

# Vulnerability and Risk Assessment

County of Wellington Climate Adaptation Plan

May 20<sup>th</sup>, 2026



1

## Recap: March 30<sup>th</sup> Climate Change Meetings

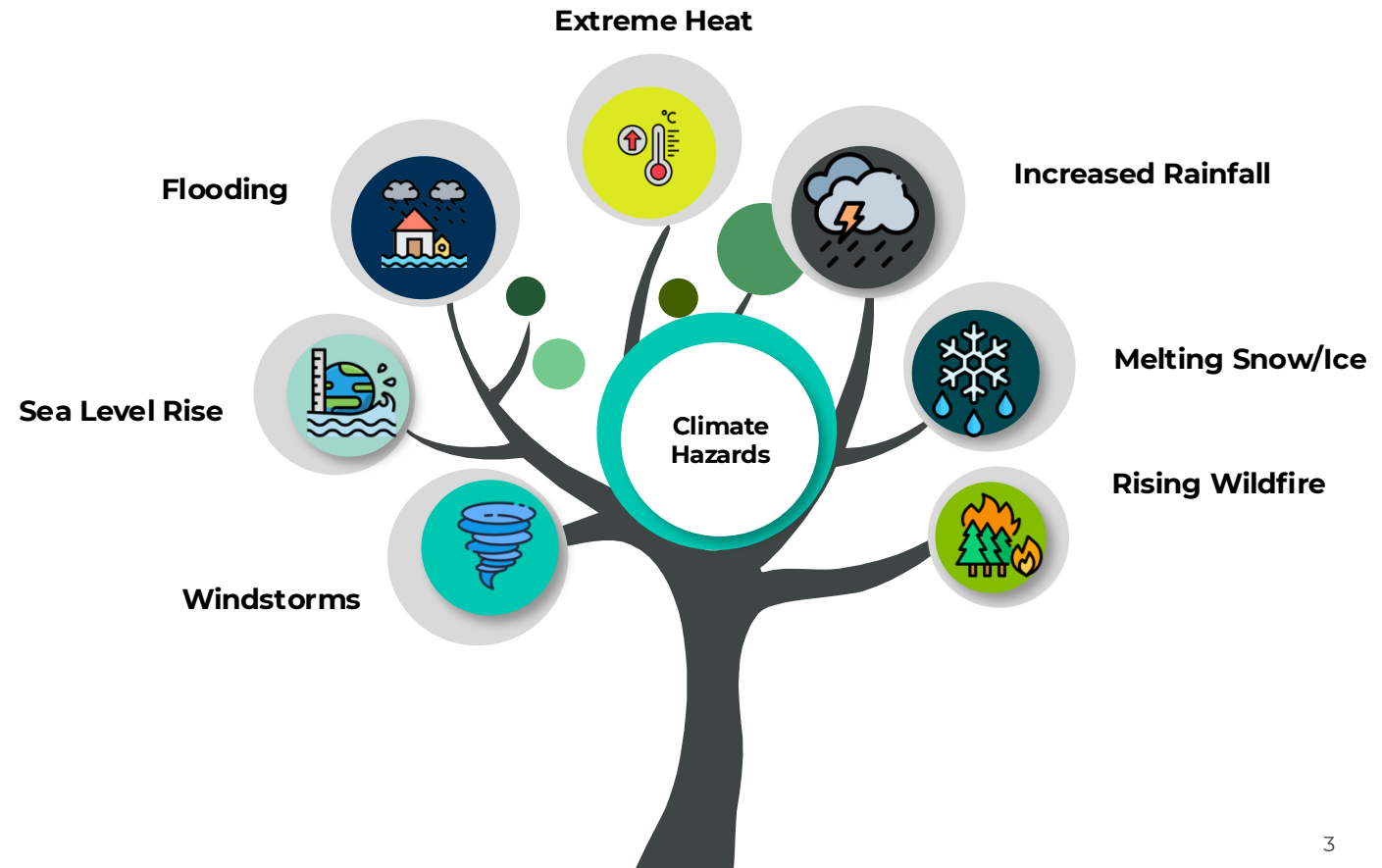


# Climate Change Hazards

Climate change is already affecting communities through shifts in temperature, precipitation, and extreme weather events. These changes increase risks to infrastructure, ecosystems, public health, and local economies.

## Why does it matter?

The **magnitude, frequency and rate** at which these changes and events are occurring vary from community to community



# Climate Impacts for County of Wellington



## Extreme Heat

- Average temperature and frequency of heat warning events are expected to rise.
- Very warm nights will occur more often
- People may need air conditioning or cooling more often



## Seasonal Variability

- Winters are expected to become warmer
- Snow and ice accumulation will be reduced
- Freeze-thaw cycles are expected to occur more frequently



## Increased Precipitation

- Total annual rainfall projected to increase
- Rainfall will occur in shorter, more intense storms
- More winter precipitation will fall as rain instead of snow



## Extreme Weather

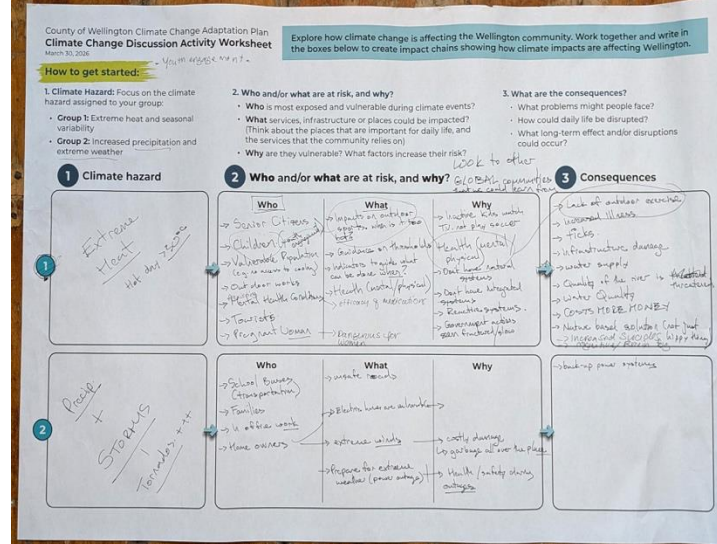
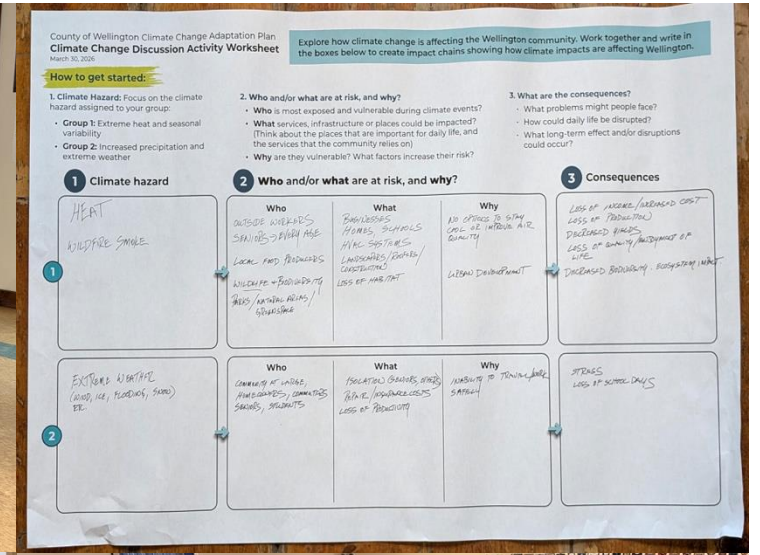
- Storm events are expected to occur more often
- High-wind events will become more intense
- Wildfire is mainly limited to grass or brush fires

# March 30<sup>th</sup> : Climate Change Meeting

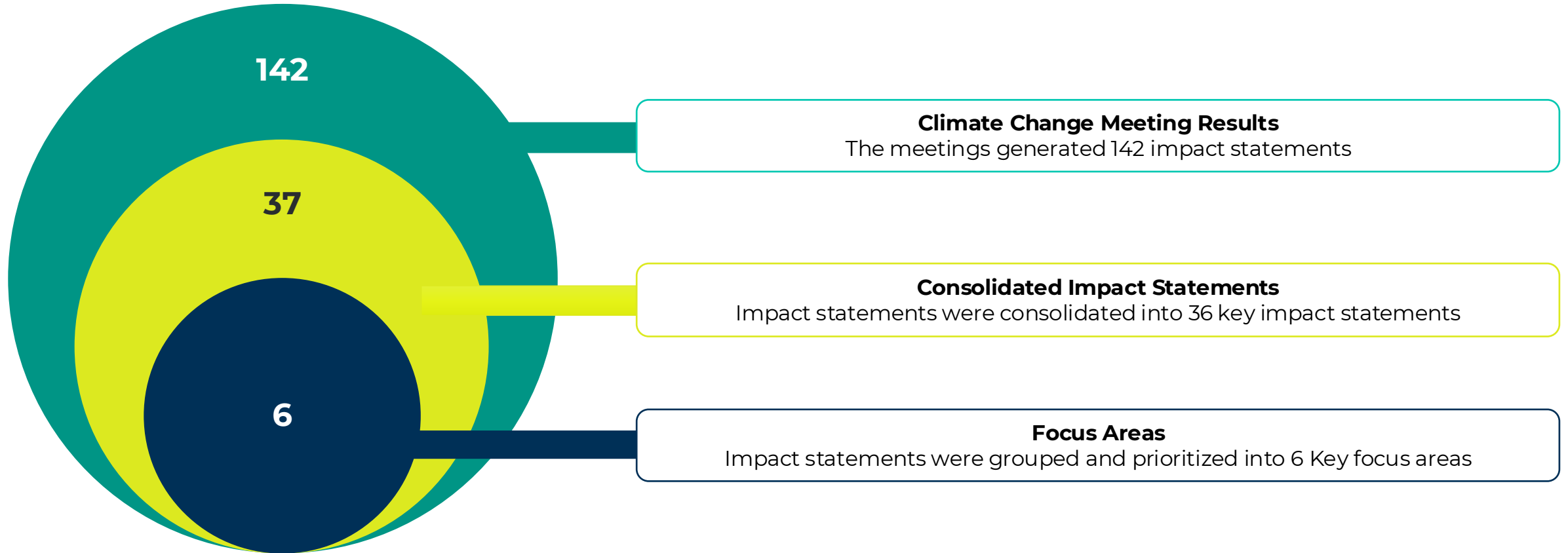
Focused conversations with residents, social services, public health, the OPP, conservation authorities, and county staff helped identify local climate risks and their potential impacts on Wellington County.

## They helped identify:

- What **key climate hazards** are you currently observing or anticipating?
- Who or what may be **most at risk**, and why?
- What **consequences and/or disruptions** do you anticipate to operations, service delivery and community well-being?



# March 30<sup>th</sup>: Climate Change Meeting Results



# Focus Areas

Impact Statement describes how climate change could affect people, services and environment.

Focus areas capture the systems people rely on every day, ensuring the community can adapt, stay resilient, and thrive under changing climate conditions.

**The County of Wellington Adaptation Plan will be is organized under 6 focus areas that cover all 36 impact statements:**



Health and social systems



Built Environment



Agriculture and Natural Environment



Energy & Power



Community Services and Systems



Local economy

# Today's Objectives

- Assess the vulnerability of the climate impacts
- Assess the consequences of the impacts on the community and critical systems



2

## Assessing Vulnerability and Risk



# What is Vulnerability?

- Vulnerability describes how strongly a system, service or community could be affected by climate impacts
- Vulnerability is influenced by sensitivity and adaptive capacity
- Based on your lived experience help us identify sensitivity and adaptive capacity

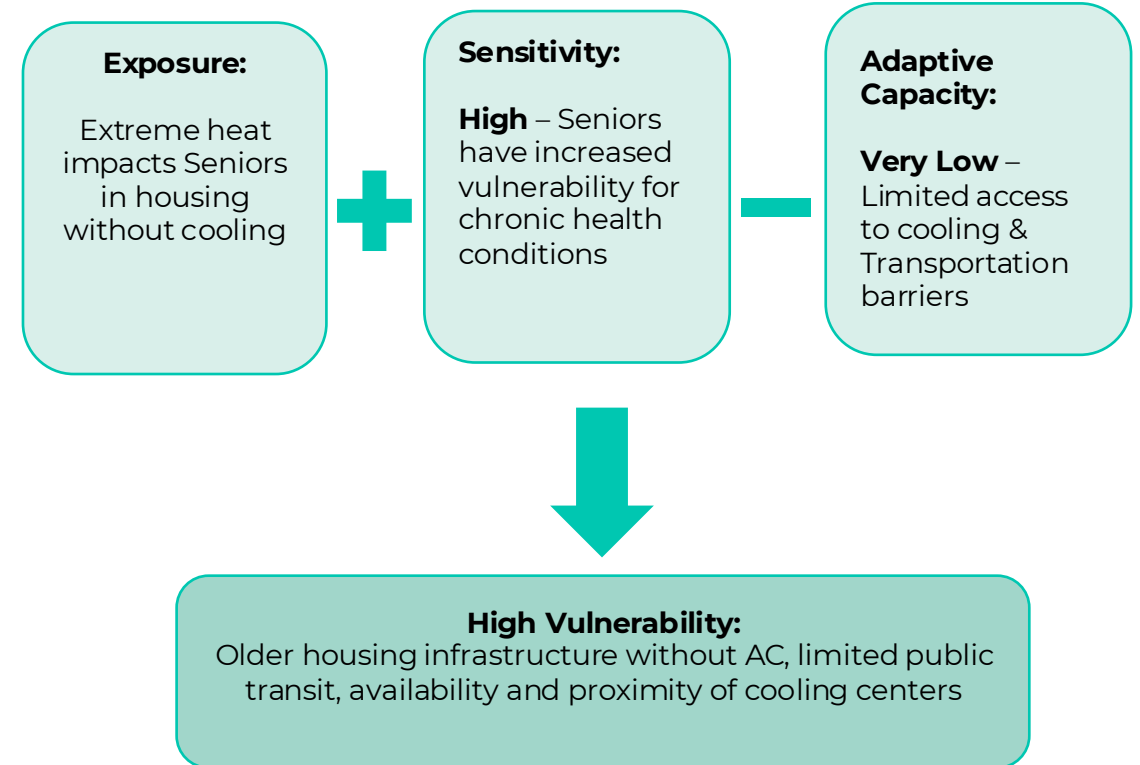
## Sensitivity

- The degree to which a system could be affected
- Extent of damage on infrastructure, stress on systems and service or loss of lives or access

## Adaptive Capacity

- Ability to cope and adjust to the impact
- If the impact were to occur, to what degree will the system fail

### Vulnerability Assessment Example



# How to Assess Risk?

We assess risk to identify which systems may pose the greatest challenges to safety, operations, and community well-being, and therefore may require priority adaptation actions.

- Risk is influenced by the potential consequences of climate impacts.
- Based on your lived experience, help us identify the consequences of climate impacts within Wellington County.

## Likelihood

Determining whether the climate hazard is recurring or a single event



## Consequence

Assess the known or estimated consequences from the climate hazard on:

- Public Health & safety
- Local Economy & Growth
- Community & Lifecycle
- Environmental and Sustainability
- Public Administration

5

## Break Out Activities



# Breakout Activity

Working together to identify vulnerabilities and prioritize risks across Wellington County.

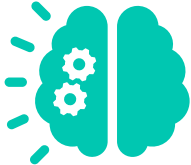
1

**Activity 1: Assess Vulnerability**  
Rate sensitivity and adaptive capacity

2

**Activity 2: Assess Risk**  
Rate the Consequences of potential impacts

## Tips for Success



**Reflect**  
Think about your own experience related to the impact statement

**Identify**  
What disruptions or system failure have you noticed or expect in your area?




**Be Practical**  
Don't overthink - Go with your lived experience

# Let's Assess Vulnerability

If the climate hazard were to happen today, how will the systems/services react, and which systems/service will be disrupted?

## Step 1: Read Impact Statements

Each table group will be assigned two focus areas and their corresponding impact statements.



# Let's Assess Vulnerability

If the climate hazard were to happen today, how will the systems/services react, and which systems/service will be disrupted?

## Step 1: Read Impact Statements

Each table group will be assigned two focus areas and their corresponding impact statements.



## Step 2: Sensitivity

- Assess the degree to which a system is affected by climate impacts by assigning a value (out of 5) for each impact statement

1	2	3	4	5
No – Functionality will stay the same	Unlikely – Functionality will likely stay the same	Yes – Functionality is likely to get worse	Yes – Functionality will get worse	Yes – Functionality will become unmanageable

# Let's Assess Vulnerability

If the climate hazard were to happen today, how will the systems/services react, and which systems/service will be disrupted?

## Step 1: Read Impact Statements

Each table group will be assigned two focus areas and their corresponding impact statements.

## Step 2: Sensitivity

- Assess the degree to which a system is affected by climate impacts by assigning a value (out of 5) for each impact statement


1	2	3	4	5
No – Functionality will stay the same	Unlikely – Functionality will likely stay the same	Yes – Functionality is likely to get worse	Yes – Functionality will get worse	Yes – Functionality will become unmanageable

## Step 3 : Adaptive Capacity

- Determine the ability of a system to cope with, respond to, and recover from climate impacts by assigning a value (out of 5) for each impact statement

1	2	3	4	5
Yes –staff intervention necessary	Yes – Staff intervention needed	Maybe – Some staff intervention	No – Significant staff intervention	No – Substantial staff intervention
\$ (Very Low):	\$\$ (Low):	\$\$\$ (Moderate):	\$\$\$\$ (High):	\$\$\$\$\$ (Very High)
Minimal financial impact; can typically be addressed within existing budgets	May require small budget adjustments or short-term resource allocation.	Noticeable financial investment requires planned budgeting and moderate new resources.	Significant financial commitment that requires funding, capital planning, or external funding sources.	Substantial financial burden that involves major capital investment, long-term funding and significant external support.

# Let's Assess Vulnerability: Example

Impact Statement	Vulnerability	
	Sensitivity	Adaptive Capacity
 <p>Extreme heat may accelerate deterioration of roads and built infrastructure, resulting in increased maintenance costs and reduced asset lifespan.</p>	4	3

Extreme heat can cause pavement damage and faster infrastructure deterioration that will disrupt travel and cause transportation barriers

The County has a moderate capacity to respond through existing asset management programs and maintenance operations.

Adaptation will require noticeable long-term investment and resources

5

## Break Out Activity #2



# Let's Assess Risk

**Step 4: Assess Consequence Rating**

Rate the consequences against the five categories for all the impact statements assigned to your group.

**Consequence Rating**

	<b>Public Health &amp; Safety</b>	<b>Local Economy &amp; Growth</b>	<b>Community &amp; lifestyle</b>	<b>Environment &amp; Sustainability</b>	<b>Public Administration</b>
<b>Catastrophic (5)</b>	Large number of serious injuries or loss of lives	Wide-spread business failure, loss of employment and hardship	Significant decline in quality of life and unable to support community	Significant loss of environmental damage	Public administration would cease to be effective
<b>Major (4)</b>	Isolated instances of serious injuries or loss of life	Business are unable to thrive and employment decline	Severe decline in quality of life and unable to support community	Severe loss of environmental damage	Public administration would struggle to be effective
<b>Moderate (3)</b>	Small number of injuries	Significant reduction in economic performance	General decline in services	Isolated instances of environmental damages	Public administration would under severe pressure
<b>Minor (2)</b>	Minor injuries	Isolated areas of reduction in economic performance	Isolated decline in services	Minor instances of environmental damages	Public administration would under moderate pressure
<b>Negligible (1)</b>	Minimal to no actual harm	Minor shortfall	Minor area unable to maintain services	No environmental damage	Manageable pressure on administration

# Let's Assess Risk: Example

Impact Statement	Vulnerability		Consequence				Rationale/ Example (lived experience)	
	Sensitivity	Adaptive Capacity	Public Safety	Local economy & growth	Community and Lifestyle	Environment and Sustainability		Public Administration
 <p>Extreme heat may accelerate deterioration of roads and built infrastructure, resulting in increased maintenance costs and reduced asset lifespan.</p>			2	2	3	1	3	

- **Public Safety:** Infrastructure deterioration can create localized safety concerns, such as accident risk and emergency response delay, in isolated areas
- **Local Economy:** Construction delays and road repairs may temporarily disrupt local businesses
- **Community and Lifestyle:** Residents may experience service disruptions, detours, and delays
- **Environment:** impact will remain localized and manageable through routine maintenance
- **Public Administration:** Municipal staff may face increased operational pressures, budget strains and high long-term infrastructure costs

# Next Steps

- Knowledge Summit #3: Adaptation Planning
- Review Adaptation strategies and suggest perspectives and additional solutions



**Thank you!**

**See you at the next meeting!**

