

High-Level Resilience Strategy for the Thornhill SNAP Neighbourhood

Joint Municipal Climate Change Working Group

May 14, 2021



Sustainable Neighbourhood Action Program (SNAP)

A program to help older neighbourhoods become more sustainable and better places to live.

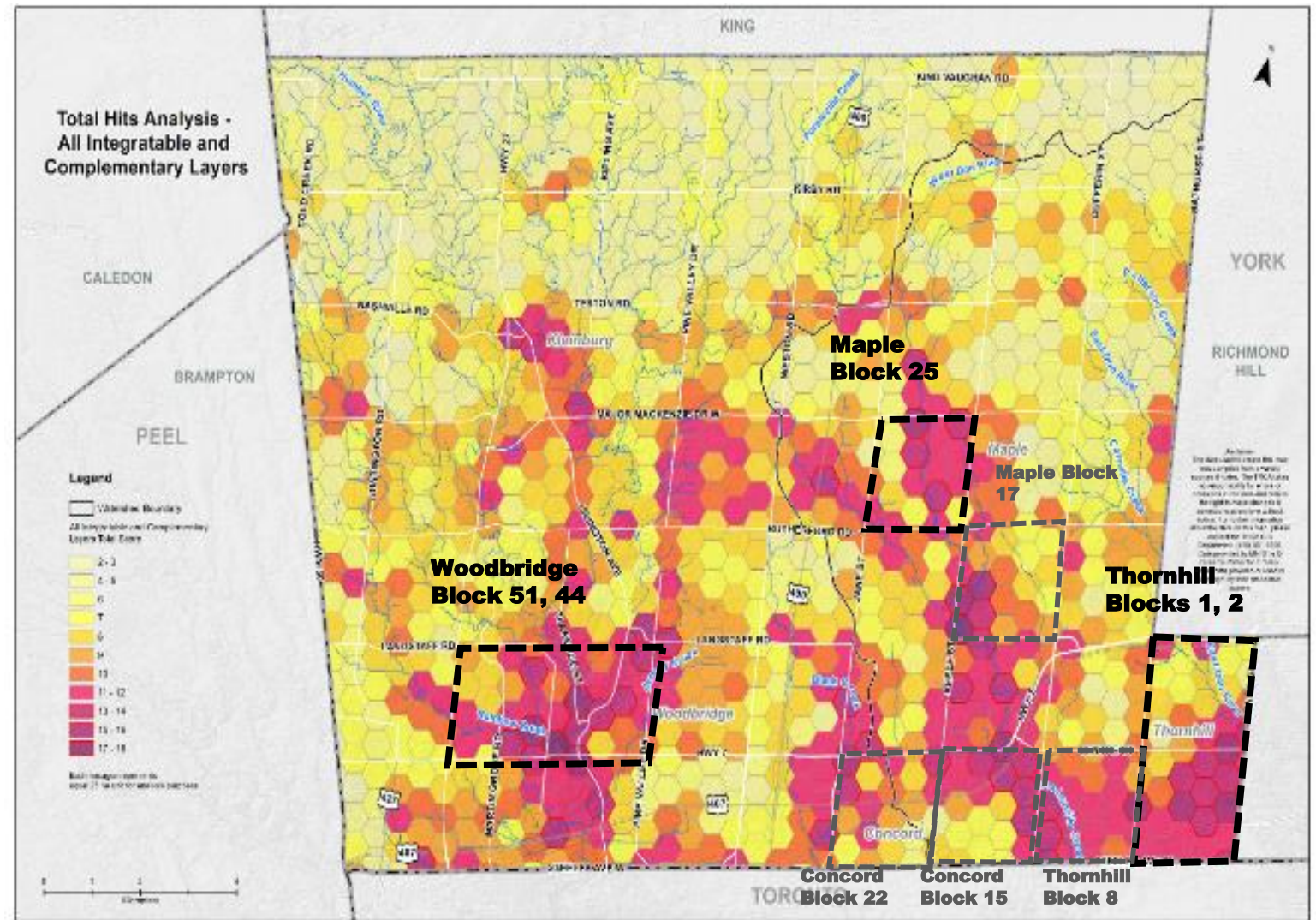
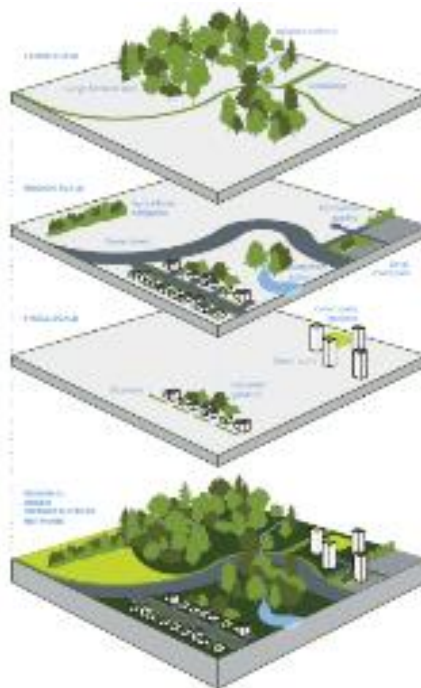


- ✓ Brings together technical objectives with residents' priorities.
- ✓ Works on all land uses within a neighbourhood.
- ✓ Works with local groups and develops partnerships with all sectors to make things happen.

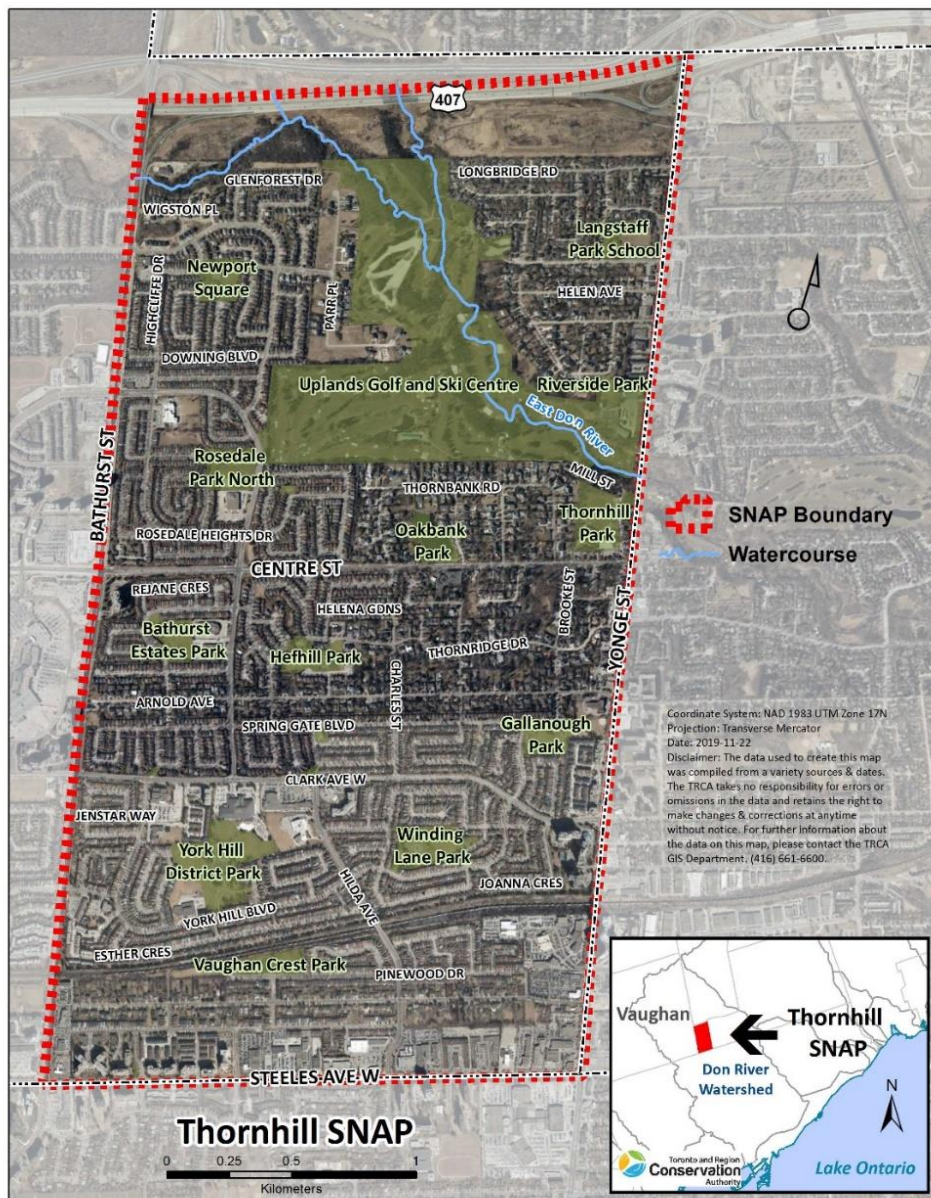
Neighbourhood Selection Process



25 ha Hexagonal Units



Thornhill Neighbourhood



Key Priorities:

- Flood vulnerable area
- High priority for low impact development for stormwater mgmt.
- Highest energy use in Vaughan
- One of highest water use in York Region
- Urban heat stress
- Areas of concentrated disadvantage (South)

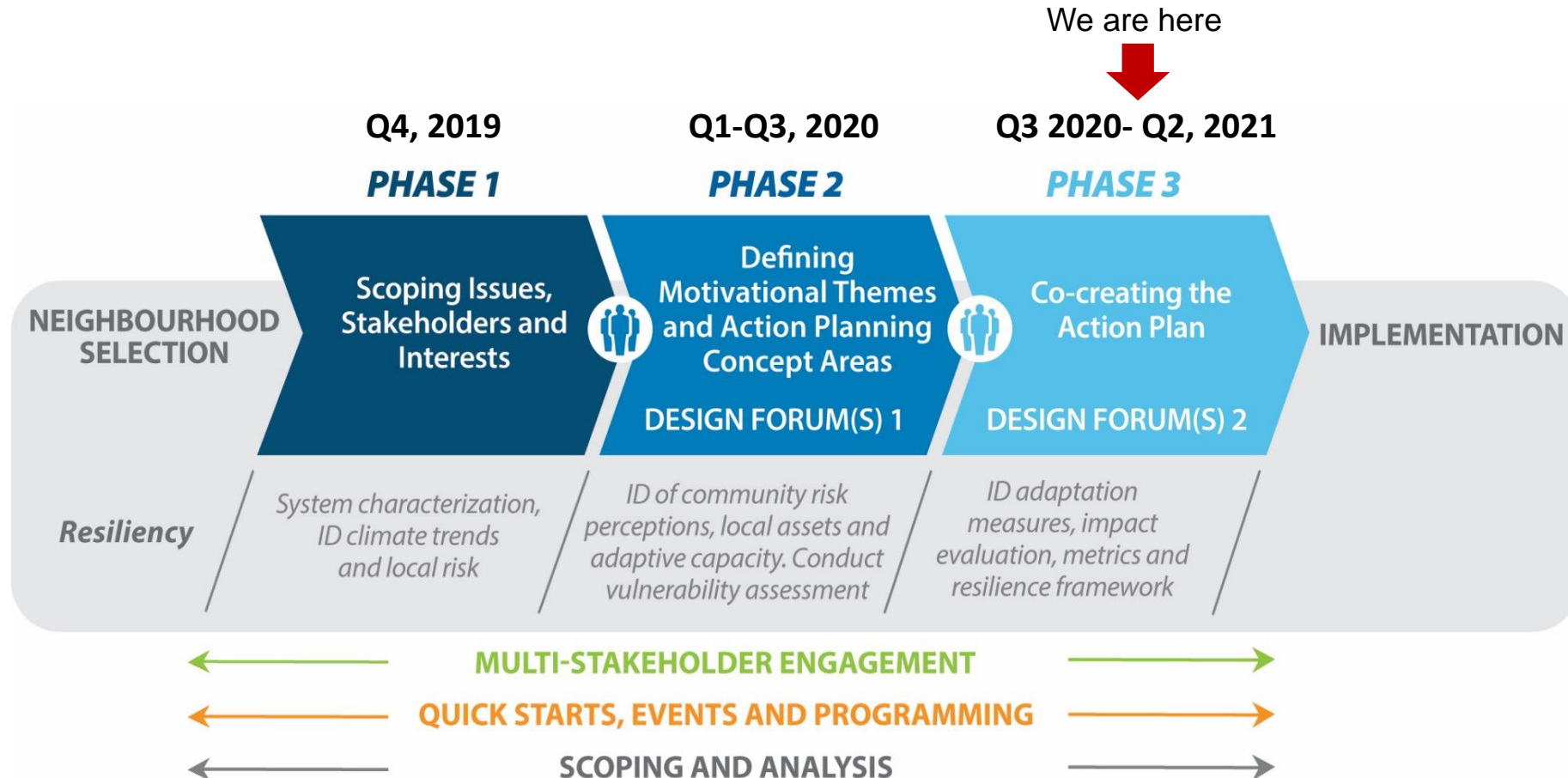
Planned Capital Projects:

- Gallanough Park and Area SWM Improvements EA
- Gallanough & York Hill Park Redevelopment
- Garnet A. W CC Retrofit
- Road Improvements (Clark Ave., Centre St., Atkinson Av., Hilda Av.)
- York Region South York Greenway Project
- Vaughan Super Trail Project

Sustainable Neighbourhood Themes



Integrated Neighbourhood Sustainability and Resilience Action Plan Development Process



Integrated Action Areas



1. Connected Places, People and Ecosystems

- Active transportation planning
- Green infrastructure planning
- Parks & open space revitalization
- Community events & programming

2. Residential Retrofits

3. Greening and Humanization of Institutional and Commercial Properties and Multi-Unit Residential Buildings

Signature Projects

Complete Streets: Atkinson Av., Centre St., Hilda Av.



York Hill District
Park Revitalization
and Community
Centre Renovations



Gallanough Park
Revitalization
integrated with SWM
Facility



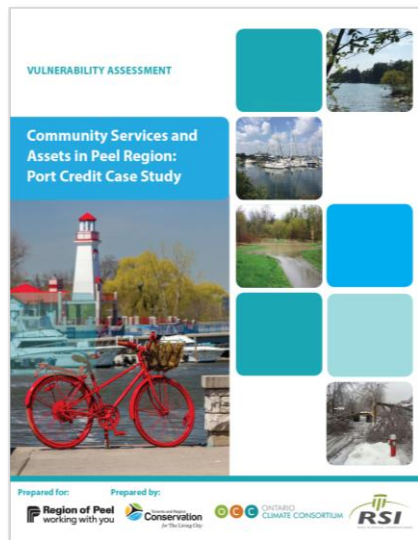
Thornhill Resilience Strategy

Neighbourhood Model of Climate Change Vulnerability Assessment and Adaptation

2016

Port Credit Vulnerability Assessment

A case study to assess the impacts of climate change on critical services and assets that support community well-being in Port Credit, Mississauga



2018-2019

Climate Ready County Court

A neighbourhood-scale vulnerability assessment and adaption plan co-created by residents and stakeholders for County Court in Brampton



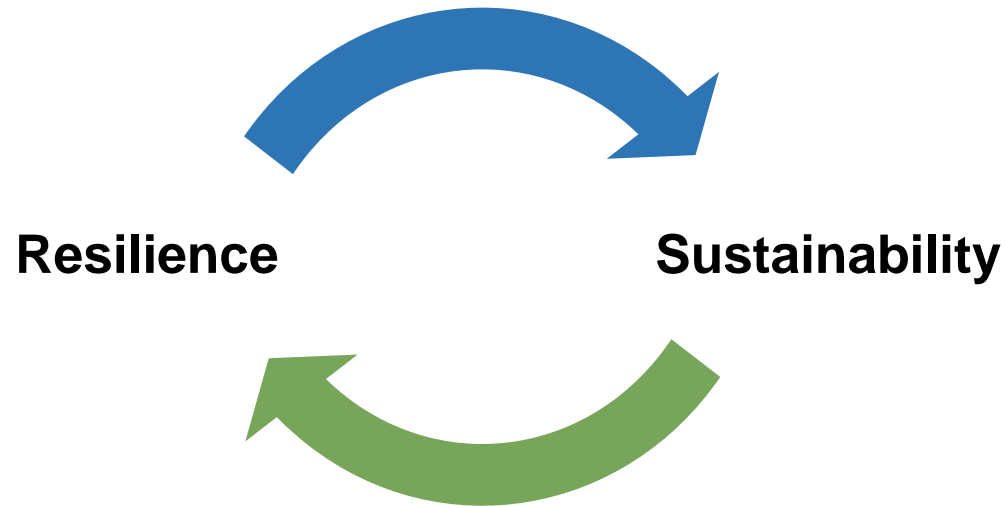
We are here

Thornhill SNAP

An integrated neighbourhood sustainability and resilience action plan co-created by residents and stakeholders



Relation between Resilience and Sustainability



- Resilience is integral to sustainability; increasing the resilience of a system makes the system more sustainable over the long-term
- Increasing the sustainability of a system does not necessarily make it more resilient but there are certainly actions that can increase both resilience and sustainability
 - E.g., water and energy conservation, and access to local food

Community Resilience

- Resilience is the ability of a system to prepare for threats, absorb impacts, recover and adapt following persistent stress or a disruptive event
- Community health and well-being are at the core of community resilience

SYSTEMS SUPPORTING WELLBEING



Community Services and Assets
Affected by Climate and Weather

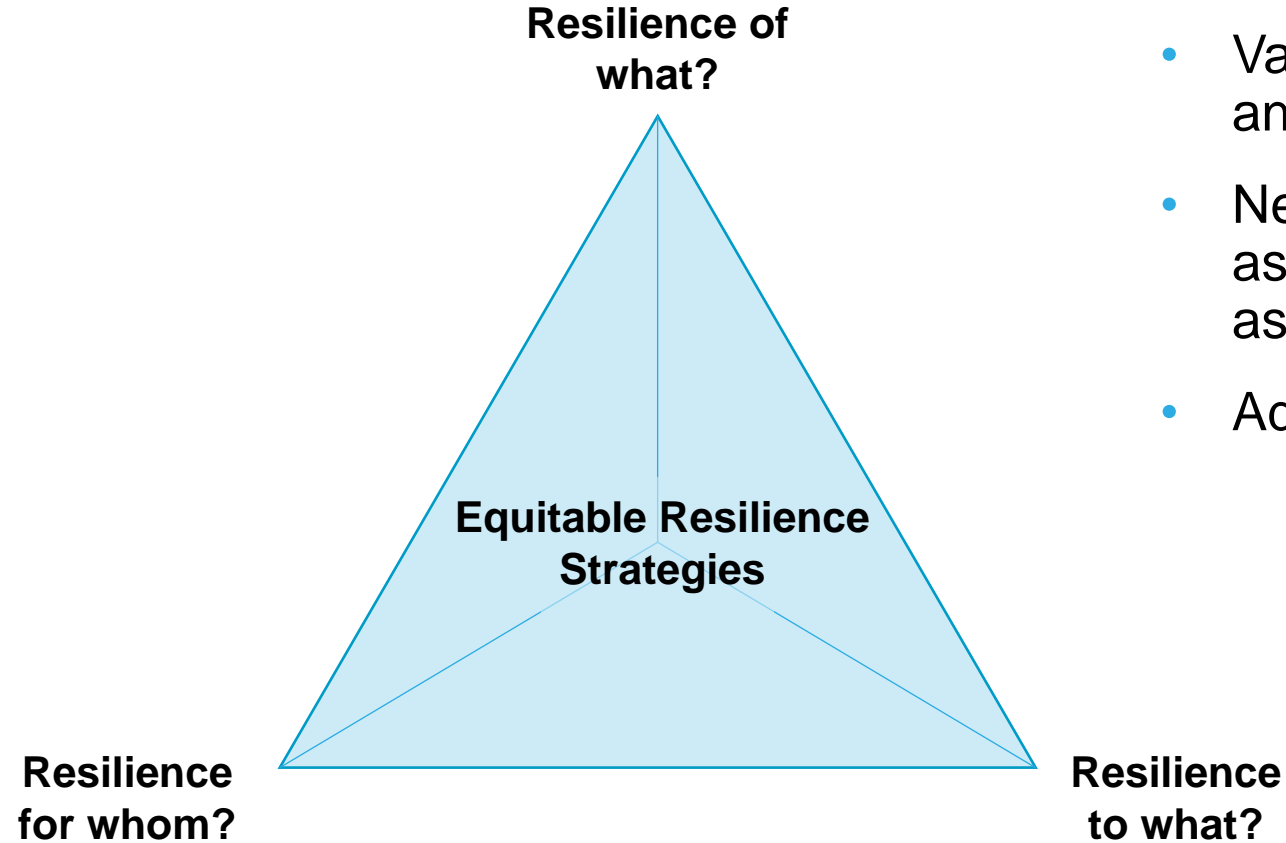


Neighbourhood as
a “system of
systems”

and

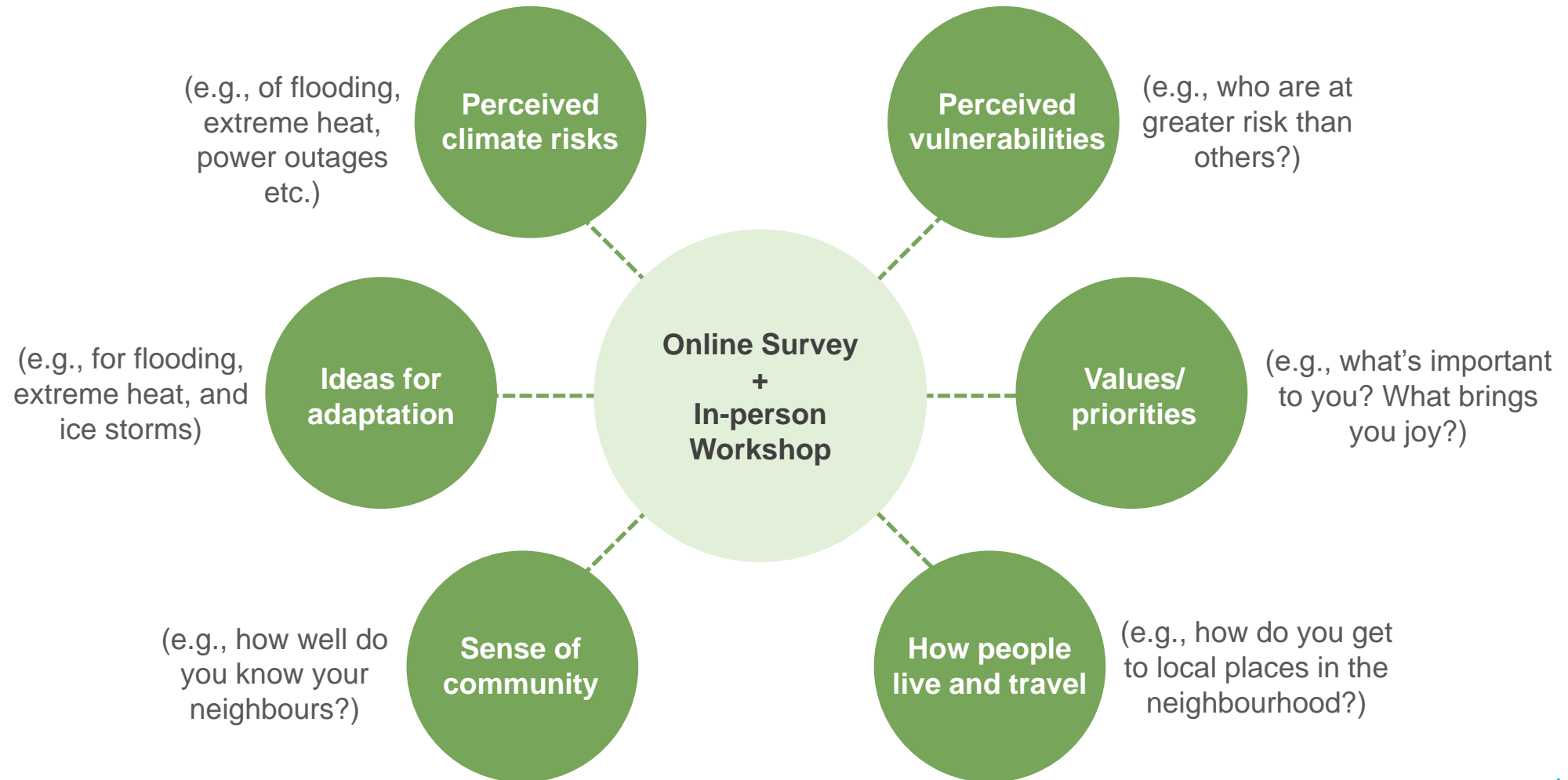
Neighbourhood as
people and
relationships

Applying a Resilience Lens



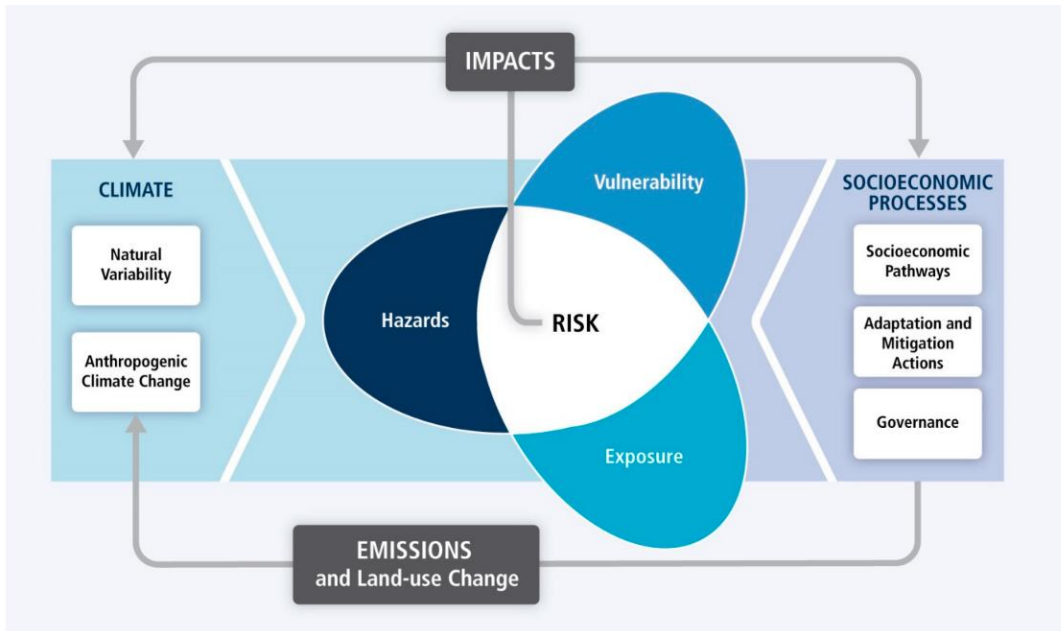
- Values and priorities of Thornhill residents and stakeholders
- Neighbourhood-scale vulnerability assessment, including local risks and assets identified by the community
- Addressing vulnerable populations

Public Engagements: What We Learned



Neighbourhood Vulnerability Assessment

Conceptual Framework of Climate Change Risk:

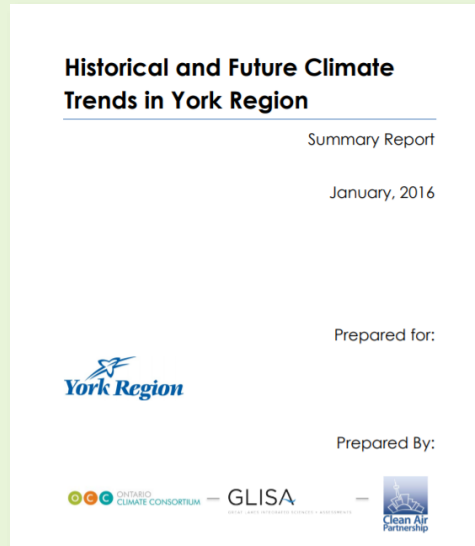


Proposed Indicators Using the TRCA Neighbourhood-Based Vulnerability Assessment Model (as tested in County Court):

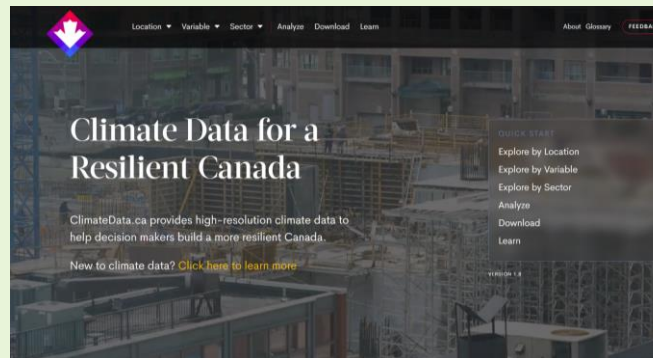
Exposure	Sensitivity	Adaptive Capacity
<ul style="list-style-type: none"> • Extreme heat (including the urban heat island effect) • Precipitation • Flooding • Ice storms • Vector-borne diseases 	<ul style="list-style-type: none"> • Perceptions of climate change risks • Seniors 65 years or older and children under 14 • Percentage of residents living alone • Percentage of population who do not speak English or French • Education • Household income and distribution (including neighbourhood income inequality and polarization) • Housing tenure (owned, rented, other) • Age of housing 	<ul style="list-style-type: none"> • Local assets and services • Presence of air conditioning • Mobility and access to transportation (including public transit and active transportation) • Access to drinking water • Access to food outlets • Street tree canopy cover • Access to greenspace • Communications • Sense of community

Climate Change Trends in York Region and Vaughan

- Based on the Historical and Future Climate Trends in York Region Report (2016)
- Cross-compared with data from climatedata.ca to help confirm the projections found in Fausto et al. (2016) and help extend projections to the end of the century
- Projections were made under RCP8.5 (high GHG emissions scenario)



- Scale: York Region
- Projections available to mid-century
- Based on available projections at the time from MOECC Climate Change Data Portal, York University LAMPS, and University of Wisconsin Dynamically Downscaled RCMs (MIROC5 and CNRM-CM5)
- Referenced in York Region's Draft Climate Change Action Plan (2020)



- Scale: "Vaughan" ~10 km x 6 km grid cell
- Developed by Environment and Climate Change Canada (ECCC), the Computer Research Institute of Montreal (CRIM), Ouranos, the Pacific Climate Impacts Consortium (PCIC), the Prairie Climate Centre (PCC), and HabitatSeven
- Analyzed: historical (1971-2000), 2020s (2006-2035), 2050s (2036-2065), and 2080s (2066-2095)

Climate Change Trends in York Region and Vaughan



Temperature



Mean temperatures (annual and seasonal)

- **Winter and summer** months are anticipated to see more warming, though data from climatedata.ca also indicate a high degree of warming in the **fall**



Days with temperatures above 30°C



Days with minimum temperature below -25°C



Precipitation



Total precipitation (annual with higher month-to-month variation)

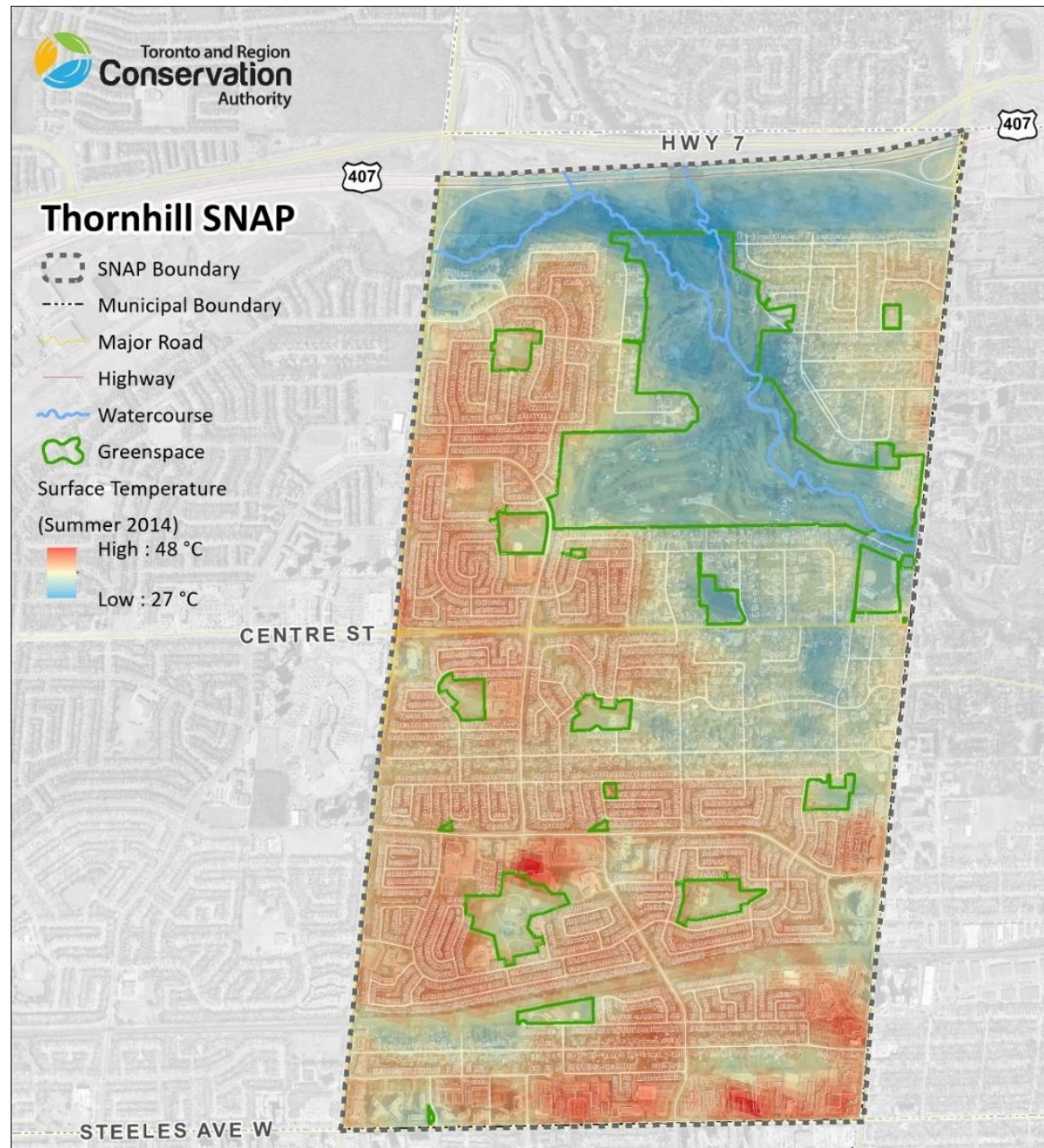
- **Winter** is anticipated to see the greatest increases, though data from climatedata.ca also suggests a great degree of increase in the **spring**



Extreme precipitation (maximum 1-day and 5-day totals)

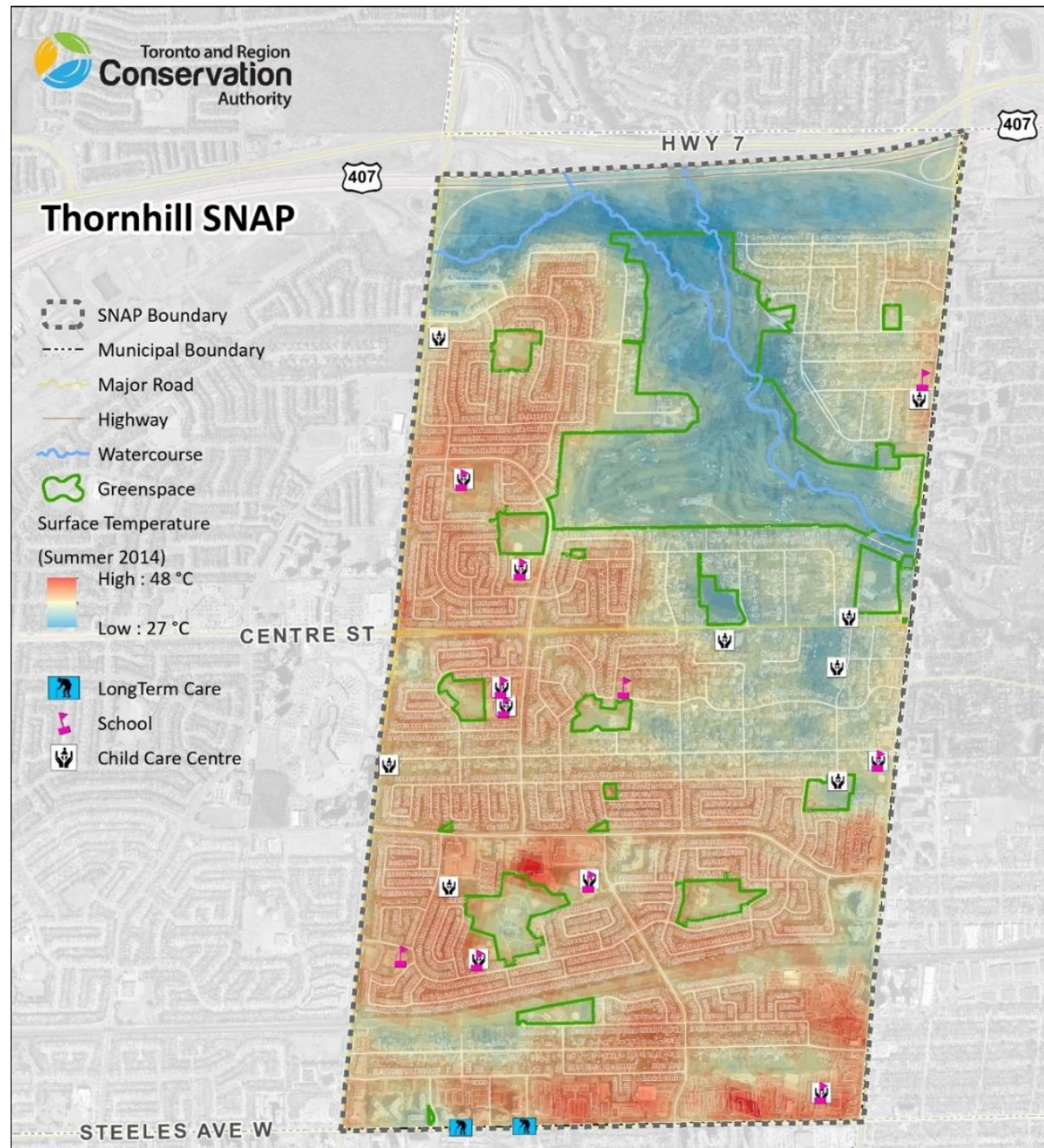
Surface Heat Island

- TRCA surface temperature mapping (July 2014)



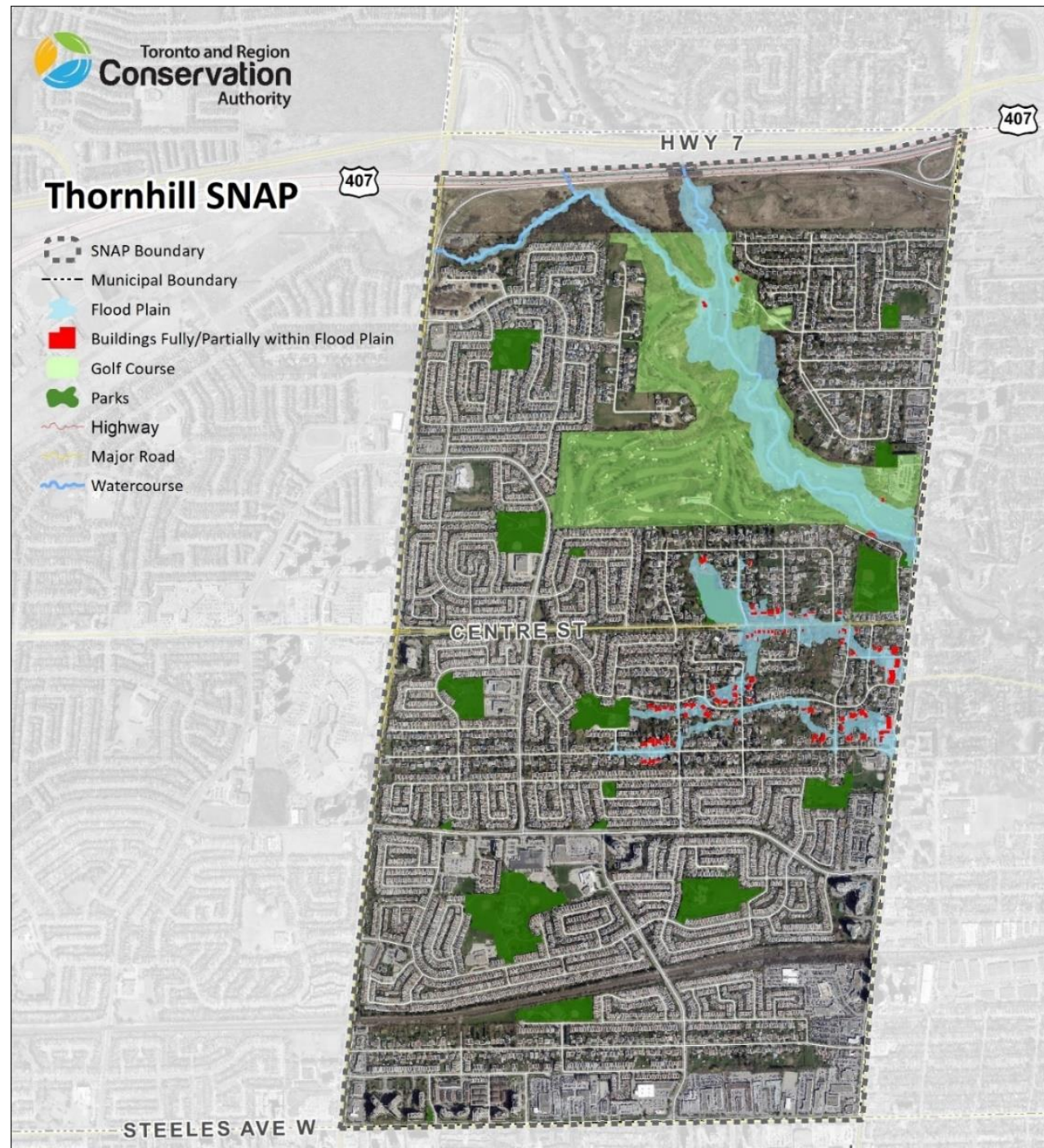
Surface Heat Island

- TRCA surface temperature mapping (July 2014)
- Overlaid with schools, child care centres, and senior residences



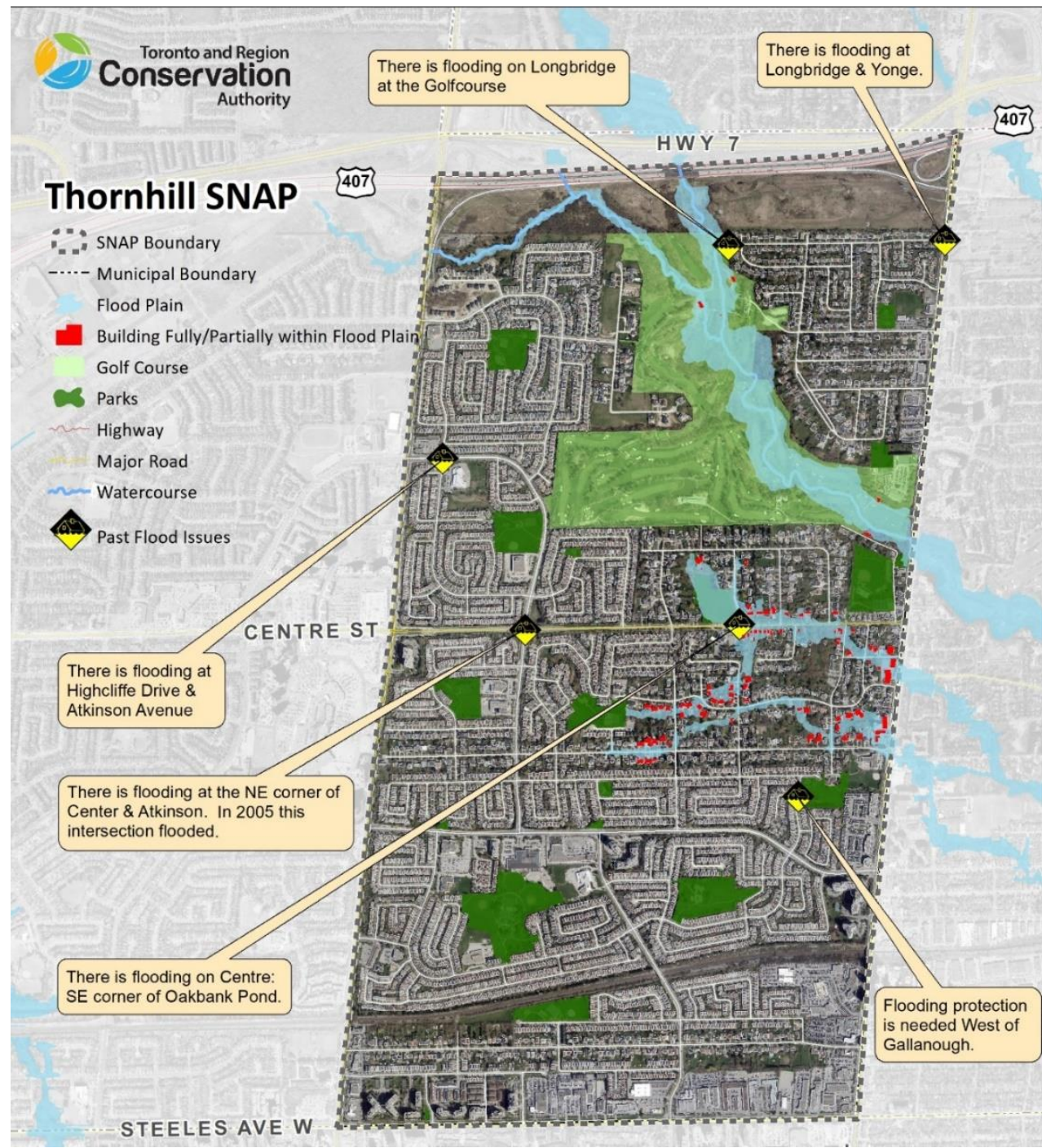
Flood Risk

- TRCA flood plain mapping



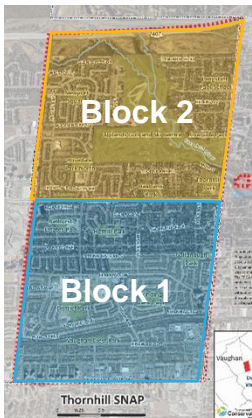
Flood Risk

- TRCA flood plain mapping
- Overlaid with past flooding issues identified by the community



Seniors, Children and Residents Living Alone

- Environics (2019):



Children
14 and under



Seniors
65+



Residents
living alone

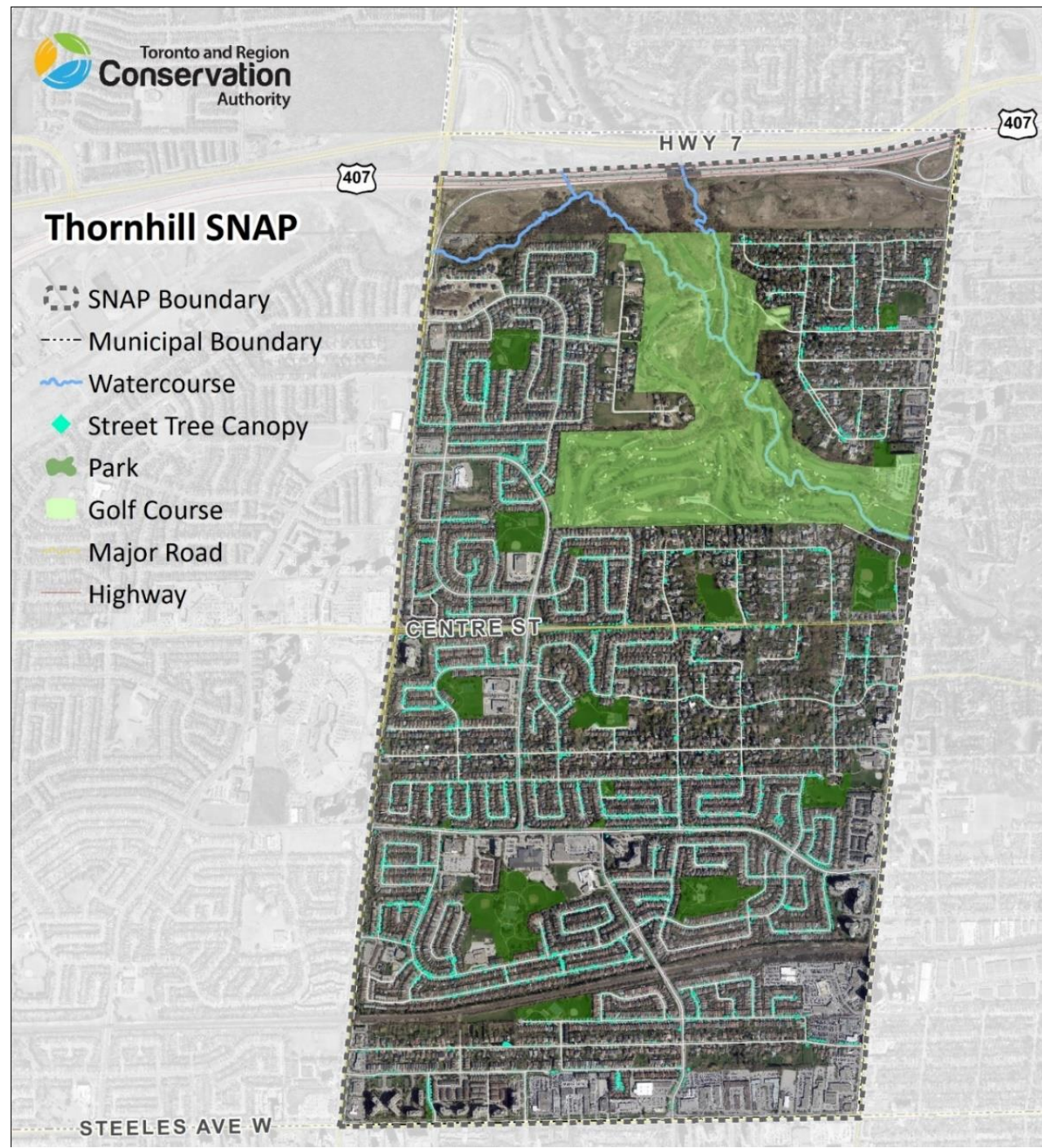
	Children 14 and under	Seniors 65+	Residents living alone
Block 1	14%	22%	23% of households
Block 2	14%	15%	15% of households
City	14%	20%	21% of households

Street Tree Canopy

- City of Vaughan street tree canopy cover
- Not included: trees in parks or private property

Percent of Street Tree Canopy Cover

Block 1	3%
Block 2	2%
Thornhill	2%



Access to Greenspace

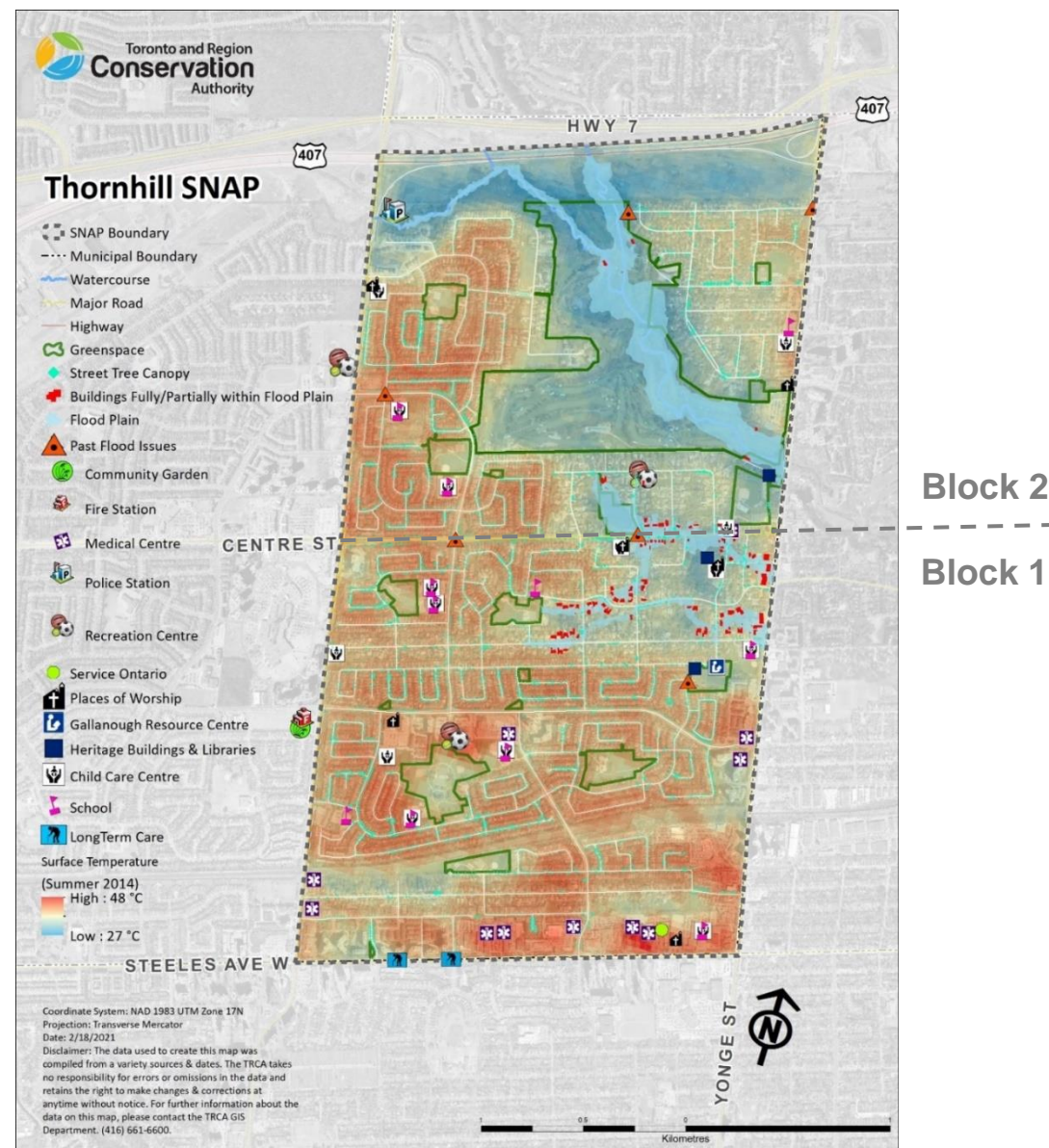
	Total Greenspace (area)
Block 1	0.2 km ²
Block 2	1.1 km ²
Thornhill	1.3 km ²

	Greenspace Per Capita	Total Greenspace Cover
Block 1	7.8 m ² per person	5%
Block 2	142.9 m ² per person	26%
Thornhill	35.9 m ² per person	15%

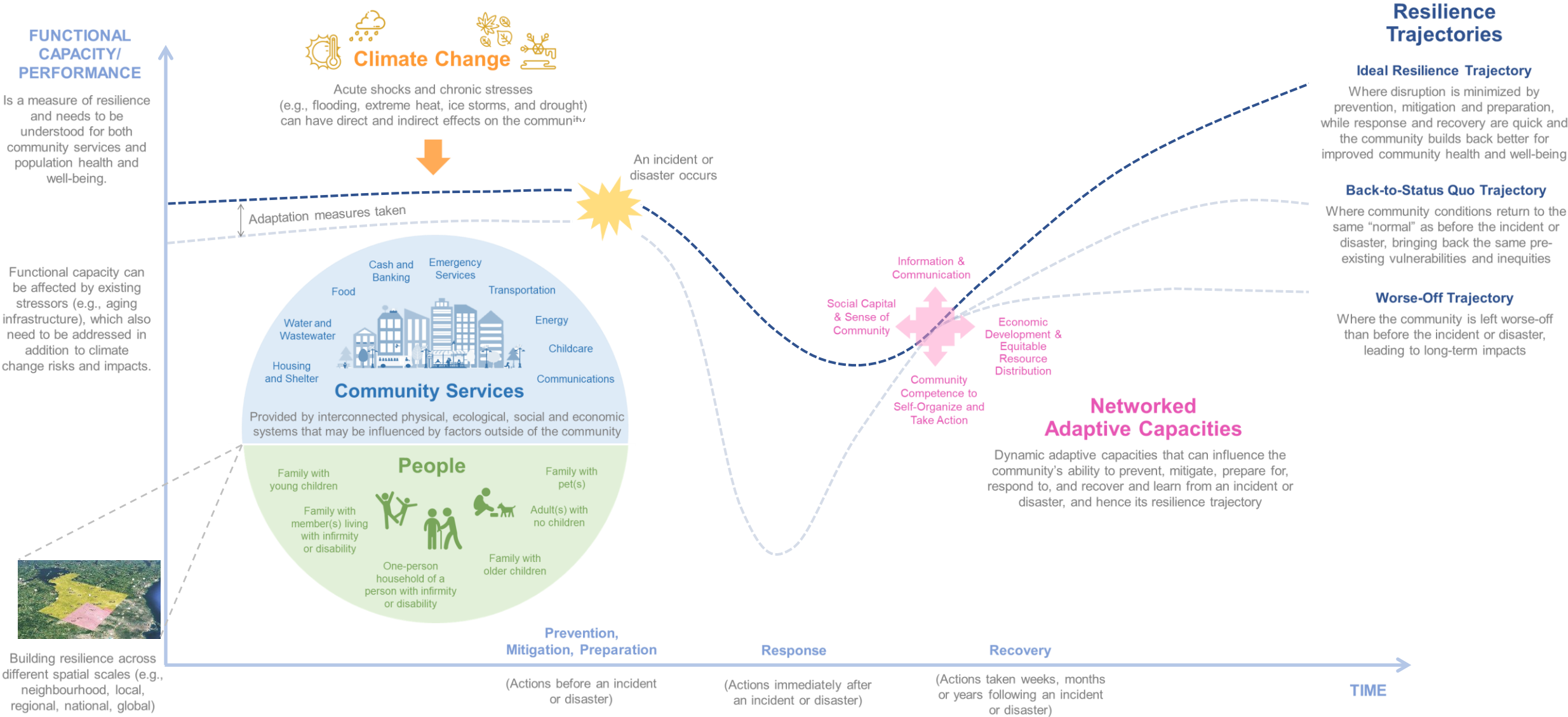


Neighbourhood Vulnerability Assessment

Indicator	RATING		
	Block 1 (South)	Block 2 (North)	Overall
EXPOSURE (High is least desirable; Low is most desirable)			
Extreme Heat	High	Medium	Medium-High
Precipitation and Flooding	High	Medium	Medium-High
Ice Storm	Medium	Medium	Medium
Vector-borne Disease	High	High	High
SENSITIVITY (High is least desirable; Low is most desirable)			
Perceptions of Climate Change	Medium	Medium	Medium
Seniors	High	Medium	Medium-High
Children	Low	Medium	Medium-Low
Residents Living Alone	High	Medium	Medium-High
Language Barriers	Medium	Low	Medium-Low
Educational Attainment	Medium	Low	Medium-Low
Household Income and Distribution	Low	Medium	Medium-Low
Housing Tenure	Medium	Low	Medium-Low
Age of Housing	Medium	High	Medium-High
ADAPTIVE CAPACITY (Low is least desirable; High is most desirable)			
Local Assets and Services	High	Medium	Medium-High
Presence of Air Conditioning	Low	High	Medium
Mobility and Access to Transit	Low	Low	Low
Access to Drinking Water	High	High	High
Access to Food Outlet	Medium	Medium	Medium
Street Tree Canopy	Medium	Medium	Medium
Access to Greenspace	Low	High	Medium
Communications	Medium	High	Medium-High
Sense of Community	Low	Medium	Medium-Low

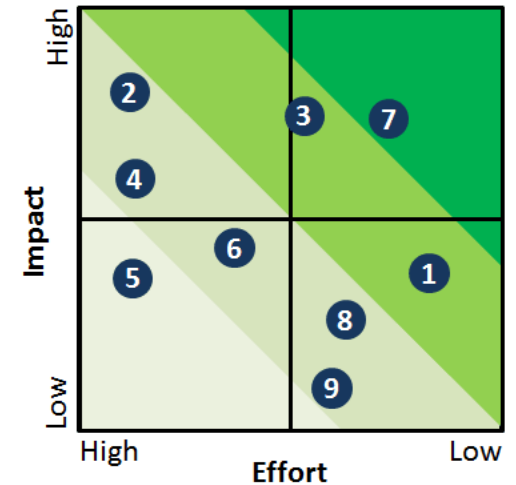
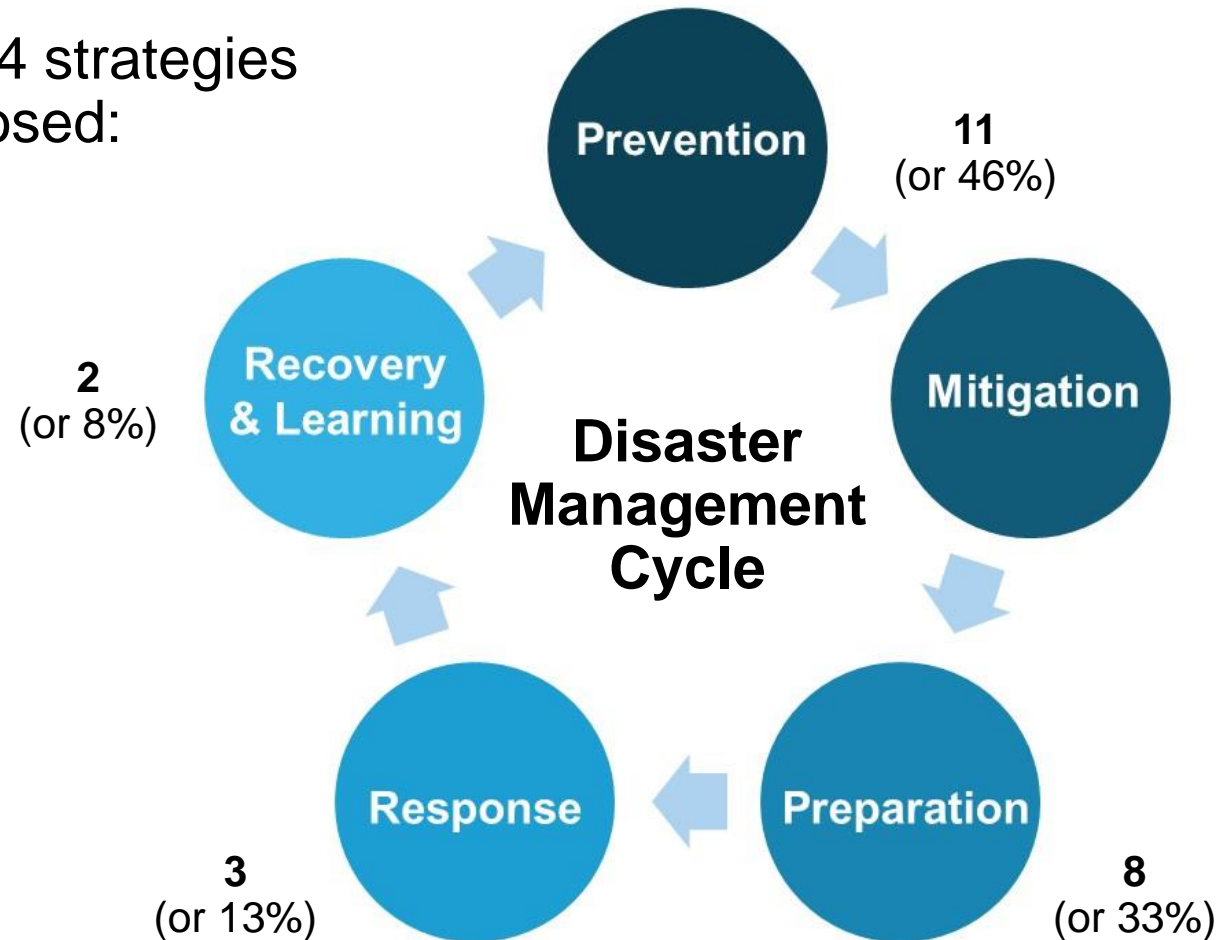


Neighbourhood Resilience Framework



Proposed Resilience Strategies

A total of 24 strategies were proposed:



Each strategy was evaluated for impact and effort

Top Rated Strategies

1. Trees on Public Property

- Plant and maintain more diverse native species of trees in public spaces (including streets and parks), particularly in the southern section of Thornhill
- Need for more trees and shade in parks (e.g., Hefhill Park, Yorkhill Park, Rosedale Park North, and Bathurst Estates Park), and along streets (e.g., Steeles Avenue, Spring Gate Boulevard, Clark Avenue, Yonge Street, and Highway 407), including plantings in median strips
- When public trees are lost or damaged due to extreme weather events or pests and diseases, as park trees have in the past, a protocol should be in place to replace lost or damaged trees

Impact Rating	Effort Rating
Very High	Low



Top Rated Strategies

2. Sense of Community

- Create opportunities for enhancing social capital, where neighbours of all ages and abilities can meet one another, particularly for seniors and residents living alone
- Examples include community gardens, programming in parks or community centres, block parties, Thornhill Festival, and programming that connects seniors with youth

Impact Rating	Effort Rating
High	Very Low



Top Rated Strategies

3. Public Outdoor Cooling Spaces

Impact Rating	Effort Rating
Very High	Moderate

- Consider adding splash pads, more public outdoor pools, drinking water fountains or bottle filling stations within the neighbourhood
- Increase shade along streets and around playgrounds and parks to help residents cool off during extreme heat events, including low-income residents and those who are homeless or precariously housed
- These measures are particularly important in areas with high surface temperatures (e.g., Spring Farm Marketplace and commercial areas along Steeles Avenue and Yonge Street), and areas with greater concentrations of vulnerable populations (e.g., schools, childcare centres, and senior residences, etc.)





Next Steps

- Final staff and Council review of Draft Action Plan and Resilience Strategy
- Present draft Action Plan to the community in June
- Bring final Action Plan to Council for approval in the fall
- Establish working committees for the Signature Projects and other key initiatives
- Proceed with detailed design for Gallanough Park Signature Project and the Residential Retrofit Program
- Host quick start projects this fall
- Fundraise to augment capital funding for implementation

Thank you

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