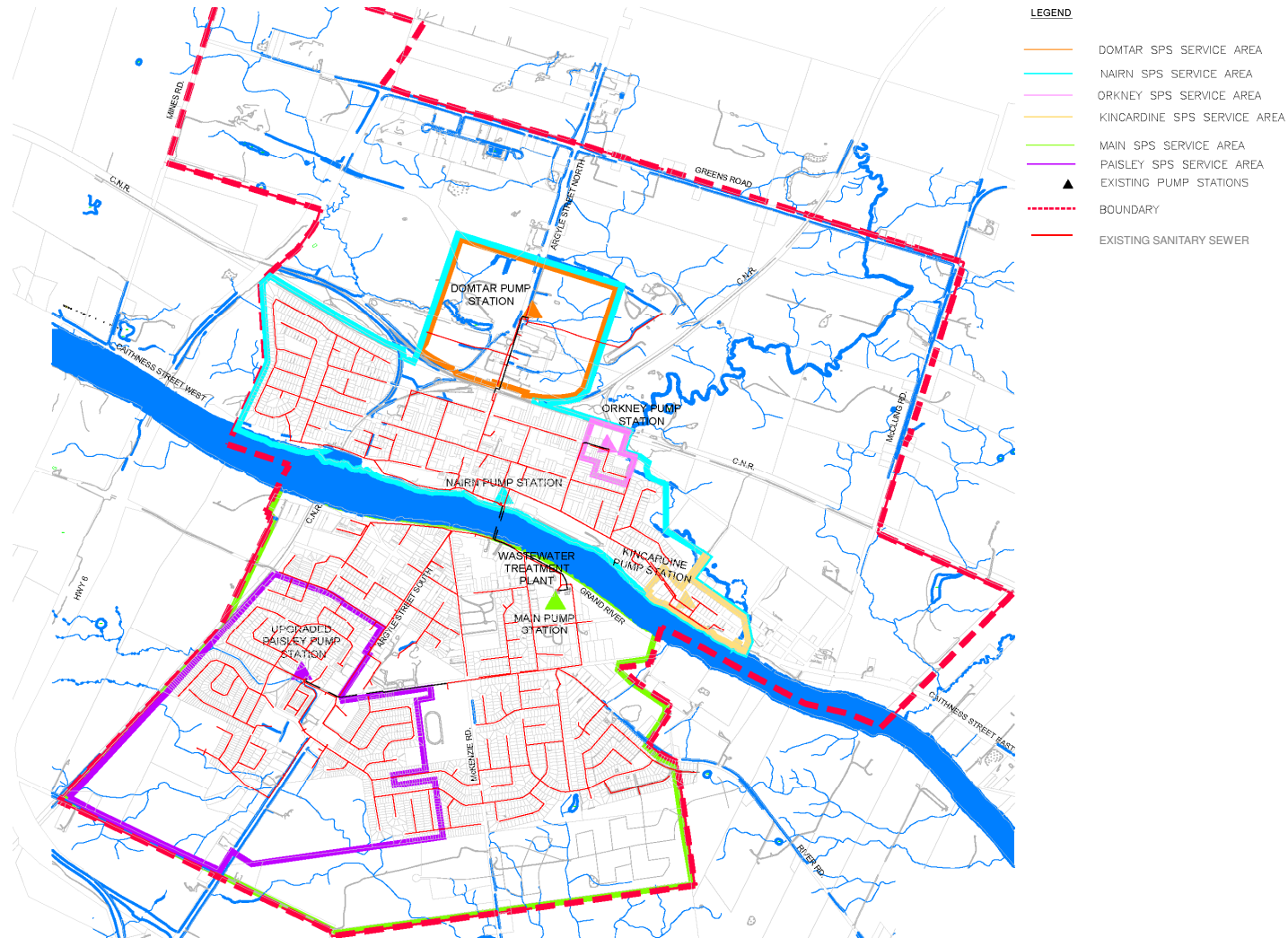


# Existing Conditions Summary– Wastewater



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## Existing Wastewater Collection and Treatment System



# Next Steps

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- Receive public comments by July 11, 2016
- Finalize existing land use and servicing assessment.
- Conduct future land use condition assessment.
- Identification of constraints based on future land use.
- Determine opportunities for servicing improvements.
- Hold Public Information Centre No. 2 in October 2016
- Finalize opportunities and prepare the Master Servicing Plan Update Report.
- Presentation to Council in 2017.



# How to Provide Comments



## Please Complete a Comment Sheet:



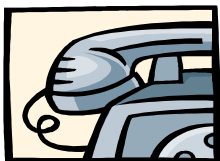
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**Please submit comments no later than  
July 11, 2016**

**Thank you for your participation!**