

# RAUG

## Risk Assessment Users Group

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**Teleconference Agenda, June 04, 2014, 10:30 – 11:30**  
**1-877-413-4790 conference ID 3381344#**

### WEBEX

Topic: RAUG Meeting

Date: Wednesday, June 4, 2014

Time: 10:30 am, Pacific Daylight Time (San Francisco, GMT-07:00)

Meeting Number: 555 399 052

Meeting Password: raug

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To join the online meeting  
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1. Go to <https://pwgsc-nh.webex.com/pwgsc-nh/j.php?MTID=mfc86cdc0244015f901eaf1506825a645>
2. Enter your name and email address.
3. Enter the meeting password: raug
4. Click "Join Now".

@RiskAUG

## Monthly RAUG meeting

The Risk Assessment Users Group meets by telephone on the first Wednesday of the month, 10:30 - 11:30 am Pacific Time. It has met in person with the Canadian Hazus User Group at the annual Canadian Risk and Hazards Network Symposium. The forum shares knowledge about using Risk Assessment for disaster reduction decisions in Canada. It is supported by NRCan's Quantitative Risk Assessment Project of the Public Safety Geoscience Program and Bert Struik.

## Participants

Kris Holm, Laurie Pearce, Bert Struik, Maggie Wojtarowicz

## Agenda

Meet and greet  
News and views

Discussion: A new Risk Management scheme used for land-use decision support, in comparison to the ISO/CSA 31000 Risk Management standard. led by Bert Struik

## **Updates**

### ***Previous meeting***

Presentation on the earthquake strategy of the city of Vancouver, as presented by Jessica Shoubridge. Material available at <http://raug.mhrisk.ca>

The RAUG twitter feed has been added to the website. <http://raug.mhrisk.ca>

### ***Summer Break***

This is the last RAUG meeting before the summer. A meeting will be held on September 3, 2014. The RAUG website will be maintained throughout 2014, providing access to past meeting material including podcasts.

### ***News and Views***

Bert: Risk-based land-use guide manuscript in review for publication with NRCan.

Maggie: NRCan has begun new five year Public Safety Geoscience program and under that a new five-year Risk Project. The risk project has a goal of producing a national seismic risk assessment.

Kris: BGC has undertaken risk assessment and mitigation for debris flow and debris flood areas in the Canmore area and throughout the eastern face of the Rocky Mountains (Creek and River Fans). They are working on 8 creeks in the Canmore area. For these they have done debris flow hazard potential research and mapping. The risk assessment for Cougar Creek has been done and several debris flow risk mitigations have been approved. The risk was based on risk to life. It is exciting to do a project with a full suite of the risk assessment through the mitigation options. As an outcome of this work BGC will produce a guide to the professional practice of determining mountain creek risk.

During BGC's work on debris flow risk in Alberta, they discovered that obtaining asset inventory data in Alberta to be challenging. Assessment records are housed by local jurisdictions; not the province. Each jurisdiction may use different assessment data management codes and schemes.

BGC is looking for alluvial fan mapping data for the Rockies.

Maggie: The NRCan group will be looking to complete a national seismic risk assessment for Canada in the new project.

Q: Does the GSC have any GIS format mapping for the alluvial fans for the eastern Rockies.

A: Check with Steve Grasby at the GSC in Calgary. I will check with Dave Huntley at the Vancouver Office.

Laurie: Students of the Royal Roads University Masters program in Disaster Emergency Management spent 3 days learning about municipal hazard risk management practice through use of a land-use decision simulation exercise, presentations on risk management case studies and working with the draft risk-based land-use guide. Students provided useful feedback on how to make the guide easier to use. Wayne Hirlehey and Bert Struik assisted with the presentation. The guide is too complex for beginners and it could use better tools for tracking progress.

RAUG participants: Recognized the challenge of producing guides for audiences with disparate interests and expertise. Maggie suggested that community flood mitigation reports in the USA may provide some guidance for what is useful and understood at the community level. The legislative context for flood and debris work is primarily Hazard based and not Risk based.

**ACTIONS:**

1. Find source for alluvial fan mapping for Rocky Mountain foothills.
2. Find a reference to a community flood mitigation report from USA.

***Upcoming events***

See <http://raug.mhrisk.ca> for events listing in left column

***Discussion: A new Risk Management scheme used for land-use decision support, in comparison to the ISO/CSA 31000 Risk Management standard. led by Bert Struik, emeritus geologist NRCan***

A new Risk Management Scheme was created for a Risk-based Land-use Guide that is being written for the Metro Vancouver area. That scheme was based on the ISO 31000 Risk Management Standard. It introduces the concepts of Hazards, Exposure, Vulnerability and Consequences typical to risk evaluations for natural hazard situations.

The ISO standard was used initially for the land-use guide. It was difficult to apply to land-use issues and was difficult to explain. Based on feedback received from various sources at the CRHNet annual symposium in Regina in November 2013, the new Risk Management scheme was created.

Here we compare the new scheme for land-use and the ISO standard for our thoughts on whether the targeted new scheme provides advantages over the ISO standard.

The following table has a summary of the comparative points from the presentation. The discussion about the points follows the table.

<b>STEPS</b>	<b>Risk Management for Land-use Decision Support</b>	<b>ISO Risk Management Standard 31000 (2009)</b>
1.	Establish the reason for managing the risk and community's priorities for safety and sustainability. It emphasizes the development of a community built level of acceptance for risk (risk tolerance criteria) based on its priorities (e.g. people's lives, infrastructure, buildings, environment). This uses language particular to land-use and hazards.	This does the same, except it does not establish the risk tolerance criteria. It defines risk criteria as “terms of reference against which the significance of the risk is evaluated”. They further describe these criteria as the ones used to preform the risk assessment. It uses language that is particular to corporate risk.
2.	Define Hazard Potential. Used the term 'hazard' because it is integral to conversations in the land-use community	Risk Identification: The ISO standard does not use the term 'hazard'. In this step it ask to find, recognize

	<p>in talking about threats. It uses 'hazard' because each risk calculation is hazard specific and is based on understanding the potential of the hazard.</p> <p>In the corporate world, a hazard can be loss of access to raw materials. In land-use it can be anomalous water heights (floods).</p>	<p>and describe the risk(s). In places it appears to confuse the term risk and hazards. Mostly it does not clearly separate the individual components of risk (potential, hazard, exposure, vulnerability, consequence). It does not describe how those components are used in the risk calculation. This step identifies risk-source,-events,-causes and -consequences.</p>
3.	<p>Identify What Could be Harmed by determining the assets exposed to the hazard and the vulnerability of those assets to the various potential of that hazard.</p>	<p>Risk Analysis. Determine the level of the risk. Here the two steps are out of sync. The land-use scheme determines two of the risk variables (exposure and vulnerability) and the ISO scheme calculates the hazards based on the information gathered in step 2.</p>
4.	<p>Calculate Potential Losses Calculates the consequences of a potential hazard event. This is sort of like step 3 of the ISO standard.</p>	<p>Evaluate Risk. Determines if risk calculated in step 3 is acceptable.</p>
5.	<p>Recommend Safe Land-use This is steps 4 and 5 of the ISO standard. Determine variance of the risk from the acceptable risk and mitigate the risk factors accordingly. Make a land-use recommendation based on the mitigation recommendations.</p>	<p>Risk Treatment How to mitigate the risk by mitigation of various parts that determine risk. Says the consequence can be mitigated. This makes no sense in the land-use scheme where potential consequence is the risk and to mitigate a potential consequence one must change the hazard potential, the exposure to the hazard and the vulnerability to the hazard.</p>
6.	<p>Monitor Success of the Decision Almost one for one with the ISO standard. Some terminology differences.</p> <p>Check whether the expected results were achieved and if not how to change the decision process to achieve the expected result.</p>	<p>Monitor and Review Check whether the expected results were achieved and if not how to change the decision process to achieve the expected result.</p>

**Discussion:**

Kris: It is important to use the term 'hazard' in the scheme. It is also important in how the work gets done and funded in a staged approach. The stages may be years apart in some community projects. The hazard potential may be determined many years before the risk is assessed. This may in part be controlled by available funding.

Laurie: In terms of sequence of steps. A community would first define what could be affected by a hazard and then define the area that can be affected by the hazard: the zone of impact. That would then trigger a revisit of the community assets that could be harmed in that zone.

Bert: That describes the “cycle or risk assessment” as used in the land-use guide. If you can establish the full community risk from a particular hazard, you can then evaluate the significance of the risk for a particular development within the context of that full community risk.

Laurie: Some people do not know what you mean by “determine how vulnerable you are”.

Kris: Initially, it's determine where's the hazard and why should we care. So the first step is determine the extent of the hazard area *and not* yet what is the likelihood it will happen. What is inside those hazard areas. At this stage, be cautious with the term vulnerability at this stage. Remove vulnerability from this because it is going to be formally defined later. At this stage it would be mainly about defining the inventory. At the same time to have a discussion with the community about what are their fears and what are the possible outcomes. Very importantly to recognize it is impossible to quantify all the risks. In most risks assessments you identify key risks of concern to the community and which can be measured without taking forever and within budget available. Quantify those risks in a way that can be compared to risk tolerance standards. Recognize the key risk components that can be calculated and managed, and which, if managed well, will reduce the other components of risk that are hard to quantify.

Laurie: I use the words a little differently: exposure and vulnerability are one thing. The impact is the other. It is useful to identify the impact.

Kris: At the early stage the impact could be estimated. At the later stage its potential would be calculated.

Laurie: Using the example of various magnitudes of earthquake shaking, which identifies the hazard, then identify it impacts the entire community and then everything is exposed to the hazard. Then for various weak structures you can identify which buildings would be damaged and how many people would be injured or killed.

Kris: These are all to do. At this stage in the process as in diagram 3, we are simply drawing a line around the areas that could be in the hazard zone. It is a non-trivial exercise. It is so essential to the process. It sets the stage for the next steps.

Bert: What I hear is that individual steps need to be separated more, rather than lumping a few in one box. The other part I hear is that the process of estimating the hazard zone is a first step, and should be followed by making an inventory of everything inside that zone and estimating what could happen to that in a hazard event. Use that information to determine to what level the hazard potential needs to be determined based on the estimated consequence. From the calculated hazard potential determine the potential consequence to the inventory in the hazard zone using stock damage functions (vulnerability).

Kris: That reflects what I am saying. At the early stage the vulnerability can not be easily determined, so that has to come later once the inventory and hazard potential are well determined.

Laurie: Yes. First you have to identify what is likely to be impacted and then how it will be harmed.

Kris: At this stage is almost like we are figuring out what is credible.

Bert: Okay. break down the steps and re-arrange them in the cyclic evaluation.

Bert: Step 1 box of the land-use scheme may need to be iterative. Re-evaluate through the process whether the community interests decided at the start are still those of value.

Laurie: the tolerance for risk may change with the hazard.

Kris: What is the controlling thing for risk for a specific community. Is it economic continuity or safety? Mostly it is safety (loss of life). Communities look around at other communities for help with this. On the economic side, through funding mitigations for risk are the safety and then the physical mitigation that protects property would reduce the potential number of lives lost.

Bert: Yes. That is what is meant in box 1 of the land-use risk management scheme. Are your priorities safety (people), economics (infrastructure), safety (shelter) and so on.

Laurie: Right. let's take example of Vancouver with the back-log of seismic retro-fitting of schools. Back to the issue of what is likely to be harmed. That is the community profile. Drawing of the hazard zone line will define what will be harmed. Then the likelihood of the hazard occurring is not that relevant (Bert disagrees on this point).

Bert: Feedback for one part. Is there any use in trying to use the ISO as a backdrop by making it a subset of the ISO. After having 6 steps then go to 12 or more steps that walks the elements of the process. Dump 6 and go to 12?

Laurie: It is useful to show the relation to the ISO, because communities need national standards and want to know how this fits with the national standard.

Kris: We have to do this each time because of the community interest in a national standard. Look at Australian standard.

Bert: wanted to make the process clearer for use with hazards and not re-invent the wheel. We can do the ISO subset comparison and amplify the steps and then make a flow chart from the steps.

Laurie: How about diagrams with bubbles and then the bubble lights up when you are at that point in the sequence. [tricky for a long list]. People are looking for where they are in the process.

end of time