NORTH COWICHAN CLIMATE RISK & VULNERABILITY ASSESSMENT

Phase 2 Summary

January 9, 2023

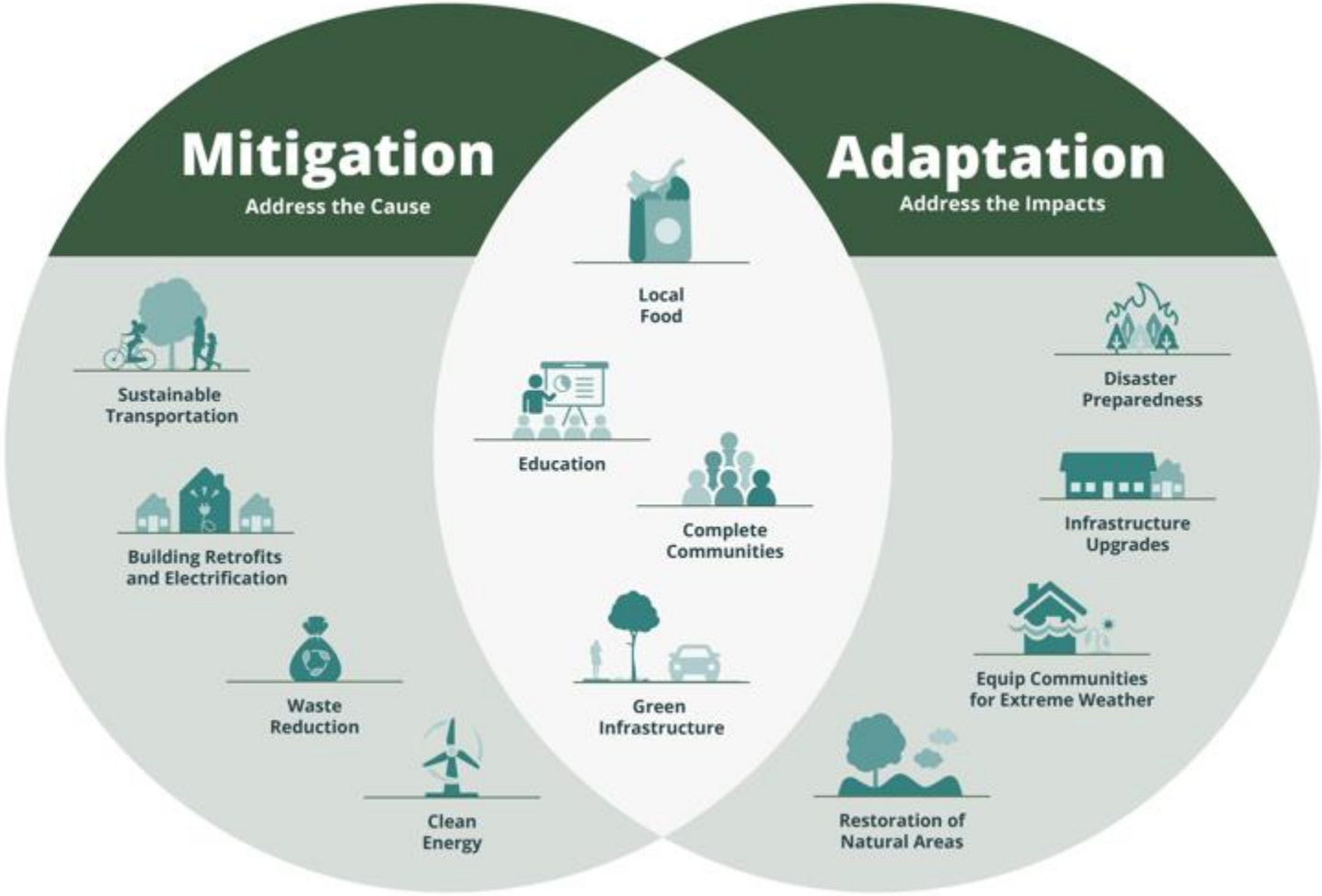
URBAN SYSTEMS

MUNICIPALITY OF NORTH Cowichan

AGENDA

1. Project Overview
2. Project Update
3. Phase 2 Overview
4. Phase 2 Results
5. Updates on Concurrent Projects
6. Next Steps
7. Questions

North Cowichan Climate Action and Energy Plan (CAEP)



North Cowichan Climate Risk & Vulnerability Assessment

URBAN SYSTEMS

PROJECT OVERVIEW

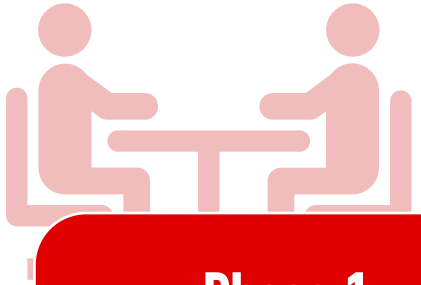
PRIMARY OBJECTIVE

To develop a climate change adaptation strategy that focuses on building resilience and reducing vulnerabilities and risks through implementation of actions at the municipal service level.

PRINCIPLES

- Understanding and building on **strengths**
- Identifying and addressing **gaps**
- Focusing on efforts that **balance effort and impact**
- **Collaborating** with others in the region

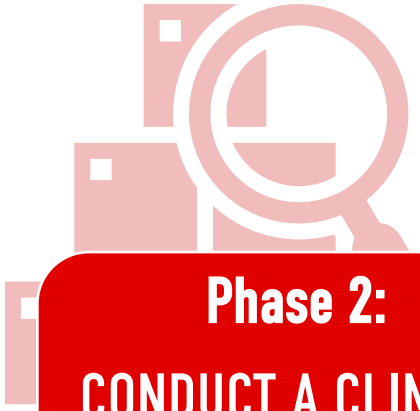
PROJECT UPDATE



Phase 1:

UNDERSTAND LOCAL CONTEXT AND CONCERNS

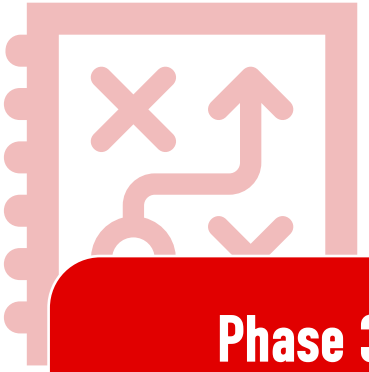
May 2023 – September 2023



Phase 2:

CONDUCT A CLIMATE RISK & VULNERABILITY ASSESSMENT

August 2023 – December 2023



Phase 3:

DEVELOP A CLIMATE CHANGE ADAPTATION STRATEGY

January 2024 – April 2024

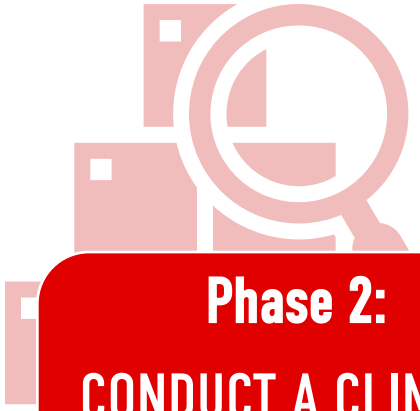
URBAN SYSTEMS

PROJECT UPDATE

Phase 1:

UNDERSTAND LOCAL CONTEXT AND CONCERNS

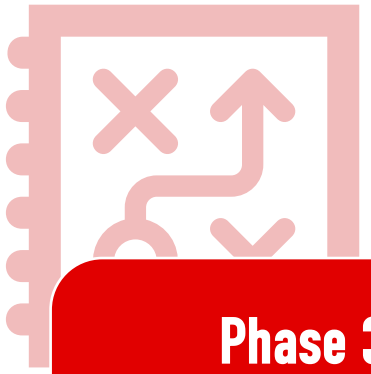
May 2023 – September 2023



Phase 2:

CONDUCT A CLIMATE RISK & VULNERABILITY ASSESSMENT

August 2023 – December 2023



Phase 3:

DEVELOP A CLIMATE CHANGE ADAPTATION STRATEGY

January 2024 – April 2024

URBAN SYSTEMS

PHASE 2 – CLIMATE RISK & VULNERABILITY ASSESSMENT

PURPOSE

To evaluate key areas of concern and determine priority risks to focus on in developing the Climate Change Adaptation Strategy in Phase 3.

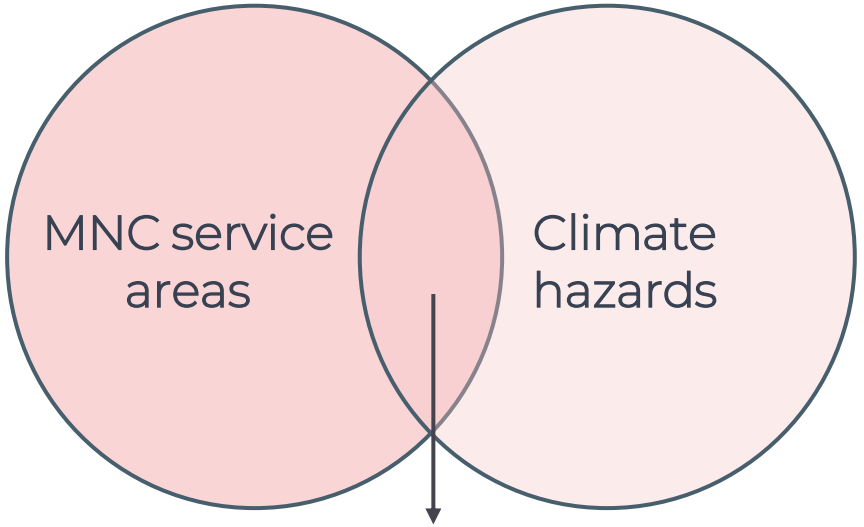
KEY ACTIVITIES

URBAN SYSTEMS

VULNERABILITY ASSESSMENT: OVERVIEW

PURPOSE

Identify and assess the exposure and sensitivity of MNC's service areas to the climate hazards of greatest concern.



Vulnerability rating

- Major
- Minor
- Insignificant
- Major/minor

URBAN SYSTEMS

VULNERABILITY ASSESSMENT: RESULTS

- Generally high service vulnerability to **Flooding** and **Severe Wildfire**; all service areas have a major/minor vulnerability to at least one of these two climate hazards.
- **Environmental Stewardship**, **Recreation**, and **Support for the Economy** service areas have the highest distribution of major vulnerabilities to climate hazards.
- **Landslides** and **Extreme Cold** have the lowest amount of major vulnerability interactions with service areas.

RISK ASSESSMENT: OVERVIEW

PURPOSE

Identify and evaluate risks to support the development and prioritization of climate change adaptation action

What is Risk?

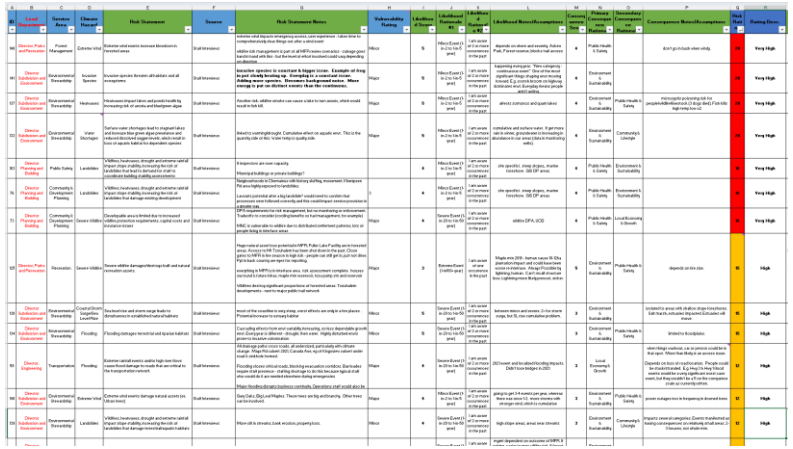
=

Likelihood x Consequence

Collaborative

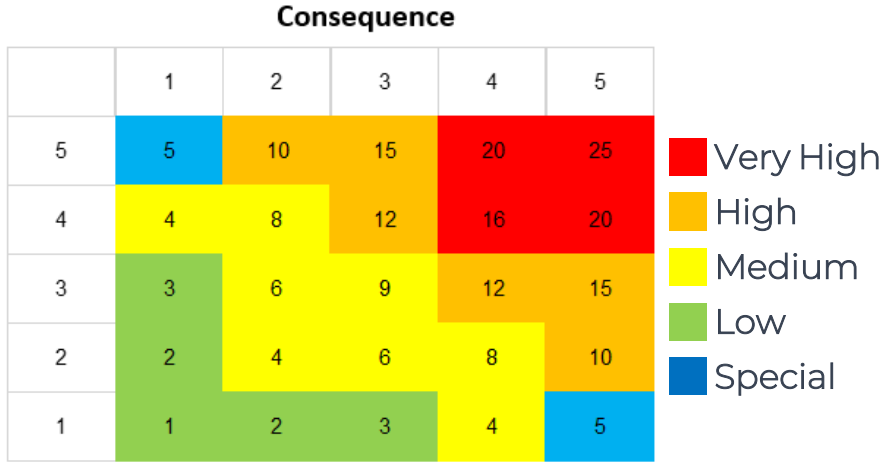
Risk Statements

E.g., "Extreme heat events exceed the cooling capacity of municipal buildings"



Collaborative

Risk Ratings



URBAN SYSTEMS

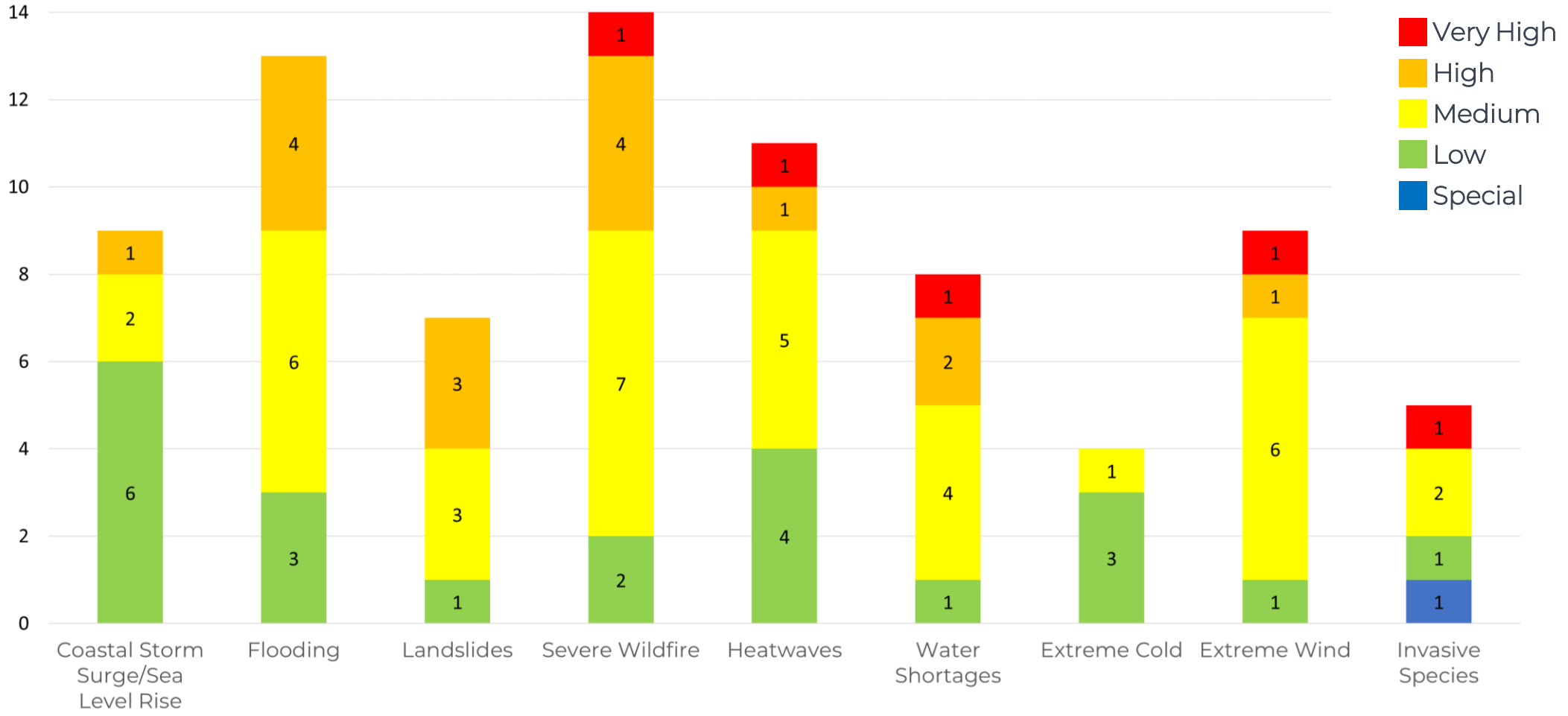
RISK ASSESSMENT: BY THE NUMBERS

80 risk statements in total

- 5 rated very high
- 16 rated high
- 36 rated medium
- 22 rated low
- 1 rated special

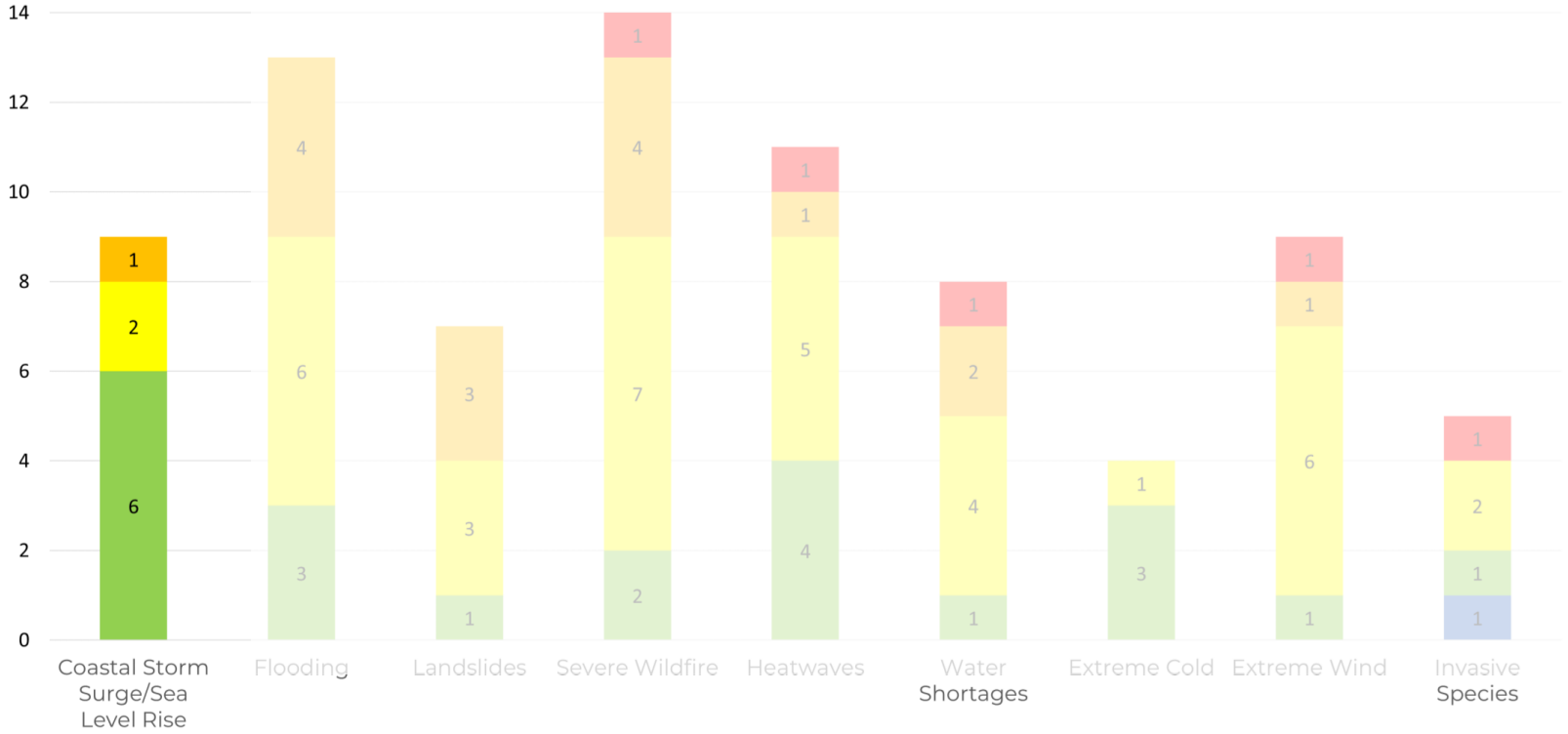
URBAN SYSTEMS

RISK ASSESSMENT RESULTS: BY CLIMATE HAZARD



URBAN SYSTEMS

RISK ASSESSMENT RESULTS: COASTAL STORM SURGE/SEA LEVEL RISE



High Risks

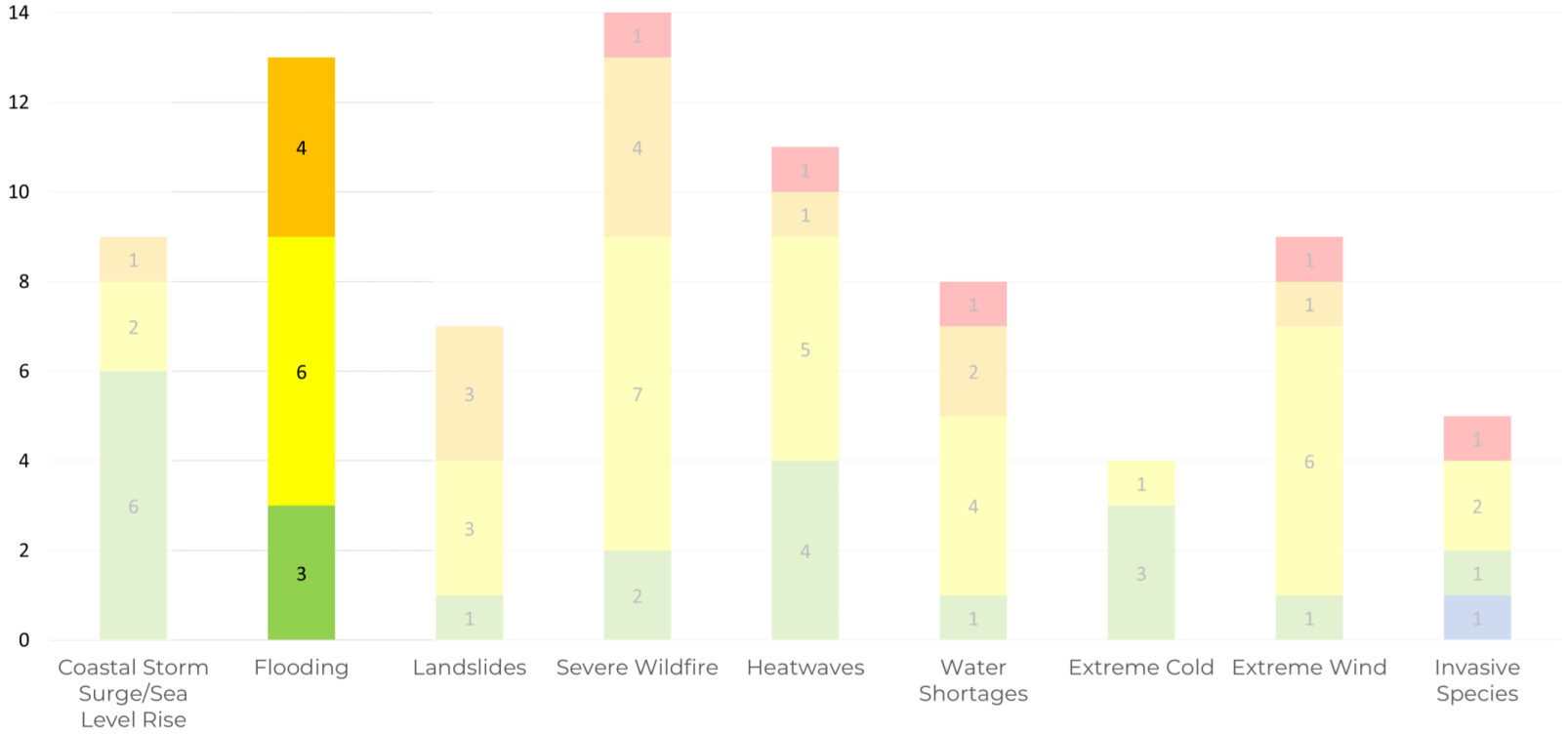
- Displacement and/or damage to established natural marine habitats.

Medium Risks

- Damage and/or service interruptions to coastal transportation infrastructure in areas at or near sea-level.
- Long-term sea-level rise and storm surge events impact the operations of major employers located along the coastal area, potentially impacting the local economy.

URBAN SYSTEMS

RISK ASSESSMENT RESULTS: FLOODING



High Risks

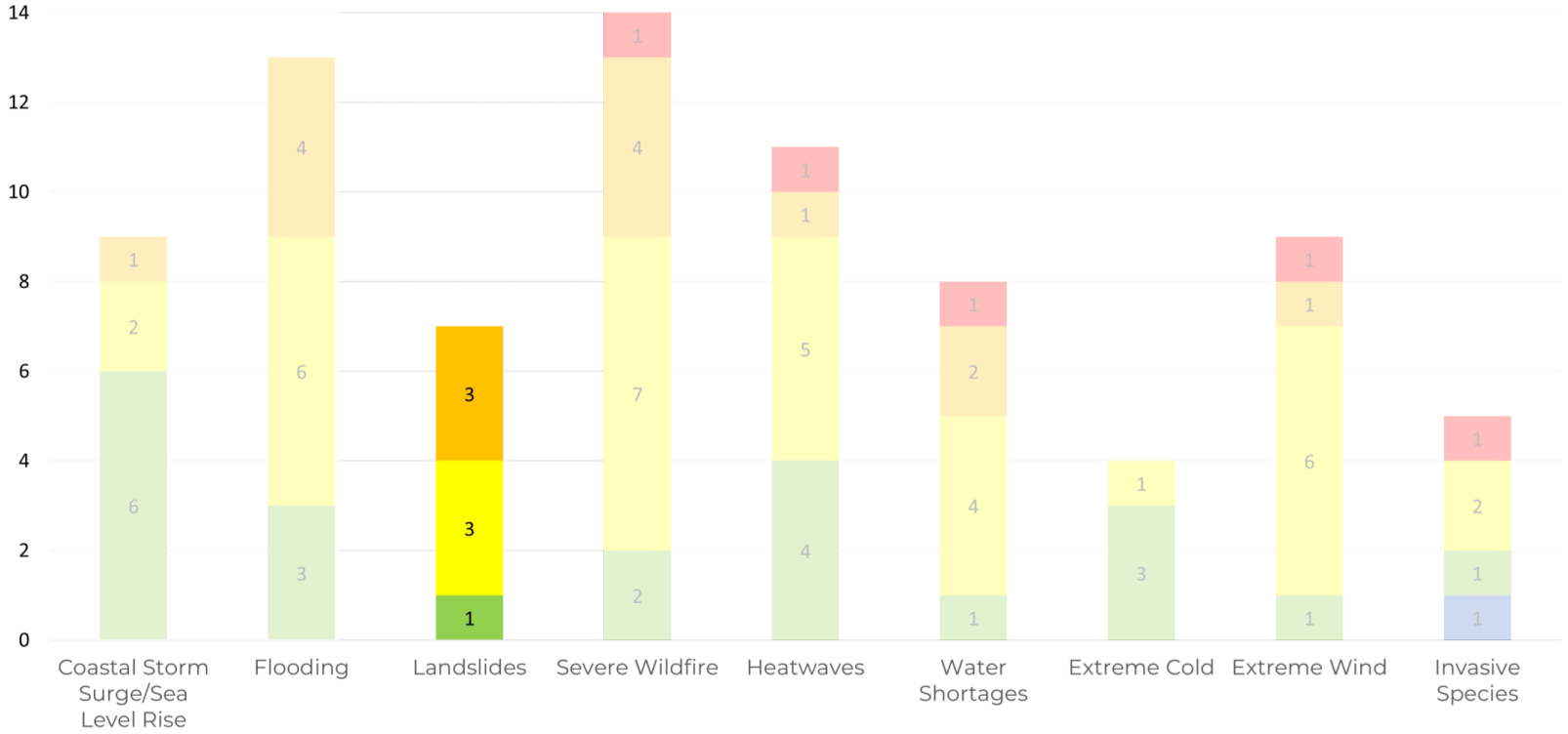
- Damage and/or service interruptions to built assets and natural assets.

Medium Risks

- Service interruptions to recreation, wastewater collection and treatment, waste collection, and financial impacts of flood response and recovery.

URBAN SYSTEMS

RISK ASSESSMENT RESULTS: LANDSLIDES



High Risks

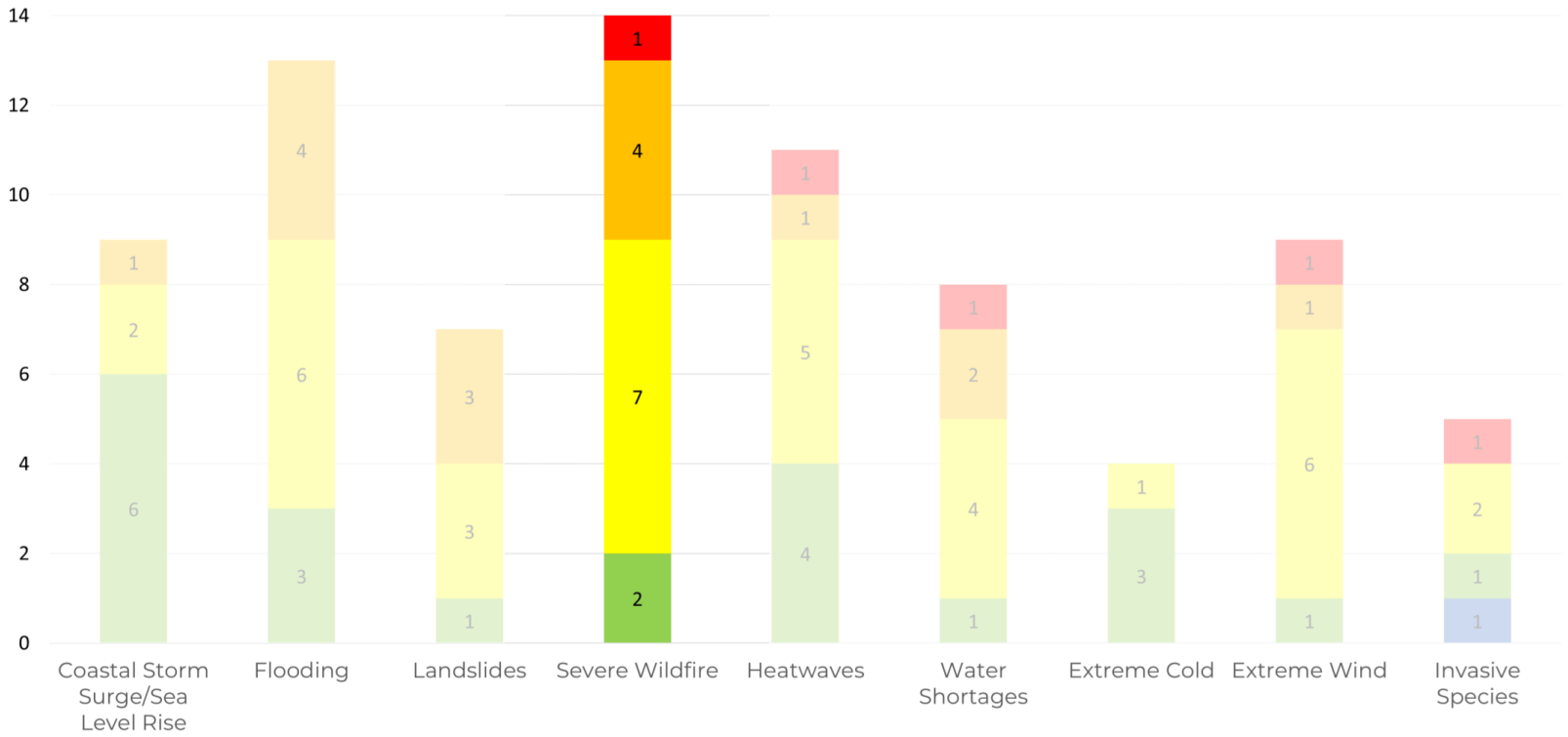
- Considerations for landslide risks to existing and planned developments and transportation routes
- Damage to terrestrial and aquatic habitats.

Medium Risks

- Damage to infrastructure and/or disruption in service for drinking water system and stormwater system.

URBAN SYSTEMS

RISK ASSESSMENT RESULTS: SEVERE WILDFIRE



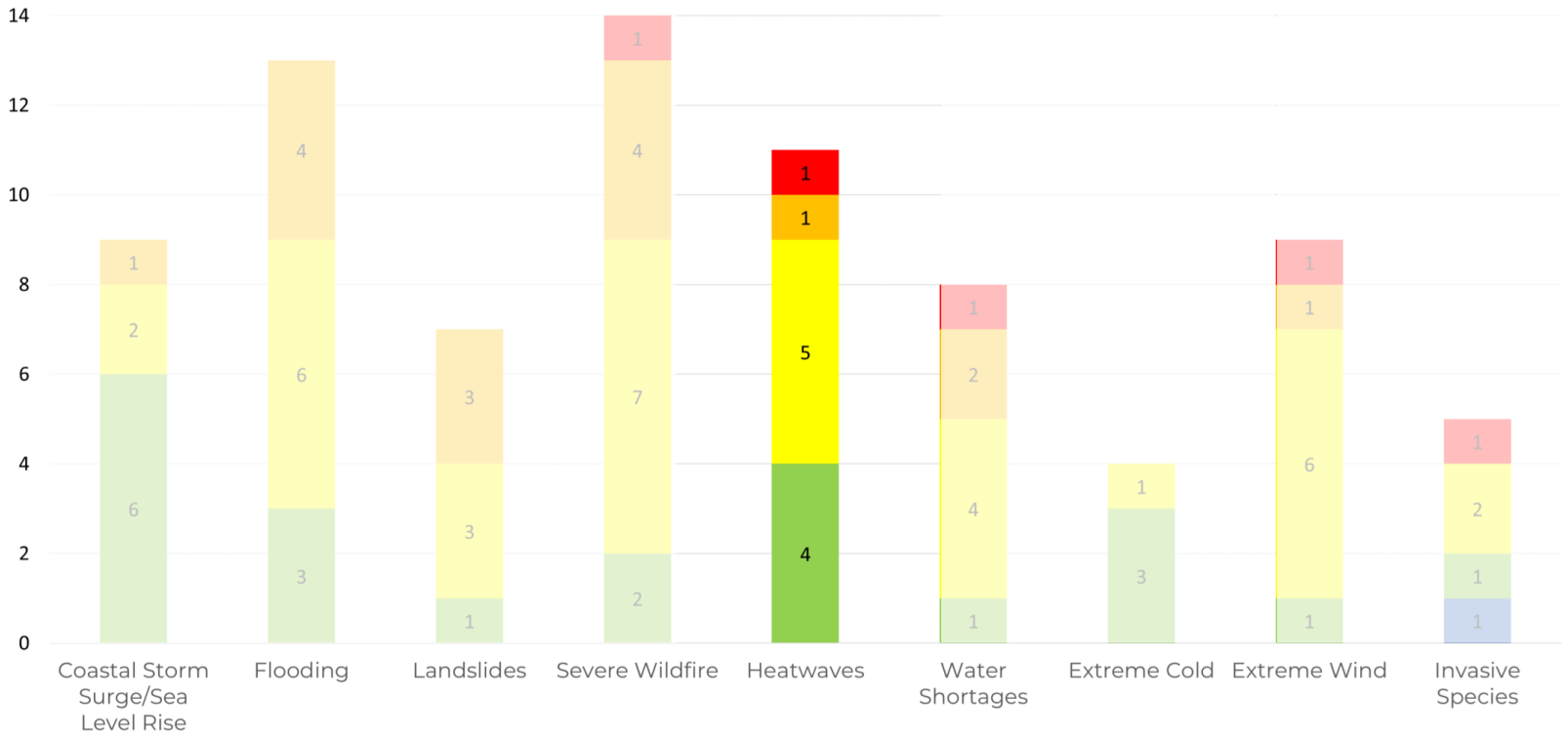
Very High/High Risks

- Developable areas are limited due to increased wildfire protection requirements, capital costs, and insurance premiums.
- Impacts to the Municipal Forest Reserve, a major natural asset and recreational amenity, and biodiversity loss.
- Damage and/or service interruptions to the drinking water system and business continuity of government services.

Medium Risks

- Damage to infrastructure and/or disruption in service for wastewater, and transportation

RISK ASSESSMENT RESULTS: HEATWAVES



Very High/High Risks

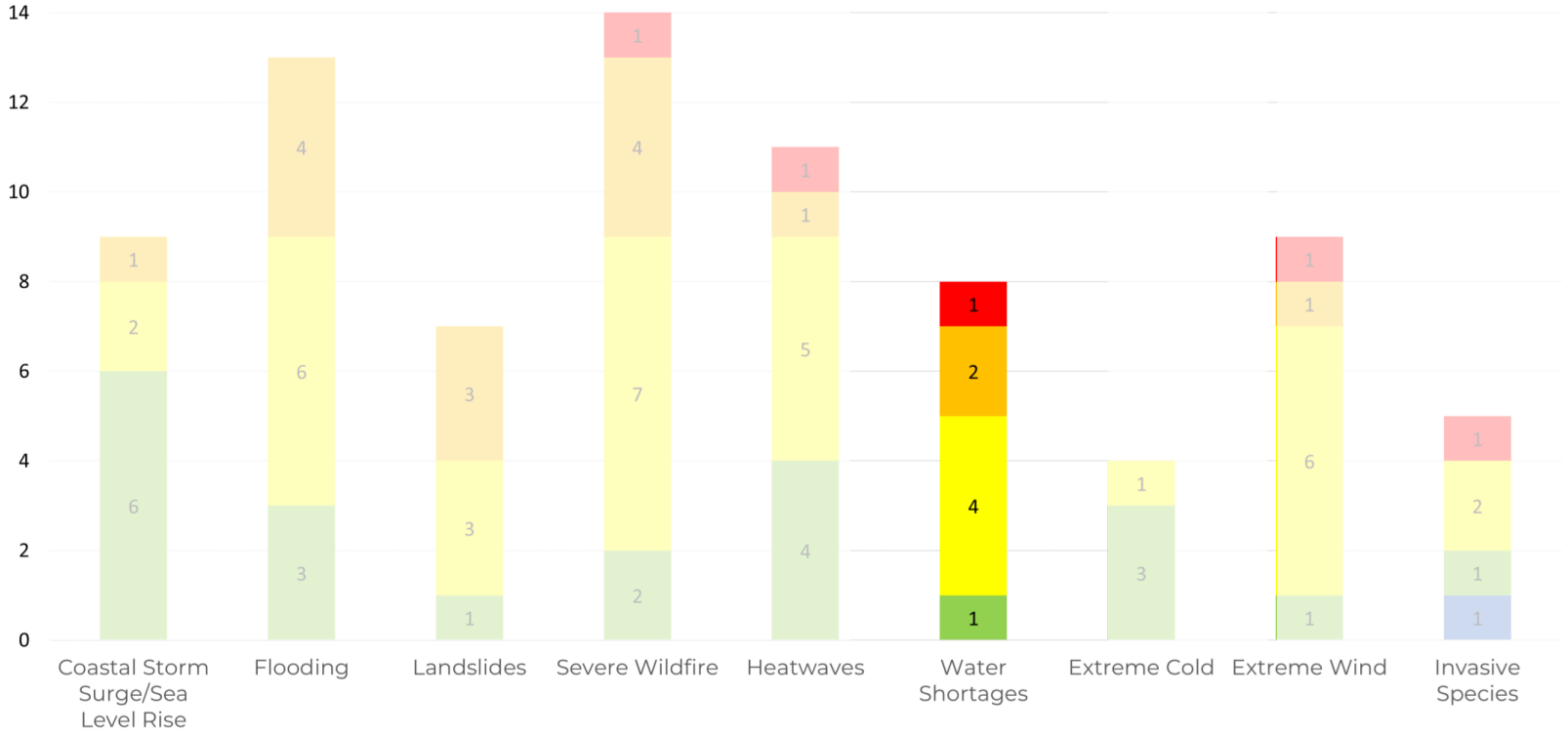
- Impacts to lake water quality affecting ecosystem health and human health.
- Reduced outdoor work activity decreases the level of service for operational and recreational assets.

Medium Risks

- Increased demand for recreational facilities as cooling centers.
- Reduced effectiveness of natural stormwater management features.
- Impacts on tree growth in young plantations in the Municipal Forest Reserve.

URBAN SYSTEMS

RISK ASSESSMENT RESULTS: WATER SHORTAGES



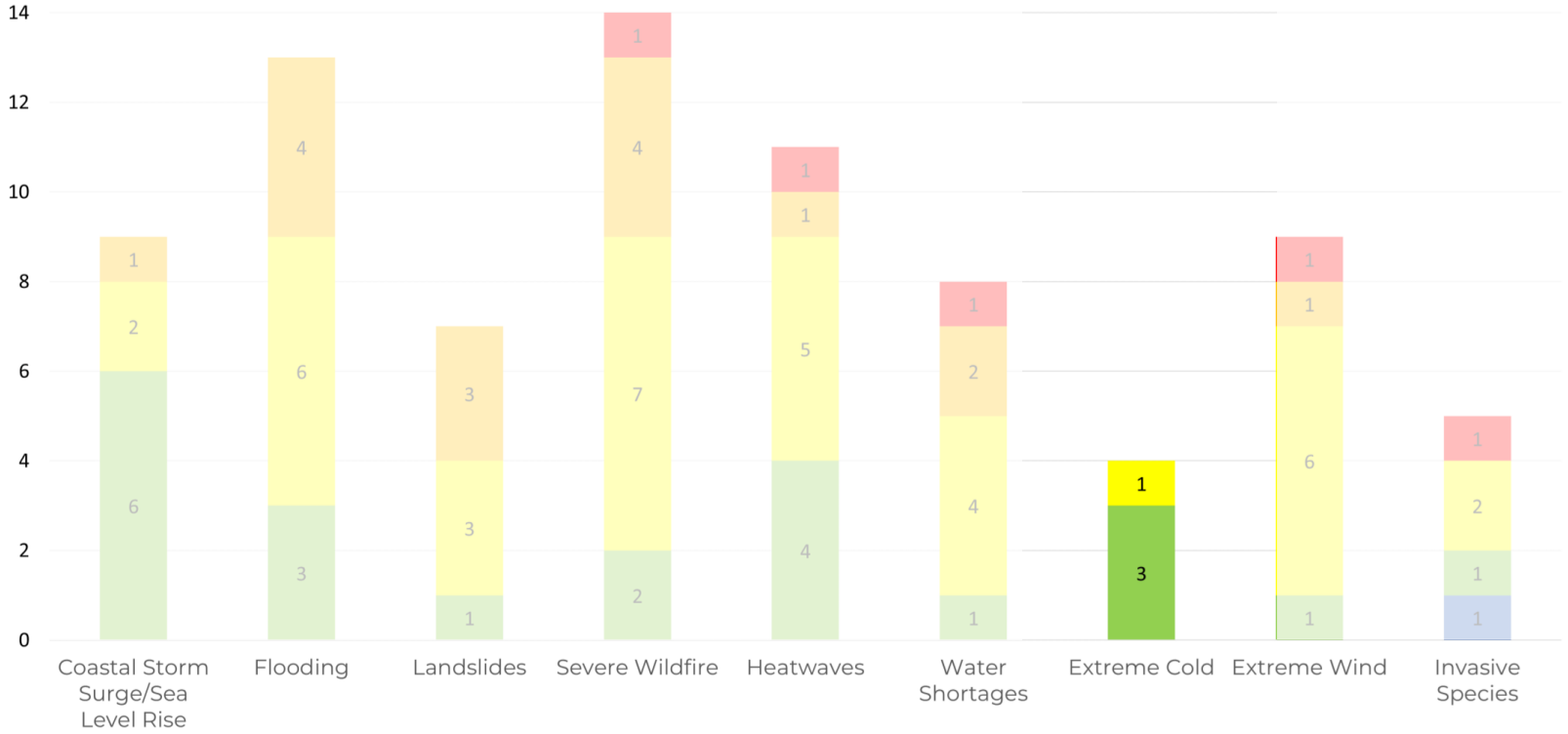
Very High/High Risks

- Impacts on aquatic habitats and other sensitive ecosystems.
- High water demands combined with water restrictions impact the level of service for the water system.
- Low flows in Cowichan River impact dilution levels of treated effluent from the Joint Utilities Sewage Lagoons Treatment Plant.

Medium Risks

- Increased tree mortality in the Municipal Forest Reserve.
- Challenges for businesses and industry impacted by municipal bylaws and provincial restrictions.
- Potential risks to community growth when additional water sources and licensing from the province are required.
- Impacts to recreational assets.

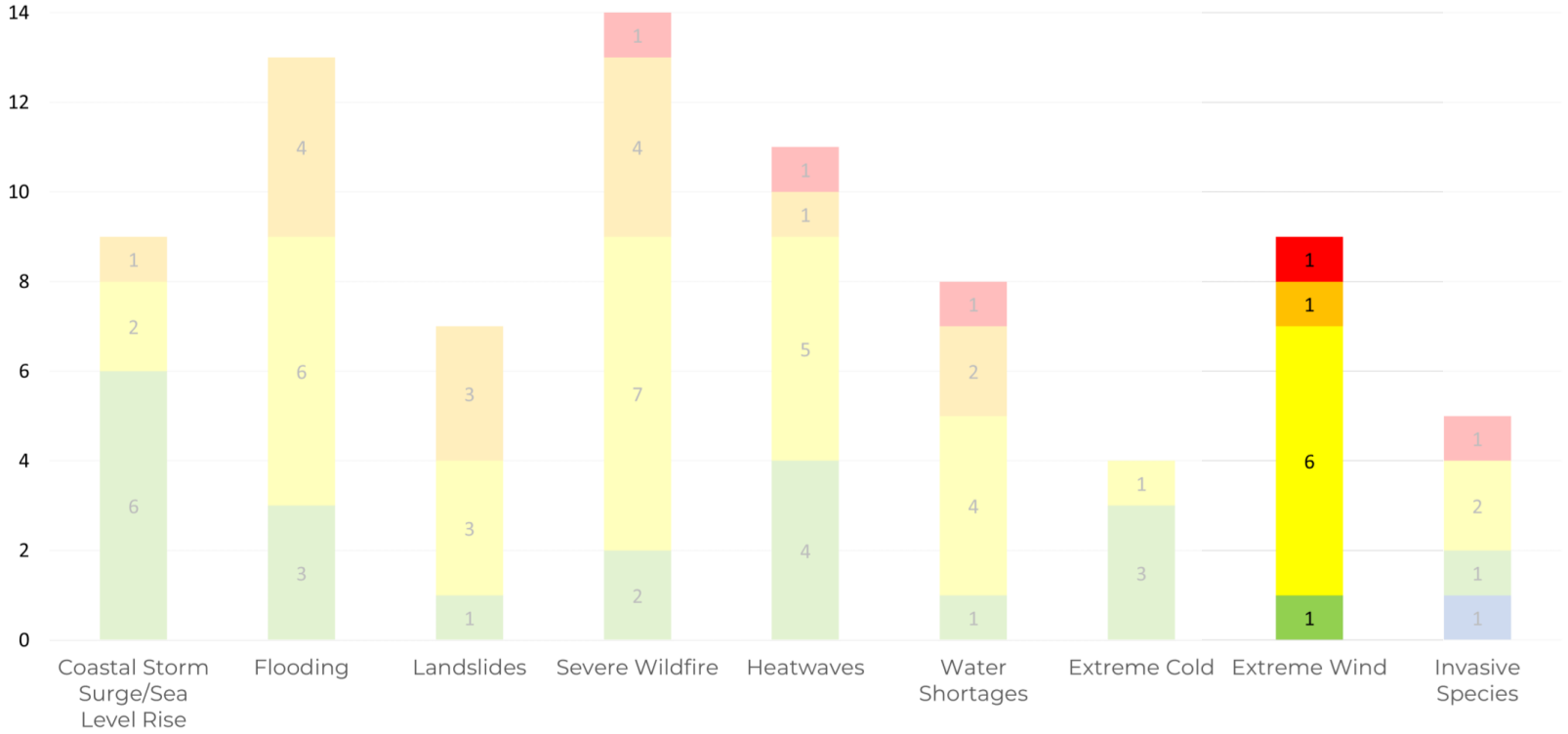
RISK ASSESSMENT RESULTS: EXTREME COLD



Medium Risks

- Damage and/or service interruptions to drinking water distribution.

RISK ASSESSMENT RESULTS: EXTREME WIND



Very High/High Risks

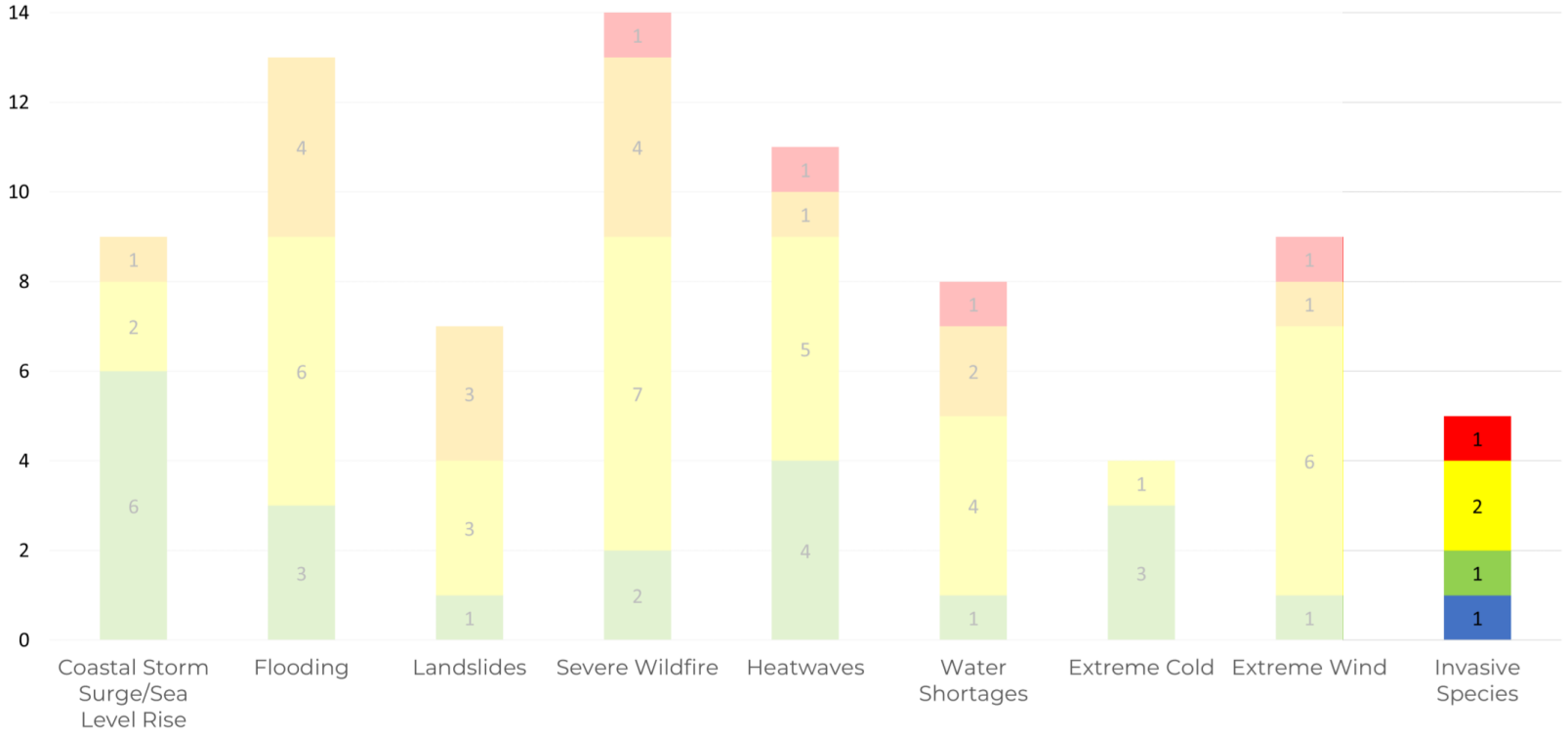
- Tree blowdown in forested areas is a safety risk and can be intensive to clean up and manage.
- Tree blowdown within the community is a public safety and environmental risk.

Medium Risks

- Power outages impact service to recreation facilities, flood protection pump stations, wastewater system , government services.
- Debris results in temporary road closures and exceeds the capacity of cleanup and disposal services.

URBAN SYSTEMS

RISK ASSESSMENT RESULTS: INVASIVE SPECIES



Very High Risks

- Impacts all habitats and ecosystems, creating a risk to environmental stewardship.

Medium Risks

- Impacts on tree planting survival and create costs and liability for developers.

Special Risks

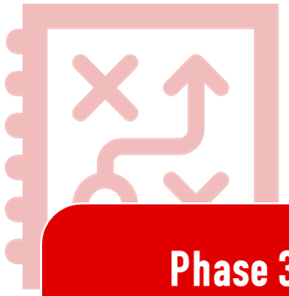
- High likelihood of invasive species impacting various recreational activities and services, but relatively low consequence as invasive species management has become part of normal staff operations.

URBAN SYSTEMS

PRELIMINARY EMERGING THEMES

- **Impacts to the environment** was a theme that emerged from the Phase 1 engagements. All risks identified in the environmental stewardship service area were rated Very High or High.
- The **Environmental Stewardship** and **Recreation Service** areas were identified as particularly vulnerable based on their exposure and sensitivity to climate hazards. These two service areas generated the most risks and highest rated risks.
- **Infrastructure-heavy service areas** (water, wastewater, storm/flood, roads) generated some high risks, with the majority rated as medium, potentially reflecting the existing climate resilience that is included in engineering design and operations and maintenance but also identifying potential areas to build on strengths and address gaps.

LOOKING AHEAD: PHASE 3 – ADAPTATION STRATEGY



Phase 3:

DEVELOP A CLIMATE CHANGE ADAPTATION STRATEGY

January 2024 – April 2024

PURPOSE

To evaluate key areas of concern and determine priority risks to focus on in developing the Climate Change Adaptation Strategy in Phase 3.

Adaptation strategy types

- **Understand & Plan** - Research, studies, plans
- **Mitigate Risk** - Reduce severity
- **Build Resilience** - Strengthen capacity
- **Respond** - Effective emergency response
- **Recover** - investments and cost recovery

Tools

- Regulation
- Incentive
- Advocate
- Capacity Building
- Capital Projects
- Funding
- O&M
- Policy

URBAN SYSTEMS

QUESTIONS & DISCUSSION

THANK YOU!