

IMPLEMENTATION PLAN
2022

WHITBY
Climate Emergency Response Plan

Phase 1: Resilience

whitby.ca/ClimateChange



1. Governance and Leadership

1.1 Incorporate climate change adaptation and resilience into all decision-making and planning in current and future processes

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
1.1.1 Policy: Update the asset management policy and plan to incorporate climate risk into asset management, following the Province’s asset management mandate.	Flood, heat, extreme weather	Supplementary to modelling results/ overarching best practice	Staff time, \$100,000 asset management plan renewal, and additional funds for individual asset-type studies	Financial Services	CLOCA Institute for Catastrophic Loss Reduction Region of Durham Ellexicon Energy Federation of Canadian Municipalities Municipal Asset Management Program Green Infrastructure Ontario Asset Management Ontario	Internal Government of Ontario Federation of Canadian Municipalities Municipal Asset Management Program	Policy updated and being implemented % of assets assessed with climate risk lens
1.1.2 Policy: Integrate climate resilience into the priority-based budgeting mechanism and reflect the findings from the asset management plan renewal.	Flood, heat, extreme weather	Supplementary to modelling results/ overarching best practice Based on engagement with interested and affected group	Staff time	Financial Services	N/A	N/A	Climate added as budget prioritization criteria
1.1.3 Policy: Develop a sustainable procurement policy that considers climate change mitigation and adaptation, and reflecting the findings of this Plan and the asset management plan renewal.	Flood, heat, extreme weather	Supplementary to modelling results/ overarching best practice	Staff time	Financial Services	N/A	N/A	Policy developed and being implemented
1.1.4 Policy: Require that administrative/staff reports to Council to include an assessment of climate risk and adaptation strategies through the Sustainability portion of the Strategic Priorities section of reports.	Flood, heat, extreme weather	Supplementary to modelling results/ overarching best practice	Staff time	Strategic Initiatives		N/A	Policy developed and being implemented
1.1.5 Initiative: Provide training and workshops to Town staff on climate change adaptation and resilience.	Flood, heat, extreme weather	Supplementary to modelling results/ overarching best practice	Staff time	Strategic Initiatives	CLOCA Institute for Catastrophic Loss Reduction Region of Durham Ellexicon Energy	N/A	% of staff completed training
1.1.6 Program: Provide support to staff on analyzing climate risk in their projects.	Flood, heat, extreme weather	Supplementary to modelling results/ overarching best practice	Staff time	Strategic Initiatives	CLOCA Region of Durham	N/A	% of corporate priorities/projects being supported by trained staff

1.2 Town promotes inclusive resilience with an equity lens

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
1.2.1 Initiative: Define vulnerable populations, working with Whitby Diversity and Inclusion Advisory Committee.	Flood, heat, extreme weather	Supplementary to modelling results/ overarching best practice Based on engagement with interested and affected groups	Staff time	Community Services	Durham Region Health Durham Region Affordable Housing Community Development Council Durham Whitby Diversity and Inclusion Advisory Committee	Durham Region Health	Initiative completed
1.2.2 Program: Create a climate change youth committee.	Flood, heat, extreme weather	Based on engagement with interested and affected groups	Staff time	Sustainability	Town of Whitby Community Services, Whitby Youth Council, School boards Climate Justice Durham	N/A	Committee created and meeting regularly
1.2.3 Initiative: Integrate climate change and emergency preparedness in the Town’s IDEA (Inclusion, Diversity, Equity, and Anti-Racism) Project to better identify how to deliver services that are reflective of the community.	Flood, heat, extreme weather	Supplementary to modelling results/ overarching best practice Based on engagement with interested and affected groups	Staff time	Sustainability	Town of Whitby Organizational Effectiveness Town of Whitby Community Services Durham Region Health Durham Region Affordable Housing Community Development Council Durham	N/A	Climate integrated into IDEA plan
1.2.4 Policy: Apply an equity checklist to climate adaptation and resilience projects and programs.	Flood, heat, extreme weather	Supplementary to modelling results/ overarching best practice Based on engagement with interested and affected groups	Staff time	Sustainability	Town of Whitby Organizational Effectiveness Town of Whitby Community Services, Durham Region Health Durham Region Affordable Housing Community Development Council Durham TRCA Youth Council	N/A	% of projects equity checklist is applied to
1.2.5 Program: Collaborate with grassroots organizations and nonprofits to strengthen relationships with the community and to share information about climate change in a way that improves trust with the Town.	Flood, heat, extreme weather	Supplementary to modelling results/ overarching best practice and based on engagement with interested and affected groups	Staff time	Strategic Initiatives	Town of Whitby Community Services Durham Region Office of the CAO LEAF CLOCA Ducks Unlimited David Suzuki Foundation Forests Ontario	N/A	# of partners communications reach

1.3 Ensure staff are protected against climate risks

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
1.3.1 Initiative: Consult individual departments on operational needs and inclement weather and extreme heat days.	Heat, extreme weather	Supplementary to modelling results	Staff time	Organizational Effectiveness	Town of Whitby Strategic Initiatives Unions representing Town staff Durham Region Health	N/A	Consultations completed
1.3.2 Policy: Based on consultations, make recommendations to departments on potential policy/ procedural changes in inclement weather and extreme heat days .	Heat, extreme weather	Supplementary to modelling results	Staff time	Organizational Effectiveness	Town of Whitby Strategic Initiatives Unions representing Town staff Durham Region Health	N/A	# of safety incidents reported relating to weather and climate-related risks
1.3.3 Policy: Ensure that anti-idling policies do not preclude outdoor staff from staying warm, dry, or cool in inclement weather or on extreme heat days. For example, designate one ‘cooling’ truck on a work site that workers can access as an air-conditioned space.	Heat, extreme weather	Supplementary to modelling results	Staff time	Organizational Effectiveness	Town of Whitby Strategic Initiatives Town of Whitby Legal Services Unions representing Town staff	N/A	# of safety incidents reported relating to weather and climate-related risks
1.3.4 Policy: Consider enhanced departmental budgets for personal protective equipment and clothing to decrease weather-related exposure and risk (such as cooling vests), and communicate to departments their ability to have such budget requests considered.	Heat, extreme weather	Supplementary to modelling results	\$20,000 - 50,000 per year	Organizational Effectiveness	Unions representing Town staff	Internal	# of safety incidents reported relating to weather and climate-related risks
1.3.5 Initiative: Conduct an internal review of programs and services that can continue to be offered remotely, and conduct public engagement to prioritize remote service offerings to supplement current offerings.	Heat, extreme weather	Supplementary to modelling results Based on engagement with interested and affected groups	Staff time (potential for long-term operational savings)	Community Services	Town of Whitby Organizational Effectiveness Unions representing Town staff	Internal	# of non-service days per service
1.3.6 Education/Initiative: Publish a toolkit and/or guidance for private businesses and organizations to follow based on the Town’s experience.	Heat, extreme weather	Supplementary to modelling results Based on engagement with interested and affected groups	Staff time	Strategic Initiatives	Town of Whitby Organizational Effectiveness Town of Whitby Community Services Durham Region Health WorkSafe	N/A	Toolkit published

1.4 Integrate future climate risks into emergency management planning

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
1.4.1 Initiative: Conduct a review of Whitby’s emergency management plans with a climate/extreme weather lens and adapt the plan accordingly.	Flood, heat, extreme weather	Supplementary to modelling results/ overarching best practice Based on engagement with interested and affected groups	Staff time	Operations Fire Services	Town of Whitby Internal departments, Emergency Operating Committee Region of Durham Canadian Red Cross Whitby Public Library	N/A	Plans updated
1.4.2 Initiative: Continue to conduct scenario training incorporating climate change-related disasters, and adapt training as needed based on projections.	Flood, heat, extreme weather	Supplementary to modelling results/ overarching best practice Based on engagement with interested and affected groups	Staff time	Operations Fire Services	Durham Region Emergency Management Office Durham Health Durham Police Services CLOCA OPG Elexicon Energy	N/A	# of climate-related training activities
1.4.3 Initiative: Identify Town-owned and operated buildings that can function as emergency shelters and heating and cooling shelters and identify a list of other publicly accessible buildings that can serve these functions.	Flood, heat, extreme weather	Supplementary to modelling results/ overarching best practice Based on engagement with interested and affected groups	Staff time	Community Services	Durham Region Emergency Management Office Durham Region Health Abilities Centre Local Businesses Operations Fire Services	N/A	Buildings identified
1.4.4 Policy: In collaboration with the Region of Durham, investigate the development of a policy to offer free transit during extreme heat, cold, and other inclement weather events so residents can access centres.	Flood, heat, extreme weather	Supplementary to modelling results/ overarching best practice	Staff time	Strategic Initiatives	Town of Whitby Planning Town of Whitby Engineering Services Durham Region Transit, Durham Region Emergency Management Office	N/A	Policy developed and being implemented
1.4.5 Program: Develop and promote a voluntary register for citizens including seniors and individuals living with a disability that may require assistance or support during extreme weather events.	Flood, heat, extreme weather	Supplementary to modelling results/ overarching best practice Based on engagement with interested and affected groups	Staff time	Fire Services	Town of Whitby Community Services Durham Region Social Services Durham Region Health Salvation Army Faith Based Organizations Community Development Council of Durham	N/A	Registry in place and being utilized

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
1.4.6 Initiative: Conduct public engagement to determine preferred communications methods and channels during climate-related events and emergencies (e.g. through an app, phone notifications, social media, etc.).	Flood, heat, extreme weather	Supplementary to modelling results/ overarching best practice Based on engagement with interested and affected groups	Staff time	Communications and Creative Services	Town of Whitby Strategic Initiatives Town of Whitby Legal Services Durham Region Emergency Management Office CLOCA	N/A	Initiative completed and recommendations being implemented

1.5 Develop and implement a community wide education campaign on climate risks, preparedness and recovery.

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
1.5.1 Education/initiative: Develop a communications strategy that includes a baseline assessment of knowledge and identifies education needs.	Flood, heat, extreme weather	Supplementary to modelling results/ overarching best practice Based on engagement with interested and affected group	Staff time	Communications and Creative Services	Town of Whitby Strategic Initiatives Town of Whitby Emergency Services Region of Durham CLOCA ICLR Ellexicon Energy	N/A	Communications reach
1.5.2 Initiative: Partner with local not-for-profits and resident-led community organizations to engage the public on how they learn about climate change and risk - including imminent weather-related emergencies and long term risks, and understand what information they need to prepare and respond, who they trust to receive information from, and how they prefer to receive information.	Flood, heat, extreme weather	Supplementary to modelling results/ overarching best practice Based on engagement with interested and affected groups	Staff time, \$10,000 in materials and stipend	Communications and Creative Services	Town of Whitby Sustainability Town of Whitby Operations Town of Whitby Fire Services Durham Region Emergency Management Office CLOCA Ellexicon Energy	Internal	# of partners Communications reach
1.5.3 Education: Develop proactive education and information campaigns with partners the public trusts and who can distribute information (libraries, non-profits, businesses, radio stations, etc.).	Flood, heat, extreme weather	Supplementary to modelling results/ overarching best practice Based on engagement with interested and affected groups	Staff time, \$10,000 in materials	Communications and Creative Services	Town of Whitby Strategic Initiatives Town of Whitby Operations Town of Whitby Fire Services Whitby Library Durham Region- Office of the CAO Local businesses CLOCA Blue Dot Whitby Climate Justice Durham Development community	Internal	Communications reach

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
1.5.4 Initiative: Complete a review of existing emergency communication protocols and identify strengths and weaknesses and assess the need for new communications tools such as an app that alerts residents of climate- and weather-related risks and closures.	Flood, heat, extreme weather	Supplementary to modelling results/ overarching best practice	Staff time, \$30,000 in communications services development	Operations Fire Services	Town of Whitby Strategic Initiatives Durham Region Emergency Management Office Town of Whitby Communications and Creative Services CLOCA OPG Elexicon Energy	Internal	Review completed and recommendations being implemented
1.5.5 Program/Education: Develop a community-level education program on the importance of developing emergency preparedness plans for a variety of climate emergencies.	Flood, heat, extreme weather	Supplementary to modelling results/ overarching best practice	Staff time	Communications and Creative Services	Town of Whitby Strategic Initiatives Town of Whitby Operations Town of Whitby Fire Services Durham Region Emergency Management Office CLOCA OPG Elexicon Energy	N/A	Communications reach
1.5.6 Education: Develop education programs specifically for: - Homeowners and renters to take action to make their homes more resilient and improve preparedness for emergencies <ul style="list-style-type: none">• Heat-related illness• Extreme weather events and emergency preparedness.	Flood, heat, extreme weather	Supplementary to modelling results/ overarching best practice Based on engagement with interested and affected groups	Staff time	Communications and Creative Services	Town of Whitby Sustainability Town of Whitby Planning and Development Services Town of Whitby Operations Town of Whitby Fire Services Elexicon Energy Region of Durham Office of the CAO	N/A	Communications reach
1.5.7 Education/Program: Ensure clear and simple communication with the public about the location of emergency services, climate risks and the types of supports available from the Town.	Flood, heat, extreme weather	Supplementary to modelling results/ overarching best practice Based on engagement with interested and affected groups	Staff time	Communications and Creative Services	Town of Whitby Sustainability Town of Whitby Operations Town of Whitby Fire Services Durham Region Emergency Management Office Durham Heath Durham Region Social Services Durham Transit CLOCA OPG Elexicon Energy	N/A	Communications reach

1.6 Conduct community outreach immediately before and during periods of high risk

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
1.6.1 Program: Partner with police, the fire department, and nonprofits to develop outreach teams, focusing on vulnerable, homeless and underhoused individuals, to: <ul style="list-style-type: none">• Create a vulnerable persons registry• Visit homes of vulnerable people and/or call during extreme heat, prior to and during flood events, and prior to and after extreme weather events• Hand out water, provide information about heat warnings, and offer advice about services such as cooling stations, businesses and facilities that welcome people to stay longer on hot days, and any free transit initiatives on hot days.	Flood, heat, extreme weather	Supplementary to modelling results/ overarching best practice	Staff time and \$10,000 for materials per year	Operations Fire Services	Region of Durham Durham Regional Police Local non-profits Local faith organizations.	Internal	% of registered vulnerable persons contacted during each event
1.6.2 Initiative/Education: Share the Town’s strategy and tips for reducing outdoor workers’ exposure to heat for private businesses/employers to consider.	Heat, extreme weather	Supplementary to modelling results/ overarching best practice	Staff time	Organizational Effectiveness	Town of Whitby Operations Town of Whitby Fire Services	N/A	Toolkit published and shared with target audiences

1.7 Monitor climate change predictions and update the Adaptation Plan

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
1.7.1 Program: Assign a staff person to track the latest climate data and information relevant to Whitby.	Flood, heat, extreme weather	Supplementary to modelling results/ overarching best practice	Staff time	Sustainability	Region of Durham CLOCA	N/A	Data and projections updated as per schedule
1.7.2 Policy: Review and update the adaptation strategy every four years.	Flood, heat, extreme weather	Supplementary to modelling results/ overarching best practice	Staff time; up to \$50,000 in modelling fees	Sustainability		Internal	Plan updated as per schedule
1.7.3 Initiative: Review the needs of the Emergency Management Offices to incorporate climate resilience and preparedness into the planning processes and service delivery. For example, as vector-borne diseases become more prominent with a changing climate, ensure that a public health representative is included as part of EMO meetings, or EMO staff receives training or scenario opportunities that involve vector-borne illnesses.	Flood, heat, extreme weather	Supplementary to modelling results/ overarching best practice	Staff time	Operations Fire Services	Town of Whitby Strategic Initiatives Town of Whitby Community Services Durham Health CLOCA	N/A	Strategy updated as per schedule

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
1.7.4 Program: Coordinate across Town departments to ensure clear communication strategies for cross-departmental responsibilities, such as ensuring the EMO has the most current information regarding road access for route planning.	Flood, heat, extreme weather	Supplementary to modelling results/overarching best practice Based on engagement with interested and affected groups	Staff time	Operations Fire Services	Town of Whitby Strategic Initiatives All Town of Whitby Department Durham Health Durham Emergency Management Office	N/A	# of transparency and communications complaints on weather and climate-related topics

2. Adapted Buildings and Built Infrastructure

2.1 Ensure new construction and retrofits increase resilience

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
2.1.1 Policy: Utilizing the ‘Durham Region Climate Resilience Standard for New Houses’, develop policies and site plan permitting requirements that direct development applicants to address basement flooding and extreme heat protection. Priorities include: <ul style="list-style-type: none">• Sewer backflow prevention policy/requirement• Site grading, drainage, and low impact development development requirements• Limiting and sealing foundation openings guidelines• Foundation drainage, sump pump, and downspout drainage and discharge policies and guidelines• Net-zero run-off guidelines and/or policy• Design guidelines for passive cooling including siting, shading, glazing, and window operability• Cool roof guidelines• Landscaping guidelines including maintaining existing trees and adding addition trees and native plant species• Energy efficiency components including insulation, windows, doors, and high-efficiency heat pumps (overlaps with Whitby Green Standard).	Flood, heat, extreme weather	Modelled actions: Dry-proofing and wet-proofing buildings Undertake building retrofits with heat pumps	Staff time	Planning and Development Services	Town of Whitby Sustainability Region of Durham Office of the CAO Region of Durham Planning Services Durham Home Builders Association, Landowners CLOCA Intact Centre Institute for Catastrophic Loss Reduction	Intact Centre	Climate and weather-related losses/damages to buildings

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
2.1.2 Education/programs: Utilizing the ‘Durham Region Climate Resilience Standard for New Houses’, develop education materials and support programs for residents to complete resilience upgrades in their home to protect against basement flooding and extreme heat. Priorities should include actions that can be completed within existing buildings such as: <ul style="list-style-type: none"> • Cool roof guidelines • Landscaping guidelines including maintaining existing trees and adding addition trees and native plant species • Energy efficiency upgrades including insulation, windows, doors, and high-efficiency heat pumps • Sealing foundations • Foundation drainage, sump pump, and downspout drainage and discharge (see more in Action 2.4). 	Flood, heat, extreme weather	Modelled actions: Dry-proofing and wet-proofing buildings Undertake building retrofits with heat pumps Based on engagement with interested and affected groups	Staff time	Sustainability	Town of Whitby Planning and Development Services Region of Durham Office of the CAO Region of Durham Planning Services Durham Home Builders Association, Landowners CLOCA Intact Centre Institute for Catastrophic Loss Reduction	N/A	Climate and weather-related losses/damages to buildings
2.1.3 Policy/initiative: Include climate resilience measures as part of the mandatory tier of the Whitby Green Standards and note the adaptation benefits for efficiency actions such as landscaping, air tightness, windows and doors, insulation, and efficient heating and cooling systems.	Flood, heat, extreme weather	Modelled actions: Dry-proofing and wet-proofing buildings Undertake building retrofits with heat pumps	Staff time	Sustainability	Town of Whitby Planning and Development Services Region of Durham Office of the CAO Region of Durham Planning Services Durham Home Builders Association, Landowners CLOCA	N/A	Climate and weather-related losses/damages to buildings
2.1.4 Program/initiative: Evaluate the need and ability to provide additional incentives and funding programs for energy-efficient new buildings and building upgrades.	Heat	Modelled actions: Dry-proofing and wet-proofing buildings Undertake building retrofits with heat pumps	Staff time and \$60,000 for program development	Sustainability	Town of Whitby Financial Services Region of Durham Office of the CAO Region of Durham Planning Services Durham Home Builders Association, Landowners CLOCA Intact Centre Institute for Catastrophic Loss Reduction	TAF	Review completed and recommendations being implemented
2.1.5 Advocacy: Advocate for the ability of municipalities to apply enhanced building codes.	Flood, heat, extreme weather	Modelled actions: Dry-proofing and wet-proofing buildings Undertake building retrofits with heat pumps	Staff time	Planning and Development Services Town Council	Town of Whitby Office of the CAO Province of Ontario Region of Durham Office of the CAO Durham Home Builders Association, Landowners CLOCA	N/A	Discussions occurring with the Province Building code legislation amended

2.2 Retrofit buildings with heat pumps for at-risk people

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
2.2.1 Initiative/program/education: Identify eligible households and implement a targeted program for installing heat pumps in vulnerable households, alongside measures that increase efficiency.	Heat	Modelled action: Undertake building retrofits with heat pumps Based on engagement with interested and affected groups	Will be determined in Phase 2 - climate mitigation strategy	Sustainability	Town of Whitby Planning and Development Service Region of Durham	Canadian Mortgage and Housing Corporation Retrofit Program Government of Canada Green Homes Grant,	# heat pumps installed

2.3 Wet-proof and dry-proof homes for flooding reduction

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
2.3.1 Initiative: Identify local expertise in these measures to develop a register of certified installers.	Flood, extreme weather events	Modelled action: Dry-proofing and wet-proofing buildings Based on engagement with interested and affected groups	Staff time	Sustainability	Durham Home Builders Association ICLR	Canadian Mortgage and Housing Corporation Retrofit Program	Climate and weather-related losses/damages to buildings
2.3.2 Education: Develop educational materials for the community in high-risk neighborhoods about the use of wet- and dry-proofing measures.	Flood, extreme weather events	Modelled action: Dry-proofing and wet-proofing buildings	Staff time	Sustainability	Town of Whitby Planning and Development Services Town of Whitby Communications and Creative Services Region of Durham Office of the CAO Region of Durham Planning Services Region of Durham Social Services CMHC	N/A	Communications reach
2.3.3 Infrastructure/initiative: Identify a Town property to use as a pilot project that demonstrates flood mitigation measures and allow the community to tour the facility, and share the project through existing Town communication networks.	Flood, extreme weather events	Modelled action: Dry-proofing and wet-proofing buildings	\$100,000	Community Services	Town of Whitby Sustainability Town of Whitby Planning and Development Services Durham Home Builders Association Landowners Region of Durham Office of the CAO CLOCA	Internal	Pilot completed
2.3.4 Initiative/program: Provide guidelines and incentives for lot-level stormwater management including rain barrels, native species planting, and grass swales.	Flood, extreme weather events	Modelled action: Dry-proofing and wet-proofing buildings	\$1.2 million	Planning and Development Services	Town of Whitby Sustainability CLOCA.	FCM	Guidelines developed Uptake of incentives

2.4 Increase culvert capacity in high-risk areas

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
2.4.1 Initiative (study): Reassess current culvert replacement studies with a climate lens to determine high-priority culvert replacements and needs for oversizing.	Flood, extreme weather events	Modelled action: Improve culverts for future climate conditions	\$100,000 study	Planning and Development Services	Durham Home Builders Association Landowners Region of Durham Office of the CAO CLOCA,	Internal Region of Durham Infrastructure Canada, Infrastructure Ontario	Study completed and recommendations being implemented
2.4.2 Policy/infrastructure: Incorporate right-sized culvert replacement, typically 1.2x 1:100 year event for major systems and 1:10 for minor systems, into asset management planning and budgeting, as opposed to one-for-one replacements. (Note: 1.2x 1:100 year event means the culvert is sized to handle a one in one-hundred-year storm event plus 20%, a 1:10 culvert is sized to handle a one in ten-year storm event).	Flood, extreme weather events	Modelled action: Improve culverts for future climate conditions	\$104 million	Planning and Development Services	Town of Whitby Sustainability Town of Whitby Financial Services Durham Home Builders Association Landowners Region of Durham Office of the CAO CLOCA,	Internal Region of Durham Infrastructure Canada, Infrastructure Ontario	% of identified/at-risk culverts upgraded

2.5 Upgrade storm sewers

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
2.5.1 Initiative (study): Reassess current storm sewer replacement studies with a climate lens to determine high priority replacements and replacement details, and complete an aligned costing study.	Flood, extreme weather events	Modelled action: Upgrade stormwater sewers for future climate conditions Based on engagement with interested and affected groups	\$200,000 for costing study to determine capital costs	Planning and Development Services	Province of Ontario Region of Durham CLOCA	Internal Region of Durham Infrastructure Canada, Infrastructure Ontario	Study completed and recommendations being implemented
2.5.2 Initiative (study): Identify key locations where valving and cisterns can be installed to hold water and prevent backflow and surcharging.	Flood, extreme weather events	Modelled action: Upgrade stormwater sewers for future climate conditions	To be assessed within the broader study	Planning and Development Services	CLOCA	TBD	Study completed and recommendations being implemented
2.5.3 Policy/infrastructure: Incorporate right-sized storm sewer replacement into asset management planning and budgeting, as opposed to one-for-one replacements.	Flood, extreme weather events	Modelled action: Upgrade stormwater sewers for future climate conditions	To be determined from the costing study	Financial Services	Town of Whitby Planning and Development Services Region of Durham Public Works CLOCA,	TBD	% of identified/at-risk storm sewers and catch basins upgraded
2.5.4 Policy: Introduce a development stormwater management fee.	Flood, extreme weather events	Modelled action: Upgrade stormwater sewers for future climate conditions	Staff time	Planning and Development Services	Town of Whitby Sustainability Town of Whitby Financial Services CLOCA	Internal	Policy developed and being implemented.

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
2.5.6 Advocacy: Advocate for provincial policy updates to allow conservation authorities to add climate change projections into floodplain modelling, and utilize these projects in Town planning and official policy.	Flood, extreme weather events	Modelled action: Upgrade stormwater sewers for future climate conditions	Staff time	Town Council	Town of Whitby Sustainability Town of Whitby Planning and Development Services Province of Ontario Region of Durham Office of the CAO Region of Durham Planning and Development Climate Risk Institute Western University TRCA	Internal	Discussions occurring with the Province Legislation amended

2.6 Manage flood risk from new development using zoning policies

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
2.6.1 Policy: Review current zoning and flood risk areas with information and mapping provided in this plan to determine appropriate revisions to or new by-laws to mitigate risk.	Flooding	Modelled action: New development restricted from future flood zones Based on engagement with interested and affected groups	Staff time	Planning and Development Services	Town of Whitby Sustainability Region of Durham Office of the CAO Region of Durham Planning and Development CLOCA Development community	N/A	Flood-related losses/damages in new developments % of new developments with implemented flood mitigation measures
2.6.2 Policy: Utilizing the ‘Durham Region Climate Resilience Standard for New Houses’, develop site plan permitting requirements that direct development applicants to address basement flooding.	Flooding	Modelled action: Dry-proofing and wet-proofing buildings Based on engagement with interested and affected groups	Staff time	Planning and Development Services	Town of Whitby Sustainability Region of Durham Office of the CAO Region of Durham Planning and Development CLOCA Development community	N/A	Site plan permitting requirements developed and being enforced

2.7 Plan for emergency response in overtopped areas

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
2.7.1 Initiative: Review communication protocols within the Town government and with the community of Whitby about road flooding.	Flooding	Based on engagement with interested and affected groups	Staff time	Planning and Development Services	Town of Whitby Operations Region of Durham Office of the CAO Region of Durham Public Works Region of Durham Planning Services CLOCA Province of Ontario CN Rail Development community	Internal National Disaster Mitigation Fund	Review completed and recommendations being implemented

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
2.7.2 Initiative (study): Conduct an assessment of high-risk roads that are prone to flooding to prioritize them for engineering-level flood mitigation measures and integrate findings into the Town’s Asset Management Plan.	Flooding	Based on engagement with interested and affected groups	\$200,000	Planning and Development Services	Town of Whitby Operations Region of Durham Office of the CAO Region of Durham Public Works Region of Durham Planning Services CLOCA Province of Ontario CN Rail Development community	Internal National Disaster Mitigation Fund	Review completed and recommendations being implemented
2.7.3 Initiative/program: Assess potential park-and-ride and other alternative transportation options to ease traffic congestion when rerouting occurs due to overtopping.	Flooding	Based on engagement with interested and affected groups	Staff time	Planning and Development Services	Region of Durham Office of the CAO Region of Durham Public Works Region of Durham Planning Services CLOCA Province of Ontario CN Rail Development community	N/A	Review completed and recommendations being implemented

2.8 Integrate future climate risk into the Townwide Urban Flood Study

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
2.8.1 Initiative (study): Complete detailed calibration and cost-analysis studies for flood mitigation measures in neighbourhoods identified as being at risk of flooding and integrate findings into the Town’s Asset Management Plan.	Flooding	Modelled action: Flood berms constructed in West Lynde and along Pringle Creek Based on engagement with interested and affected groups	\$200,000	Planning and Development Services	Town of Whitby Sustainability Town of Whitby Financial Services Region of Durham Public Works Region of Durham Planning Services CLOCA Province of Ontario CN Rail Development community	National Disaster Mitigation Program (Government of Canada)	Analysis complete
2.8.2 Infrastructure: Implement the solutions identified by the calibration and cost-analysis studies, described above.	Flooding	Modelled action: Flood berms constructed in West Lynde and along Pringle Creek Based on community engagement	~\$8 M capital costs	Planning and Development Services	Town of Whitby Sustainability Town of Whitby Financial Services Region of Durham Public Works Region of Durham Planning Services CLOCA Province of Ontario CN Rail Development community	National Disaster Mitigation Program (Government of Canada)	# of dwellings vulnerable to flooding

2.9 Enhance the redundancy of the energy system

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
2.9.1 Infrastructure: Integrate energy storage into emergency heating and cooling centers to enable continued operation during partial disruptions.	Extreme weather events	Based on community engagement	Will be determined in Phase 2 - climate mitigation strategy	Community Services	Province of Ontario Region of Durham Elexicon Group	Elexicon, Infrastructure Canada, Natural Resources Canada	# of customers installing/ subscribing to energy alternatives
2.9.2 Initiative/program: Support residents to install renewable energy and energy storage at home and at businesses to create building-scale redundancy.	Extreme weather events	Based on community engagement	Will be determined in Phase 2 - climate mitigation strategy	Sustainability	Region of Durham Office of the CAO	Durham Greener Homes, Canada Greener Homes	# of customers installing/ subscribing to energy alternatives
2.9.3 Initiative (study): Conduct a study to assess opportunities for community-scale renewable energy and energy storage (to be explored in more detail in the emissions portion of the Climate Master Plan).	Extreme weather events	Based on community engagement	Will be determined in Phase 2 - climate mitigation strategy	Sustainability	Town of Whitby Planning and Development Services Town of Whitby Community Services, Region of Durham Office of the CAO	Internal	Study completed and recommendations being implemented
2.9.4 Initiative (study): Conduct a study to explore micro-grids in existing developed areas (to be explored in more detail in the emissions portion of the Climate Master Plan).	Extreme weather events	Based on community engagement	Will be determined in Phase 2 - climate mitigation strategy	Sustainability	Town of Whitby Planning and Development Services Town of Whitby Community Services, Region of Durham Office of the CAO	Internal	Study completed and recommendations being implemented
2.9.5 Initiative (study): Conduct a study to explore ambient district energy systems in new development areas with higher building intensities (to be explored in more detail in the emissions portion of the Climate Master Plan).	Extreme weather events	Based on community engagement	Will be determined in Phase 2 - climate mitigation strategy	Sustainability	Town of Whitby Planning and Development Services Town of Whitby Community Services, Region of Durham Office of the CAO	Internal	Study completed and recommendations being implemented
2.9.6 Initiative/program: Incentivize and encourage the installation of high-efficiency heating and cooling options, such as heat pumps to minimize disruptions stemming from overpeaking.	Extreme weather events	Modelled action: Undertake building retrofits with heat pumps	\$15,000 to \$32,000 per heat pump (to be scaled in the mitigation study)	Sustainability	Town of Whitby Financial Services Durham Region Office of the CAO CLOCA	Town of Whitby, Community Bonds, Insurance, FCM	# of customers installing/ subscribing to energy alternatives Uptake of incentivize

3. Natural Spaces, Green Infrastructure and Trees

3.1 Conserve, expand, and protect natural spaces and urban forest for flood risk reduction, cooling and improved human well-being

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
3.1.1 Initiative: Assess current canopy cover in the Town, as a whole and separately in more and less developed areas of Whitby, and with an equity lens (e.g. are there vulnerable communities with less canopy cover that could lead to increased heat risk?).	Heat	Modelled action: Expand green infrastructure	\$90 M capital cost and \$2 M in yearly O&M	Operations	Town of Whitby Sustainability Town of Whitby Fire Services Town of Whitby Community Services Region of Durham LEAF CLOCA School Boards Local environmental non-profits Local workplaces/businesses	Internal Forests Ontario	# of trees planted % canopy coverage for the Town
3.1.2 Policy: Develop policies to maintain existing tree canopy coverage.	Heat	Modelled action: Expand green infrastructure	Staff time	Sustainability	Town of Whitby Community Services Town of Whitby Operations Town of Whitby Fire Services Town of Whitby Legal Services Town of Whitby Planning and Development Services Region of Durham CLOCA Developers Ellexicon Energy Ontario Urban Forest Council Local workplaces/businesses	N/A	Policies developed and being implemented
3.1.3 Policy: Set an urban canopy cover target of at least 40% and an overall natural cover target that includes wetlands and tall grass prairies of 60%.	Heat	Modelled action: Expand green infrastructure	Staff time	Sustainability	Town of Whitby Community Services Town of Whitby Operations Town of Whitby Fire Services Town of Whitby Legal Services Town of Whitby Planning and Development Services Region of Durham CLOCA Developers Ellexicon Energy Ontario Urban Forest Council Local workplaces/businesses	N/A	Targets set % canopy coverage and natural cover for the Town

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
3.1.4 Initiative: Develop an urban forest management strategy with recommendations on the following: <ul style="list-style-type: none">Meeting the canopy cover target and number of trees planted, focusing on both individual plantings (street trees) and opportunities for creating new urban forestsIdentifying trees resilient to expected changes in climate, and build resilience through diversified plantings throughout the TownMaintaining a town wide tree inventory and monitoring and tracking tree conditions.Introducing improved soil standards for new plantings for trees, as well as other plants.Monitoring for and managing climate-related risks to trees such as diseases, pests, invasive species, and heat stress and identifying the introduced species that can be planted to maintain canopy targets, as well as ways to manage habitat loss for birds and animals reliant on current tree species in Whitby.Identifying roles for the City, local organizations, and citizen scientists including considering a collaborative tree monitoring program throughout the community.	Heat	Modelled action: Expand green infrastructure	\$300,000	Operations	Town of Whitby Community Services Town of Whitby Legal Services Town of Whitby Fire Services Town of Whitby Planning and Development Services Region of Durham CLOCA Developers Ellexicon Energy Ontario Urban Forest Council Local workplaces/businesses	Internal	Strategy developed and recommendations being implemented
3.1.5 Program: Increase tree management to help young trees thrive in a changing climate. For example, increasing watering, adding watering bags/gators to street trees and educating property owners on proper care, assist the migration of native trees to areas where they are more likely to survive.	Heat	Modelled action: Expand green infrastructure Based on engagement with interested and affected groups	\$50,000 per year	Operations	Town of Whitby Sustainability Town of Whitby Fire Services LEAF CLOCA Region of Durham Ellexicon Energy	Internal	One FTE hired to implement
3.1.6 Policy: Update standards for tree planting on new private developments to incorporate climate-based targets.	Heat	Modelled action: Expand green infrastructure Based on engagement with interested and affected groups	Staff time	Planning and Development Services	Town of Whitby Sustainability Town of Whitby Community Services Town of Whitby Operations Town of Whitby Fire Services Developers	N/A	Policies developed and being implemented
3.1.7 Policy: Update standards for green space access and tree planting to address climate change in new developments and determine the funding structure (For example co-pay by the municipality and developers).	Heat	Modelled action: Expand green infrastructure Based on engagement with interested and affected groups	Staff time	Planning and Development Services	Town of Whitby Sustainability Town of Whitby Community Services Town of Whitby Legal Services Town of Whitby Operations Town of Whitby Fire Services CLOCA Landowners Developers	N/A	Policies developed and being implemented

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
3.1.8 Initiative: Work in partnership with CLOCA to develop a strategy for the Town to conserve urban forests and high natural heritage value lands.	Heat, flooding	Modelled action: Expand green infrastructure Based on engagement with interested and affected groups	\$50,000	Sustainability	Town of Whitby Strategic Initiatives CLOCA Region of Durham Planning Local environmental not-for-profits Ducks Unlimited Nature Conservancy of Canada	Internal	% of permanently protected urban forests and natural heritage lands
3.1.9 Initiative: Acquire existing NHS blocks into public ownership during the development process and manage them for climate change mitigation.	Heat	Modelled action: Expand green infrastructure	TBD	Planning and Development Services	Town of Whitby Strategic Initiatives Town of Whitby Legal Services Region of Durham CLOCA Ducks Unlimited Nature Conservancy Canada Landowners Developers	TBD	% of NHS blocks conserved through public acquisition
3.1.10 Initiative (study): Assess the need/ability for the Town to purchase additional lands for tree planting.	Heat	Modelled action: Expand green infrastructure	Staff time	Financial Services	Town of Whitby Strategic Initiatives Town of Whitby Legal Services Town of Whitby Planning and Development Region of Durham CLOCA Ducks Unlimited Nature Conservancy Canada Landowners Developers	N/A	Strategy developed and recommendations being implemented
3.1.11 Program: Plant trees alongside trails, sidewalks, and outdoor sports fields/facilities to provide cooling benefits.	Heat	Modelled action: Expand green infrastructure Based on engagement with interested and affected groups	Staff time (capital budget included above)	Planning and Development	Town of Whitby Operations Town of Whitby Fire Services Town of Whitby Community Services Region of Durham Office of the CAO Region of Durham Public Works LEAF Forests Ontario Tree Durham	Internal	% canopy cover % shade cover in public spaces
3.1.12 Initiative: Increased planting around creeks to maintain creek temperatures.	Heat	Modelled action: Expand green infrastructure	Staff time (capital budget included above)	Operations	Town of Whitby Sustainability Town of Whitby Community Services CLOCA LEAF Forests Ontario Ontario Federation of Anglers and Hunters Ducks Unlimited	Internal	% of time creek temperatures within normal range

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
3.1.13 Initiative/Education: Develop educational materials and a support program to encourage tree buffers for soil protection on agricultural lands.	Heat/ Flooding	Modelled action: Expand green infrastructure	Staff time + costs for educational materials	Sustainability	Town of Whitby Community Services Town of Whitby Communications and Creative Services CLOCA Ducks Unlimited Ontario Federation of Agriculture Region of Durham Office of the CAO	Internal	% of agricultural lands with tree buffers

3.2 Apply green infrastructure for flood reduction and heat management

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
3.2.1 Policy: Strengthen policy-based protection of natural heritage systems, woodlands, and floodplain areas from development, and utilize zoning to create and maintain connected natural heritage systems.	Heat, flooding	Modelled action: Expand green infrastructure Based on engagement with interested and affected groups	Staff time	Planning and Development Services	Town of Whitby Sustainability CLOCA Region of Durham Planning Local environmental not-for-profits Ducks Unlimited Nature Conservancy of Canada	Internal Region of Durham CLOCA Intact Foundation Government of Canada	km2/protected lands
3.2.2 Policy: Create a policy to increase vegetative buffers in flood plains to mitigate risk to new development.	Flood, heat	Modelled action: Expand green infrastructure Based on engagement with interested and affected groups	\$61 M capital cost and \$2 M in yearly O&M	Planning and Development Services	Town of Whitby Operations Town of Whitby Fire Services Town of Whitby Community Services Region of Durham CLOCA Local environmental nonprofits Durham Home Builders Association	Internal Intact Foundation	Ha of green infrastructure installed
3.2.3 Initiative (study)/program: Assess current flood plains and develop a strategy for increasing vegetative buffers.	Flood, heat	Modelled action: Expand green infrastructure	\$80,000 study	Planning and Development Services	Town of Whitby Sustainability Town of Whitby Community Services Town of Whitby Operations Region of Durham Office of the CAO CLOCA Ducks Unlimited Landowners Developers Ontario Federation of Agriculture Ontario Federation of Anglers and Hunters Ducks Unlimited	Internal	Study completed and recommendations being implemented

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
3.2.4 Initiative (study)/program: Assess the health of wetlands within the town and develop restoration plans.	Flood, heat	Modelled action: Expand green infrastructure Based on engagement with interested and affected groups	\$80,000 study	Planning and Development Services	Town of Whitby Sustainability Town of Whitby Operations CLOCA Ducks Unlimited Landowners Developers Ontario Federation of Anglers and Hunters Ducks Unlimited.	Internal	Study completed and recommendations being implemented
3.2.5 Initiative: Select a neighbourhood for a pilot project to install green infrastructure, with signage and community participation where possible.	Flood, heat	Modelled action: Expand green infrastructure Based on engagement with interested and affected groups	\$120,000	Sustainability	Town of Whitby Planning and Development Services CLOCA TRCA Region of Durham Office of the CAO Green Infrastructure Ontario Sustainable Technologies Evaluation Program	RBC Blue Water Fund, Intact Climate Centre	Establishment of a Sustainable Neighbourhood Action Plan Program
3.2.6 Education: Publically share information on how to install and maintain green infrastructure.	Flood, heat	Modelled action: Expand green infrastructure	Staff time	Sustainability	Town of Whitby Planning and Development Services CLOCA TRCA Region of Durham Office of the CAO Green Infrastructure Ontario Sustainable Technologies Evaluation Program	N/A	Participation in events and workshops Communications reach
3.2.7 Initiative/education: Continue to host community tree planting events and utilize the events to disseminate information on green infrastructure.	Flood, heat	Modelled action: Expand green infrastructure	Staff time	Sustainability	Town of Whitby Operations Town of Whitby Community Services LEAF Forests Ontario CLOCA School Boards Local environmental non-profits Local workplaces/businesses	N/A	# events/# of trees planted
3.2.8 Initiative (study): Complete a review of Town of Whitby properties and infrastructure to identify locations and opportunities for green infrastructure.	Flood, heat	Modelled action: Expand green infrastructure	\$80,000 study	Operations Fire Services	Town of Whitby Sustainability Town of Whitby Community Services Town of Whitby Planning and Development Services CLOCA Region of Durham Credit Valley Conservation Ducks Unlimited Sustainable Technologies Evaluation Program TRCA	Internal	Review completed and recommendations being implemented

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
3.2.9 Initiative (study): Investigate drainage solutions for community recreation areas and sports fields that are impacted by flooding to avoid loss of recreational and economic development opportunities.	Flood, heat	Modelled action: Expand green infrastructure	\$80,000 study	Community Services	Town of Whitby Planning and Development Services Town of Whitby Operations Town of Whitby Fire Services CLOCA Region of Durham Credit Valley Conservation Ducks Unlimited,	Internal	Review completed and recommendations being implemented
3.2.10 Education: Add natural infrastructure data to Whitby’s open data portal, and actively reach out to partners and stakeholders to share information.	Flood, heat	Modelled action: Expand green infrastructure	Staff time	Technical Information Systems	Town of Whitby Planning and Development Services Town of Whitby Operations Town of Whitby Fire Services CLOCA Region of Durham	N/A	Data added to open data portal

3.3 Monitor for invasive species on trees, natural heritage features and agricultural crops

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
3.3.1 Education: Educate staff on invasive species in Ontario, and on the Early Detection and Distribution Mapping System.	Non-modelled hazard: invasive species	Based on engagement with interested and affected groups	Staff time	Sustainability	Town of Whitby Operations Invasive Species Centre Ducks Unlimited CLOCA Ontario Federation of Anglers and Hunters Forest Ontario Citizens Schools	Region of Durham, Province of Ontario, CLOCA, Environment and Climate Change Canada, Ontario Invasive Species Council	# of targeted staff trained
3.3.2 Initiative: Create an Invasive Species Management Plan to monitor and manage invasive species.	Non-modelled hazard: invasive species	Based on engagement with interested and affected groups	\$120,000	Operations	Town of Whitby Office of the CAO Town of Whitby Strategic Initiatives Town of Whitby Sustainability Town of Whitby Community Services, Town of Whitby Planning and Development Services CLOCA Region of Durham Durham Health Credit Valley Conservation Ducks Unlimited Invasive Species Centre TRCA	Internal	Plan developed and recommendations being implemented

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
3.3.3 Initiative/education: Continue to identify potential invasive species threats with the assistance of local, provincial, and national monitoring agencies.	Non-modelled hazard: invasive species	Based on engagement with interested and affected groups	Staff time	Operations	Town of Whitby Sustainability Town of Whitby Fire Services Town of Whitby Community Services Town of Whitby Planning & Development Services CLOCA Ontario Invasive Plant Council Ducks Unlimited Ontario Federation of Anglers and Hunters Invasive Species Centre Canada Food Inspection Agency	N/A	
3.3.4 Infrastructure: Purchase and assemble monitoring supplies and equipment.	Non-modelled hazard: invasive species	Based on engagement with interested and affected groups	\$20,000 per year	Operations	Town of Whitby Community Services CLOCA Ontario Invasive Plant Council Ontario Federation of Anglers and Hunters Invasive Species Centre	Internal	Equipment purchased
3.3.5 Program: Put out an open call and assemble interested parties who wish to distribute and monitor invasive species traps and report back to the Town.	Non-modelled hazard: invasive species	Based on engagement with interested and affected groups	Staff time	Sustainability	Town of Whitby Operations Town of Whitby Fire Services CLOCA Ontario Invasive Plant Council Ontario Federation of Anglers and Hunters Invasive Species Centre	N/A	# of participants
3.3.6 Policy: Investigate requirements for invasive species management plans as a condition of development for development adjacent to natural heritage areas.	Non-modelled hazard: invasive species	Modelled action: Expand green infrastructure	\$120,000	Planning and Development Services	Town of Whitby Community Services Town of Whitby Operations Town of Whitby Fire Services CLOCA Region of Durham Planning Local environmental not-for-profits Ducks Unlimited Nature Conservancy of Canada	Internal	Review completed and appropriate policies and guidelines developed

4. Human Well-being

4.1 Ensure a network of cooling centres, splash parks and drinking fountains

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
4.1.1 Initiative (study): Determine key locations for fountains, based on areas with high percentages of vulnerable populations and proximity to gathering places/high-traffic outdoor spaces.	Heat	Based on engagement with interested and affected groups	Staff time	Community Services	Local businesses Durham Health	N/A	# of splash parks and public pools / usage # of drinking fountains
4.1.2 Initiative: Create a map of public water fountains, splash pads, and cooling centres and ask businesses to register via a Town-curated map or external platform (such as BlueW.org or water-map.org) if they have a publicly accessible fountain, water refill station, or allow the public to refill water bottles at their location. Promote the map via identified communications channels.	Heat	Based on engagement with interested and affected groups	Staff time	Community Services	Local businesses Durham Health	N/A	Map completed and review on a quarterly basis
4.1.3 Initiative/program: Develop a strategy for when, how, and where to deploy temporary structures in public spaces such as event tents that can be used as temporary shade structures, and promote these to the public.	Heat	Based on engagement with interested and affected groups	Staff time	Sustainability	Town of Whitby Community Services Local businesses Durham Health	N/A	Strategy developed and recommendations being implemented
4.1.4 Initiative: Develop a strategy for when and how to open Town facilities to the public for daytime cooling.	Heat	Based on engagement with interested and affected groups	Staff time	Community Services	Town of Whitby Strategic Initiatives Whitby Library Durham Health Salvation Army Faith Based Organizations Community Development Council Durham	N/A	Strategy developed and recommendations being implemented
4.1.5 Initiative/infrastructure: Create an implementation schedule and construct splash pads in key locations previously identified by the Town.	Heat	Based on engagement with interested and affected groups	Staff time (schedule) Infrastructure cost \$200,000+ per pad	Community Services	Durham Health Developers	Internal	# of planned splash parks constructed
4.1.6 Initiative: Extend the season water fountains, splash pads, and cooling facilities are open to the public to coincide with weather and climate trends.	Heat	Based on engagement with interested and affected groups	Staff time	Community Services	Town of Whitby Operations & Fire Services	N/A	Season extended # of splash parks
4.1.7 Education: Coordinate within the Town and with not-for-profit partners and businesses to ensure that social media sites, public information screens, and any other publicly-accessible information notify residents of extreme heat events and spaces they can go to cool down.	Heat	Based on engagement with interested and affected groups	Staff time	Communications and Creative Services	Town of Whitby Sustainability Town of Whitby Whitby Library Durham Health Salvation Army Faith Based Organizations Community Development Council Durham	N/A	Communications reach

4.2 Develop shaded structures for public protection

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
4.2.1 Policy: Create a policy or design guideline for public spaces to incorporate shade structures, and set a minimum shaded area standard for public spaces.	Heat	Based on engagement with interested and affected groups	Staff time	Community Services	Town of Whitby Sustainability Region of Durham Durham Health Environment and Climate Change Canada Elexicon group School boards	Federation of Canadian Municipalities	# of public spaces with shade facilities % of 'shade canopy' in public spaces
4.2.2 Policy: Create a policy to ensure shaded spaces and a heat management plan at all public events and events hosted on Town-owned lands.	Heat	Based on engagement with interested and affected groups	Staff time	Creative Communities	Durham Health Community Organizations Local Businesses	N/A	Policy developed and being implemented
4.2.3 Education/policy/program: Ensure that all individuals and groups hosting events on public lands are aware of the shaded spaces and heat management plan policy, and require that they submit a heat management plan with their event application (education on an appropriate heat management plan should be provided).	Heat	Based on engagement with interested and affected groups	Staff time	Creative Communities	Durham Health Community Organizations Local Businesses	N/A	Policy being enforced in 100% of applications
4.2.4 Initiative: Build a pilot project of a shaded area with combined solar PV, and report back on the costs, benefits, and challenges of the project.	Heat	Based on engagement with interested and affected groups	\$100,000	Community Services	Town of Whitby Sustainability Town of Whitby Operations Town of Whitby Fire Services	Internal	Pilot project complete
4.2.5 Initiative: Include a new label in the Town's Asset Management Plan - Parks Report Card that specifically identifies "Shade Facilities" in the inventory of Amenities and Furniture Overview.	Heat	Based on engagement with interested and affected groups	Staff time	Financial Services	Town of Whitby Sustainability Town of Whitby Operations Town of Whitby Fire Services Green Infrastructure Coalition Municipal Natural Assets Initiative	N/A	Asset added

4.3 Promote urban agriculture

ACTION	HAZARD RESPONSE	SOURCE	COST	TOWN OF WHITBY LEAD	OTHER PARTNERS	FUNDING	METRIC
4.3.1 Policy: Develop an Urban Agriculture Strategy with priorities including: <ul style="list-style-type: none">Utilizing urban agriculture as a form of productive greenspace/mechanism to expand greenspaceSupporting farmer’s markets developmentCommunity gardensAn Urban Hen Pilot Program/by-lawRoof-top gardens and greenhousesIndoor farmingAn urban beehive policy/by-law.	Extreme weather events	Based on engagement with interested and affected groups	\$80,000	Strategic Initiatives	Town of Whitby Community Services Durham Agricultural Advisory Committee Durham Farm Fresh Ontario Federation of Agriculture Durham Food Policy Council Durham Integrated Growers. Durham College- Centre for Food Local Food Banks TRCA Interested and affected residents Farm owners and operators Local not-for-profits Schools	Community foundations	Strategy complete # of strategy recommendations being implemented