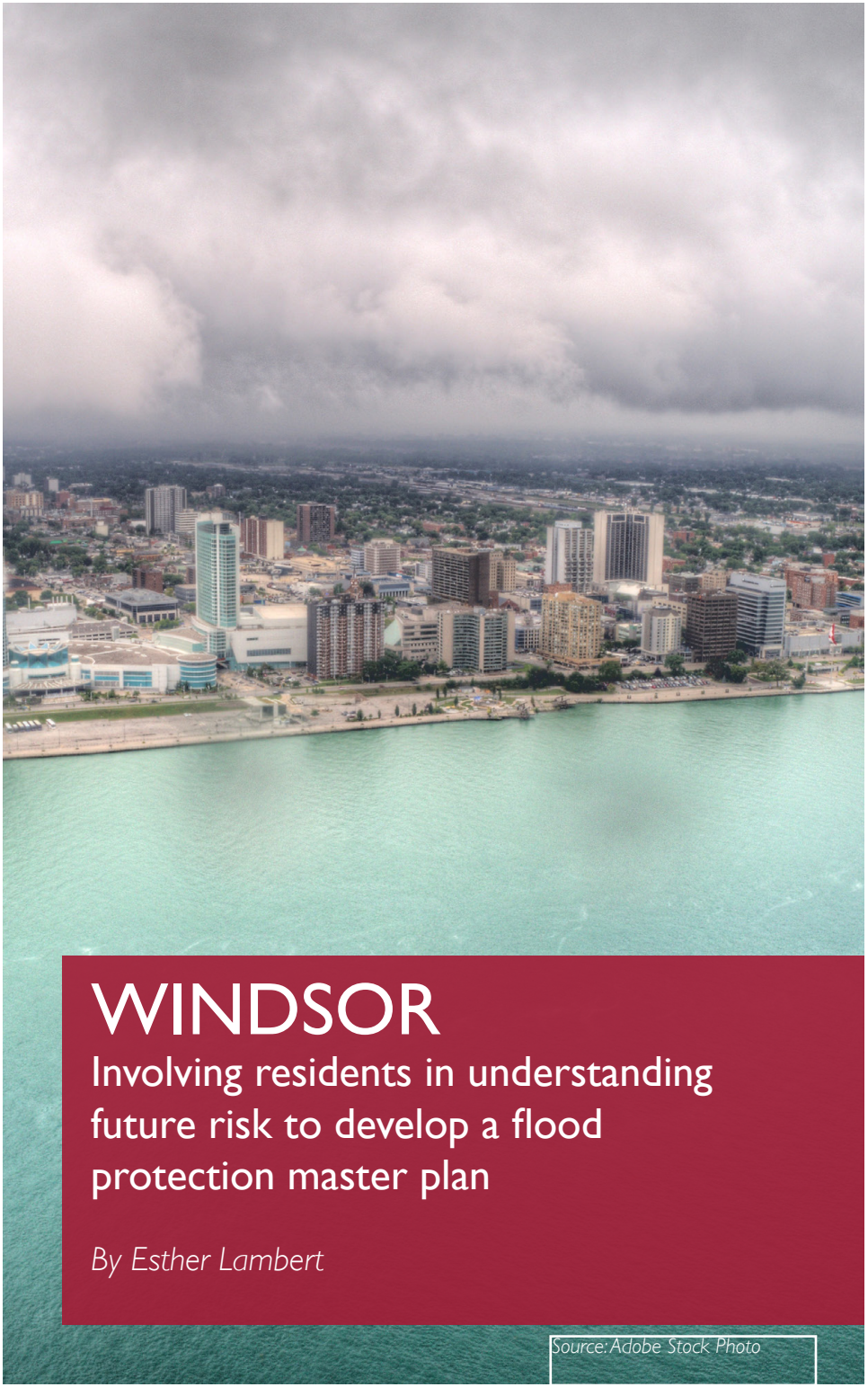

WINDSOR

Involving residents in understanding future risk to develop a flood protection master plan

By Esther Lambert

Source: Adobe Stock Photo

THE SCIENCE

Windsor is expected to experience an increase in average precipitation in the coming decades, facing a heightened risk of loss and damage to infrastructure including sewer systems. Extreme precipitation has resulted in an overwhelming of city storm water infrastructure and widespread basement flooding, increasing households' financial burden through property losses and reconstruction costs. The increasing financial impact of flooding events on the City of Windsor has been a big motivator for putting plans and policies in place to guide risk reduction actions. Developing plans and policies around adaptation action often involves studies to understand the impacts of climate change, risks, vulnerabilities, and priority issues.

While municipalities have a key role to play in reducing urban flood risk, actions taken on private property are essential to manage the inflow and infiltration of rainwater into municipal wastewater systems. Involving homeowners in the process of understanding risk and planning policies around adaptation can be a great way to increase engagement and risk reduction actions at the lot level to further support municipal adaptation actions.

THE TRIGGER

With a track record of recent extreme storms in 2010, 2011, 2014, 2016 and 2017, the City of Windsor acknowledged the importance of building climate resilience within local infrastructure and, for almost a decade, has been taking action towards adapting. The duration of those flood events was short (six hours); however, they were followed by extended aftermath effects. For the 2017 flood event, over 220 mm of rainfall was recorded – which exceeds that expected for a 1 in 100-year storm – flooding more than 6,200 basements. Flooding extended beyond Windsor to LaSalle, McGregor, Tecumseh, Amherstburg, and Lakeshore. Damage was estimated at over $175 million.

Frequent storm occurrences followed by increasing losses was an impetus to apply for funding for the completion of a Sewer and Flood Protection Master Plan, which provides guidance on improving all of the City's sewer systems and overland drainage infrastructure. The storm events also led the City to rethink how it understands the impact of increasingly extreme storms on lake levels. In 2019, the East Riverside Flood Risk PIEVC assessment was conducted, confirming a new record high level in Lake St. Clair and the need to conduct an assessment of vulnerable regions along the Detroit River.

THE APPROACH

One of the first intentions of the City of Windsor was to understand the causes of basement, surface, and coastal flooding and the areas at risk. This was accomplished through the development of a Sewer and Coastal Flood Protection Master Plan, which was fully approved by City Council in July of 2020. City staff and consultants collaborated on this project over a two-year period to identify and prioritize rehabilitation projects. More specifically, the master plan identified improvements to

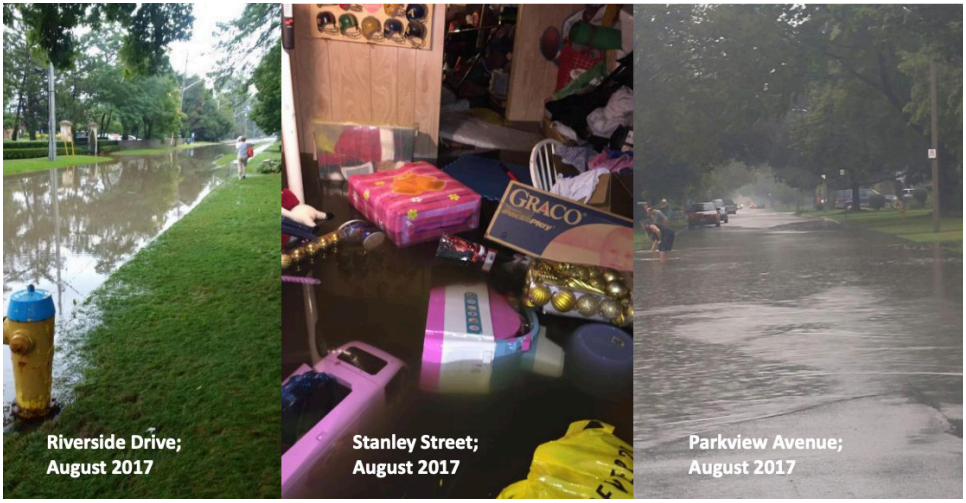

Figure 5: *The City of Windsor has experienced flooding caused by severe rainfalls on many occasions and in various parts of the municipality. (Source: City of Windsor)*

infrastructure and explored design and cost estimates for these improvements.

The City put together a technical team with representation from different departments, including Engineering, Operations, Pollution Control (which manages treatment plants and pumping stations), legal, building, and parks personnel. A stakeholder advisory committee consisting of 17 people was also established and included representatives from the community, environmental experts, and academics. They met seven times with the technical committee to provide advice and feedback to the project team as it evolved.

Ongoing public engagement and education activities throughout the development of the master plan included two public information sessions, public meetings attended by property owners, and the dissemination of three newsletters. There was also a website named "Weathering the Storm" where the public could follow the progress of the project. A special survey called "Partners for Action" was completed by 306 residents to understand their opinions on various aspects of the project. The public information sessions attracted homeowners, indigenous communities, and other interested members of the public. The City reported on its findings about flood risk in various locations and on its proposed solutions, which included projects that require cooperation from homeowners for effective implementation and those under the jurisdiction of the City such as projects concerning pump stations, sewers, stormwater management ponds, and treatment plants.

THE OUTCOME

The master plan identified four priorities and recommendations on how to tackle them. First, it suggested increasing downstream outlet capacity by an expansion of the Little River Pollution Control Plant to account for population growth. Second, the plan recommended implementing coastal flood protection actions to include

the construction of an earth berm along the northern or southern stretch of Riverside Drive East. Third, it suggested implementing source control and private property measures through public education campaigns, implementing low impact development (LID) features and updating the City's development standards. Finally, the fourth priority was to improve sewer system conveyance and storage capacity. After the work was conducted to further understand flood risk and establish the master plan, the City is not in a position to work towards securing funding for specific risk-reduction actions.

The public education component of the master plan development revealed that homeowners do not understand certain aspects of the function of their homes; however, after looking at the website and participating in the information sessions, people gained a better understanding of how their drainage works and why it is important to maintain their sewage backflow preventer.

A WORD FROM WINDSOR

Anna Godo, Senior Engineer for the City of Windsor, stated that municipalities ought to take on a leading role in implementing plans meant to provide direction on improving the resilience of public infrastructure, so that public interests are taken into consideration. She spoke about the master plan with great pride, highlighting major accomplishments to include recommendations for the improvements of both private property and public infrastructure. Ms. Godo added, "If we can keep the water from getting into the system and encourage infiltration, as opposed to collection by the storm sewer system, this would be good for the City."

She mentioned that it is also necessary to look at private property issues that reduce the size of public infrastructure. "The City is saying that we can facilitate the change needed, but in the vast majority of cases, it has to be the individual homeowners that make the changes," says Karina Richters, Supervisor in the Environmental Sustainability and Climate Change Department, in agreement. Another important point emphasized by Ms. Richters was the need for municipalities to position themselves well to receive funding. "The municipality has to lead to develop a sewer master plan to provide the information needed for funding applications." Furthermore, support from Council is crucial.