

# Disaster Education Through the Flood Resilience Challenge Serious Game

[www.frcgame.com](http://www.frcgame.com)



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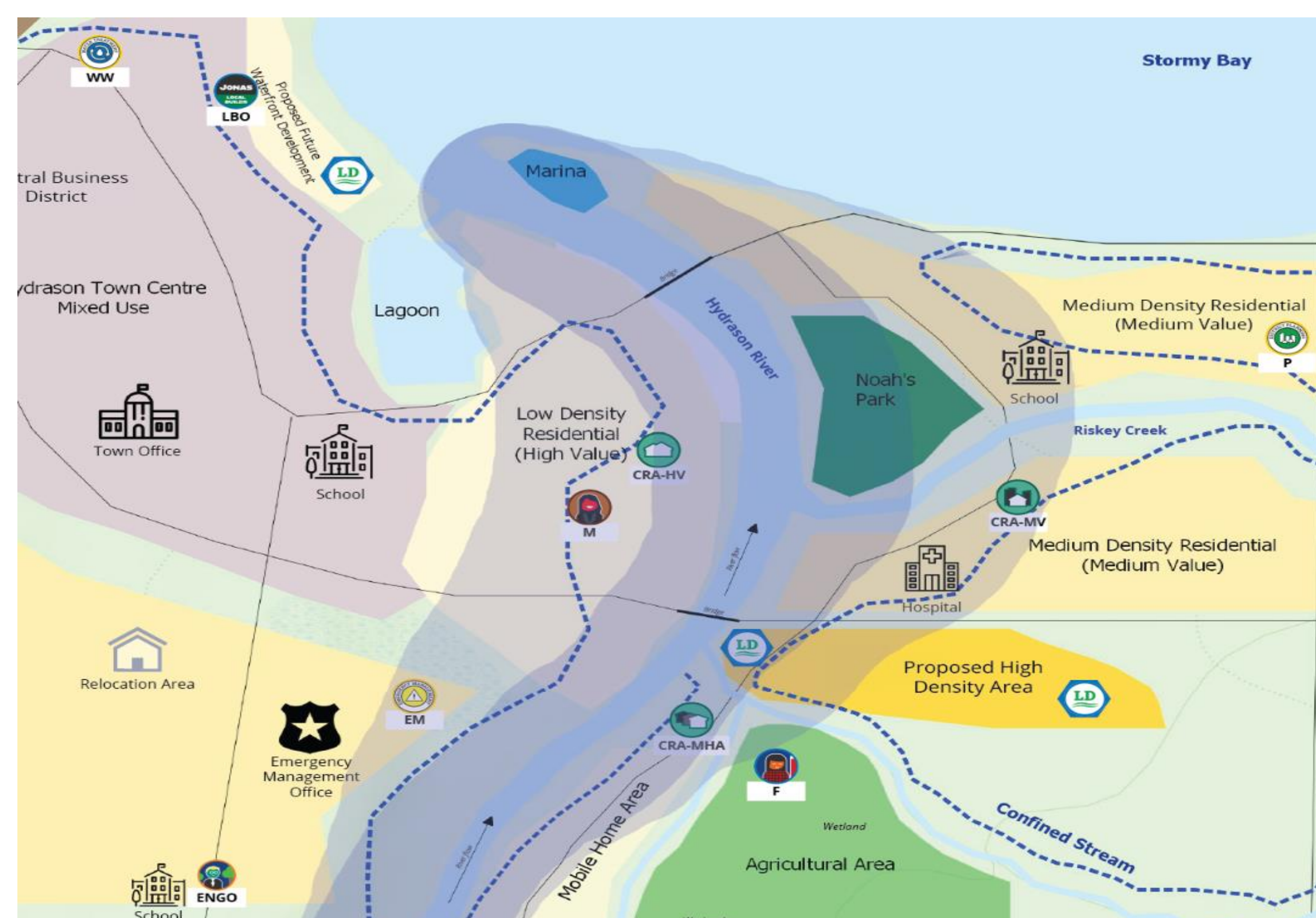


## Research Problem

- Flood risk management is challenging because it:
  - Involves stakeholders with diverse and competing interests
  - Touches on core values of property rights, public safety, and economic security.
- There is a need to move beyond expert-driven, and technical approaches towards authentic inclusion of affected citizens, and to provide safe spaces for the public to explore ideas and values.
- Serious games have been shown to be effective in many ways but there is limited research on rigorously testing the efficacy of serious role-playing games against their intended learning objectives.

## Purpose of the FRC Game

- To build the capacity of stakeholders to improve flood resilience and enhance flood risk governance, including collective decision-making.
- The Flood Resilience game achieves this purpose, as an educational and engagement tool, by:
  - Increasing flood literacy
  - Fostering social learning\*
  - Creating a safe space for exploring both risk management and communication strategies.



*Serious games* are games that are not just for entertainment but also have an educational purpose and address real-world problems.

## Learning Outcomes for Participants

1. Explain the various components of the risk equation such as risk, hazard, exposure, and vulnerability.
2. Describe structural and non-structural flood risk management measures and their benefits and challenges.
3. Recognize the benefits and challenges of collaborative decision-making in flood risk management.

## Playing the FRC game



## Unique Features

- Online and in-person versions
- Additional content to enhance flood literacy
- Tailored to the Canadian context (e.g. regulations)
- Financial component with payments (e.g. insurance)
- Socio-political dynamics (e.g. voting)

## Methodology

- 300+ players and 100+ research participants Jan. 2021 – Feb. 2024 from universities, community stakeholders, NGOs, governments, private sector
- Evaluation methods: Pre- and post-game survey, debrief

*\*Social learning* occurs when individuals look beyond their individual perspectives and shift towards shared interests and collective well-being, working towards mutually acceptable solutions. It's an iterative process and involves active experimentation.

## Results

- Increased flood literacy
  - Disaster concepts
  - Flood types & risk measures
- Better understanding of diversity and power dynamics
  - Differing views & values
  - Inequities in resources & influence
- Experienced conflict and collaboration
  - Explored tensions and found common ground
  - Explored empathy & ethics

"... "Much more applicative than sitting and listening to a lecture."

"Making the right decisions as an engineer might be easy but not as a politician."

"It was strange because I threw ethics out the window and as an engineer you shouldn't do that."

"This exercise helped me understand the benefit of planning and collaborating with a team to prevent natural disasters."

"Remembering, kind of actualizing that it is all very interconnected. The systems are not silos, as much as we try to silo our world, this is a very complex system with different points to remember."

"But it was very interesting looking at that power dynamics and seeing how it played out in the game... potentially carrying over to how it could play out in real life?"

"FRC was fun and could think outside-of-the box and provides opportunities for people to be more creative."

"Everyone has own expertise so [the FRC game] creates an understanding of what others' perspectives are especially when trying to do something for the greater good."

## Conclusion

- Designing serious games:
  - Using evidence-based information for design and evaluation
  - Balance between simplicity and complexity
  - Time-consuming
- Serious gaming:
  - Effective tool for teaching and learning
  - Provides a safe space to test out ideas
  - Adds value to climate change adaptation engagement
  - Applicable to diverse disciplines

Thank you to our generous funders:

