Institute for Catastrophic Loss Reduction

CATtales

e-newsletter of the Institute for Catastrophic Loss Reduction

Volume 9, Issue 2
March/April 2015

Under development

Several Canadian communities have started incorporating land use planning tools, such as development permits, into their wildland fire management strategies

By Paul Kovacs, Executive Director and
Glenn McGillivray, Managing Director
Institute for Catastrophic Loss Reduction

Land use planning is a tool that many local governments around the world use to reduce the risk of flood damage. Now, several Canadian communities have begun to incorporate planning tools, such as development permits, into comprehensive community wildland fire management strategies.

Development permits are planning tools that local governments can use to manage development, protect the environment and address local health and safety issues. These permits can be used to combine management of zoning, site planning and minor variants into a single process.

As of late, more than a dozen communities in British Columbia and Alberta have started using development permits to control the extent, nature and location of new residential development in the wildland-urban interface - or WUI - essentially those places where housing and vegetation abut or comingle.

It appears the growing use of local government planning tools to address wildfire exposure in western Canada is poised to spread across the country. Indeed, this past June, a revised Provincial Policy Statement now requires that local governments in Ontario use their planning powers to address both flood and, now, wildland fire.

Fire on the landscape

Fire is an essential agent for ecological renewal and health in forests and grasslands. However, fire also has the potential to destroy homes, disrupt communities and threaten health and safety.

Loss and damage from fire in the WUI has been growing and is expected to increase significantly over the coming decades unless ▶

current practices change. In particular, the rising number of people who live in the WUI, coupled with the impact of climate change on expected area burned, are two factors that will drive fire losses in Canada higher absent action being taken.

For almost one hundred years, fire specialists have managed the risk of loss and damage from wildfire in Canada with little involvement from individual property owners and communities located in or near wildlands.

Historically, most fires were identified soon after they began, and were suppressed quickly. For many decades, there were few wildfire fatalities and relatively little damage to property.

Since the 1990s, however, there has been a trend of rising costs of fighting wildland fire and fire damage. These costs have been growing in Canada and have increased at an unsustainable rate in some other countries, including the United States and Australia.

The most damaging wildfires in Canadian history, in terms of the value of property destroyed, were relatively recent events in 2003 (Kelowna, British Columbia and nearby communities) and 2011 (Slave Lake, Alberta).

There is widespread agreement that the current approach to fire management in Canada needs to evolve.

Emerging fire management best practices are complex and seek to involve many stakeholders, including all levels of government, land managers, fire management and suppression agencies, home-owners and insurers.

Fire specialists continue to address fires when they ignite. There are also efforts to reduce the risk of large, uncontrolled fire through prescribed burning, thinning of forests and creation of fire breaks.

Beyond the forests, efforts are under way to involve property owners in managing the risk of fire damage. National programs such as FireSmart seek to educate property owners and community leaders about the role of fire in the ecosystem and actions Canadians can take to reduce the risk that fire enters a community.

New wildfire management tools are frequently identified and tested in this changing environment. Of interest here, however, is the emerging role of local government planning officials.

Over many decades, planners have provided important tools to address other hazards, most commonly the risk of loss from riverine flood. However, some progressive communities have recently begun using established tools, like development permits, to address the risk of damage from wildfire.

In June 2014, for example, the Province of Ontario included wildland fire in its planning statement for the first time. Prior to this change, only British Columbia included wildfire in its provincial planning policy statement.

Permits as wildland firefighting tools

Several local governments now include covenants in the development permit system requiring fire-resilient building materials for new homes.

Conditions for approving a development permit may include fire-retardant roofing, exterior walls sheathed with fire-resistive materials, windows with tempered or double-glazed glass, decks built with fire-resistant materials, screens on all eaves, attics and roof vents and chimney spark arrestors. ►

Provincial and territorial governments do not currently include provisions addressing the risk of damage from wildland fires in their respective building codes; fortunately, these public safety measures are now emerging in local government development permit requirements. The development permit system can also address landscaping and site considerations to reduce the risk that wildland fire will enter and spread through a community.

This may include a requirement for defensible space of at least 10 metres around each home free of combustible materials, thinned plantings and reduced combustibles in a zone extending at least 30 metres around each home, underground servicing for hydro, considerations to address the additional risk to structures on a slope, fire breaks and other community safety measures.

The overall objective is to ensure that new residential developments are designed with measures to defend against the risk of wildland fire blowing or burning into the community.

Most significantly, development permits provide local governments with the authority to control and even prohibit residential development in zones of high fire risk. There has been rapid growth in the number of people who live in or near wildlands across Canada, including more permanent residences and seasonal homes.

Evidence from the United States, Australia and emerging in Canada shows that growth in the number of people living in areas at risk is a critical factor that has been increasing loss and damage in the WUI. Development permits give local governments the authority and responsibility to control residential development in interface zones with high risk of fire.

Looking forward

Land use planning is a tool that local governments around the world use to reduce the risk of damage from riverine flooding. This is true in Canada as well, as many jurisdictions across the country have endeavoured to keep developers from constructing homes in floodplains and on floodways (some, as has recently been witnessed, with better success than others).

Now, it is emerging that several communities have similarly begun to use planning tools, such as development permits, to forge comprehensive community wildland fire management strategies.

The growing population living in the WUI and projections of increasing areas burned by wildfire due to climate change suggests these tools are likely to spread in the years ahead and, eventually, will be used by a number of local governments across the country.

Local planning decisions can provide an important contribution within a comprehensive community wildland-urban interface fire management strategy.

Establishing development permits looks to be an emerging policy instrument for local governments to address the risk of loss from wildland fire and will play a significant role in ensuring that communities located in the WUI are safe places to live, work and play. **CT**

New Global Alliance of Disaster Research Institutes formed

ICLR has announced that it will immediately form a new worldwide alliance with an international group of disaster research institutes.

The proposal builds on initiatives presented at the Sendai Framework for Disaster Risk Reduction 2015-2030. The 3rd U.N. World Conference on Disaster Risk Reduction was held in Sendai, Japan from March 14 to 18.

The Global Alliance of Disaster Research Institutes (GADRI) will serve as a forum for sharing knowledge and promoting collaboration on topics related to disaster risk reduction and resilience to disasters. GADRI will facilitate discussions on: planning and organization of natural disaster research; formation of international research groups to investigate current global disasters; establishment of an international network for timely communication related to natural disaster research; and, other issues relating to the promotion of natural disaster research.

"By forming GADRI bodies like ICLR will be able to better coordinate, communicate and share plans and information with like organizations around the world. It is key that organizations like ICLR not just work to reduce the impact of earthquake and severe weather at home, but also be plugged into international organizations that are doing similar work elsewhere," Paul Kovacs said. "GADRI will help facilitate this coordination."

GADRI's structure will include a president, a board of directors and members. In addition, there will be a secretariat that will facilitate and organize GADRI activities. The first secretariat will reside at the Disaster Prevention Research Institute of Kyoto University in Japan. **CT**

Flood Forecast: Climate Risk and Resiliency in Canada

Part two: Toronto

Being followed by the water (page 79)

In June 2013, Toronto and the rest of Canada watched as a storm submerged much of southern Alberta, causing untold hardship for people in High River, Calgary and nearby towns.

Just a few days after the initial flooding – the rivers still swollen and the downtown covered in puddles – I watched the news from my hotel room at the Calgary airport, my eyes glued to mayor Naheed Nenshi as he addressed the city throughout the emergency, providing hourly updates and warnings.

I was in town for the unexpectedly well-timed Canadian Water Summit, relocated, within hours of the rainfall, from the flooded Saddledome arena to the airport hotel. The event gave Alberta's water experts a forum to speak with their peers between long shifts of helping their family, friends and colleagues salvage their homes. A rapid-fire breakfast session captured some of their observations and outrage. Their warnings had gone unheard and Albertans were once again about to pay the price of inaction. Indeed, the Insurance Bureau of Canada eventually reported billions of dollars of damage to infrastructure, buildings and homes.

Back home, Torontonians nervously joked about how our city would handle such an emergency. If similarly fierce rains happened here, could we weather the storm?

We should have knocked on wood. Not more than three weeks later, the skies above Toronto opened and, with very little warning, dumped some 100 millimetres of rain in just two hours, exceeding the previous record for same-day rainfall, set on October 15, 1954.

The July 8 storm overwhelmed portions of the city's sewer system, sending more than a million cubic metres of raw sewage into streets, parks, Lake Ontario and the Don River. It left 37 of 69 city transit stations without service, trapped 1,400 passengers (and, famously, one snake) on a commuter train for three hours, left 300,000 residents without power, caused major flight delays at both the city and international airports and flooded unknown numbers of basements.

Leaving work that night, I abandoned any hope of public transit (streetcars were stalled in the middle of the streets), fashioned a makeshift raincoat from a garbage bag and began my journey home on foot. Darting between raindrops on King Street in the downtown centre of Old Toronto, I watched with amazement as a manhole became a geyser, shooting raw sewage into the air like a sloppy Jet d'eau de Genève. It was indeed a marvel, but hardly a triumphant celebration of city life.

I was one of the lucky ones. In the following months, Torontonians would learn the storm set a record for Ontario insured damages arising from a single natural disaster, triggering more than $940-million in private claims, according to the Insurance Bureau of Canada.

Other estimates revealed the storm would cost the City of Toronto more than $60-million in repairs, a mere $5-million of which was covered by insurance. Canadians are becoming increasingly aware that climate change is no longer some abstract idea.

And, according to the Intergovernmental Panel on Climate Change, Ontario can expect more frequent thunderstorms in the coming years. For an older city like Toronto, extreme wet weather is a growing risk and a serious challenge. But if you remove climate change from the equation (I've left most of the hydro-climatic science to my coauthor), the city would still have a big problem.

Here's what I know. Flooding is part of a natural cycle. Healthy crops grow on fertile land when floods spread nutrients across fields. In times of drought, a flood can help recharge watercourses and aquifers. But when we build cities and homes – what photographer Edward Burtynsky calls "human systems" – near water, we interrupt this natural flow. Pavement acts as a barrier or seal, forcing water to find new places to go, with the result that we put ourselves and our environment (both built and natural) at risk. And when Toronto flooded on July 8, we came face to face with our flawed urban composition. We have pretended we don't have to follow the rules.

The uncertainty of a changing climate demands a faster response, but making decisions and funding action in a municipality like Toronto can be akin to moving mountains. An unfit stormwater system, the crippling cost of replacing it, a host of competing political interests and a largely oblivious public prevent Toronto from becoming a resilient city. Unless we're willing to accept further and more extensive damage, it's time to make a big shift. We must define what we value and measure our actions accordingly. Is Toronto up to the challenge? ►

X

We must make a place for flooding to happen (page 123)

Before he spoke at the 2013 Columbia Basin Watershed Network Symposium, Canadian public intellectual and author John Ralston Saul told me in an interview he'd been rethinking the relationship we have with place.

"As Canadians, we've taken this view that humans are on top and everything is here to serve us, but it doesn't work that way," he said.

> Canada has a long history of benefiting from its commodities and convincing ourselves that we're smart as opposed to lucky. We have fished, mined, polluted – you name it, we've done it – as if we have the right to do it, and moved on. Are we able to accept that we were extremely lucky to get a place with all of these commodities, and that to be successful we have to respect these commodities rather than cash in? We have to learn that commodity-rich countries succeed only when they understand the relationship between people and place, and [that] ease of making short-term benefit from these commodities is a destructive delusion. We have to make proper use of our role.

Hearing those remarks, I couldn't help but draw parallels to urban flooding. How does it reflect the relationship Torontonians have with their surroundings?

In building cities, we have largely ignored the natural flow. In Toronto we've buried entire rivers and built neighbourhoods on top of them like they never existed. We take our drinking water from Lake Ontario and at the same time use the lake as a repository for our treated waste and, more passively, our contaminated stormwater, whether short shower or torrential downpour.

In an interview about his recent Water series, photographer Edward Burtynsky told me what he learned during his five-year study of the resource. "While water is forgiving and can rehabilitate, it's not infinitely resilient."

At what point does the lake reach its tipping point? As the insurance dilemma shows, it might be when we start to see the threat flooding poses to our prosperity. Right now, that means flooded basements, so we engineer solutions to avoid that problem. In a "new normal" future, however, could it mean a real threat to our water supply? What effect would that have on our Western understanding of prosperity?

John Ralston Saul had more to add, from the interview cited earlier:

> [Economics] is a social phenomenon. It's about how we want to live and how we should go about it. It has always been that. The last 40 years have been about pretending that economics had their own truth and you could impose that truth on human beings and society, even if it was destructive. The next big question will be whether or not we've learned from that.

At the root of our approach to urban flooding, it seems, is a set of just such questions. How do we want to live? Do we want to continue pursuing the same notion of economy, the success of which, by the way, rests entirely on the health and availability of our water? And where exactly does a healthy environment fit into the picture?

While it seems logical to say we should endeavour to respect and protect the waterways that make our lives and cities possible, the majority of the time we bury this responsibility like our rivers, allowing it to surface only during times of emergency or when it affects the bottom line.

Municipalities worry about revenue and try to attract developers so they can grow their property tax base. Insurance companies want to see municipalities spend funds on protecting themselves and their constituents from flooded property so that insurance claims will go down. Homeowners want to know their assets are safe from being devalued and that municipalities are not wasting their tax dollars. In navigating these choppy cross-currents, we rarely stop to think about the long-term impacts.

Who decides how to manage this risk? I don't have that answer. I'm not sure anyone does. But I do know more focused work could put Toronto on the road to resilience. ►

Flood Forecast: Climate Risk and Resiliency in Canada

Rocky Mountain Books
www.rmbooks.com

ICLR's Kovacs opens Premiers' climate change summit

Paul Kovacs, executive director of ICLR, discussed the state of science with respect to the impacts of climate change on communities in Canada, at the Climate Change Summit in Quebec City April 14.

Kovacs was part of a four-member international briefing team, joined on the podium by Christiana Figueres, executive secretary of the United Nations Framework Convention on Climate Change; Mark Kenber, CEO of The Climate Group; and Alain Bourque, executive director of Ouranos.

"Climate change is expected to make Canada wetter, warmer and stormier," Kovacs said. "Across Canada we expect more extreme rainfall events that will destroy public infrastructure and damage homes, more hot days that threaten our health, and larger and more frequent storms that disrupt society. In addition, we expect more coastal erosion, permafrost thaw and wildfires in vulnerable regions of Canada."

Kovacs told the attending Premiers, territorial leaders and more than 100 other summit participants that "the consequences of these impacts can be offset to some extent over the long-term by reductions in international greenhouse gas emissions and over the near-term by investing in adaptation."

The current adaptation priorities for ICLR set by its member insurers include: identify and promote best practices to reduce the risk of sewer backup; identify building design and construction practices to reduce damage to new homes; and, identify actions for homeowners to protect their property. **CT**

Flood Forecast cont...

Conservation authorities, and to a similar extent the City, realize we can't do much to stop the storms from coming, but we can be better prepared to handle them.

We must adopt whole-system thinking and create useful, directive policies with clear language and expected outcomes. We must also adapt our existing systems. Throwing money at flooded basements does not solve the problem, and short of ripping up and replacing all our pipes, we can never fully remove flood risk. But we can "slow the flow" with green infrastructure projects and work toward capturing and treating stormwater before we release it into Lake Ontario. With the knowledge that the environment fuels the economy (and not the other way around), we can think bigger than just protecting basements.

For instance, could we feasibly "daylight" some of our buried urban watercourses to prevent rain from entering the sewer system? Even better, could we move to a localized urban system that doesn't require sewers at all? Dutch scientist Grietje Zeeman works in this space and sees "new sanitation" – wastewater separated at the source, recycled and returned to the system – as the future. Can we envision a world without bypasses and overflows, or is it too difficult for cities to see past sunk capital?

True resilience is not just about weathering a storm; it's about a new collective mindset. As Lake Ontario Waterkeeper's Krystyn Tully asks, can we figure out how to run a city and respect the waterway that supports it? Can we make a place for flooding to happen?

When we develop land, we need to demand smarter design and hold the developers accountable. City plans need to include more places for flooding to happen. Unlike Marie Curtis Park in Long Branch, which honours the people who lost homes and relatives to Hazel, and the reeve who came to their aid, parks should not be built in tribute to victims of disaster; they should celebrate and respect natural systems. They should be symbols of progress. They should encourage recreation and bring people closer to water.

Finally, we need to act, and soon. It took three major storms, including Hazel – and untold loss – for Toronto to decide to turn part of Long Branch into Marie Curtis Park. We've learned since then, but we still experience events that lead to great loss. At what point do we understand the risks, demand action and make the move to truly resilient cities? **CT**

Institute for Catastrophic Loss Reduction

20 Richmond Street East
Suite 210
Toronto, Ontario
M5C 2R9
Tel: (416) 364-8677
Fax: (416) 364-5889
www.iclr.org
www.basementfloodreduction.com

Mission
To reduce the loss of life and property caused by severe weather and earthquakes through the identification and support of sustained actions that improve society's capacity to adapt to, anticipate, mitigate, withstand and recover from natural disasters.

Western University
Boundary Layer Wind Tunnel
1151 Richmond Street
London, Ontario
N6G 5B9
Tel: (519) 661-3338
Fax: (519) 661-3339
www.iclr.org
www.basementfloodreduction.com