

Area of Focus 8 - Adapting and Making London More Resilient

Area of Focus 8	Adapting and Making London More Resilient Workplan
Purpose of this Workplan	The Adapting and Making London More Resilient Workplan has been developed based on details: • Provided during community engagement; • compiled or recommended from other municipalities, organizations, committees, and others specializing in climate change actions; • approved by Council; and/or • recommended by City staff. The purpose of this workplan is to set an initial direction for collaborative discussion, action and measuring progress for both the corporation and the community. How the workplan is operationalized will be determined in early 2022.
Climate Change Expected Results	This workplan has been designed to make progress toward the following expected results: More Resilient Buildings and Infrastructure Increased Community Resilience
Why Does this Matter?	Warmer, wetter, and wilder weather events in addition to incremental changes to climate (e.g., temperature), will have impacts to citizens, communities, infrastructure and natural environment. Both the physical structures and community members need to be more resilient to the impacts of severe weather (e.g., snow squalls, heat waves, wind downdrafts, tornados) and the incremental climate changes (e.g., hotter summers, more frequent flooding) which are rapidly occurring. Preparing through adaptation for these weather and climatic changes will assist London to weather the storms and better position London towards sustainability. Adaptation to these changes which are already occurring, is necessary to safeguard Londoners, ensure municipal services are not disrupted and support continued prosperity.
Background – How did we get here?	London is a city that contains 45 km of the Thames River as well as 82 km of smaller creeks and waterways. Riverine flooding has always been part of London’s history and will only be more challenging given the increases in severe weather and related impacts. During

Area of Focus 8	Adapting and Making London More Resilient Workplan
	watershed-wide storm events, properties within the floodplain are especially vulnerable to riverine flooding. During local storm events, older developed areas of the city do not have modern stormwater management and may be susceptible to overland flooding. London is also the 'Forest City' with an extensive tree cover susceptible to wind damage and health impacts caused by invasive species (e.g., Emerald Ash Borer, <i>Lymantria dispar dispar</i> (LDD)). Vulnerable populations in London are the most susceptible to the impacts of climate change. The homeless, elderly, and economically disadvantaged will require greater support and assistance given these expected changes. Many of these challenges were made apparent during the COVID pandemic and the July 2021 heat wave. London's drinking water is supplied from both Lake Huron and Lake Erie. This dual supply gives London built-in resiliency; however, London's distance from these supplies is also a key vulnerability. The City's drinking water travels 50km from Lake Huron and 25km from Lake Erie before entering the City's water system. The supply relies on treatment plants, large pumps, and an underground network of large water mains that are susceptible to disruption during extreme weather events. Although significant redundancies are built into the system, climate change driven extreme events pose a risk to the City of London's drinking water supply. Climate change can also impact the quality of the raw water taken from Lake Huron and Lake Erie. Large storms can trigger a sudden decrease of the quality of the raw water making the water more difficult to treat. Increasing large storm events can cause temporary interruptions to the City's water supply.
What has been done recently?	The London Plan (Official Plan) has established a plan for London to grow inwards and upwards, supported with several climate change policies and directions. An internal Risk Assessment for Climate Change Adaptation was completed in 2014 to provide the city with direction for Asset Management Planning and assist Service Areas on impact adaptation. This work is being updated and built upon using the Building Adaptive and Resilient Communities (BARC) tool as further described below.

Area of Focus 8	Adapting and Making London More Resilient Workplan
	Flood hazard protection and mitigation has been a longstanding program designed to protect neighbourhoods, including the West London Dyke that safeguards 1,200 buildings and 2,500 people. This dyke is currently undergoing a major, multi-year reconstruction designed to increase flood protection. Seven of 11 phases have been completed with the assistance of National Disaster Mitigation Funding received in 2016. The anticipated timeline for completion is 2028. The Mud Creek rehabilitation project will reduce the frequency of flooding over Oxford Street at Proudfoot Lane, while having co-benefits of increasing pedestrian active mobility and creating a sustainable stream corridor. This project will be completed by 2023. Stormwater Management continues to adapt using more ‘at source’ techniques to reduce the amount of water runoff reaching the storm drainage system (e.g., low impact development approaches). Upgraded intensity-duration-frequency (IDF) curves are being used to design new stormwater infrastructure and new flood line mapping is in preparation along critical watercourses. Sensitivity analyses are conducted during the design of all stormwater infrastructure projects to ensure resiliency beyond the 100-year and 250-year regional storm events. The City’s emergency preparedness and response during extreme flood events have been coordinated and managed at the Emergency Operations Centre. The City’s Flood Coordinator works with staff at the Upper Thames River Conservation Authority to monitor and respond to riverine flood risks during large storm events. Actions taken during recent events have included road closures and evacuation of identified vulnerable properties. Combined sewers continue to be separated as part of an overall scheme to eliminate them altogether. Basement flooding prevention programs continue to provide incentives for homeowners to improve their building resilience (e.g., sump pump back-up power, sewer backflow prevention). The Middlesex London Health Unit completed an Assessment of Vulnerability to the Health Impacts of Climate Change (2014) with recommendations for adaptation. They also prepared an assessment of urban heat island effects. The Urban Forest Strategy was completed in 2016 to effectively care for existing tree cover, plan for continued health and improve tree

Area of Focus 8	Adapting and Making London More Resilient Workplan
	cover for the future. A Tree Planting Strategy update is underway which will also include an update to the Wildland Fire Risk rating (identified as 'low to moderate' for London in 2017 by Provincial Ministries). Guidance documents such as the Urban Design Guidelines, Complete Streets Manual and Parks and Recreation Master Plan are all promoting the increased use of street trees and vegetation to offset the impacts of the urban heat island effect. These heat impacts are exacerbated during heat waves making urban spaces less desirable and potentially harmful to human health. The City is in the process of constructing a new 100 million litre drinking water reservoir to be complete in 2023. This additional drinking water storage will increase the amount of water available during an emergency mass power outage or a drop in raw water quality caused by a major climate change event. Additional storage will provide an extend time that Londoners can receive drinking water while the cause of the disruption is being addressed. The City has partnered with the Canadian office of ICLEI, the International Council for Local Environmental Initiatives who support local governments for sustainability. ICLEI, a non-profit organization, and London along with 21 other Ontario municipalities are actively participating in the Advancing Adaptation Program. ICLEI Canada has decades of experience assisting municipalities in completing Adaptation Strategies using industry-standard adaptation processes (e.g., Building Adaptive and Resilient Communities, or BARC, tool). This approach has already guided many southern Ontario cities with adaptation plan creation and implementation. London has previously taken part and benefitted from several collaborations with ICLEI Canada and their partners (e.g., Showcase Cities in 2019). The Advancing Adaptation Program led by ICLEI will collaborate with London staff in the completion of an Adaptation Strategy in 2022. The Strategy will utilize the earlier work completed in London's Risk Assessment for Climate Change Adaptation in addition to earlier baseline climate change vulnerability work prepared by the Middlesex London Health Unit.
Responsible City Service Area(s)	• Led by Environment and Infrastructure and Planning and Economic Development • Supported by Neighbourhood and Community-wide Services,, Enterprise Services

Area of Focus 8	Adapting and Making London More Resilient Workplan
Key Community Partners and Stakeholders	• Middlesex London Health Unit • Conservation Authorities • City of London Advisory Committees • Community Groups (e.g., London Environment Network, Urban League of London) • London Development Institute (LDI) and developers not represented by LDI • Local First Nations and Urban Indigenous communities • Western University • Fanshawe College • Business Associations (e.g., London Chamber of Commerce) • London Community Foundation • ICLEI staff (as part of the Advancing Adaptation program) • Energy utilities (London Hydro, Enwave, Enbridge Gas)
Key Actions (and Milestones)	1. Finalize an Adaptation Strategy based on the updated Risk Assessment for Climate Change Adaptation (Timeline: 2022) a. Finalize London Working Group / Review Team b. Utilize program and expertise of ICLEI c. Develop list of focused actions under specific areas such as: i. Integrate Climate Change Thinking and Response ii. Protect Public Health and Safety iii. Reduce Risk to Buildings and Property iv. Strengthen Infrastructure Resilience v. Protect Biodiversity and Enhance Ecosystem Functions vi. Reduce Community Service Disruptions vii. Build Community Resilience 2. Update the Climate Lens Process to incorporate the latest information included in the Adaptation Strategy to ensure corporate decision-making takes full advantage of the latest information (Timeline: 2022 onward) 3. Identify and assess extreme weather events, impacts and data gaps (Timeline: 2022 and annually) 4. Implement recommendations guided by the timelines established in the completed Adaptation Strategy (2022 onward) 5. Monitor best management practises of other municipalities to take full advantage of new developments in adaptation methods (Timeline: 2022 onward)

Area of Focus 8	Adapting and Making London More Resilient Workplan
	6. Work with the Middlesex-London Health Unit and other community partners to review the effectiveness of existing extreme heat event response programs, including affordable access to indoor air cooling 7. Work with community partners to review the effectiveness of existing flooding event response programs, including access to current flood hazard mapping
Examples of Measuring Progress	More Resilient Buildings and Infrastructure • Key projects and initiatives identified and completed (e.g., completion of the West London Dyke rehabilitation work) • Progress on decreasing the number of damage centres and related losses • % of combined sewers that have been separated • % of sidewalks with shade (by tree cover or physical structures) Increased Community Resilience • Number of people, groups and businesses reached with their own adaptation strategies • Number of people, groups and businesses that have made the recommended adaptation changes • Number of households provided with education materials about living in a floodplain or lot-level stormwater management best practices These measures will be reviewed and updated upon completion of the ICLEI Advancing Adaptation Program currently underway (completion date in early 2022). In addition, these measures are intended to evolve through the consultation and implementation process to ensure they are adding value to the progress of the CEAP.
Resources	• Climate data resources from Environment and Climate Change Canada including the Climateatlas.ca and Climatedata.ca • A Climate Resilience Roadmap for Ontario Municipal Infrastructure and Systems, Regional Public Works Commissioners of Ontario, 2020 • Mitigating Flood Risk in Canada, 2020. Clear Air Council webinar • Ahead of the Storm 2019, Intact Centre on Climate Adaptation • Changing Climate, Changing Communities: Guide and Workbook for Municipal Climate Adaptation, ICLEI (2019) • Characterizing the Urban Heat Island Effect in Middlesex London, Middlesex London Health Unit, 2015

Area of Focus 8	Adapting and Making London More Resilient Workplan
	• Assessment of Vulnerability to the Health Impacts of Climate Change, Middlesex London Health Unit, 2014 • City of London Risk Assessment for Climate Change Adaptation, 2014