# THE CHERP MOBILE APP

## Helping Canadian Communities Help their Residents to Learn About, Prepare for, and Respond to Local Hazard Threats

FEBRUARY 8, 2022 — SURREY BOARD OF TRADE,
ENVIRONMENT & NATURAL RESOURCES TEAM

**RYAN P. REYNOLDS,**

POSTDOCTORAL RESEARCH FELLOW,
SCHOOL OF COMMUNITY AND REGIONAL PLANNING,
UNIVERSITY OF BRITISH COLUMBIA

**ryan.reynolds@ubc.ca**

*We would like to respectfully acknowledge that* ***UBC s Vancouver Point Grey campus*** *is situated on the traditional, ancestral, unceded territory of the xʷməθkʷəy̓əm (Musqueam) people.*

Community-University
Engagement Support

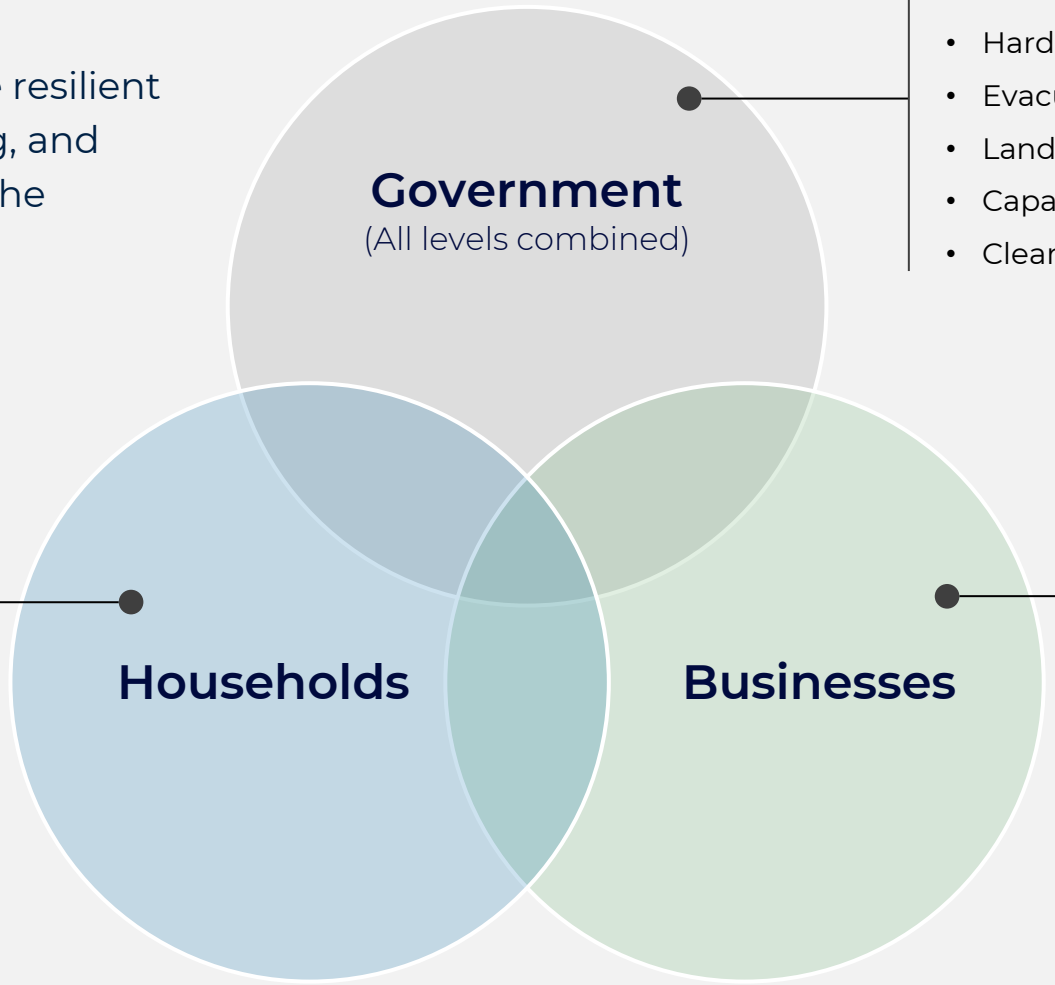
Knowledge Mobilization Fund

# Community Hazards Resilience

Household Contributions to Community Resilience

# COMMUNITY RESILIENCE, IN A PERFECT WORLD

To develop a hazard and climate resilient community, education, planning, and preparedness must happen by the following groups:




**Examples of responsibilities:**

- Hazard risk & vulnerability assessments
- Local hazard risk impact mapping
- Hardened critical infrastructure
- Evacuation routing & safe destinations
- Land-use & construction regulations
- Capacity designed to meet or exceed needs
- Clear communication plans

- Learn about local hazards
- Preparedness actions around home
- Household emergency plan
- Emergency kits & go bags
- Family evacuation plan
- Family communication plan

- Hazard risk & vulnerability assessments
- Structural assessments
- Evacuation plans
- Clear communication plans

# CHERP

The Canadian Hazards Emergency Response & Preparedness Initiative

# ONE SIMPLE QUESTION

CHERP seeks to address one simple question:

***"What would happen if we helped to make it quicker and easier for community residents to prepare for and respond to local hazard threats?"***

# WHAT WOULD SIMPLIFYING HOUSEHOLD PREPAREDNESS LOOK LIKE?

What if we **helped communities** to their help residents:

- Better understand local hazard risks;
- Determine if their home is in a hazard risk zone;
- Learn about local emergency plans, including where to go, what to bring, and where to look for more information; and
- Create household emergency plans customized to the unique needs of their home and family?

What impact would **reducing uncertainty** and simplifying the household preparedness process have when it comes to building more hazard and climate resilient communities in Canada?

# PHASE I PARTNER COMMUNITIES

For Phase I of the project, our team partnered with **seven communities on Vancouver Island** to learn about some of the barriers and planning issues faced by different types of communities.

Together, we identified a **basic template of information** residents need to better understand, prepare for, and respond to future hazard-related events.

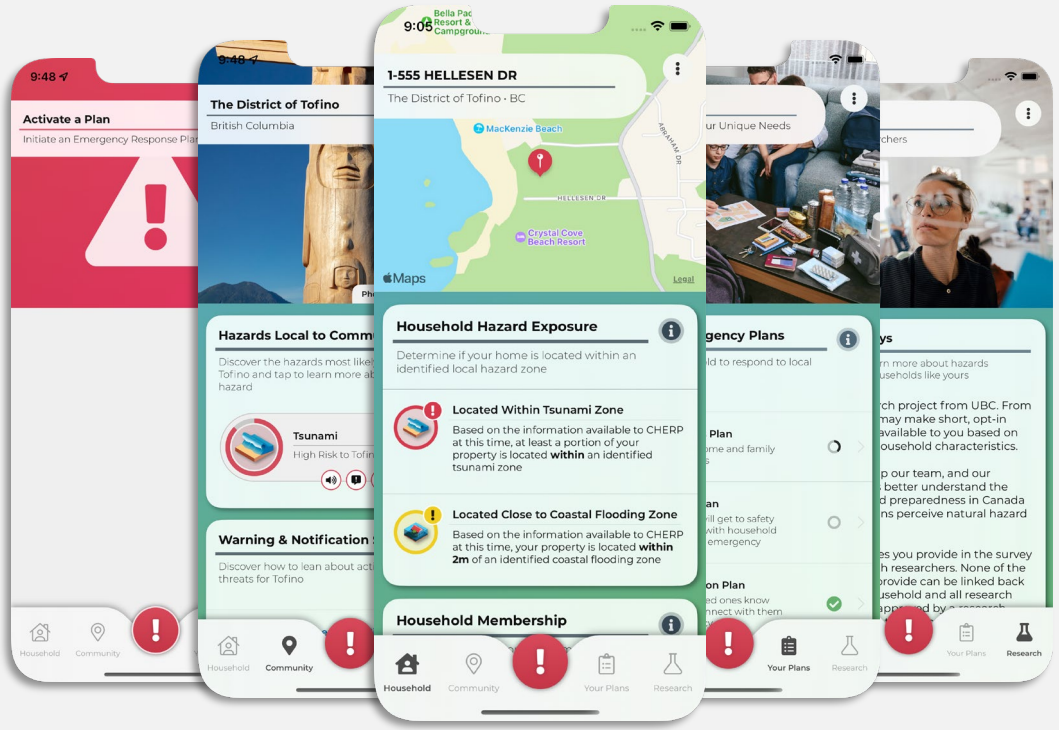
We explored how best to share this information with their residents and what actions residents could take to **become more hazards resilient**.

# THE CHERP MOBILE APP

This work resulted in the development of a **mobile app** for iPhone and iPad devices.

The app **helps educate residents about local hazard risks** based on information from official planning documents, hazard risk and vulnerability assessments, recent hazard studies, and national risk datasets.

CHERP uses information provided by residents and our partner communities to determine which **preparedness and response actions best fit their household's unique needs**. This results in a set of dynamic emergency plans that adapt as the family ages and changes.



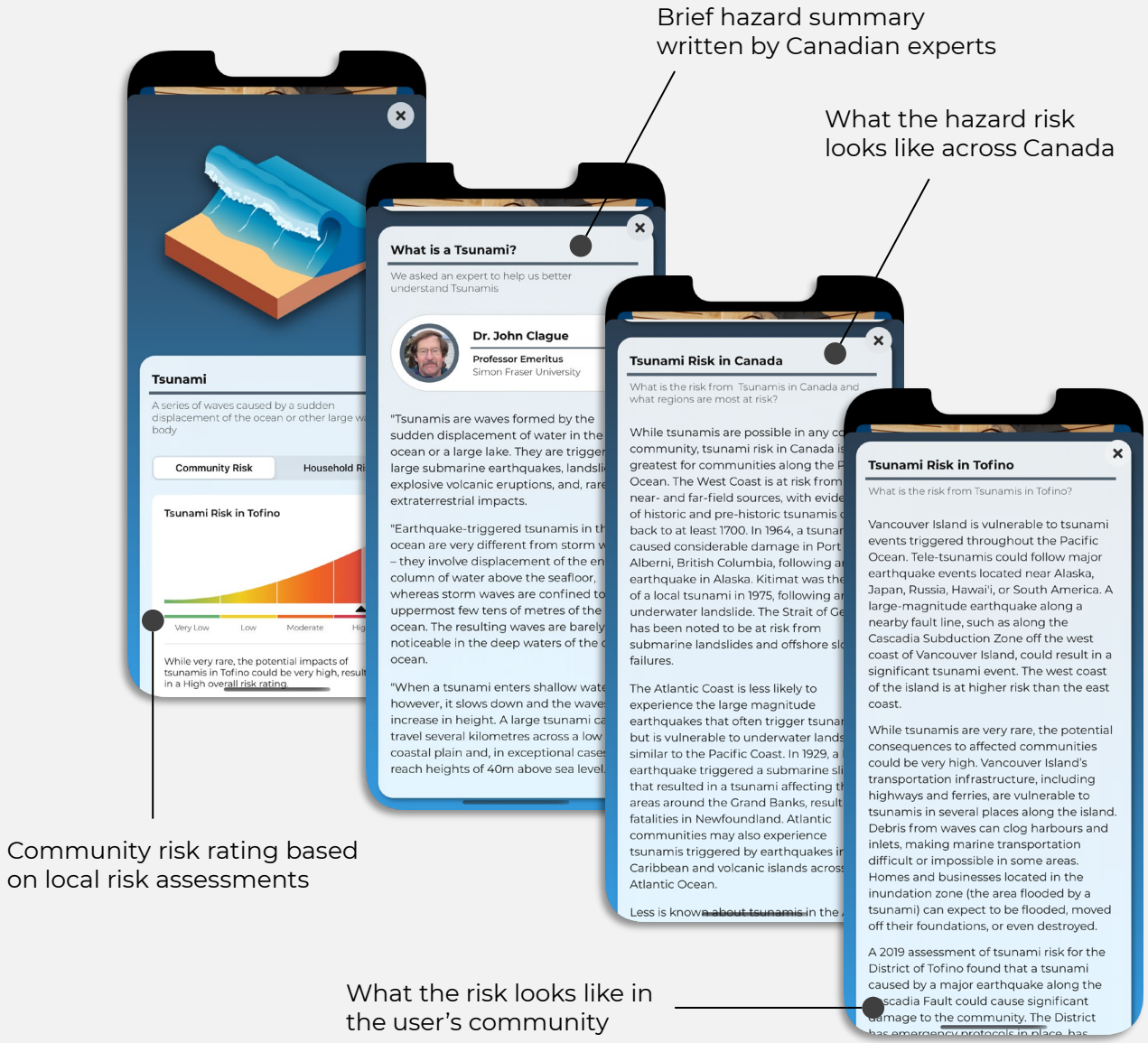
# COMMUNITY HAZARD RISK

Our team has developed profiles for **11 hazards** common to communities on Vancouver Island.

# COMMUNITY HAZARD RISK

Our team has developed profiles for **11 hazards** common to communities on Vancouver Island.

**Each profile** includes community risk ratings, expert summaries, a description of hazard risk across Canada, and a local risk summary for each partner community.



# COMMUNITY HAZARD RISK

Our team has developed profiles for **11 hazards** common to communities on Vancouver Island.

**Each profile** includes community risk ratings, expert summaries, a description of hazard risk across Canada, and a local risk summary for each partner community.

**Where data exists**, information about household risk ratings, warning and notification systems, and key community information channels is also made available to users.

# COMMUNITY HAZARD RISK

Our team has developed profiles for **11 hazards** common to communities on Vancouver Island.

**Each profile** includes community risk ratings, expert summaries, a description of hazard risk across Canada, and a local risk summary for each partner community.

**Where data exists**, information about household risk ratings, warning and notification systems, and key community information channels is also made available to users.

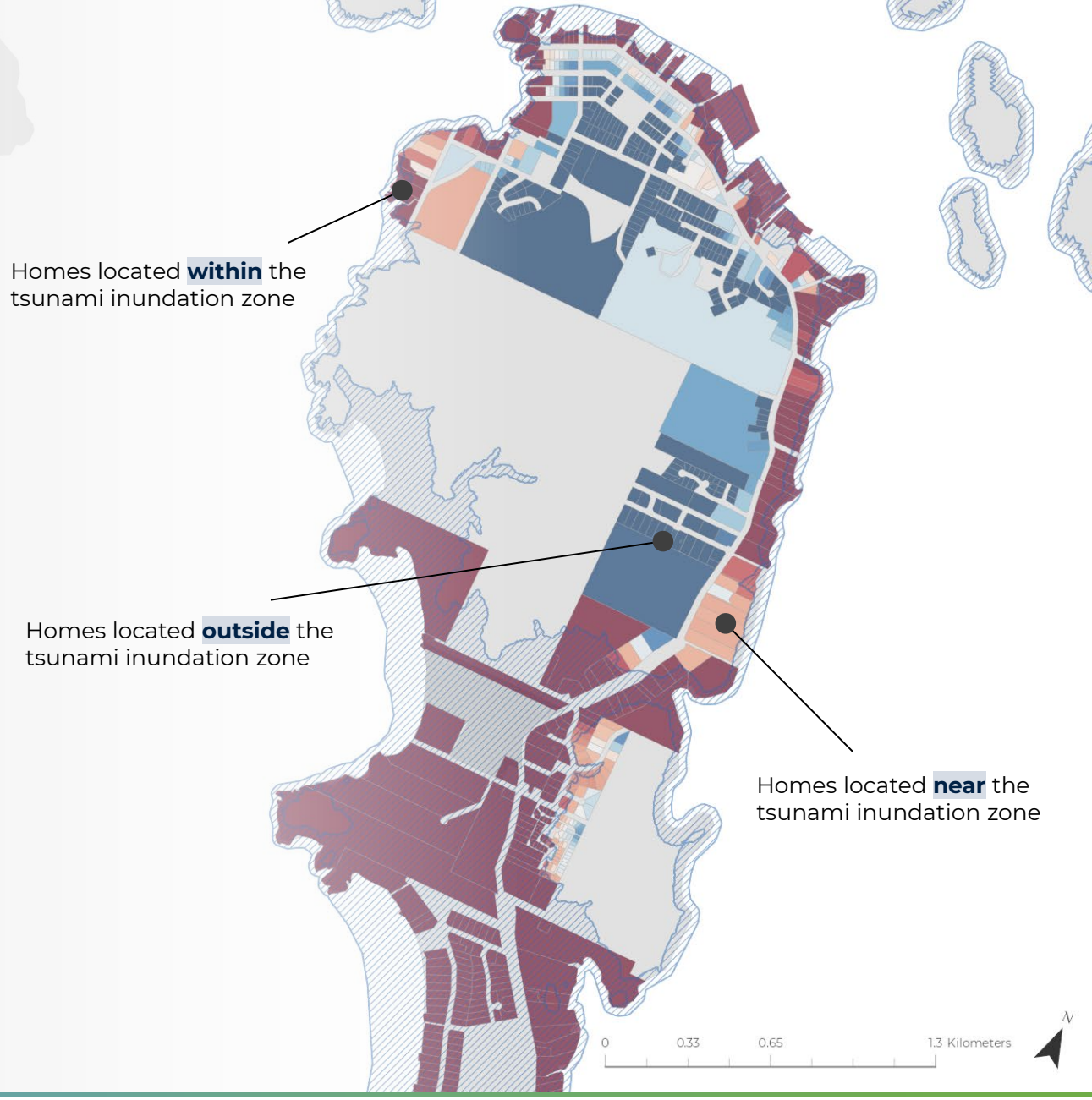
**Our sources** and links to additional information are also provided, allowing interested users to learn more about specific hazards.

# HOUSEHOLD HAZARD RISK

Where detailed risk assessments and geospatial hazard information exists, our GIS models establish household-level risk ratings for **each residential property** in a given community based on their proximity to identified hazard zones.

For example,* in the District of Tofino, CHERP allows users to quickly check if their home is located within a tsunami inundation or coastal flood zone based on recent studies completed for the District. Users will receive different preparedness and response guidance based on whether their home is located within, near, or well outside of these hazard zones.

* Tsunami risk ratings shown for business and residential properties in Tofino, along with the official tsunami inundation zone (shown in dashed lines)



# EMERGENCY RESPONSE PLANNING DATASET

To ensure residents receive relevant preparedness and response planning information from authoritative sources, our team has developed a **dataset of hundreds of possible actions** along with items for emergency kits and Grab ‘n Go bags.

- Actions sourced from Canada, the U.S., and abroad, including Public Safety Canada, Prepared BC, and the Canadian Red Cross;
- Action descriptions have been simplified and worded to follow risk communication best practices;
- Each action and item is coded to appear only when it is relevant to a household’s unique profile; and
- General actions are supplemented with community-specific information, including local evacuation plans, safe destination locations, and local emergency information sources

# HOUSEHOLD PROFILES

To determine **which actions are appropriate** for a given household, CHERP collects information about users' homes, vehicles, family members, and pets.

This profile includes information on:

- Age
- Physical & mental disabilities
- Medical & mental health conditions
- Assistive aids
- Non-fluent speakers
- LGBTQ+ status
- Recent immigrants
- Pets
- Car-less households
- Basements/crawlspaces

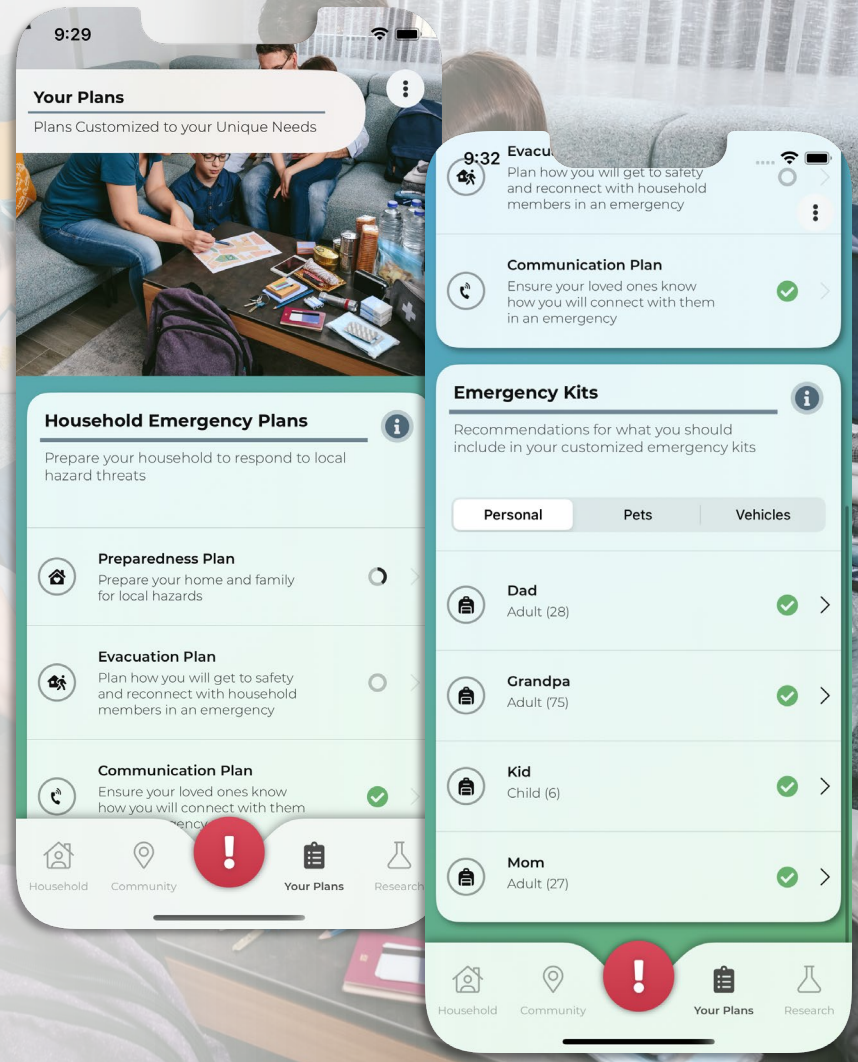
# BRINGING IT ALL TOGETHER

# EMERGENCY PLANS

CHERP provides users with a set of emergency preparedness checklists that they can complete in advance of an emergency and track their progress

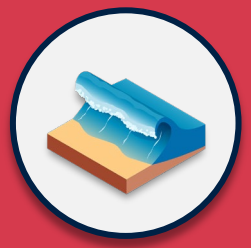
They also receive customized emergency kit lists for each household member, pet, and vehicle based on the information that was provided by the users

Should the need ever arise, they can activate one of these plans by taping on the red exclamation button at the bottom of the screen....



# EMERGENCY PLANS

Emergency plans can be enacted in just a couple of taps and each item can be checked off as they are completed



**Tsunami**

- Immediate
- 20 minutes
- 1 hour
- 3 hours
- 6 hours or more

**Coastal Flooding**

- Immediate
- 20 minutes
- 1 hour
- 1 day

**Wildfire**

- Immediate
- 20 minutes
- 1 hour
- 1 day

**Earthquake**

- Immediate

**Contaminant Spill**

- Immediate

# USER PRIVACY

CHERP collects some **sensitive information** from our users, so the protection of our users' personal information is paramount. All information is stored on user devices and their encrypted iCloud storage.

Our team only receives a **monthly "ping"** that contains broad categorical data in an anonymous and aggregated form. This is enough to help us understand our users' needs and to help our partner communities with their planning while making it impossible to tie responses to individuals or households.

# PUBLIC LAUNCH

We will be launching the app in six of our partner communities in a staged roll-out in **early 2022**.

This will start with the Village of Tahsis and District of Tofino, followed by our other partner communities as local data can be incorporated into the app and tested.

# LOOKING FORWARD TO PHASE II

Phase II of the project, starting in late 2022, will focus on four key components:

- Development of an Android version;
- Expansion to new communities and provinces;
- New hazard profiles for additional hazards, such as hurricanes, tornadoes, and avalanches; and
- Continued updates to our dataset of household preparedness and response actions, emergency kit items

We will be seeking additional community partners from BC and across Canada for upcoming funding applications.

Additional information and an “interested community form” available at: https://ryanreynolds.ca/cherp/

**Ryan P. Reynolds**
Postdoctoral Research Fellow
School of Community and Regional Planning
University of British Columbia

**ryan.reynolds@ubc.ca**

## Learn more about CHERP:

https://ryanreynolds.ca/cherp