



Canadian Risk & Hazards
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HazNet

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(connaissances et pratiques)

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WELCOME FROM THE CO- PRESIDENTS

Welcome to this edition of HazNet.

Once again, CRHNet is proud to present its latest edition of this newsletter, which is growing in size, diversity, and depth of coverage. Our focus continues to be the advancement of knowledge-development through the highlighting of news items, discussions and concepts. Your contribution and involvement in the related dialogue is welcome and could be advanced through this medium as well as the various components of our website (www.CRHNet.ca).

The annual CRHNet Symposium is part of our contribution to that “discussion.” After the whirlwind activity since our last newsletter, it’s time to take stock and extend our appreciation for the tremendous contributions made by our membership and partners in making the 2012 symposium – held in Vancouver, a tremendous success. The organizers, with great support from our partners, sponsors, volunteers and membership, delivered a great social and learning event, which included a rich offering of insightful, innovative and thought-provoking presentations or panels. The growth in the number of participants - presenters, attendees and vendors - clearly illustrated the success of the symposium; so was the continued interest and active support by federal departments or agencies including Defence Research and Development Canada (DRDC), Natural Resources Canada (NRC) and Public Safety Canada (PSC).

Immediately following the Symposium, which included our Annual General Meeting, the new Board again conducted a day-long Strategic Planning workshop to review the association’s

progress and to continue advancing its goals. The board set six priorities for the coming year; key among them is ensuring that “CRHNet seeks to inform and influence (if necessary) policy and practitioners to achieve disaster risk reduction rather than act as a lobbyist”. Another key priority is to explore and then facilitate the creation of a network of networks towards an improved approach for disaster risk reduction in Canada.

CRHNet was established for that purpose but is committed to the exploration and implementation of a more dynamic model.

The other priorities include the advancement of the existing website, establishment of a more active membership engagement, and enhancement of the current publications or information sources. Each of these projects has a designated lead and a related working group. Your suggestions and involvement are welcome. (If interested, please contact any Board member.)

To achieve the above objectives, the Board has set as a priority the revision of our governance structure, related linkages, and service delivery model. We hope that this effort would better serve our Association, its Members and its network partners. This effort is based on feedback or suggestions from our membership and provides opportunities for members to contribute to CRHNet’s activities and initiatives.

As we look to the coming year and to the next symposium (November 2013) in Regina, we believe that CRHNet’s modest contributions to the cause of risk reduction and resilience are becoming more important, if not essential to the profession and the practice of emergency management in Canada. That also implies that we have a responsibility to be relevant and responsive to the interests of our

members, stakeholders and partners; your board remains committed to that goal.

While our membership is growing, and includes the “CRHNet Young Professionals and Student Network”, we continue to reach out to individuals or other organizations with similar objectives and values. YOUR involvement is welcome! Together we can make tremendous contribution to Canada’s disaster risk reduction.

Ron Kuban and Ernie MacGillivray,
CRHNet Co-Presidents

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disaster recovery. The stories and knowledge products participating youth create through this exploration will extend disaster recovery and resilience theory and provide possibilities for ongoing peer-to-peer support. The goal is to empower youth to help shape policies and practices that more effectively address their vulnerabilities and strengths and create opportunities for them to contribute to the long-term resilience of their communities.

Our research team, which is led by us, currently includes two graduate and several undergraduate research assistants from Royal Roads University and Colorado State University. Four of us traveled to Joplin in January 2013, to begin preliminary fieldwork in that community. During that initial visit, we met with and informally interviewed over 40 community leaders representing the schools, local government, the health care system, the private sector, the faith-based community, the emergency management community, and the arts community. One theme consistently emerged in those initial interviews, which is that youth are interested in *paying it forward*, sharing the insights and lessons they have learned with others who may experience disasters. We are currently working to build a project website so that we can more regularly share updates, as well as the insights of participating youth and the stories they produce. Moreover, over the coming months we will continue our research and community engagement work in Joplin and begin fieldwork in Slave Lake as well.

Questions about the project can be directed to

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A CANADIAN RISK-BASED LAND-USE GUIDE: DECISION SIMULATIONS



By: *L.C. Struik¹, B. Grieve²
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Abstract

Simulation exercises on decision making for development proposals in areas subject to natural hazard threats are being used to develop a risk-based land use guide. A simulation exercise at the Dr. Donald J. Rix Simulation Laboratory of the Justice Institute of BC led staff and interested parties from the City of New Westminster through a decision scenario for a development proposal in a flood plain. The scenario examined municipal needs in ensuring that a development be safe for the use intended. These needs were guided by a draft abridged risk-based land use guide that is under development by a consortium of experts in natural hazard resilience. The scenarios are being used to further develop the guide by determining the real-life needs of municipal staff.

Introduction

Land-use permits and the application of building code provisions are two everyday community decisions that can either build a resilient community or create a disaster. Of these two, building codes are sufficiently advanced in Canada to provide substantive design guidelines that reduce potential hazard risk caused by building construction and use. Land-use guidelines for hazard risk reduction, however, are few and scattered amongst various legislation and

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regulations. Yet, land-use decisions are the ones that either expose development to hazards or not.

Risk-based land-use guides help municipal staff identify ways to reduce community exposure to hazards (stay out of harm's way), and to recognize and recommend effective practical risk mitigation options. In recognition of the large responsibility that municipal staff carry in building safe communities, a consortium formed in southwest British Columbia to assist in consolidating informed risk-based land-use practice into a practical guide (Struik 2012). That ad-hoc consortium was directed by concerns and opportunities in land-use as identified at local risk mitigation workshops and land-use decision simulation exercises. This paper describes the formulation and results of a decision simulation conducted in May 2012, with the City of New Westminster, British Columbia.

Creating a Land-use Guide

In a pilot begun in 2010, stakeholders in southwestern British Columbia are creating a risk-based land-use guide for the Metro Vancouver region. The guide will include practices targeted to the social, economic, political and environmental character of the region. It is planned to be the template for a national guide and the creation of other local guides. Presently, stakeholders in this process include land-use planners, city managers, permits and licensing staff, engineers, critical-infrastructure owners and managers, insurers, researchers and practitioners of land-use policy, and emergency managers and disaster reduction policy advocates from all levels of government.

The guide and its creation are based on several principles: stakeholder built and managed; use existing local instruments³ that incorporate informed practice; balance social, economic and

environmental concerns; transparency of knowledge and decisions; and community engagement.

Stakeholders are creating the guide together to ensure it is practical, applicable and usable. Through workshops, exercises and joint writing, the group identifies the instruments and best practices available locally to identify and manage land-use risk. Through connections with researchers and practitioners, best practices available globally are identified and incorporated. Effective risk-based land-use evaluation methods are then incorporated into existing municipal practices for social, economic and environmental development and management.

The southwest British Columbia method for building the guide includes examining existing land-use decision-making processes through land-use decision simulation exercises and workshops. In the exercise, teams use a simulated development permit application and a strategic land-use plan for an area plagued by hazards. The simulated application and plan are used to highlight existing local instruments, best practice and principles for the guide. Workshops shared the simulation results and gathered input on the format and content of a land-use guide. Workshop outputs are being consolidated in a draft guide and will be opened through an internet wiki for facilitated shared writing. Additional input is sought through follow-up discussions at conferences and additional workshops to identify best practices and practical applications. The draft guide is expected to be validated in another workshop and exercise through its application to a case study example. The completed guide will be posted online for use and reference. It is expected that the guide will undergo periodic review and updating.

Latest workshop graphic summaries and original notes are available for viewing and download (CNHR 2011).

The land-use decision simulation

³ *Instruments in this paper are such things as laws, rules, data, plans, governance and the like that are the operational infrastructure from which a land-use recommendation is made and implemented.*

Three urban land-use recommendation simulations have been developed and operated. Each was based on actual considerations recently required of municipal staff. They were based on the knowledge those staff had in-hand at the time to make their recommendations. Two of those simulations were conducted in September 2010 as parts of one exercise staged at the Dr. Donald B. Rix Simulation Laboratory of the Justice Institute of British Columbia. They involved a permit application for the renovation of a firehall along a debris-flood prone creek and a strategic plan for development opportunities along the lower reaches of that same creek. The third was conducted in May 2012, at the same simulation laboratory and consisted of recommendations for a permit application for renovation of a community centre in a flood plain of the large Fraser River in the city of New Westminster, British Columbia. In this paper, the New Westminster community centre decision simulation is described as an example of the process and the rewards for staging such an event.

The New Westminster simulation

Creation and operation of the simulation exercise was based on two primary principles: 1) full approval, cooperation and engagement of the municipality supplying the land-use scenario, and 2) operation of the exercise as a learning experience in best practice. These principles required the Guide committee to solicit the interest of a municipality in participating and in gaining value from the learning experience.

In practice it meant committee members, through their networks, approached a person working for a municipality, explained the opportunity and gauged the person's interest in realizing the value of such an exercise for their colleagues or for their municipality as a whole. Follow-up with those who expressed interest involved a thorough explanation of the intent, scope, and the time and cost commitment of the land-use recommendation simulation exercise. In development of our second

exercise we had the advantage of using the material from the first one to help provide the explanation. At this stage the municipal representative had a few options in mind for a land-use recommendation scenario that could be used for the exercise and that could be of value to their municipality. It was then up to that municipal representative to determine the interest of their colleagues, and potentially city council, in pursuing such an initiative.

In this case, author Struik, representing the land-use consortium, worked with authors Jones, Emergency Manager, and Grieve, Manager of Planning, at the City of New Westminster, British Columbia, who expressed keen interest in the concept and had conversations with their colleagues to cultivate interest and gain approvals. Over several months of internal conversations and meetings where the authors described the intent and anticipated rewards of the activity, we arrived at a preferred land-use recommendation scenario, production and operation schedule, and distribution of tasks. Much of the consideration for the choice of the scenario included the type of hazard that was of risk to the community and the type of property decision the municipality would be comfortable making public. In this case, New Westminster staff settled on changes to a municipal building on municipal land.

New Westminster decided to use the proposal and subsequent redevelopment of the Queensborough Community Centre, which is in a dike-protected flood plain of the Fraser River. The development decision had just been made and the construction underway. The decision had been to renovate the centre, making space for several amenities at ground level. New Westminster decided the exercise would be run primarily for its staff only. They did invite representatives from several of their neighbouring municipalities along the Fraser River who have similar hazard and development issues.

To develop the scenario, Jones and Struik brought together reports, plans, maps and other material that may have been used as reference or were created or

commissioned specifically to support the development proposal. We pieced together the chronology of events and milestones in the decision process and used those to develop background and events that triggered the development proposal up to the stage where the flood hazard would have been considered as an influence on the development proposal. From that information we created:

- a renovation proposal,
- a script for video of a meeting of New Westminster staff about the renovation proposal,
- an interview questions of experts on the renovation project, to provide video reference material for the simulation exercise teams,
- a suite of documents pertinent to the decision,
- an annotated list of the documents,
- a simulation exercise script with a schedule of tasks and outputs required of the exercise teams,
- a conversion of the tasks and outputs to injects and triggers for the simulation control room, and
- a guide for operation of the exercise.
- an evaluation form

The renovation proposal provided details of the scope, timeline and intent of the community centre renovation.

The staff meeting video provided background on the proposal and gave each simulation exercise team the background and exercise task to evaluate the flood hazard risk of the proposal and determine that the development would be safe for the use intended. That script kept as true to the hazard situation as permitted by available information at the time, and to the British Columbia legislated requirement that developments be determined to be “safe for the use intended”.

Several New Westminster staff involved in the Queensborough Community Centre project were interviewed on video. Those videos were available to the simulation exercise teams, on demand during the exercise, for background on New Westminster practices in land-use decision-making or for specific information about the community centre project. Such information is in lieu of the regular practice of walking down the hall to ask your colleague about a process or some knowledge.

Each of the videos was directed, filmed and edited by the Simulation Laboratory team at the Justice Institute of British Columbia, New Westminster, as led by Robert Walker. For the opening staff meeting video, actors were gathered by the simulation development team, and consisted of our friends or work colleagues. If time and resources are available to have professional actors and a well written script, it is worthwhile. The opening video sets the stage for the exercise and the realism imparted by a well done video invokes a stronger sense of seriousness and commitment to the exercise teams.

The suite of documents and its annotated list were available to the exercise teams as resource material from which they could find the knowledge needed to evaluate the safety of the proposal. The documents were reproduced as a printed set available to each team. Several of the documents were provided at the outset as part of setting the context for the evaluation.

The exercise script provided the objectives, tasks and their start-end times, and background information for each team and was programmed in to the exercise operation system.

Each participant received an abbreviated guide on conducting risk assessment. That booklet was abridged from the risk-based land-use guide currently under development. The guide provided what is required for a risk assessment, why each type of knowledge and activity is required and a

glossary to provide a common framework for discussion.

Following the exercise, the group discussed the activity and what they learned and provided feedback through a real-time and written evaluation.

Exercise operation

The Justice Institute of British Columbia's Dr. Rix Simulation Laboratory has a control room, 4 pods and a plenary room (JIBC 2012). Each pod requires a recorder unaffiliated with the exercise team in that pod. The control room requires a monitor for each of the video and sound feeds from each pod being used, and a simulation control room master operator. In addition it is important for experts on the exercise subject to be on hand to answer questions from the simulation teams in real time. The monitors can also be subject matter experts.

The exercise was conducted over a single day with morning plenary introduction, exercise activities to lunch time with plenary discussion, early afternoon exercise activities and post afternoon-refreshment break plenary discussion and exercise evaluation.

The detailed exercise script can be found at CNHR 2012. In summary after each team assembled in its pod the team:

- viewed the staff meeting video shown simultaneously in each pod.
- assessed the material at hand and created a work plan for how they would evaluate the proposal and make a recommendation for how it could be safe for intended use.
- made a list of knowledge required to evaluate the proposal.
- wrote requests for documents they felt contained the knowledge required; based on the list of available documents,
- searched the documents they requested for the information they felt was needed

- collated the knowledge, discussed it and drafted their recommendation concerning the potential for the proposal to be safe for the use intended.
- Following their work as isolated pods, all groups gathered for a plenary discussion and evaluation of the exercise.

The evaluation was conducted in two parts. The first part used the simulation centre's electronic voting system. Individuals each received a voting remote and selected their preferred multiple choice answer to a question posed by a power point displayed on a single screen at the front of the room. After all votes were in, the results were displayed through the same power point. Evaluation results were then seen by everyone together.

A second evaluation was done with a hand out form that could be completed before the participant left. It provided the opportunity for directed and detailed comments about any aspect of the exercise.

Exercise Results

During the afternoon plenary each pod team reported on their evaluation process and their recommendation. Subsequently we discussed the process and the learning. The following observations come from the pod participants themselves and from the exercise operational team.

Operational observations

The teams evaluated the development proposal with mostly the same criteria, although some used unique criteria and concerns. One team, that included the real project manager, delved into more criteria and knowledge needs. The criteria the teams decided to consider for evaluation appeared mostly controlled by the discipline and real-life job of each of the team participants. For a full evaluation of all factors, therefore, it appears important to bring together the full scope of experts who understand the type of hazard, the infrastructure at risk and how to conduct a risk assessment.

Making a workplan for the evaluation was a challenge. That may be due to a lack of a standardized municipal process for hazard risk evaluation. Exercise operators concluded the land-use guide should contain sample work plans.

The concepts in the guide booklet needed to be taught prior to the exercise. The guide introduces vocabulary and processes unfamiliar to many in the teams. Without familiarity prior to the evaluation process, participants tended to rely on what they knew coming into the task rather than dedicate time to first learning what could be a useful method.

Participant observations

The pre-existing Hazard Risk and Vulnerability Assessment conducted by the City of New Westminster was found very important in the analysis. It gave some sense of the scope of the flood hazard and risk in the neighbourhood and its context with other hazards. Several participants suggested it be posted publicly on the Internet. They did not realize it was already available on the Internet as a downloadable document.

In general it was agreed that more information about the community needed to be easier to get and easier to use. It was not enough to make it available over the web. The knowledge needed to be easily found and used. Having a dedicated web tool for hazard risk assessment support would provide a signal that the information was available. Having a repository or library of sorts was considered to be a good first step that identified the various literature currently held in various departments.

In this case participants felt it may have been better to use an imaginary scenario. The community centre scenario was too close to the participants and it was difficult to be objective.

Participants looked for more guidance on when and how to engage subject matter experts in the process. In particular they wanted to know the level of expertise required for each risk assessment function.

Participants suggested that any risk-based land-use guide should establish what is mandatory and what is desirable. Such declarations can only be made for local areas and regions that share the same laws and regulations. It is easier to describe what is required for a hazard risk assessment and why. This would aid communities in writing contracts for subject matter experts and contribute to creating standards.

Having a hazard, risk map for the community would be beneficial to move forward on Official Community Plans and other projects. It would be helpful if the risk map covered the Metro Vancouver Regional District. As part of the implementation of the Region's Regional Growth Strategy (2012), municipalities must identify, in their Official Community Plans, actions that would reduce risks presented by natural hazards. It was recognized that a better soil properties map should be developed to assist in hazard and risk evaluation.

It is useful to clearly explain probability terms and the misconception created by using phrases like 1-in-200 years. For example, people understand better the notion that they have a 40% chance of experiencing a major flood event in their lifetime.

The planning process was agreed to be already fairly inclusive in New Westminster. It could use clearer definition (charter) on roles and responsibilities and elevate the awareness around risk, hazards and what can be done to reduce the risk. This is a long term strategy. The development permitting and strategic planning systems need to be simple so they do not bog down projects.

One of the valuable experiences from the exercise was connecting with colleagues from different departments during this shared learning experience. It provided an opportunity to develop a common language for talking about hazard risk and it demonstrated the reward of bringing the diverse expertise to the evaluation.

The exercise has already had an impact on the work of the Planning and Engineering departments. As part of the flood hazard adaptation work being undertaken for the Queensborough Community Plan review, staff took a hazard risk assessment approach to establishing a Flood Control Level for new development in Queensborough. The issue of the establishment of a suitable and defensible Flood Control Level had proved to be a challenge to the City. A better understanding of the flood risks and the creation of a number of scenarios has led to a shared understanding and the development of a solution that both staff and City Council feel better addressed the risk. The development of clear non-technical communication tools that will be used for public consultation was an essential component of this task.

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INTO THE FIRE: DISASTER AND THE REMAKING OF GENDER⁴

The turbulence of post-disaster social life provides fertile soil for exploring the mechanisms of change, particularly in the realm of gender relations. *Into the Fire* analyzes the shifting terrain of gender in the aftermath of a catastrophic wildfire. The case study examines three crises that threatened to rupture the link between firefighting and masculinity and destabilize institutionalized patterns of gender. Media representations of the fire and interviews with 40 firefighters reveal that new patterns of masculinity can emerge in the wake of crises and these patterns may simultaneously sustain and unsettle gender hierarchies. This book brings fresh insights to the field of disaster studies by extending and deepening knowledge of gender relations and crises. Post-disaster relations of marginalization and hegemony and spaces where change can occur are also of broader interest to those concerned with disaster and issues of social inequality.

⁴ *Into the Fire* will be published by the University of Toronto Press in June 2013 by **Shelley Pacholok**