# Summary and Recommendations Final Report

Extreme Heat Mapping, Assessment, and Planning

Submitted to: City of Nanaimo

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RESILIENCE PLANNING

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# Acknowledgements

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- BC Schizophrenia Society
- BC Community Response Networks
- Ballenas Housing Society
- Connective Nanaimo
- Island Crisis Care Society
- Island Health
- Mid-Island Métis Nation
- Nanaimo & Area Land Trust
- Nanaimo Block Watches
- Nanaimo Family Life Association
- Nanaimo Neighbourhood Associations
- Reaching Home Community Advisory Board
- Rise Bridge Project
- St. Andrews United Church
- Self-advocates and community members from Nanaimo
- Snuneymuxw First Nation
- Supporting Advocates in Leadership
- United Way BC

This report was prepared by Resilience Planning Ltd.

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# Executive summary

The goal of the Extreme Heat Risk Mapping, Assessment, and Planning project is to complete research (including wise practices[1] research), community engagement, mapping, and assessment to inform recommendations for how to save lives in future extreme heat events. This report summarizes the work completed on the project and provides recommendations to alleviate risk from extreme heat events for heat-vulnerable community members.

Extreme heat has been found to disproportionately affect vulnerable populations,[2] and this report provides recommendations to alleviate extreme heat effects for people experiencing the following vulnerabilities:

- have a chronic mental or physical health condition;
- live alone;
- live with a disability;
- are older adults living alone or in isolation (65+; 55+ for Indigenous Peoples);
- low-income renters; and,
- those who use substances.

According to the Report to the Chief Coroner of British Columbia, the extreme heat events in 2021 resulted in 619 heat-related mortalities in the province, of which 55 occurred on Vancouver Island[3] and 11 within the City of Nanaimo.[4] This Summary and Recommendations Report is intended to inform the implementation of the City of Nanaimo Emergency Response and Recovery Plan,[5] as well as the policies and practices to save lives during extreme weather and extreme heat events.

The Summary Report outlines the key findings from across all engagement activities. The What We Heard section summarizes the barriers, gaps, and how and where to focus efforts. This section first describes what was **heard about barriers and ways to address barriers** including how to:

- reduce barriers for seniors and Elders;
- focus on transportation and mobility;
- address discrimination;
- improve tenant-landlord relationships; and,
- alleviate financial barriers.

It describes what was **heard about gaps in heat-vulnerable residents' social networks and how to address them,** including how to:

- support neighbours, family and friends;
- work through trusted relationships; and,
- communicate with vulnerable populations.

[1] Best practices are not always applicable in different contexts. They are also backward looking and illustrate what happened in the past. Also, who considers something a "best practice"? Who is qualified to name that? Using the terms wise practices and case studies better reflects what we hope are takeaways, and we pursue examples that are most relevant to local contexts.

[2] BCCS, *Report to the Chief Coroner of British Columbia (*Vancouver: BC Government, 2022).

[3] BCCS, *Report to the Chief Coroner of British Columbia (*Vancouver: BC Government, 2022), 37.

[4] BCCS, Report to the Chief Coroner of British Columbia (Vancouver: BC Government, 2022), 6.

[5] City of Nanaimo, *Emergency Response and Recovery Plan* (Nanaimo: City of Nanaimo, 2018).

Next, the report describes **how to focus efforts**, where and to whom residents turn to for heat relief. The What We Heard Story Map (Map 1) responds to the question: *"Where are clusters of heat-vulnerable people located in Nanaimo?"*.

The Recommendations section of the report combines analysis and recommendations from across all research and engagement activities under four themes.

1. It is **recommended to take action towards immediate tactical solutions for extreme heat** by improving communications through multiple efforts by:
    - collaborating with Snuneymuxw First Nation;
    - encouraging neighbour-to-neighbour resiliency;
    - tailoring communications and public-facing mapping in diverse formats and languages;
    - leveraging existing trusted connections; and
    - identifying community champions and informal gathering spots.
2. **To support in-home heat relief**, it is recommended to prepare and distribute educational information including:
    - a map of heat-relief locations that individuals may access outside of the home;
    - simple tips and tricks for at-home cooling; and,
    - information about reducing financial barriers to enable vulnerable populations to determine their in-place heat relief resources including hazard awareness.
3. **A spatial approach is recommended** for targeted efforts in areas of Nanaimo with older buildings (pre-1980) and clusters of vulnerability, and informal gathering spots (Map 2: Vulnerability Focus Areas). These top five locations were identified to take a recommended spatial approach to focussing heat relief efforts:
    A. **Old City**
    B. **Brechin Hill**
    C. **University District, Fairview**
    D. **Nanaimo South, Harewood**
    E. **Central Nanaimo**

    Focussing efforts and long term-strategies are recommended to:
    - respond to potential updates to the BC Building Code;
    - invest in nature-based solutions, by increasing the tree canopy, adding cooling infrastructure, enabling free accessible transportation; and,
    - collaborating with Snuneymuxw First Nation to support re-connecting with natural heat relief outdoors by accessing forests, waterfronts and riparian areas.
4. The final set of recommendations centre around **being prepared to pivot and increasing adaptive capacity** through municipal leadership and with partnerships in communities. It is recommended that the City take the lead on adaptations in municipal places of heat relief by:
    - extending hours of operations for public buildings as **places of refuge**;
    - proving **mobile heat relief hubs** (e.g., an ice cream truck distributing heat relief information and kits); and
    - trialing **pilot projects** with adaptive learning approaches, building in continuous monitoring of programs to determine effectiveness.

Adaptation in communities involves going to where people are at, further engagement to hear about what is and isn't working, and then re-focusing efforts based on iterative evaluation. The recommendations include innovation in heat relief, for example, **bringing heat relief to where people are at, engaging to hear about what is/isn't working,** and **refocusing efforts** based on iterative program evaluation, changing circumstances and available resources.

The report includes additional **mapping and assessments** which the City may choose to undertake: land surface temperature, buildings vulnerability index, and adding health indicators.

Appendices share results of the work completed in the project's early phases. This early work informed the plan for mapping and engagement with key services providers, residents, and members of the Snuneymuxw First Nation. City of Nanaimo staff participated in Audience Mapping (Appendix B) to identify community organizations and groups who serve vulnerable populations, and staff participated as witness to the subsequent engagement conversations. Through interviews, discussion circles and surveys conducted in April and May, 2023, the project engaged with 169 individuals.

Four additional maps are included (Appendix A: What We Did) and respond to the following questions: *Which areas are most heat exposed?* (Map 3: Exposure); *Which areas have the most vulnerable populations?* (Map 4: Housing Vulnerability; Map 5: Demographic Vulnerability Index); and where heat relief resources are currently in place, such as parks, libraries, malls, drinking fountains, and public toilets (Map 6: Adaptation Capacity).

# Project background

In March 2023, the City of Nanaimo engaged Resilience Planning Ltd. to complete an Extreme Heat Risk Mapping, Assessment, and Planning project. The intention is that through research, community engagement, mapping and assessment, the City of Nanaimo and residents will be prepared to save lives in future extreme heat events.

The goal of the Extreme Heat Risk Mapping, Assessment, and Planning project is to complete research (including wise practices[6] research), community engagement, mapping, and assessment to inform recommendations for how to save lives in future extreme heat events. This report summarizes the work completed on the project and provides recommendations to save lives in extreme heat events for heat-vulnerable community members.

Extreme heat has been found to disproportionately affect vulnerable populations,[7] and this report provides recommendations to alleviate extreme heat effects for people experiencing the following vulnerabilities:

- have a chronic mental or physical health condition;
- live alone;
- live with a disability;
- are older adults living alone or in isolation (65+; 55+ for Indigenous Peoples);
- low-income renters; and,
- those who use substances.

According to the Report to the Chief Coroner of British Columbia, the extreme heat events in 2021 resulted in 619 heat-related mortalities in the province, of which 55 occurred on Vancouver Island[8] and 11 within the City of Nanaimo.[9] This Summary and Recommendations Report is intended to inform the implementation of the City of Nanaimo Emergency Response and Recovery Plan,[10] as well as the policies and practices to save lives during extreme weather and extreme heat events.

[6] Best practices are not always applicable in different contexts. They are also backward looking and illustrate what happened in the past. Also, who considers something a "best practice"? Who is qualified to name that? Using the terms wise practices and case studies better reflects what we hope are takeaways, and we pursue examples that are most relevant to local contexts.

[7] BCCS, *Report to the Chief Coroner of British Columbia (*Vancouver: BC Government, 2022).

[8] BCCS, *Report to the Chief Coroner of British Columbia (*Vancouver: BC Government, 2022), 37.

[9] BCCS, Report to the Chief Coroner of British Columbia (Vancouver: BC Government, 2022), 6.

[10] City of Nanaimo, *Emergency Response and Recovery Plan* (Nanaimo: City of Nanaimo, 2018).

# What we heard

The following is a summary of key findings across all engagement activities.

**Table 1: Ways to Address Barriers**

| Barriers | Ways to Address Barriers |
|---|---|
| Seniors and Elders face multiple barriers including:<br>▪ Accessing online communications<br>▪ Perceptions of trust and safety to disclose their vulnerabilities<br>▪ Declining health during COVID, compounding medical conditions | ▪ Communicate through trusted networks (family and friends, neighbours, psychiatrists and other medical professionals)<br>▪ Go to the community members who don't access cooling centres, pairing heat-relief education and intervention with existing points of contact for basic needs (e.g., pharmacies, holistic supports for wellbeing including social and cultural services)<br>▪ Leverage existing in-home outreach programs to distribute heat-relief information and resources<br>▪ Support seniors and Elders with transportation if they wish to access heat relief out of home (e.g. natural outdoor spaces or indoor heat relief in public and commercial spaces).<br>▪ Expand outdoor heat relief during cultural events and make it fun (misting stations, cool drinks, snacks) |
| Public transportation and safety perceptions experienced across vulnerable groups | ▪ Provide free transit and HandyDart rides to access heat relief out of home<br>▪ Provide shuttle transportation to/from out of home heat relief locations (public parks, beaches, waterfront, stores, shops and cafés) |
| Experiences of discrimination in accessing indoor spaces and heat relief centres, perpetuating isolation and keeping people from receiving support or asking for help<br>▪ People don't see themselves represented in those offering heat relief responses (e.g., LGBTQIA2S+, Indigenous seniors, PoC seniors, etc.)<br>▪ Perceptions of safety and feeling unwelcome or not belonging<br>▪ Unhoused community members experience discrimination from | ▪ Communicate with businesses (mall management, business owners) and share education and information (e.g., seminars held in the spring) about how to support vulnerable populations<br>▪ Build upon existing infrastructure such as winter warming centres for unhoused populations<br>▪ Bring heat relief kits and communication materials to community members who don't access cooling centres (e.g. mobile heat relief hub)<br>▪ Expand outdoor heat relief spaces that are welcoming for vulnerable populations (include multi-generational activities, misting stations, cool drinks, nourishing foods) |

| Barriers | Ways to Address Barriers |
|---|---|
| other community members when sharing communal heat relief spaces | |
| Tenant-landlord relationships and jurisdictional barriers:<br><br>Tenants don't trust landlords, so landlords aren't a reliable source of information for many renters | ▪ Work with property managers and strata groups to enable use of A/C units<br>▪ Reduce, or advocate for the reduction of the costs of cooling equipment through grants, subsidies, tax credits for making changes in-home<br>▪ Open 'common areas' in rental buildings as heat relief spaces |
| Financial barriers to purchasing in-home cooling equipment:<br><br>Vulnerable populations are at-risk in overnight situations | ▪ Reduce, or advocate for the reduction of cooling equipment costs through grants, subsidies, tax credits for making changes in-home<br>▪ Communicate simple tips and tricks to help people identify ways they can self-administer heat relief<br>▪ Encourage residents to check in on potentially vulnerable neighbours |

Through engagement activities, we learned about the following key gaps in heat-vulnerable residents' social networks. These gaps can be addressed through municipal leadership, advocacy about the city's most vulnerable residents, and partnerships with community-serving groups (e.g. support with communication materials, leveraging funding programs for accessing grants for air conditioners).

"Don't let people fall through the gaps in services. Cooling stations only work if a person is mobile enough to access one."

**Table 2: Ways to Address Gaps**

| Gaps | Ways to Address Gaps |
|---|---|
| Being isolated or disconnected from social networks | Support neighbours, family and friends to check-in on one another (in-person, by phone tree, non-emergency Fire Department line 250-753-7311, healthlinkbc.ca, or 8-1-1) |
| Not accessing services in the community | ▪ Work through trusted relationships of caregivers and service providers (LifeLine, Alertable, emergency health services, non-emergency Fire Department line 250-753-7311, healthlinkbc.ca, or 8-1-1) |

| | |
|---|---|
| | ▪ Share printed information with landlords and local businesses (grocery store, cafés, malls) |
| Challenging to communicate about extreme heat events and impacts, specifically to those with mental health issues (e.g., dementia, schizophrenia, etc.) | ▪ Organize volunteers and service providers to identify and communicate with vulnerable populations<br>▪ Communicate educational information about the compounding effects of extreme heat and medications to communities through service providers |

## How to focus efforts

### Heat relief and cooling sites

During engagement events, we heard from residents and community service providers that there is under-utilization of official government-staffed "cooling centres." Engagement with residents and community-serving organizations also uncovered many informal heat-relief resources, including natural spaces with shade (i.e., parks, forests, waterfront, riparian areas) as well as heat relief provided by public or community organizations and commercial businesses (i.e., shopping centres, coffee shops, community organizations, libraries). In this report, we have used the terms **"cooling sites"** and **"heat relief resources"** interchangeably to encompass all locations and cooling amenities provided by a combination of public, community and commercial business organizations.

> *"Focus on climate change mitigation by protecting water, trees, and parks. These are natural points of connection in the community as well as natural cooling spaces that are free and open to access"*
>
> -- neighbourhood survey response

In the neighbourhood engagement survey, we asked about where vulnerable people can go for relief from extreme heat, and what would have the most benefit for heat-vulnerable people. "*Where can vulnerable people go for relief from extreme heat?"* (top responses)

1. Public Parks
2. Beaches and waterfront
3. Stores, shops and cafés

*Which would have the most benefit for heat-vulnerable people in your neighbourhood?* (top responses)

1. Neighbours, family and friends checking in on one another
2. At-home heat relief tips and tricks
3. Outdoor heat relief access

> *"Forested parks of significant size to provide cooling islands throughout the community. Secure now before they become retail boxes or single family housing."*
> -- discussion circle response

We learned about the different ways to communicate (methods) that would work well to reach heat-vulnerable people, with responses centred around building from a trusting relationship. Many of these trusted relationships already exist and are held by local community service providers.

Partnerships and working closely to align communication methods will be key to successful heat relief efforts across the city.

**Table 3: How to communicate**

| **Communication methods** (top responses) |
|---|
| Communications should come from a trusted source, be simple and engaging, and timely (prior to a heat event) (e.g., share printed materials with medical offices and local businesses that support community partners in sharing information) |
| Communication through existing touchpoints in a medium people are comfortable with |
| Have a central hub that is accessible to neighbours in each community |
| Phone tree for neighbours |

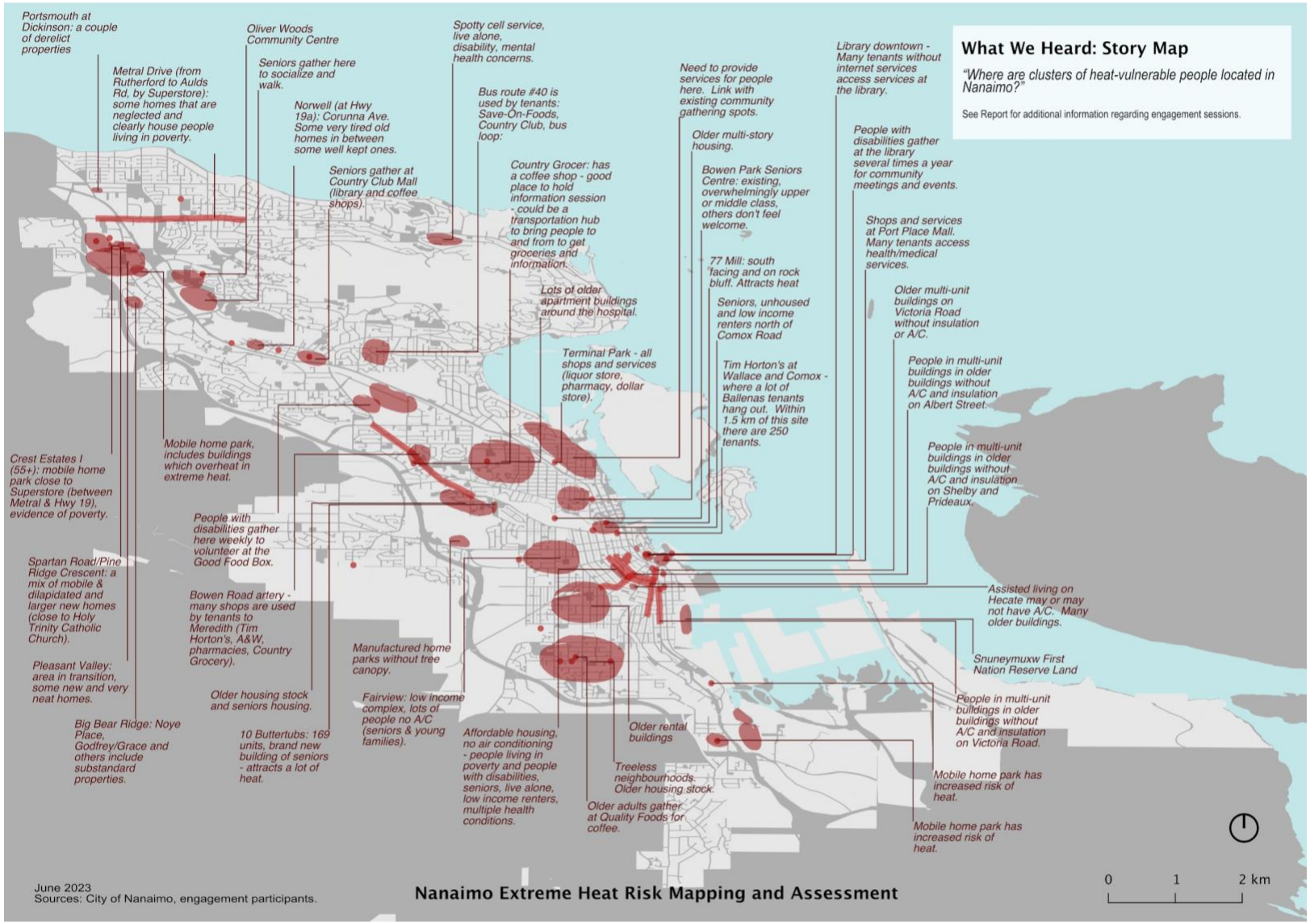
In engagement, we heard that communication products (materials) should be simple and easy to read or retain (if audio/visual communication). As a partner working with local community-serving organizations, the City can support partners by providing and/or distributing educational materials in ways that can be brought home.

**Table 4: What to communicate**

| **Communication materials** (top responses) |
|---|
| Educational tools (First Aid information, prevention and signs of heat exhaustion, a map of heat relief places) |
| Printed materials that include tips and tricks for heat relief at home (i.e., door hangers are less threatening than answering door knocks, can be shared in conjunction with food delivery services, public health visits, in-home care practitioners, etc.) |
| A heat relief kit that includes information/contacts for where to get help, map to cooling centres, quick reference for heat first aid, simple tips and tricks to administer at home |

## Where to focus efforts

The following What We Heard: Story Map (Map 1) depicts a combined set of location-based responses to the question *"Where are clusters of heat-vulnerable people located in Nanaimo?"*. During virtual focus group sessions, engagement participants provided written and verbal responses. For detailed description of all engagement activities, see Appendix A. What We Did.




Map 1: What we heard Story Map

# Recommendations

The recommendations section of the report combines analysis and recommendations from across all research and engagement activities under four themes.

## Immediate-term tactical guidance

The Report to the Chief Coroner of British Columbia[11] found the two most impactful interventions during extreme heat events were:

1. **Access to heat relief** - in residence, air conditioning or fans, or temporary, free transport (i.e., cooling shuttles) to and from heat relief locations; and
2. **Wellness checks** on older adults, people with health conditions, those living alone or with mobility barriers.

In consideration of what immediate actions are possible, we have compiled the following recommendations that build on the BC Centre for Disease Control's guidance for small and medium-sized municipalities.

### Improve communications

We recommend that the City of Nanaimo build on its existing networks and collaborate to develop and distribute communications with community-serving organizations and groups (also see Appendix B, Appendix C and Map 1). While not an exhaustive list, the following groups were identified in discussion circles as serving vulnerable populations:

- Mid-Island Métis Nation
- Stone Soup Kitchen
- Nanaimo Community Kitchens
- Vancouver Island University alumni network[12]
- The Vault Café
- Overdose Prevention Services, sobering and assessment centre,
- Shaded bus stops/terminals
- Mental health service centres (Brooks landing, Barons Road)
- New Hope Centre
- Unitarian Shelter
- Second-hand stores (Value Village)
- Kw'umut Lelum child and family services

Partnerships and collaborations would support improved communication methods and materials, including:

- **Collaborate with Snuneymuxw First Nation** to co-develop cooling infrastructure for indoor and outdoor spaces, during cultural events, and re-connecting with natural heat-relief outdoors.
- **Encourage neighbour-to-neighbour collaborations** to build social and community resiliency (e.g. incentivize collaborations through small grants where neighbours decide on

[11] BCCS, *Report to the Chief Coroner of British Columbia (*Vancouver: BC Government, 2022)

[12] Engagement participants suggested supporting VIU communications with alumni regarding gathering places on VIU campus.

their own community projects; build on existing community associations/neighbourhood block watch groups to discuss a common vision for protecting vulnerable populations).[13]

- **Be prepared with communications,** extreme heat event advance notifications, and Public Service Announcements to media outlet lists to inform about anticipated heat emergencies; each spring, generate printed materials for community dissemination with landlords, building managers, local businesses, medical professionals, and wrap-around service providers.
- **Tailor communications** in multiple languages and formats; communicate educational information about the compounding effects of extreme heat on individuals and on the impacts to the effectiveness of certain medications or substances through service providers.
- **Produce public-facing maps** in diverse formats and languages to help residents find their closest heat relief resources.
- **Leverage connections and relationships** by working with community organizations who are already connected to vulnerable populations.
- **Identify community champions** who are keen to act as a link between the City and vulnerable people in their neighbourhoods.
- **Identify informal gathering spots** within neighbourhoods as existing points of connection with vulnerable populations; make it fun, and combined with food and cultural events.

### In-home heat relief

We recommend the City of Nanaimo support vulnerable populations deciding what heat relief resources are best for using at home (also see Appendix C. Additional Resources and Appendix D. Communication Materials). Whether distributed door-to-door, through telephone, radio and online media, through community-serving organizations at a central hub, the City and community partners can offer:

- **Educational information:** a map to heat relief locations, tips and tricks for heat relief at home, First Aid information, and signs of heat distress (with communications tailored to different cultural and generational experiences).
- **Heat relief kit** containing simple, effective items: e.g., washcloth, spray bottle, electrolytes, water bottle, reusable ice pack, snacks, etc.
- **Reducing financial barriers:** information about home energy retrofit rebates, tax credits, and grants for lower-income renters to purchase A/C and fans. Administrative support to enable residents to apply for subsidies and grant programs.

## Spatial approach

Map 2 demonstrates the intersection between vulnerability factors (sensitivity) with heat relief resources (adaptation capacity). Public cooling infrastructure data (provided by the City of Nanaimo) include water fountains, water parks, beaches, washrooms, misting stations, parks and open spaces, and both public and commercial cooling sites. Vulnerability factors include older apartment rental buildings (built before 1980, see Map 3, Appendix A), unhoused encampments (Map 3, Appendix A), clusters of vulnerable population (as identified in engagement, see Map 1), and a vulnerability index developed from census demographic data (Map 5, Appendix A).

[13] For example, municipalities are providing small neighbourhood-scale grants in Victoria, Saanich and Colwood. One of the case studies reviewed three neighbourhood groups working together to find additional heat relief resources in their own neighbourhood. TNC et. al. Heat Action Planning Guide for Neighborhoods of Greater Phoenix. (Phoenix: Nature's Cooling Systems Project, 2020).

A spatially targeted approach can enable the City and community partners to focus funds and resources (via incentives and grants) around downtown, inner city, and specific pockets adjacent to the Island Highway corridor. This will provide the biggest return on investment. These areas contain the highest concentrations of vulnerable populations and the highest population density. These areas are quite central and are already well serviced by parks, public buildings, public transportation, and large commercial retailers. However, the most vulnerable populations may experience difficulty reaching these due to mobility challenges, so in-home cooling solutions are required to cater to the most vulnerable.

As a starting point, efforts should be targeted on:

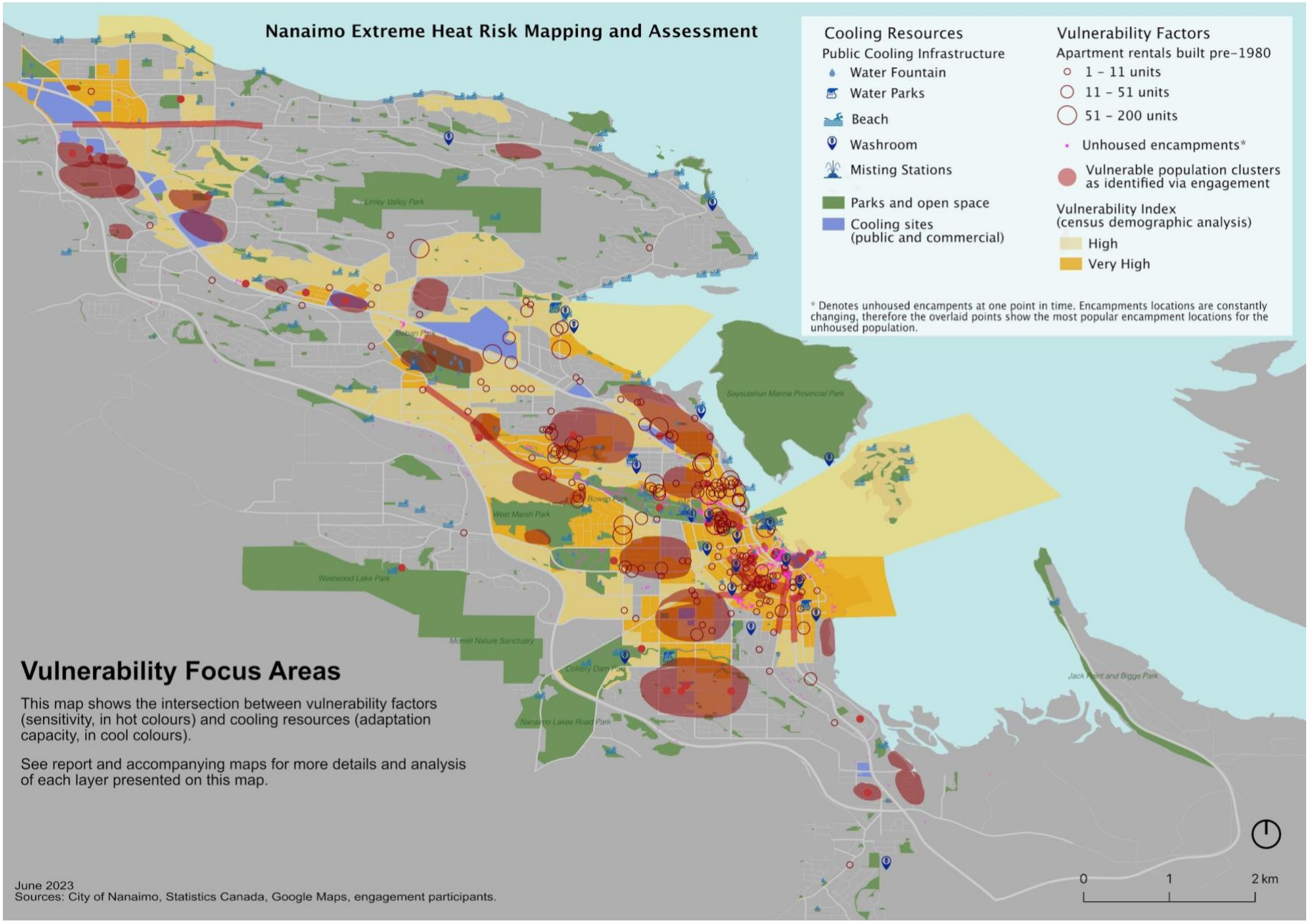
- **Older multi-residential buildings (pre-1980)** (Map 1 and Map 4: Housing Vulnerability). Tackling the smaller buildings first may work well as pilot projects. At the same time, providing cooling resources to the largest buildings will invest solutions that reach the largest number of people (e.g., providing A/C in a common room in a large apartment building).
- **Clusters of vulnerability** areas identified by organization representatives during engagement (see Map 1: What We Heard Story Map).
- **Informal gathering places** (e.g., Tim Hortons, indoor shopping malls) for vulnerable people in each area, as a springboard to connect and offer services to vulnerable populations. Some of these locations have been identified in Map 1: What We Heard Story Map.

### Focus on heat relief locations

Map 2, Vulnerability Focus Areas, depicts an intersectional approach to assessing vulnerability to extreme heat risk. The most pressing areas to address are those where multiple vulnerability indicators overlap: where vulnerable population clusters (red areas) overlap high and very high demographic vulnerability areas (yellow areas) and contain a high number of rental apartment buildings. Map 2 provides guidance for other areas which may require support and resources for pockets, and which are best strategized with community-serving organizations. These top five locations were identified to take a recommended spatial approach to focussing heat relief efforts:

A. **Old City**, with particular focus on the following areas:
    a. **Selby St., Prideaux St., Albert St., and Victoria Rd**. – improve communications with owners/managers of older buildings and respond to potential updates in the BC Building Code;
    b. **Comox Rd. and Prideaux St.** – improve communications with owners/managers of older buildings and respond to potential updates in the BC Building Code;
    c. **Hecate St. and Milton St.** – improve communications with owners/managers of older buildings and respond to potential updates in the BC Building Code; and,
    d. **Library, Museum, Port Place Mall, Bastion St. and Skinner St.** – leverage existing trusted connections with community-serving organizations for low income households and people experiencing homelessness and housing insecurity.
B. **Brechin Hill** – leverage existing trusted connections with community-serving organizations.
C. **University District**, **Fairview** (Howard Ave. at Second St. and Third St.) – leverage existing trusted connections with community-serving organizations who support low income seniors and young families.
D. **Nanaimo South, Harewood** (East and West of Bruce Ave.) – improve communications with owners/managers of older buildings and respond to potential updates in the BC Building Code; invest in nature-based solutions (e.g., tree planting).
E. **Central Nanaimo**, with particular focus on the following areas:

a. East and south of **Townsite Rd. and Arbutus Ave**.– improve communications with owners/managers of older buildings and respond to potential updates in the BC Building Code; and
b. Areas surrounding **Beaufort Park** (Dufferin Crescent and Beaufort Crescent) – improve communications with owners/managers of older apartment buildings.




Map 2: Vulnerability Focus Areas

## Long-term strategies

The development of long-term strategies (i.e., climate action, adaptation, and resilience planning) are ways that municipalities can be better prepared for extreme heat events.

### Changes to older buildings

Heat relief at home, particularly in overnight situations, is key to alleviating extreme heat risk for vulnerable populations. Nanaimo is a city built up around older buildings in and around the downtown core, and regulation of building type and implementation of building code revisions are within the municipality's scope. The BC Coroner's report recommends that BC Building Code updates in 2024 include cardinal orientation passive/active cooling standards for home renovations and new housing. The report also noted the impacts of heat related to dwelling type and living situations,[14] and it is recommended to focus on:

- **Private residences** (73% of deaths occurred in these living situations)
- **Vulnerable populations living alone** (56% lived alone)
- **Homes without air conditioning units or fans** (98% of deaths occurred indoors)

In their report on the lessons learned from the 2021 extreme heat events, the BC Climate Action Secretariat identified five key messages:

1. Focus on cooling infrastructure, not just cooling centres, to keep heat-vulnerable populations safe.
2. Heat response must be resilient to compounding effects, such as pandemic restrictions, holiday closures, and wildfire smoke.
3. There is an opportunity to apply existing response plans (e.g., extreme cold, COVID-19) to heat, and initiate community level response and support.
4. Urban and rural communities have differing needs and priorities for addressing social inequities exacerbated by heat.
5. People living in BC can no longer escape the frequency and intensity of climate change and we must adapt and be flexible to our new normal.

While it will take time to enact changes to the BC Building Code, and renovations will be costly, there are energy retrofit subsidies (Clean BC), and property owners may be eligible for tax credits and grant programs. Communication, and advocacy, for reducing financial barriers with landlords, homeowners and property managers is key.

In the City of Nanaimo, older apartment buildings (built before 1980) are concentrated in clusters around the core and immediate inner city (see Map 2). Efforts should be focused on older buildings, and the City should take a combined approach to pilot changes to smaller buildings alongside targeted changes to large buildings. To encourage and inform building owners, the City can offer incentives for residents to upgrade their properties (particularly for older homes) to better respond to extreme heat, such as BC Hydro's financial assistance for building owners, individuals and housing providers to support installation of air conditioners.[15] The City can also lead with educational communications such as simple materials with examples of achievable upgrades and communication materials for building owners and tenants, like those depicted in Appendix D.

[14] BCCS, *Report to the Chief Coroner of British Columbia (*Vancouver: BC Government, 2022)

[15] BC Hydro. Energy Conservation Assistance Program. 2023. https://www.bchydro.com/powersmart/residential/rebates-programs/savings-based-on-income/free-product-install-and-advice.html

### Invest in nature-based solutions

Increasingly, climate adaptation and resilience strategies are looking to nature-based solutions[16] that are supporting, protecting and sharing access to natural infrastructure such beaches, waterfront, parks and protected areas. Nanaimo is a coastal city, the Salish Sea already provides a cooling temperate effect. To increase the temperate effect in high intensity land use areas in the long term, increase vegetation, shade, and minimize hard paving. Nature-based solutions on a larger scale can be explored to provide a cooler environment in high-density areas.

Long-term strategies that the City of Nanaimo is already developing, through zoning and City Plan: Nanaimo ReImagined. include protection of ecologically important and natural areas. Additional municipal land acquisition and partnerships with landowners can support restoration of the ecological integrity of natural spaces.

It is recommended that the City of Nanaimo support nature-based solutions through:

- Increasing the **tree canopy and shade** in public spaces and incentivizing private property upgrades to expand the scale of cooling effects.
- Investing in **cooling infrastructure**, water fountains and washrooms in public parks.
- Enabling **free, accessible transportation** for vulnerable populations to get to these natural places.
- **Partner with Snuneymuxw First Nation** to support re-connecting with natural heat-relief outdoors.

## Be prepared to pivot

Being ready to pivot has helped a number of BC municipalities to adapt to changing circumstances.

### Adaptation with municipal leadership

Many adaptation resources are maintained by the City of Nanaimo, such as parks, water parks, drinking fountains, and public toilets. The City will need to provide in-place relief for vulnerable populations who face mobility and transportation barriers.

We recommend that the City consider the following adaptations:

- Extend hours for public buildings as **places of refuge**;
- **Provide mobile heat relief hubs** (e.g., an ice cream truck distributing heat relief information and kits); and
- Trial **pilot projects** with adaptive learning approaches, building in continuous monitoring of programs to determine effectiveness.

[16] TNC et. al. *Heat Action Planning Guide for Neighborhoods of Greater Phoenix.* (Phoenix: Nature's Cooling Systems Project, 2020)

In the BC interior region, Interior Health conducted community health and climate change mapping. The City of Kamloops prepared public-facing communications, and during the 2021 extreme heat events, the City was able to rapidly activate their pre-existing protocols.

The City of Burnaby first developed their Extreme Heat Initial Response Guidelines in 2011 and staff continued to review annually. These preparations set up the municipality to be prepared to respond to future extreme heat events. Throughout the summer of 2021, Council requested regular debriefing on the status of Burnaby's response actions. This meant that Burnaby staff conducted head-counts at cooling centres, monitored the effectiveness of communications about the extreme heat event, and increased staffing in areas most needed (e.g., wellness checks, emergency fire response, garbage/recycling crews in parks, and additional porta-potties). "Quick Starts" meant Burnaby could pivot and try out new actions as effective and iterative solutions.

### Adaptation in communities

We recommend that the City of Nanaimo and community-serving partner organizations support continued engagement and two-way communication with vulnerable populations.

- **Go to where people are at** and bring heat relief information and resources to those who are facing barriers and gaps (e.g., ongoing dialogue with community-serving partner organizations, Snuneymuxw First Nation members, informal neighbourhood groups).
- **Engage to hear about what is/isn't working** and be prepared to let go of the pilot projects that no longer serve the goal of saving lives in extreme heat events.
- **Re-focus efforts** based on iterative program evaluation, changing circumstances and available resources.

# Conclusion

The Extreme Heat Risk Mapping, Assessment, and Planning project report is an accumulation of research, community engagement, mapping and assessment during the spring of 2023. Additional studies can support the City to obtain a better understanding of urban heat islands within Nanaimo.

To better target long term and tactical response efforts, the following actions can include:

- **Land Surface Temperature** - A land and air surface temperature study can be commissioned using a combination of satellite data and real time temperature observations across the city on the hottest days of the year. See Map 3: Exposure, for a simplified mapping approach, using land use as a proxy, to visualize heat exposure in Nanaimo.
- **Buildings Vulnerability Index** - A buildings climate study can be undertaken (using satellite imagery and ground-truthing) to single out the buildings posing the highest heat risk. Amongst other factors, it takes into consideration building age, height, materials, solar loading, and shading. Such a study is currently underway by the Capital Regional District.
- **Health Indicators -** Adding the dimension of health indicators will help provide a better demographic vulnerability snapshot, as health determinants play a significant role in heat-related illness.[17]

The City of Prince George conducted one such study that was included in the case study review. Other cities, such as Surrey, Victoria, and Vancouver have similar mapping to better understand which parts of each city are disproportionately affected by heat and therefore can better direct their long term efforts to dampen the heat island effects.

In summary, this report was informed by input from Nanaimo community service providers, residents, and Snuneymuxw First Nation members on ways to address barriers and gaps towards saving lives in extreme heat events. While working towards solutions in the short- and long-term, it is important to anticipate compounding and evolving factors. Unexpected events such as power outages, water shortages, boil water advisories, and air quality alerts are all possible compounding factors that can occur during an extreme heat event. The recommended actions for the City of Nanaimo are centred around spatial and long-term strategies, near-term immediate guidance, and being prepared to change methods based on evolving contexts and new information.

[17] BCCS, *Report to the Chief Coroner of British Columbia (*Vancouver: BC Government, 2022).

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# Appendix A. What we did

## Case studies and wise practices

A report on Case Studies and Wise Practices was delivered to the City of Nanaimo in April, 2023. This included a review of evidence-based programs and interventions, which are relevant to the Nanaimo context, and includes lessons learned from other communities with similar scale, social-environmental conditions, and experience in responding to extreme heat weather events. Several case study resources were identified in the consultant's proposal; this list was supplemented with additional Extreme Heat Weather Plans from other municipalities after a brief scan of the available grey and academic literature. In total, we reviewed 12 resource documents and examples of responses to extreme heat events. These comparable evidence-based programs and interventions were selected as relevant to the Nanaimo context, from communities in BC (province-wide and Metro Vancouver/Burnaby, Prince George, Kelowna, Kamloops), as well as Toronto, ON, Phoenix, AZ, London, UK, and Rennes, France.

## Geospatial mapping

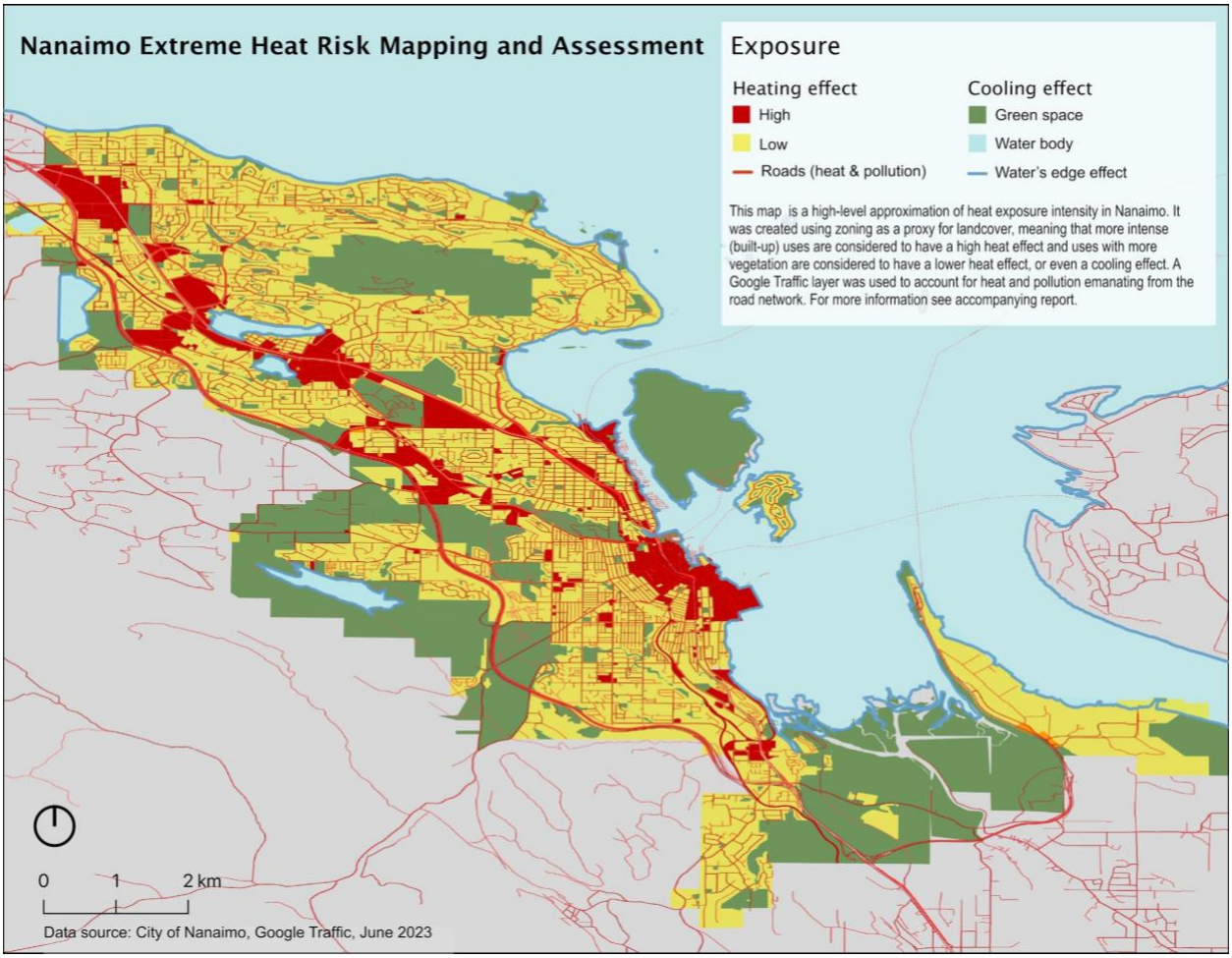
Through the review of case studies, we learned about wise practices for mapping heat vulnerability using the thematic layers of exposure, sensitivity, and adaptation capacity. These thematic layers were built through two key components: desktop mapping and participatory mapping in a virtual environment (see Table 5 below). To carry out desktop mapping, a number of best-fit indicators were selected amongst available geospatial layers. By obtaining a snapshot of each layer, the City can customize their response to tackle the elements that need bolstering, in particular areas in the city. In preparation for engagement activities, we developed a number of open-ended location questions to ask in interviews, discussion circles, and surveys. Engagement events, including discussion circles, were supported by virtual mapping activities to geolocate responses to a specific neighbourhood or approximate location. As a result of geospatial mapping, we produced six maps all of which are depicted in this report.

**Table 5: Exposure, Sensitivity and Adaptation Capacity**

| **Exposure:** Physical factors increasing vulnerability | **Sensitivity:** Population factors increasing vulnerability | **Adaptation Capacity:** Measures in place to decrease vulnerability |
|---|---|---|
| ▪ Land use as proxy for exposure (adjusted using satellite imagery)<br>▪ Google Traffic layer (indicator for hard surface veins and traffic pollution) | ▪ People over 65<br>▪ People who live alone<br>▪ People who live under the Low Income Cut Off (LICO)<br>▪ People who are renters<br>▪ People who 'spend 30% or more of income on shelter costs' or whose housing is 'not suitable' or 'major repairs needed'<br>▪ People who are visible minorities<br>▪ Apartment rental buildings<br>▪ Unhoused encampments<br>▪ Vulnerable population clusters (via participatory mapping) | ▪ Parks<br>▪ Commercial retailers<br>▪ Public buildings: free and pay access<br>▪ Public facilities: beaches, misting stations, water parks, water fountains, washrooms<br>▪ Potential resources: future cooling centre venues, service resources, schools |

## Exposure

The following map (Map 3: Exposure) responds to the question: "*Which areas are most heat exposed?"* In Nanaimo, these are the most built-up areas where tree canopies and vegetation are lacking, areas which absorb the most heat. Such areas are concentrated in the downtown and inner city, and in clusters along the corridor of the Island Highway as well as a few other pockets. The highest intensity (in terms of land use) areas are typically less shaded and vegetated than their residential counterparts. High intensity areas also have a higher population density, as such, interventions here benefit more people.




Map 3: Exposure

## Sensitivity

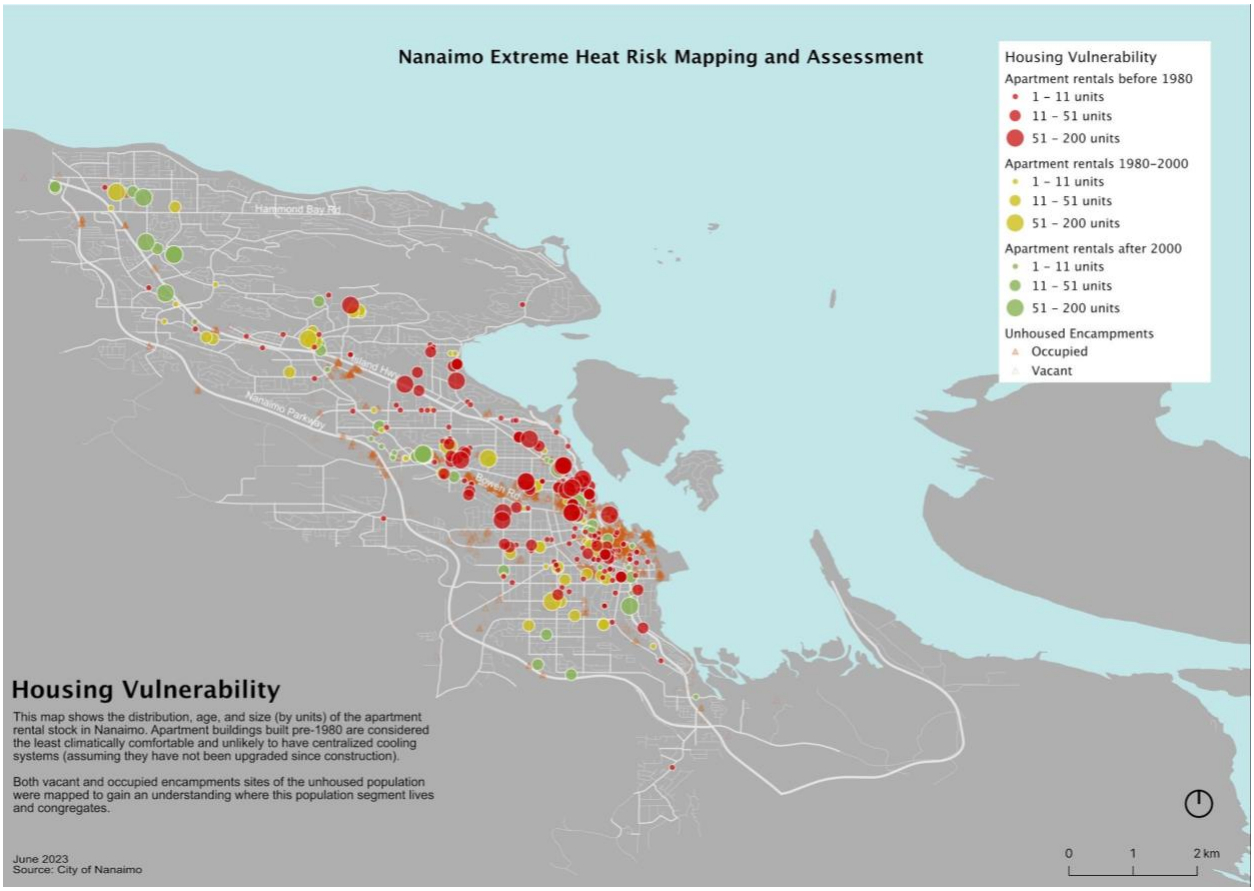
The following maps (Map 4: Housing Vulnerability, Map 5: Demographic Vulnerability Index) responds to the question: *Which areas have the most vulnerable populations?*

Older apartment buildings are concentrated in clusters around the core and immediate inner city. Efforts should be focused on buildings with most units (largest circles in Map 3). Very high population vulnerability is located mainly downtown and in the inner city between Island Highway and the Nanaimo Parkway. The areas flanking the Island Highway corridor typically exhibit higher vulnerability than more suburban areas. This trend also aligns with concentrations of older (pre-1980s) rental buildings.

Encampments of unhoused residents are mostly located downtown with some locations in the south, moving up Bowen Road and along Nanaimo Parkway. Both occupied (current) and vacant encampments were mapped, however mapping shows a snapshot in time of encampments as they are temporary and ever-changing by nature. As such, the purpose of mapping encampments is to show the general areas that unhoused residents frequent and congregates rather than precise points. Darker orange shading shows popular encampment locations for unhoused residents. The highway corridor and adjacent areas contain most of the vulnerable populations in Nanaimo,

particularly concentrated between two anchors: downtown and inner city Nanaimo, and Pleasant Valley in North Nanaimo.

Most cooling resources (e.g., malls, parks, libraries, etc.) are already located within these areas. However, it is likely that the most vulnerable residents (seniors, those with chronic health conditions and/or people with disabilities, etc.) have mobility difficulties and therefore need to be able to safely spend an extreme heat event in-place and at home.



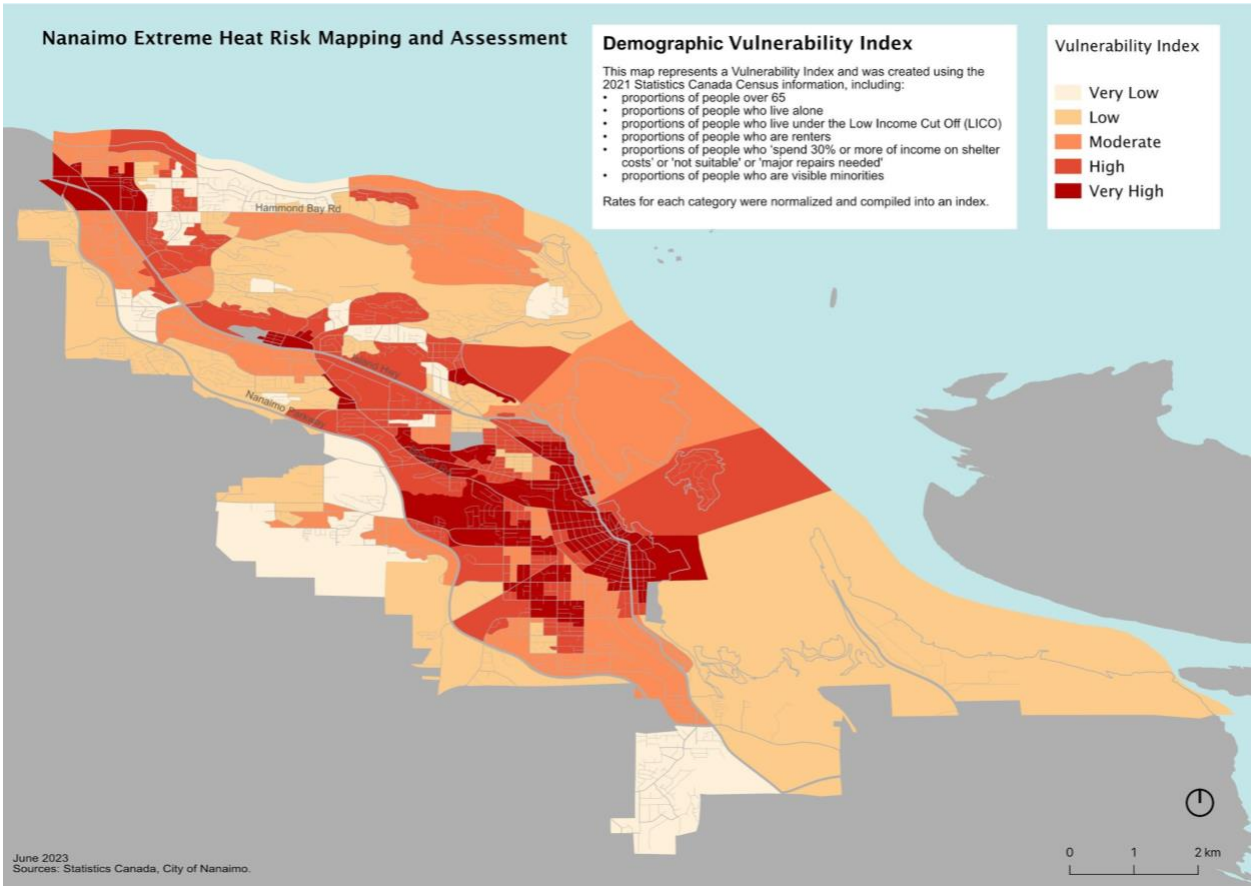

Map 4: Housing Vulnerability

The Demographic Vulnerability Index (Map 5) was created using six indicators from the 2021 Statistics Canada Census:

- proportions of people over 65
- proportions of people who live alone
- proportions of people who live under the Low Income Cut Off (LICO)
- proportions of people who are renters
- proportions of people who 'spend 30% or more of income on shelter costs' or 'not suitable' or 'major repairs needed'
- proportions of people who are (racialized) visible minorities[18]

[18] This is a term used by Statistics Canada. We do not choose to use this term because it assumes white is the majority race, which is not always the case.

Rates for each category were normalized and compiled into an index, giving each category equal weighting. Map 5: Demographic Vulnerability Index  is classified according to quantiles (equal intervals) to enable extracting the 'high' and 'very high' vulnerability areas. These areas largely coincide with the rental apartment building mapping and preparedness efforts and response should be targeted on these areas.




Map 5: Demographic Vulnerability Index

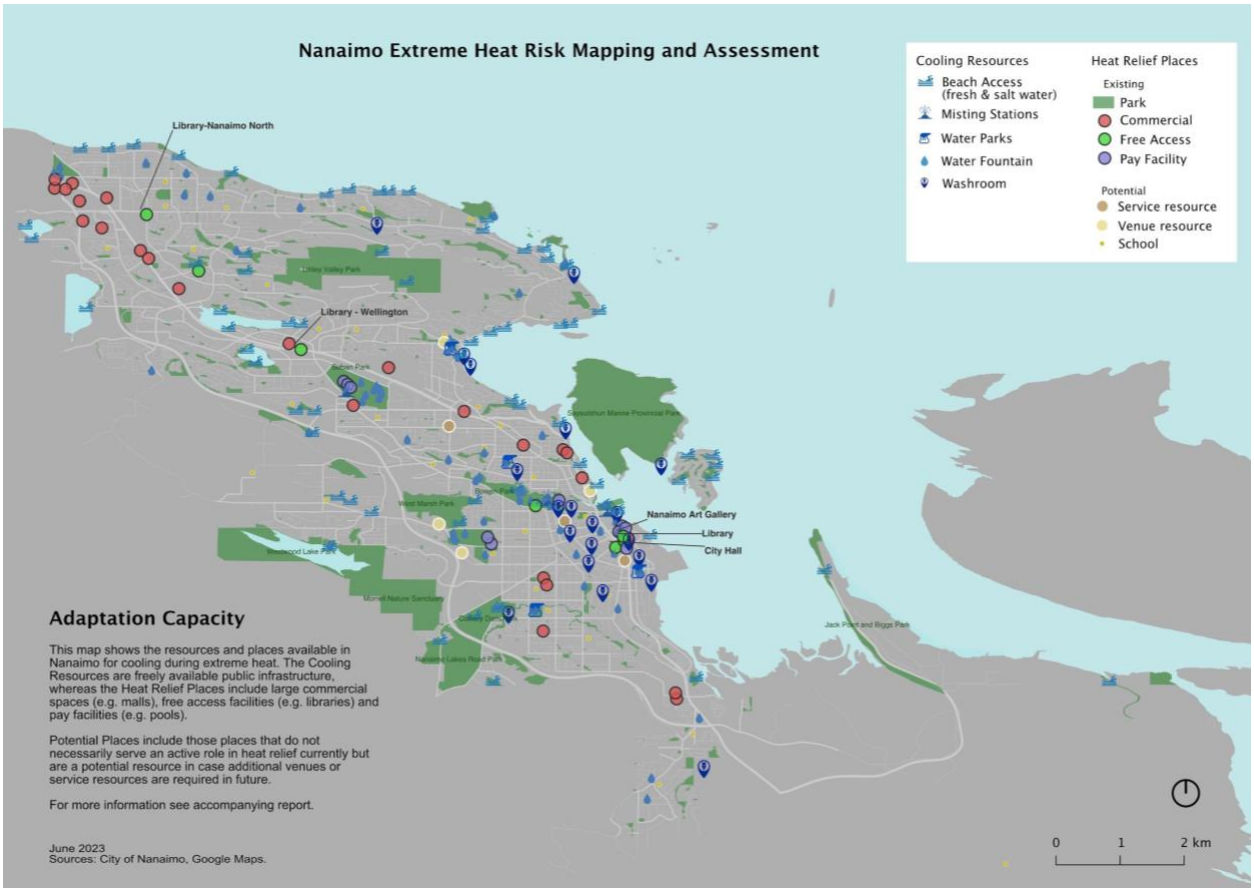
## Adaptation capacity

The following map (Map 6: Adaptation Capacity) depicts resources such as parks, libraries, malls, drinking fountains, and public toilets. These were found to be concentrated downtown, in the inner city and along the Island Highway spine, matching the vulnerability spatial profile. However, parks, large open spaces, and beaches[19] do not follow this same trend. During engagement activities, we learned that vulnerable populations may not be mobile enough to access these resources even if

[19] Note: beaches were mapped using existing layers and therefore are not an exhaustive list.

they are located nearby. Therefore providing heat relief in-place to low-mobility vulnerable residents is required.

Large commercial retailers, such as large malls, some of which house public facilities such as libraries, are located along the Island Highway artery away from the downtown and the inner city to the west and the south. With a high vulnerability profile and high population density, people in these areas may need to expend more effort to get to cooling centres and are more at risk of the impacts of extreme heat if they are unable to reach heat relief resources.




Map 6: Adaptation Capacity

## Engagement

### Purpose for engagement

The purpose of the engagement was to ground the development of the City of Nanaimo's response to extreme heat events in the local knowledge and the needs of the community and to invite staff from the City to participate as witness to the conversations.

Through the review of case studies, we learned about wise practices for engagement of People With Lived Experience and community service providers, by inviting participation in ways that included community asset mapping, journey mapping exercises, participatory action research methods, and invitation to witness.

All throughout interviews, discussion circles, and surveys, we heard more deeply from key community serving members who shared detailed information about potential vulnerable communities, their location, and how to best provide support to them in extreme heat events. In addition, we heard feedback on innovative, new heat relief services and communications efforts to connect residents with heat relief resources in the city.

### Engagement promotion

On March 30, 2023, we conducted an audience mapping exercise with project staff from the City of Nanaimo (see Appendix B). Audience mapping helped us understand the "strategic landscape" for participation and engagement. This helped us identify how early to engage certain groups as well as to identify particular ways of working with them. We learned about groups who serve communities who may not be typically engaged or are underrepresented in policy making processes.

To engage communities virtually, promotion focused on the reach of City of Nanaimo staff's relationships with key service providers and with residents (e.g., Reaching Home Community Advisory Committee, key community serving members, local block watch and neighbourhood associations). For in-person engagement with the Snuneymuxw First Nation members, the City took the lead and leaned on the strengths of their existing and trusted relationships with staff from the Snuneymuxw Hulit Lelum (Health Centre).

**Table 6: Promotion Channels**

| Engagement Event | Communication media / materials |
|---|---|
| Interviews | City staff sent email invitations to key community serving members between April 12 to 24, 2023<br><br>City staff shared in-person invitations to a group interview on May 12, 2023 at the Snuneymuxw Hulit Lelum (Health Centre). |
| Discussion Circles | Reaching Home Community Advisory Committee's meeting on April 13, 2023<br><br>Email invitation to a discussion circle on May 4, 2023 was sent to 80 key service providers |
| Neighbourhood Survey | City staff sent email invitations to 100 local block watch and neighbourhood associations.<br><br>The survey was open between May 19-June 9, 2023. |
| Snuneymuxw Survey | Snuneymuxw Hulit Lelum (Health Centre) staff delivered a hard copy survey to clients on May 12, 2023 |

## Reciprocity

Neighbourhood survey participants were eligible to be entered into a draw to win one of 10 passes to City recreation facilities. Snuneymuxw First Nation ( Elders, members and/or health centre clients who completed the group interview/survey led by the Snuneymuxw Hulit Lelum (Health Centre) staff were each offered a $20 honorarium.

## Engagement activities

### Interviews

Four, one-hour interviews were conducted virtually (on Zoom) between April 24 and May 1, 2023 with key community-serving organizations. These interviews featured eight questions, led by Resilience Planning with City of Nanaimo staff present as witnesses. Interview themes focused on improving communications, identifying and addressing gaps and barriers, and innovation and advice to save lives.

A group interview was held in-person at the Snuneymuxw Hulit Lelum (Health Centre) on May 12, 2023. Resilience Planning prepared a flexible interview guide with four questions for each of the primary interviewees (health centre staff, Elders, or clients) with interviews led by health centre staff.

### Discussion Circles

A brief, 20-minute discussion was hosted virtually on Zoom on April 13, 2023 with 20 participants from the Reaching Home Community Advisory Committee. Resilience Planning was invited to pose discussion questions during a segment of the group's regular meeting. 20 members of this group were in attendance.

A full-length, two-hour discussion circle was hosted virtually (on Zoom) on May 4, 2023 with 17 key community serving members participating. Resilience Planning and City staff co-facilitated the discussion topics, which focused on the key community-serving organization members' knowledge and experiences of potential vulnerable communities, where and how best to provide support to them in extreme heat events.

Each discussion circle was moderated through live conversation, concurrent mapping on Google JamBoard, large group and smaller breakout group discussions, and feedback via the chat function on Zoom.

### Neighbourhood survey

The online survey launched May 23, 2023, and closed June 9, 2023. The 15-question survey was hosted on the City's online survey platform.  In total, 111 surveys were completed. The survey led with an eligibility question which ensured that all respondents met the project requirements of either: 1) living within the City of Nanaimo boundaries; or, 2) living on Snuneymuxw First Nation lands.

All survey data was collected anonymously, and respondent identifiers were removed. At the conclusion of the survey, respondents were provided an option to exit the survey and enter their contact information for a chance to win the prize draw incentive.

### Snuneymuxw First Nation survey

For those who could not participate in the group interview led by staff of the Snuneymuxw Hulit Lelum (Health Centre), 12 hardcopy versions of the interview questions were left with Health Centre staff to distribute. All were completed.

### Participation rates

Table 7 outlines the participation rates across all engagement activities.

**Table 7: Participation Rates**

| Engagement Event | # of Participants | Dates (2023) |
|---|---|---|
| Interviews | 5 participants in 4 individual interviews<br><br>4 participants in a group interview | April 24 and May 1<br><br>May 12 |
| Discussion Circles | 20 participants<br><br>17 participants | April 13<br><br>May 4 |
| Neighbourhood Survey | 111 survey respondents | May 19-June 9 |
| Snuneymuxw First Nation Survey | 12 survey respondents | May 12-30 |

# Appendix B. Community partnerships

## Partnerships with organizations for targeted population groups

Resilience Planning worked with City of Nanaimo Staff to identify different audiences to reach out to and invite to different engagement activities. Subsequently, through interviews and discussion circles, some organizations were highlighted as potential partners to share communications and resources about extreme heat preparation and heat-relief opportunities and materials.

**Table 8: Community partnership opportunities**

| Potential community members to reach | Community-serving organization |
|---|---|
| Live Alone<br>Live with a disability<br>Are older adults living alone or in isolation (65+; 55+ for Indigenous Peoples)<br>Low-income renters | BC Community Response Networks<br>Island Health Authority<br>Walk-in clinics<br>CPAP centres<br>Heart function clinic<br>Milestone clinic |
| Are older adults living alone or in isolation (65+; 55+ for Indigenous Peoples) | Nanaimo Family Life Association<br>Bowen Seniors Group<br>Vancouver Island Multicultural Society |
| Have a chronic mental or physical health condition<br>Live Alone<br>Live with a disability<br>Are older adults living alone or in isolation (65+; 55+ for Indigenous Peoples)<br>Low-income renters<br>Those who use substances | Food bank<br>BC Community Response Network, Nanaimo Chapter<br>Stone Soup Kitchen<br>Nanaimo Community Kitchens<br>Overdose Prevention Services |
| Have a chronic mental or physical health condition<br>Live Alone<br>Live with a disability<br>Are older adults living alone or in isolation (65+; 55+ for Indigenous Peoples)<br>Low-income renters | Rotary<br>Nanaimo Brain Injury Society<br>BC Schizophrenia Society/Brooks Landing (Nanaimo Chapter) |
| Live Alone | BC Housing |

| Potential community members to reach | Community-serving organization |
|---|---|
| Are older adults living alone or in isolation (65+; 55+ for Indigenous Peoples)<br>Low-income renters | Older buildings run by non-profits<br>Seniors care homes |
| Have a chronic mental or physical health condition<br>Live Alone<br>Live with a disability<br>Are older adults living alone or in isolation (65+; 55+ for Indigenous Peoples)<br>Low-income renters<br>Those who use substances | Libraries<br>Parks staff and community safety officers |
| Have a chronic mental or physical health condition<br>Live with a disability<br>Are older adults living alone or in isolation (65+; 55+ for Indigenous Peoples)<br>Those who use substances | Pharmacies<br>First Responders (RCMP, FIRE, EMS) |
| Are older Indigenous adults living alone or in isolation (55+) | Mid-Island Métis Nation<br>Kwumut Lelum<br>First Nations Health Authority |

# Appendix C. Additional Resources

## Sharing information about extreme heat

The following list includes links to online and printable information that the City of Nanaimo can share with residents, as sources of information about extreme heat. Note: this list is not exhaustive and may be supplemented with partner organizations that various City departments are already collaborating with.

BC Housing. *Planning and Communicating with Tenants.* 2023. https://www.bchousing.org/projects-partners/extreme-heat/tenants

BC Hydro. *Energy Conservation Assistance Program.* 2023. https://www.bchydro.com/powersmart/residential/rebates-programs/savings-based-on-income/free-product-install-and-advice.html

British Columbia Centre for Disease Control (BCCDC). Twitter:@CDCofBC Website: bccdc.ca

Emergency Info BC. Twitter: @emergencyinfobc Website: emergencyinfobc.gov.bc.ca

First Nations Health Authority. Twitter: @FNHA Facebook: firstnationshealthauthority Website: fnha.ca

Fraser Health. *Extreme heat and people experiencing homelessness.* 2023. https://www.fraserhealth.ca/health-topics-a-to-z/sun-safety/extreme-heat-and-people-experiencing-homelessness--a-primer-for-community-organizations

Government of British Columbia. *Be prepared for extreme heat and drought.* Website: https://www2.gov.bc.ca/gov/content/safety/emergency-management/preparedbc/know-your-hazards/severe-weather/extreme-heat

Government of British Columbia. HealthLink BC. Website: www.healthlinkbc.ca/

Government of British Columbia. Prepared BC. *Extreme Heat Preparedness Guide.* http://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/embc/preparedbc/preparedbc-guides/preparedbc_extreme_heat_guide.pdf

Government of Canada. Health Canada. H*ow to prepare for the heat* and *Information for health care providers and industry*. Website: https://www.canada.ca/en/health-canada/services/climate-change-health/extreme-heat/related-resources.html#a2

Intact Centre. Three Steps to Cost-Effective Apartment and Condo Heat Protection. www.intactcentreclimateadaptation.ca/wp-content/uploads/2023/05/IntactCentre-Three_steps-Apartment_Heat_Protection.pdf

Island Health. Website: https://www.islandhealth.ca

Government of Canada. Environment Canada. Twitter: @ECCCWeatherBC https://weather.gc.ca/

National Collaborating Centre for Environmental Health. *Health checks during extreme heat events.* https://www.kamloops.ca/sites/default/files/2022-07/NCCEH%20Extreme%20Heat%20Event%20-%20Health%20Checklist%20WEB_0.pdf

# Appendix D. Communication Materials

## Tips and tricks for extreme heat

The following printable communication materials are available to be shared with residents, building managers, housing providers, medical professionals, and community-serving organizations as sources of information about extreme heat. Note: these tip sheets are not exhaustive and may be supplemented with partner organizations and various health authorities that the City of Nanaimo is already collaborating with.

- **For building owners and managers:** Intact Centre's infographic, "Three Steps to Cost-Effective Apartment and Condo Heat Protection"[20]
- **For community-serving organizations:** BC Housing "Tips to Beat the Heat Poster" and "Wellness Card for Tenants"[21]
- **For heat-relief locations:** Health Canada and Fraser Health "Heat Health posters"[22]
- **For health and wellness service providers:** Health Canada checklist for health care providers of Community Care During Extreme Heat[23]

[20] Intact Centre. *Three Steps to Cost-Effective Apartment and Condo Heat Protection.* 2023. https://www.intactcentreclimateadaptation.ca/wp-content/uploads/2023/05/IntactCentre-Three_steps-Apartment_Heat_Protection.pdf

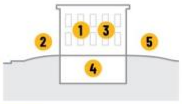
[21] BC Housing. Planning and Communicating with Tenants. 2023. https://www.bchousing.org/projects-partners/extreme-heat/tenants

[22] Fraser Health. *Extreme heat and people experiencing homelessness.* 2023. https://www.fraserhealth.ca/health-topics-a-to-z/sun-safety/extreme-heat-and-people-experiencing-homelessness--a-primer-for-community-organizations

[23] Ibid.

# THREE STEPS TO COST-EFFECTIVE
# APARTMENT AND CONDO HEAT PROTECTION

## Step 1: Plan ahead to keep cool




Do-it-yourself, $0


1

Help vulnerable neighbours, family, friends prepare and arrange to check on them during heat events.

2

Sign up for heat alerts on your phone (e.g., WeatherCan).


3

Learn how to best use windows and doors to naturally ventilate your unit, particularly at night.


4

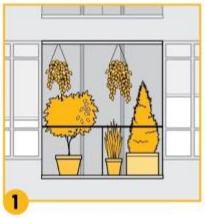
Choose energy efficient lights and appliances that produce less "waste" heat.

5

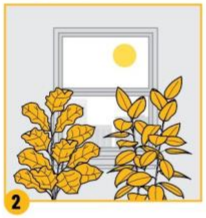
Arrange to work or sleep in a cooler place (e.g., shared cooling space).

## Step 2: Complete simple upgrades


Do-it-yourself, for under $250


1

Green your balcony or deck with potted, hanging and climbing plants.*


2

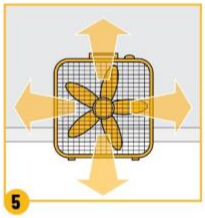
Place tall plants with large leaves near light-facing windows.


3

Improve unit insulation and air tightness (e.g., draft strips).

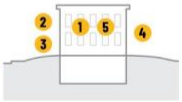

4

Install blinds, heat-resistant curtains, or films on windows.


5

Use portable or ceiling fans that increase air circulation.

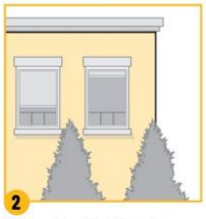
## Step 3: Complete more complex upgrades



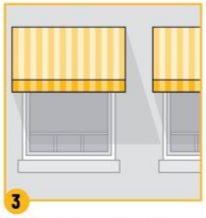

With building managers, for over $250

1

Install temperature and humidity monitors or controls.


2

Paint unit walls with white paint or light colours.


3

Shade windows with outdoor shutters and awnings.


4

Install windows and doors with low Solar Heat Gain Coefficients, that let less heat in.


5

Install and maintain a heat pump or air conditioning unit.

* In places at risk of wildfire, the use of green infrastructure must be considered alongside FireSmart™ guidance.

INTACT CENTRE
ON CLIMATE ADAPTATION

Scan the code or click the link for additional resources at www.intactcentre.ca

UNIVERSITY OF WATERLOO

# Tips to Beat The Heat

## Cool Your Body

- Wet clothing to help bring down body temperature
- Use water-soaked cloths or cooling packs on neck/wrists
- Sit in or put legs in cool (not cold) bath

## Hydrate

- Drink water/cool liquids
- Eat fresh fruit & salads
- Drink before you feel thirsty. Thirst is not the only indicator of dehydration

## Reduce Indoor Heat

- Daytime: cool living and working areas by closing windows, and use window coverings, air conditioners and misters
- Nighttime: keep windows open, with a fan near window to bring in cool air

## Protect Your Pets

- Provide shade & cool drinking water & baths
- Never leave pets unattended in cars or direct sunlight
- Plan outdoor activities during cooler parts of day. Asphalt might be too hot for bare paws

## Avoid Sun Exposure

- Wear wide-brimmed, breathable hat or use umbrella
- Avoid / limit strenuous activities during hottest part of the day
- Find shade if you need to be outside
- Use sunscreen

## Ask Your Doctor

- If taking medications, ask your doctor, nurse, or pharmacist if you need to be extra careful
- Some medical conditions may increase vulnerability during hot weather

## Check on Others

- Visit or call family & neighbours when you can

## Avoid/Limit Alcohol & Caffeine

- These can lead to dehydration

**Extreme heat can be dangerous.**

www.healthlinkbc.ca/more/health-features/beat-heat

For non-emergency health information and services call **811**.

BC HOUSING

# Sorry We Missed You!

Date: _____

Time: _____

Address: _____

Unit Number: _____

## You can reach us at:

**See a doctor** if you are not feeling well, and in a **medical emergency call 911**. For **non-emergency health information and services call 811.**

For deaf and hearing-impaired assistance call 7-1-1 in BC.
Translation services available in more than 130 languages upon request.

For more information, visit the Extreme Heat webpage at **canada.ca**

# STAYING HEALTHY *in the* HEAT

## HEAT EXHAUSTION

What are the **SIGNS AND SYMPTOMS** of heat illness?

- Skin rash
- Muscle cramps
- Dizziness or fainting
- Nausea or vomiting
- Heavy sweating
- Headache
- Rapid breathing and heartbeat
- Extreme thirst
- Dark urine and decreased urination

! If you experience any of these symptoms during extreme heat, immediately **move to a cool place** and **drink liquids**; water is best.

## HEAT STROKE

- High body temperature
- Confusion and lack of coordination
- Dizziness/ Fainting
- No sweating, but very hot, red skin

! Heat stroke is a medical emergency! **Call 911 or your local emergency number immediately.** While waiting for help—cool the person right away by:

- moving them to a cool place, if you can;
- applying cold water to large areas of the skin; and
- fanning the person as much as possible.

Cat.: H144-57/2-2019E-PDF • ISBN: 978-0-660-29161-1 • Pub.: 180713

Health Canada Santé Canada

Canada

For more information, visit the Extreme Heat webpage at **canada.ca**

# STAYING HEALTHY *in the* HEAT

## Who is MOST AT RISK?

### FACT 1
**OLDER ADULTS**

Older adults may be faced with compounding factors that could put them at increased risk during extreme heat events. These factors may include chronic illnesses, medications that interfere with the body's cooling mechanisms, social isolation, and poverty.

### FACT 2
**INFANTS AND YOUNG CHILDREN**

Given the unique physiological characteristics of children's bodies and their high dependency on caregivers, they are likely to be at risk during extreme heat events.

### FACT 3
**CHRONIC ILLNESS/ SPECIAL MEDICATION**

Individuals with breathing difficulties, heart problems, and psychiatric illnesses are at a higher risk of heat-related health effects.

### FACT 4
**PEOPLE WHO WORK OR ARE ACTIVE OUTDOORS**

People who work outdoors (e.g. construction, road repair) and physically active individuals who exercise in the heat could face greater environmental heat exposure and physical strain.

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Health Canada Santé Canada

Canada

For more information, visit the Extreme Heat webpage at canada.ca

# STAYING HEALTHY *in the* HEAT

## SAFETY TIPS

### TIP 1 PREPARE FOR THE HEAT

- **Tune in regularly to local weather forecasts and alerts** so you know when to take extra care.
- If you have an air conditioner, make sure it works properly.
- If you don't have an air conditioner, find an air-conditioned spot close by where you can cool off for a few hours on very hot days.

### TIP 2 KNOW THE SIGNS OF HEAT

### TIP 3 PAY ATTENTION TO HOW YOU AND THOSE AROUND YOU FEEL

Frequently visit neighbors, friends and older family members, especially those who are chronically ill, to make sure that they are cool and hydrated.

### TIP 4 DRINK LIQUIDS; WATER IS BEST.

### TIP 5 STAY COOL


*How to stay cool?*

- Wear loose-fitting, light-coloured clothing made of breathable fabric.
- Take cool showers or baths until you feel refreshed.
- Plan strenuous outdoor activities for cooler days, or choose a cooler location, like a place with air conditioning or with tree shade.
- Spend a few hours in a cool place. It could be a tree-shaded area, swimming facility or an air-conditioned spot.

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Health Canada Santé Canada

Canada

# Extreme Heat

Some people are more affected by the heat than other people. Those who may need extra care include people over age 60, people who live alone, people with certain health conditions or disabilities, people who use substances, people on certain medicines, people who are pregnant, and young children.

## Signs of Heat Exhaustion

- Skin Rash
- Heavy Sweating
- Feel Dizzy
- Feel Sick or Throw Up
- Rapid Breathing and Heartbeat
- Headache
- Trouble Concentrating
- Muscle Cramps
- Extreme Thirst
- Dark Urine and Urinate Less

## Signs of Heat Stroke

- High Body Temperature
- Drowsy or Fainting
- Confused
- Less Coordinated
- Very Hot and Red Skin

**Anyone with these signs:**

- Move to a cool space.
- Give plenty of water.
- Cool the skin down with water.

**Anyone with these signs: Call 9-1-1**

- Submerge all or part of the body in cool water.
- Remove their clothes and cover them with wet towels.

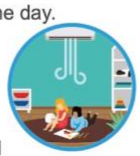
**The best way to prevent a heat-related illness is to spend time in a cool space.**

## Cool Off

- Go somewhere with air conditioning such as a library, community centre, café, or someone else's home.
- Cool off with water. Take a cool shower. Sit in or put your feet and legs in a cool bath. Wear a wet shirt. Put damp towels on your skin.
- Never rely on fans as the only way of cooling your body during extreme heat. Fans cannot directly lower your body temperature or prevent heat illnesses.

## Keep the space cool

- Keep shades and blinds closed during the day.
- If you have air conditioning, keep windows closed to trap cooler air inside.
- If you don't have air conditioning, open windows at night to let cooler air in. Use fans in front of open windows to pull cooler air from outside into your home.



## Check-In

- Notice how you feel and watch for signs of heat illness in those around you.
- Monitor the indoor temperature.
- At least 2 times a day, check in on those at risk for heat illness.

## Dress for the heat

- Wear clothing that is loose-fitting, light-colored, and breathable.

## Hydrate

- Drink plenty of water.
- Offer water often to those in your care.

## Plan ahead and stay informed

- Check the weather forecast and latest heat alert information. Take it easy during the hottest times of the day.

Find out more about heat-related illness, preparing for the heat season and staying healthy in the heat: fraserhealth.ca/heatsafety

MAY 2023

During the summer months both heat and wildfire smoke can be a health concern. Find out more about air quality: fraserhealth.ca/health-topics-a-to-z/air-quality

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Catalogue #267111 To order, visit: patienteduc.fraserhealth.ca

# Community Care During Extreme Heat

## Heat Illness: Prevention and Preliminary Care

This fact sheet is for Health Care Workers working outside of facilities in the community and in patient/client homes.

## Heat Illness and High Risk Individuals

### Recognizing Risk

Populations most at risk for heat illness and death during extreme heat:

- People who are confined to bed, or have reduced ability for self care
- People with pre-existing conditions have greater risk of heat illnesses. These include cardiovascular, pulmonary, renal and psychiatric conditions.
- People who are alone without a social support network in hot home environments.

## Planning for the Summer and Extreme Heat

### Knowledge Check and Action Plan for Management and Staff

- Ensure your organization has an updated extreme heat emergency plan.
- Plan to coordinate with other agencies.
- Know your partners and maintain coordination plan with other services during extreme heat.
- Educate and train staff on extreme heat and heat illnesses in the early spring.
- Inform staff about extreme heat emergency plans (e.g. staffing, response to client needs).
- Increase staff awareness of public cooling options (e.g. pools, splash pads, shaded green space, libraries, shopping centres).
- During extreme heat, review key fact sheet information with volunteers and staff.
- During extreme heat, review clinical management of patients and residents most at risk either due to reduced mobility, chronic illnesses (pulmonary, cardiovascular, renal), or certain medications. (*Refer to Health Canada's Acute Care Fact Sheet.)*

## Community Care – Assessing for and Educating on Heat Illnesses

### Checklist when Visiting Client

***URGENT: If client does not answer the door for a scheduled visit:***

- ❑ Notify your office / supervisor
- ❑ Attempt to call the client, if there is no answer:
  - ❑ Call the client's emergency contacts to request they check on the client
  - ❑ Follow any other steps required by your organization

***On entering client's home, check how they are coping with the heat.***

- ❑ Observe home environment
- ❑ Do they show physical signs of being in distress?
  - ❑ Slower than usual response to answer the door
  - ❑ Appearing unwell or complaining of not feeling well
  - ❑ Appearing disoriented

**9 1 1** **If client is unusually confused and very hot, call 911. This may be heat stroke and is a medical emergency.**

Canada

## Community Care – Assessing for and Educating on Heat Illnesses (Continued)

***If client is not in distress, check further on how they are coping with the heat.***

- ❑ Is client uncomfortable because of the heat?
- ❑ Does the client have access to fan, air conditioning, fridge, phone, social support?
- ❑ Is client at risk from exposure to extreme heat?
  - ❑ Client has mobility, mental and/or physical health issues
  - ❑ Client does not have physical and/or mental capability to escape the heat
  - ❑ Client lacks access to transportation
  - ❑ Client needs help to keep their environment cool, or move to a cooler place?

***Is client showing signs of heat illness:***

- ❑ extreme thirst
- ❑ unusual skin colouring
- ❑ tiredness
- ❑ weakness
- ❑ dizziness
- ❑ headache
- ❑ fainting
- ❑ nausea
- ❑ vomiting
- ❑ rapid breathing and heartbeat
- ❑ muscle cramps
- ❑ decreased urination with unusually dark yellow urine colour

### Actions to Help Clients Avoid Heat Illnesses

- ❑ Provide care (or help to coordinate care)
- ❑ Educate client (and caregivers) on how to cool themselves
- ❑ Inform client of local cooling options and community services to help support the needs of the client
- ❑ Provide client with appropriate Health Canada Heat-Health Fact Sheet (for Older Adults, Physically Active and Young Children)

### Keeping the Person Cool

- ❑ Use cool water to:
  - ❑ Sponge or bathe
  - ❑ Soak hands, forearms, and/or feet
  - ❑ Spray skin while fanning
  - ❑ Wet a cloth to put on neck and/or armpits.
- ❑ Have Patient/Client:
  - ❑ Dress in loose fitting, light-coloured clothing made from breathable fabric (e.g. cotton).
  - ❑ Drink liquid (especially water) regularly, even when not thirsty.
  - ❑ Eat fruits and vegetables which are high in water content.
  - ❑ Have a glass of water in reach – ensure it is beside them before leaving.

### Keeping the Home Cool and Food Safe

- ❑ Close windows, blinds and curtains during the hottest part of the day.
- ❑ Open windows, blinds and curtains when temperature is cooler in the evening.
- ❑ Use electric fans, air conditioning, to cool or circulate air.
- ❑ If home gets too hot, have client go to public place to cool down (e.g. pool, shaded green space, library, shopping centre). Ideal temperature range is assessed on a case by case basis.
- ❑ Do not use the oven. Instead use the stove top or microwave to heat food, or have meals that do not require heating.
- ❑ Ensure that food is properly stored as soon as eating has finished, and discard spoiled food. This is particularly important following a power outage.

For additional information refer to Health Canada's Extreme Heat Events Guidelines: Technical Guide for Health Care Workers

For further information email: Climatinfo@hc-sc.gc.ca

For more information in your region:

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