

# **Environmental & Science & Engineering** MAGAZINE

AUGUST 2017  
[www.esemag.com](http://www.esemag.com)

**SPECIAL FOCUS**  
**CLIMATE CHANGE &  
RESILIENT INFRASTRUCTURE**

**ES&E'S ANNUAL GUIDE TO**  
Government, Associations  
& Academic Institutions



# STORMWATER FUNDING NEEDS TO BE A PRIORITY IN ONTARIO: REPORT

By Peter Davey

According to a recent report, stormwater infrastructure in Ontario is in poor condition and under tremendous strain as the number of severe flood events increases.

The Ontario Society of Professional Engineers (OSPE), the Residential & Civil Construction Alliance of Ontario (RCCAO) and the Ontario Sewer & Watermain Construction Association (OSWCA) partnered to assess the province's ability to cope with the impending impacts of climate change and severe weather patterns, by looking at the condition of stormwater infrastructure and the type of asset management planning that is done in municipalities across Ontario.

The joint report, released on July 5, 2017, and titled *Weathering the Storms: Municipalities Plead for Stormwater Infrastructure Funding*, found that resources and funding are extremely limited. The findings are based on a survey of Ontario municipalities conducted in February 2017. Based on the survey results and feedback, the report says: "Significant investments will be

required to maintain or bring municipal stormwater infrastructure up to a good or better condition rating."

Some key statistics in the report include:

- 58% of survey respondents saying they have limited to no engineered stormwater infrastructure.
- Only 15% have a stormwater monitoring plan, which collects data on the performance of existing systems.
- Only 11% reported that their stormwater asset management plans accounted for climate change.

## STORMWATER PRIORITIES

Mark Hartley, a water resource engineer who worked on the report, said it's important to recognize that most of the survey respondents represent towns with populations under 50,000 and that they have different infrastructure priorities from larger cities.

"A small municipality may have one or two residential developments serviced by curb and gutter catch basins with stormwater sewers and ponds. Relative

to the other infrastructure they have, it's not high on their priority list," said Hartley. "In contrast, a more built-out municipality may have hundreds of parcels of land that have been developed. These municipalities might have already conducted stormwater pond cleanouts and retrofits, or experienced flooding events. They have a tremendous amount of experience with stormwater management, and are keenly aware of the infrastructure."

With this difference in stormwater priorities and experience, Hartley recommends that stormwater be recognized as a distinct utility with different treatment challenges and options from drinking water and wastewater.

Stormwater guidelines and treatment priorities have changed in the past decades and continue to do so. Stormwater controls initially only addressed flooding in urban areas. Dry ponds were used to detain water for a short time before releasing it. The next iteration in treatment came about when water quality problems were identified.

Contaminants from urban surfaces include winter sand and dust, oil and grease, metals and nutrients. "To manage these quality concerns, municipalities adopted wet ponds that have a treatment component as well as a quantity component," said Hartley.

Surveyed municipalities rating the conditions of their stormwater infrastructure. *Weathering the Storms* report.

Stormwater Asset	Assets - Very Poor (1)	Assets - Poor (2)	Assets - Fair (3)	Assets - Good (4)	Assets - Very Good (5)
Stormwater Pipes	2	4	16	26	0
Manholes	0	2	18	28	0
Stormwater Ponds	0	2	15	20	4
Small Culverts (<1m)	2	6	29	12	1
Medium Culverts (1 to 3m)	1	8	24	16	0
Large Culverts (>3 m)	2	3	17	21	1

## LOW IMPACT DEVELOPMENT

According to Hartley, the importance of the “water balance” has been recognized in the last few years as a stormwater management priority. As part of the hydrologic cycle, water needs to infiltrate the ground to recharge groundwater. Low impact development (LID) stormwater management seeks to mimic this natural cycle in urban areas by getting rainfall into the ground as soon as it falls. By using rain gardens, permeable pavements, grassy swales, etc., LID deals with rainfall before it gets into the stormwater conveyance system.

According to the report, 25% of the survey respondents have already implemented LID practices. However, several respondents said they are “concerned about the costs that could be incurred as a result of the proposed Ministry of the Environment and Climate Change LID standards.”

## BRIDGING THE FUNDING GAP

Funding, especially for smaller municipalities, is a huge challenge when it comes to stormwater, and the report dedicates a lot of attention to this issue. It recommends that “stormwater management assistance needs to be considered a funding priority in the next provincial Long-Term Infrastructure Plan, especially for municipalities with populations under 50,000.”

An earlier call for addressing the funding gap came in November 2016, with the Environmental Commissioner of Ontario releasing a report, titled *Urban stormwater fees: How to pay for what we need*. It argued that using property taxes to fund stormwater management “simply has not worked” and, instead, municipalities should levy dedicated stormwater fees to provide stable and equitable funding.

A few Ontario municipalities have adopted dedicated stormwater fees, including London, Markham, Waterloo and Aurora. Last year, Mississauga introduced a stormwater fee that bills residential and non-residential properties based on the size of their impermeable surfaces rather than a flat or tiered rate.

Some stormwater fee programs incor-

porate credit programs to incentivize properties to implement water quality and flow reduction improvements. According to Rosanna DiLabio, senior client manager of Pinchin Ltd.’s emissions reduction & compliance division, credits can generally be categorized as follows:

**1. Peak flow reduction:** Storing precipitation on-site before allowing it to drain slowly into the municipal stormwater system.

**2. Water quality treatment:** Removing solids and other contaminants such as oil and grease from stormwater prior to discharge.

**3. Runoff volume reduction:** Capturing rainfall for irrigation or other non-potable use within the property.

**4. Pollution prevention:** Parking lot sweeping programs and deicing programs to minimize rock salt use. For industrial properties, spill prevention and contingency plans can qualify for pollution prevention credits.

The specifics and use of these credit categories can vary widely across jurisdictions, with different levels of complexity. For municipalities investigating a credit program, DiLabio says that it is important to offer enough of a financial incentive so it makes financial sense for property owners to participate and not view the program as just another tax.

## CONCLUSION

Overall, the recommendations of the *Weathering the Storms* report centre on the importance of municipalities developing Stormwater Infrastructure Asset Management Plans (SIAMPs). Of the 55 municipalities that responded to the survey, only 35% have a separate SIAMP from their water/wastewater plan. The report says that the Ontario government should use incentives, guidelines and regulations to ensure all Ontario municipalities have the means to develop SIAMPs.

To read the full report online, visit: [www.ospe.on.ca/publications/reports](http://www.ospe.on.ca/publications/reports) ■

*Peter Davey is managing and online editor of Environmental Science & Engineering Magazine. Email: [peter@esemag.com](mailto:peter@esemag.com)*



## MULTISTAGE CENTRIFUGAL BLOWERS

### DURABILITY AND PERFORMANCE

From water and wastewater applications to landfill gas recovery systems, Atlas Copco’s years of experience, backed up by a strong global service network, ensure that ZM multistage centrifugal blowers meet all your environmental application requirements including basin aeration, digester gas, soil remediation, filter backwash systems and other processes.

- Flow range < 67,900 Nm<sup>3</sup>/h
- Pressure range: < 170 kPa(g)
- Vacuum range: < 19” hg
- 4-2237 kW – 575V/4160V units
- Local and process controls (DO, Flow and MOV Controls)
- CSA/UL Certified



## COMMITTED TO SUSTAINABLE PRODUCTIVITY

We stand by our responsibilities towards our customers, towards the environment and the people around us. We make performance stand the test of time. This is what we call – Sustainable Productivity.

For more information in regards to our Blowers or Low pressure compressors, please contact Mrs. Marie-Josée (MJ) Quessy at 514.464.7095 or via email at [marie-josée.queissy@ca.atlascopco.com](mailto:marie-josée.queissy@ca.atlascopco.com)

Atlas Copco