AGLG

PERSPECTIVE SERIES
APRIL 2018

AUDITOR GENERAL FOR LOCAL GOVERNMENT

ACCESSIBILITY • INDEPENDENCE • TRANSPARENCY • PERFORMANCE

IMPROVING LOCAL GOVERNMENT

EMERGENCY MANAGEMENT

Considerations for Local Government Council and Board Members

RELATING TO AGLG AUDIT TOPICS:

Local Government's Role in Ensuring Clean Drinking Water
Emergency Management in Local Government

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This booklet offers suggestions to all local governments interested in enhancing their emergency management practices. We recognize that every local government faces unique circumstances, including their size, community characteristics and the organization's maturity and capacity. As a result, how each local government implements these suggestions will vary.

THE AGLG PERSPECTIVES SERIES

The office of the Auditor General for Local Government (AGLG) was created to carry out performance audits of local government[1] operations in British Columbia and provide local governments with useful information and advice. The AGLG's goal is to help local governments fulfil their responsibilities to be accountable to their communities for how well they take care of public assets and achieve value for money in their operations.

The AGLG Perspectives Series booklets are designed to help improve local government performance. These booklets complement the AGLG's performance audit reports by providing local governments across the province with tools and more detailed information relating to the topics we examine.

Some AGLG Perspectives Series booklets are written mainly for elected council and board members, while others are directed more toward local government staff. These booklets are also helpful to others who take an interest in local government in British Columbia.

THIS BOOKLET

This Perspectives Series booklet is written mainly for elected council and board members. We hope to highlight:

- The importance of emergency management
- How emergency management can affect critical services and community resilience
- Why an integrated and embedded approach to emergency management is necessary

With valuable feedback and review from subject matter experts, we have developed this booklet in a format meant to help elected officials identify the principles and elements of a resilient emergency management program.

We hope this booklet will help elected officials determine how prepared your local government is for an emergency. It explores emergency management broadly at a local government level, while also providing a focus on drinking water – two audit topics the AGLG recently explored.

[1] Local governments *(as defined by the Auditor General for Local Government Act) are municipalities, regional districts, greater boards, commissions, corporations or other organizations that are financially controlled by one or more municipalities, regional districts or greater boards and any other local body that may be prescribed by regulation at some point in the future.*

HOW THE AGLG'S AUDIT WORK CONTRIBUTED TO THIS BOOKLET

The AGLG recently conducted several audits on topics such as drinking water and emergency management in local governments. From our audit findings and further research, we learned that local governments often face the following challenges:

- Lack a strategic approach to emergency management
- Lack organization-wide business continuity planning
- Focus primarily on the first three phases of emergency management (mitigation and prevention, preparedness and response procedures), with little emphasis on recovery strategies and resilience
- Have insufficient knowledge of emergency procedures and may be unaware of roles and responsibilities of various parties involved
- Rarely review or revise emergency response plans after their initial development
- Rarely test, practise or consistently implement emergency response plans
- Do not recognize the impact of emergencies and recovery impact on vital systems such as Information Technology services or communications
- Do not always have viable or accessible alternative water supplies available in the event of emergencies affecting drinking water services

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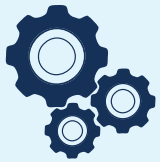
UNDERSTANDING THE EMERGENCY MANAGEMENT FRAMEWORK



1 WHAT IS EMERGENCY MANAGEMENT AND WHY IS IT IMPORTANT?

Emergencies and disasters, such as earthquakes, severe drought, aircraft crashes and train derailments causing fire and/or chemical release can strike at any time with little or no warning. These events can have devastating impacts on the environment, communities and their economies. Emergency management is how we can manage and organize resources and responsibilities to safeguard, maintain and restore the health and wellbeing of affected communities.

Like many other parts of the world, British Columbia (B.C.) is vulnerable to natural, human-induced and technological hazards and disasters that can affect urban and rural communities. Most emergencies are local in nature, so it is important for local governments to have a plan of action to minimize the effects of any emergency on the community.

Local governments across B.C. need to prepare for emergencies while also addressing trends that can influence their severity. These trends include ageing infrastructure, changing population size and demographics, changing workforces as well as impacts of climate change. In recent years, there has been increasing occurrence and severity of floods, droughts, wildfires, winter storms and heat waves. Combined, these trends may strain the capacities of local governments to respond to emergencies and maintain continuity of essential services.

B.C. has a diverse climate and geography and faces a similarly diverse range of hazards, such as earthquakes, tsunamis, contaminant release, wildfires, mudslides and floods and droughts. All local governments are at risk of service disruptions due to disasters or accidents, sabotage, power or energy outages, pollution, hazardous material spills or cyberattacks and hacker activity. It is important for local governments to understand the risks they face. While a local government may not be able to prevent all emergencies from occurring, it is able to develop a robust plan of action to ready for an effective and timely response, as well as a plan for recovery.

Failure to prioritize emergency management supported by staff training and exercises may result in an increased risk of loss of life, property damage, environmental damage, as well as significant financial loss. There is also increased risk of litigation if a local government's response was not implemented in a professional manner or it can be shown that the local government was not adequately prepared.

EMERGENCY MANAGEMENT FRAMEWORK

It is important for each local government to have an emergency management framework, which is a high-level approach to planning for and dealing with potential emergencies, as well as recovering from an emergency (see *Figure 1*). An emergency management framework can make it possible for a local government to stay proactive and one step ahead of emergencies.

The council/board and senior staff of a local government with an effective emergency management framework recognize and support integrated planning, preparation and practice, adequate staff training and resourcing. A well-articulated framework supports staff in understanding their roles and responsibilities and enables them to respond efficiently, effectively and rapidly to an emergency situation.

It is important to ensure that the framework is based on collaboration, coordination, responsibility, transparency, and an intention to learn continuously. Local governments with strong emergency management frameworks engage key stakeholders and residents in various initiatives, including volunteer programs, designed to improve emergency response and recovery as well as increase the community's resilience.

EMERGENCY MANAGEMENT FRAMEWORK

COHERENT ACTION Establish clear and appropriate roles, responsibilities, authorities and capacities of emergency management partners based on widely shared expectations, understanding and support in order to ensure collaboration, coordination and integration by all partners and effective use of emergency management resources and execution of activities.

RESPONSIBLE Carry out emergency management roles and activities in a responsible manner and ensure legal, policy frameworks and other arrangements establish guidelines and standards so that due diligence is exercised while accountability is respected in the conduct of emergency management activities.

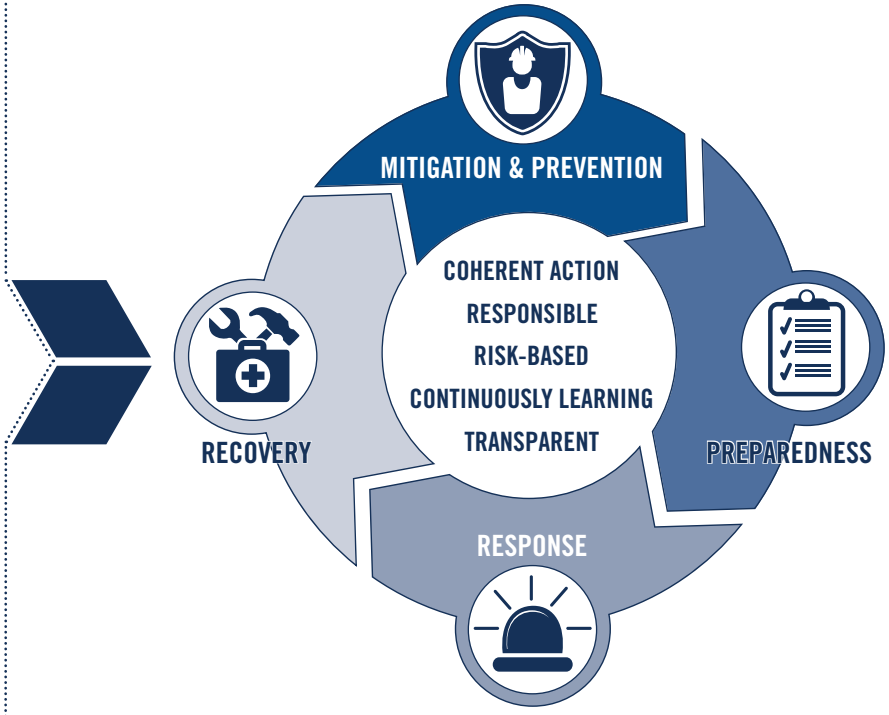
RISK-BASED Emphasize the importance of assessing vulnerability to all hazards in order to determine the optimal balance and integration of measures to address vulnerabilities and risks.

CONTINUOUSLY LEARNING Generate knowledge from lessons learned through quantitative and qualitative information and develop improved practices to share widely. Systematic approaches to learning from events can increase effectiveness and improve emergency management practices and processes, ultimately reducing recurrence of problems.

TRANSPARENT Aim to be as open as possible regarding the work done in emergency management by providing clear communications by appropriate authorities before, during and after an emergency.

SOURCE: *Ministers Responsible for Emergency Management, An Emergency Management Framework for Canada Second Edition January 2011*

Figure 1 — EMERGENCY MANAGEMENT FRAMEWORK



SOURCE: *[Adapted] from Emergency Management BC web content*

EMERGENCY MANAGEMENT PROGRAM

Preparation and planning enables local government staff to respond efficiently, effectively and rapidly to an emergency situation as well as increasing resilience. A robust emergency management program can be thought of as a multi-step process that includes the emergency response plans required by provincial legislation. It is a continuous cycle—as opposed to a one-off process—comprising of four interlinked phases (see *Figure 2*):

A local government's emergency management program sits within the overarching framework of emergency management (refer to *Figure 1*) and also includes other important aspects such as staff training and exercises, financing, relationship-building and continuous learning.

Figure 2— EMERGENCY MANAGEMENT PROGRAM

SOURCE: *[Adapted] from Public Safety Canada, Emergency Management Planning Guide 2010-2011*

2 WHAT IS RESILIENCE AND HOW DOES IT RELATE TO EMERGENCY MANAGEMENT?

Resilience is about making people, communities and systems better prepared to withstand natural and man-made catastrophic events, so they can bounce back quickly and adapt.

"*Humans are not born with resilience—we learn it, adapt it, and improve upon it. The same is true for organizations, systems, and societies*" (100 Resilient Cities[2]).

The key to resiliency is being proactive—taking action now. Sharing knowledge, plans, expertise and resources can also increase resilience. So local governments can develop resources and build capacity by working with local communities and business as well as key stakeholders such as government agencies, utilities, public health and first responders.

EXAMPLES OF LOCAL GOVERNMENT EMERGENCY MANAGEMENT PROGRAMS

- Powell River Regional District Emergency Program has an established volunteer program, community notification system, preparedness documents and information on how to build emergency kits and prepare for storm surges and wildfires.

- North Shore Emergency Management is an inter-municipal agency that provides emergency management services to three North Shore communities, including coordinated planning, response, and recovery strategies.

- The City of Vancouver Emergency Management Program includes an established volunteer program, workshops, support hubs, preparedness documents and information on how to build emergency kits.

SOURCE: *Powell River Regional District, North Shore Emergency Management, and City of Vancouver web content*

[2] *A program by the Rockefeller Foundation dedicated to helping cities around the world become more resilient.*

3 WHY IS IT IMPORTANT FOR LOCAL GOVERNMENTS TO FOSTER RESILIENCE IN THEIR COMMUNITIES?

Building resilience must happen at several levels: households, neighbourhoods, connected communities, businesses and government (see *Figure 3*). Planning and implementation of emergency initiatives should include educating the public and other key stakeholders (from encouraging participation in volunteer programs to inter-agency exercises) to understand emergency mitigation, improve emergency preparedness, response and recovery and increase resilience.

For example, in New Zealand, local authorities have recognized their important role in supporting and building community resilience. After a catastrophic earthquake, the Mayor of Christchurch (Lianne Dalziel) noted:

"*If the earthquakes taught us one thing, it's that there is strength in our communities coming together to take charge of their destiny.*"

COMMUNITY RESILIENCE

In Vancouver, Dunbar Earthquake and Emergency Preparedness (DEEP) is a citizen's grass roots effort fostering personal and neighbourhood preparedness to make the community more resilient. They provide workshops, training exercises and advice on preparing emergency kits. They also function as a disaster support hub. The group is one of four community groups within the City of Vancouver to receive support and funding under the international program 100 Resilient Cities, which is funded by the Rockefeller Foundation.

SOURCE: *Dunbar Earthquake and Emergency Preparation web content*

PERSONAL PREPAREDNESS

A recent IPSOS survey on personal preparedness in B.C. found that many British Columbians are unprepared for emergencies. Only 54% of British Columbians have a household emergency response plan and only 13% of these are complete.

SOURCE: *IPSOS Public Affairs, Personal Preparedness Survey Report 2018*

Figure 3 — COMMUNITY RESILIENCE TRIANGLE

SOURCE: *Dunbar Earthquake and Emergency Preparation web content*

LOCAL IMPACT OF NEW ZEALAND EARTHQUAKES

In September 2010, a 7.1 magnitude earthquake struck New Zealand's Canterbury region, and was followed over succeeding months by aftershocks of 4.9 and 6.3 magnitude. The last of these caused over $2 billion of damage to Christchurch's infrastructure (a city of about 400,000 people) and decimated its downtown core.

Over half of the city's roads were damaged: 50,000 potholes, 30 bridges and 600 retaining walls had to be fixed and approximately one-third of the buildings needed to be demolished. About 424 kilometres of underground water and sewer pipes had to be fixed or replaced.

One of the first priorities was to restore potable water supply to all homes. This was achieved within a week of the initial earthquake and in just over a month following the last major aftershock. Returning sewerage services to all households took several months.

There are many parallels between the Christchurch example and British Columbia, which highlights the importance of planning, community resilience and recovery.

SOURCE: *Australian Civil-Military Centre, Disaster response: lessons from Christchurch 2012*

RESPONSIBILITIES IN EMERGENCY MANAGEMENT

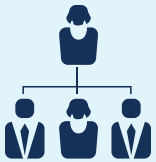
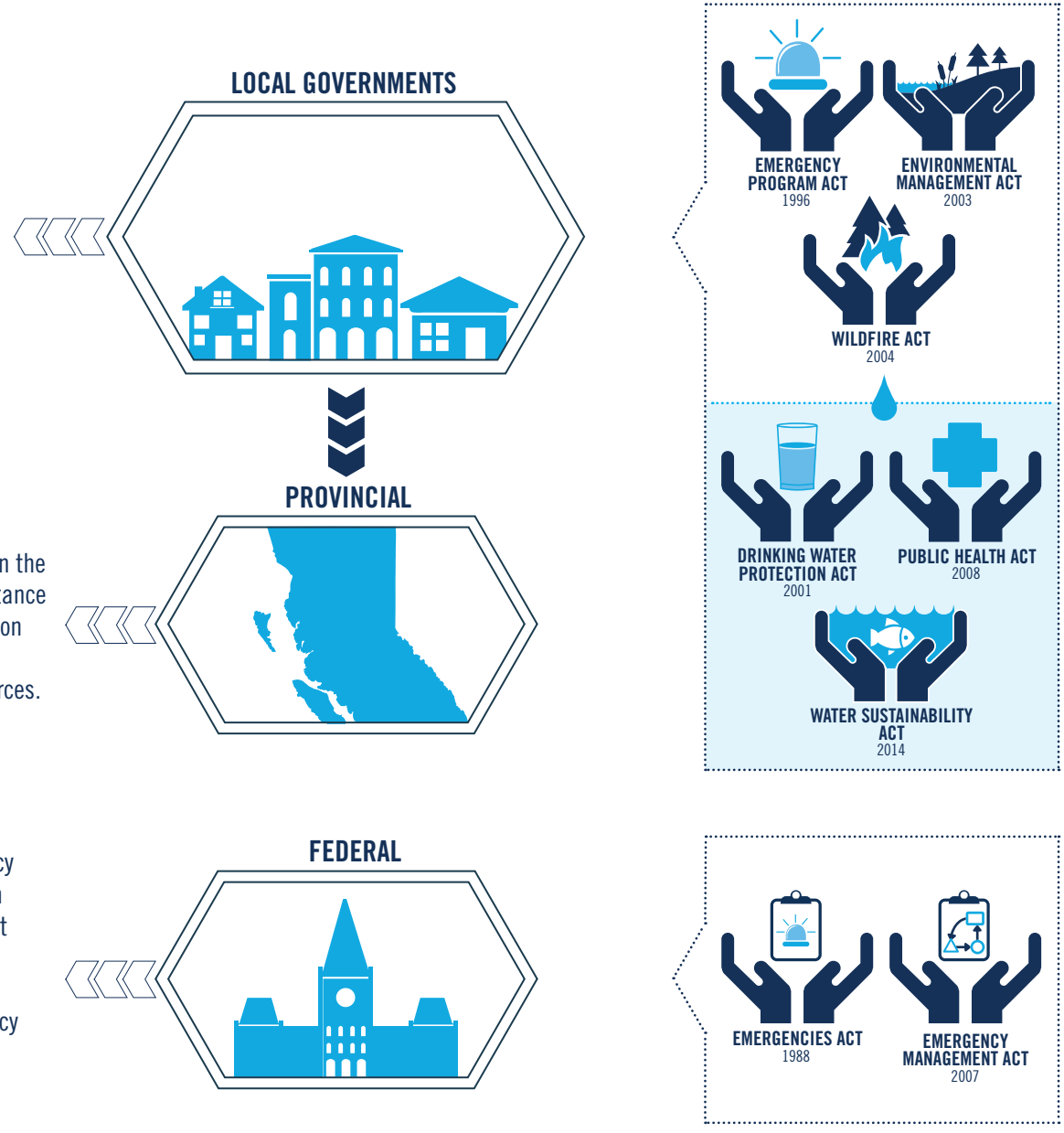


Figure 4— ROLES AND RESPONSIBILITIES FOR EMERGENCY MANAGEMENT



4 WHAT IS THE ROLE OF ELECTED OFFICIALS?

Elected officials need to understand their specific role in an emergency, and need to support the expert staff that they have in their organization and to whom they have provided the resources for appropriate training and preparation (see *Figure 4*).

The council/board[3] collectively—not individual elected officials—has the authority to respond to an emergency. Operating as a council/board, elected officials approve the emergency management plan, budgets and resources and can enact a local state of emergency.

Elected officials may not have particular expertise in emergency management and normally should not be a part of the incident response team or the emergency operations centre. Newly-elected officials sometimes may think their role is to direct resources and give out orders during an incident. However, to ensure appropriately trained and prepared personnel maximize safety in such cases, elected officials should refrain from this.

The mayor/chair and/or designated councillors/directors may have a role as the "spokesperson" for media relations, with the support of the manager of emergency services or the incident commander.

[3]Council—*means the duly elected council of a municipality.*
Board—*means the board of directors of a regional district.*

5 WHO SHOULD BE INVOLVED IN EMERGENCY MANAGEMENT?

It is important for a local government to understand jurisdictional roles and responsibilities for emergency management.

Because most emergencies are local in nature, they tend to first be managed at the local level. When a situation escalates beyond the first responder (police or fire department) level, then local government leads the next response.

If the situation escalates further or is catastrophic, then the provincial government leads and coordinates further actions by activating the provincial emergency management structure. This is known as the British Columbia Emergency Management System. In this situation, the local authority would generally still lead the emergency response in its jurisdiction and the province would provide support. The province would only lead if specifically asked to do so.

The federal government can become involved in an emergency where it has primary jurisdiction and responsibility as well as when it receives requests for assistance from the provincial government due to the scope of the emergency and/or capacity limitations. Department of Indigenous Services Canada is responsible for supporting emergency management in on-reserve First Nation communities.[4]

Overall, the different levels of governments have shared responsibilities for emergency management and their roles and responsibilities in an emergency depend on the nature and scope of the event.

THE BRITISH COLUMBIA EMERGENCY MANAGEMENT SYSTEM (BCEMS)

BCEMS is recognized as a standard system for emergency response and is currently mandated for use within the Government of B.C.

We recommend that local governments adopt this process as a standard of best practice. In addition to the strengths of this system, local governments that use it are well positioned to apply for provincial financial assistance.

[4] *On April 1, 2017 Emergency Management BC entered into a 10-year bilateral agreement with the Department of Indigenous Services Canada (DISC) to provide emergency management services that includes the provision of mitigation, preparedness, response, and recovery activities.*

EMERGENCY PROGRAM ACT—RESPONSIBILITIES OF LOCAL GOVERNMENTS

In B.C., the 1996 *Emergency Program Act* and associated regulations provide the legislative framework for managing disasters and emergencies. This legislation mandates three important responsibilities for local governments:

1. Develop an emergency plan

Under Section 6 of the *Act*, councils/boards (referred to as 'local authorities' in the *Act*) are responsible for directing and controlling their emergency responses. Local governments are required to have emergency plans that address the preparation for, response to, and recovery from emergencies and disasters.

The Local Authority Emergency Management Regulation (1995) is important as it describes what must be included in the plan, as well as duties and powers of local government (for example, it requires local authorities to identify potential risks and hazards, develop plans that are regularly reviewed and updated, conduct training and exercises, establish priorities for restoring essential services and others).

2. Establish an emergency management organization

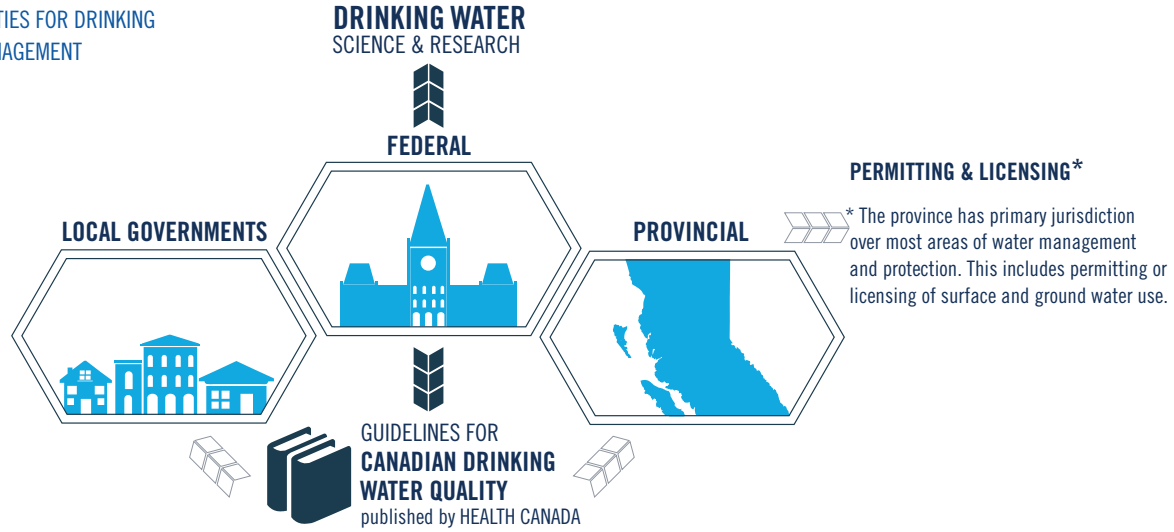
Under Section 6 of the *Act*, local authorities must also establish and maintain an emergency management organization to address their responsibilities. They may delegate their powers and duties to a committee, an emergency management organization or an emergency management coordinator (except for the power to declare a state of local emergency).

3. Implement the emergency response plan

Section 8 of the *Act* addresses the implementation of local emergency plans. Emergency response plans are discussed in more detail later in this booklet.

In addition to the provincial emergency management legislation, the *Drinking Water Protection Act* (Section 10) and the Drinking Water Protection Regulation (Section 13) requires all water suppliers to have a written Emergency Response and Contingency Plan (see *Figure 5*).

Figure 5 — ROLES & RESPONSIBILITIES FOR DRINKING WATER EMERGENCY MANAGEMENT



LOCAL GOVERNMENTS WATER SYSTEMS

Local governments that operate water systems may manage the day-to-day operations of drinking water source protection, supply, treatment and distribution and must comply with provincial legislation. A typical water system includes a watershed or aquifer, intakes, storage facilities, treatment facilities, pump stations, pressure-reducing stations, fire hydrants, connections to individual properties and–in some cases–water meters.

6 HOW DOES A LOCAL GOVERNMENT DETERMINE WHO IS RESPONSIBLE FOR WHAT IN THE EMERGENCY MANAGEMENT ORGANIZATION?

A local government may structure its emergency management organization as it sees fit, taking into account the community's circumstances, such as its population size and characteristics, geographic features, the number and expertise of local government staff and so forth.

The local government should clearly articulate reporting relationships relating to emergency management, in particular the relationship between the council/board, chief administrative officer and the emergency management coordinator to ensure there are no ambiguities when the emergency plan is put into action.

Under Section 6 of the *Emergency Program Act*, the local authority may appoint a committee to advise and assist and may also appoint a coordinator for the emergency management organization. The local authority may, in writing, delegate any of its powers and duties to the committee, the emergency management organization or the coordinator, except for the power to declare a state of local emergency.

EMERGENCY OPERATIONS CENTRE MANAGEMENT CONSIDERATIONS - POLICY GROUP

When an Emergency Operations Centre is activated, local authorities may establish a policy group comprised of the head of the local authority (for example, the mayor) and other elected officials and senior executive officers in order to provide the centre with policy direction. An example of this level of policy direction is the declaration of a state of local emergency.

SOURCE: *Justice Institute of BC, Emergency Management Division. Emergency Operations Centre Operational Guidelines 2nd Edition*

EMERGENCY MANAGEMENT COORDINATOR

Best practice for local governments is to hire a full-time dedicated emergency management coordinator to whom council delegates responsibility.

The coordinator is the key organizational contact for emergency management and should have a high profile in the organization with direct access to key decision-makers.

The coordinator leads the development of response plans, business continuity plans and supports communications plans. The coordinator ensures that staff are adequately trained and plans are routinely exercised so that staff are familiar with their roles and responsibilities.

Having a dedicated coordinator, even if part-time, is critical to ensure the local government can respond quickly and effectively in an emergency.

Where a local government cannot (or chooses not to) hire an emergency management coordinator, the council/board is responsible for dealing with emergencies. This is not ideal. It is also not ideal to have the chief administrative officer or fire chief serve as the emergency management coordinator. For example, conflicts of interest can arise when individuals with other significant responsibilities in the organization (such as the daily operations of the fire department or supervising other public safety areas) are also tasked with emergency management coordination.

Local governments that find it difficult to hire a full-time emergency coordinator may want to consider creative arrangements such as sharing a full-time coordinator with another (nearby) municipality, First Nation or regional district.

7 WHY SHOULD EMERGENCY MANAGEMENT BE INTEGRATED ACROSS LOCAL GOVERNMENT DEPARTMENTS?

An emergency can affect every aspect of a local government, from engineering and operations to IT, communications and finance. For this reason, emergency management must always be a shared responsibility.

Inter-departmental coordination is the best way to ensure that an emergency response makes the most effective and efficient use of resources. A prudent local government makes emergency management part of its organizational culture rather than considering it a distinct, stand-alone project.

EMERGENCY SOCIAL SERVICES

Emergency social services is critical to communities during response and recovery. British Columbians forced from their homes by fire, floods, earthquakes or other emergencies may receive emergency social services for up to 72 hours. Services may include food, lodging, clothing, emotional support, information about the crisis and family reunification. There may also be special services like first aid, child minding, pet care and transportation.

Under the *Emergency Program Act*, municipalities, First Nations communities and regional districts are responsible for providing emergency social services, which is an important component of local emergency plans.

The Province of B.C. supports local governments in developing an emergency social services program though Emergency Management BC[5]. Many local governments depend on volunteers to support the program. There are an estimated 5,000-trained emergency social services volunteers in B.C.

Flooding in April 2017 forced over 2,500 British Columbians to be evacuated while 2017 forest fires displaced more than 65,000 people over a six-week period. Volunteers were the backbone of the response.

The numerous After Actions Reports pointed out the need for enhanced emergency social services resources.

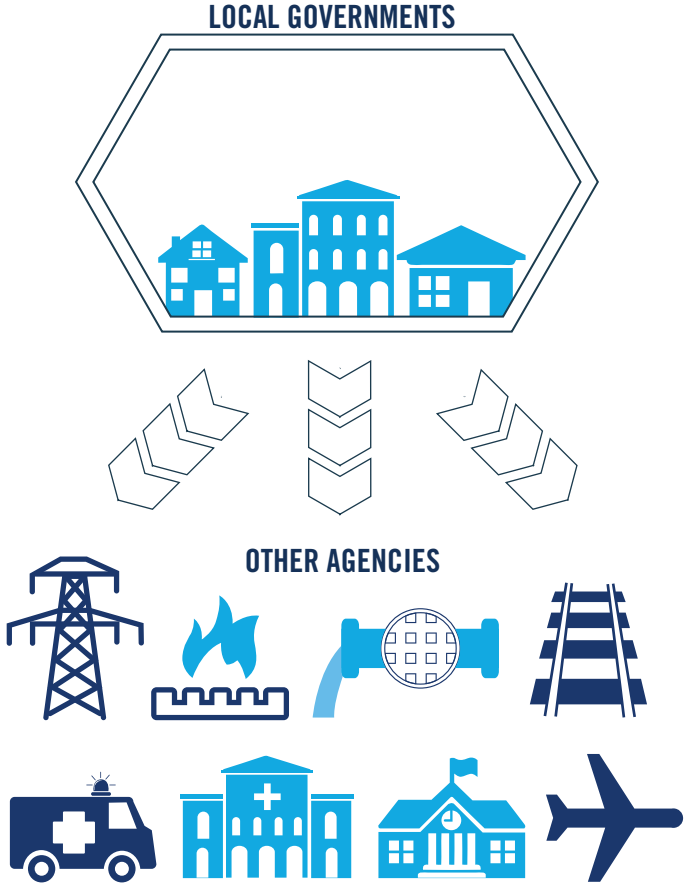
SOURCE: *EMBC web content*

[5]Emergency Management BC *is the province's lead coordinating agency for all emergency management activities, including planning, training, testing and exercising, to help strengthen provincial preparedness.*

8 WHY ARE INTER-AGENCY RELATIONSHIPS IMPORTANT TO EMERGENCY MANAGEMENT?

Another critical component is the establishment of partnerships and direct communication lines with other levels of government and the other agencies that will also be involved in an emergency (for example, power, gas, water-sewer, railways, roadway authorities, transit authorities, airport authorities, school boards, health services, hospitals and ambulance services). These partners must be consulted and involved in the creation of emergency management plans. In an emergency, other agencies may be fully involved doing their own priority work with no spare capacity to provide the assistance. Any potential emergency assistance needs to be discussed and worked out ahead of time.

Leisure or recreation facilities are often overlooked, but they too play a critical role during an emergency. Ice arenas, schools, and community centres can be used as temporary facilities or provide reception areas and shelter for those displaced or otherwise in need.



9 WHY IS IT IMPORTANT TO INVOLVE EMERGENCY MANAGEMENT AND DRINKING WATER DEPARTMENTS IN THE DEVELOPMENT OF EMERGENCY PLANS?

The provincial *Emergency Program Act* requires an emergency management plan and the *Drinking Water Protection Act* requires all water suppliers to have a written emergency response and contingency plan (ERCP).

In our performance audit work, we found that local government (when the local government is responsible for a drinking water system) departments typically develop these plans separately from one another. For example, local governments may have their water utilities department develop their plan, without the involvement of the local government's emergency manager.

Drinking water is a critical service, so the plans should be linked. The most effective approach would be to have the emergency management coordinator and drinking water staff develop the plans together.

If a community's water utility is separate from the local government, the local government must be involved in the creation of the plan.

Best practice is an integrated approach that connects not just emergency management with operational staff, but also includes, for example, land-use planning, fire department and communication department personnel, as these departments have a role to play and will be implementing their part of the plan during an emergency response.

It is becoming increasingly important to consider the potential impacts of land-use decisions on water resources (such as drought, flooding and risks of contamination), particularly as the climate changes and community populations change.

EMERGENCY PROGRAM ACT
1996

DRINKING WATER PROTECTION ACT
2001

HOW PREPARED IS YOUR LOCAL GOVERNMENT TO HANDLE AN EMERGENCY?

10 DOES YOUR LOCAL GOVERNMENT HAVE A RESILIENT EMERGENCY MANAGEMENT PROGRAM?

A prudent local government has an emergency management program that includes four core phases (see *figure 6*):

1. Mitigation and prevention of risks (risk assessment and management)
2. Preparedness activities
3. Coordinated response
4. Recovery and reconstruction

Such a program should be facilitated by a dedicated emergency management coordinator and include important aspects such as staff training and practices, sustainable financing, relationship-building and continuous learning.

Figure 6 — EMERGENCY MANAGEMENT PROGRAM

SOURCE: *Emergency Management BC web content*

MITIGATION AND PREVENTION OF RISKS

A local government is better prepared to address potential emergencies when it identifies and understands the specific events to which it is vulnerable.

Emergency planning should aim to prevent emergencies from occurring and, when they do occur, have a good action plan in place to mitigate their effects. By focusing on prevention and mitigation actions (well in advance of hazards and disasters), local governments can lower their vulnerability and increase their resiliency. A comprehensive understanding of these risks (existing and potential) is imperative for critical services such as drinking water.

Risk assessment considers the local government's services, facilities and assets, identifying the strengths and weaknesses of each, as well as the types of threats (emergencies and risks) that could affect them. The local government estimates the likelihood of each threat occurring, how often it might occur and identifies possible response strategies. Risks need to be balanced with available mitigation options that can be undertaken with available resources.

EXAMPLE OF RISK ASSESSMENT FOR DRINKING WATER

For drinking water, a risk assessment would identify threats to water quality and quantity throughout the system, from the water source all the way through to the customer (including the water treatment plant, storage and distribution system).

Threats to water quality can include sources of contamination, human errors, technical failures, and malicious acts. The risk assessment should include an evaluation of the potential impact of an emergency on IT and communication services (including hardware, software, geographic information systems (GIS), mapping and SCADA[5] systems), which have a significant impact on drinking water quality, as well as determining critical dependencies, for example, high priority customers such as hospitals.

For a critical service like drinking water, completing this "source-to-tap assessment" is one of the most important things to do to guide prevention and preparedness activities.

MULTI-BARRIER APPROACH

The surest way to keep drinking water clean, safe and reliable, is to understand and minimize the risks at each stage of the water supply system in an integrated way, from source to tap where it is consumed:

SOURCE: *Canadian Council of Ministers of the Environment (CCME)*

- Source water protection
- Effective treatment
- Secure water distribution system
- Water quality monitoring (at source, treatment and tap)
- Operator training
- Emergency response procedures

[5]Supervisory Control and Data Acquisition—*a computer system that monitors and controls a process.*

PREPAREDNESS ACTIVITIES

A local government develops its emergency response and contingency plan based on requirements identified through risk assessment and management.

The plan should consider resources (staff and volunteers, facilities, equipment and supplies) and have contingencies in place. A prudent local government builds redundancies into its systems (such as backup generators, alternative communication methods and spare parts or replacements available for critical components) to ensure it is ready to respond to any identified threats.

The plan should illustrate the potential impacts of an emergency across a range of services such as IT and communications. To do this, local governments should involve various departments such as engineering, operations, finance, IT and communications, leisure and recreation services, critical external stakeholders such as public health, as well as emergency social services.

EMERGENCY RESPONSE AND CONTINGENCY PLANS FOR DRINKING WATER

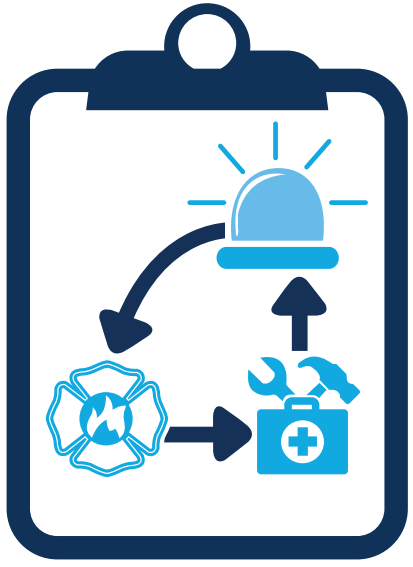
For drinking water, the plan should include maps of the system, standard operating procedures for equipment and electrical schematics. Critical components for drinking water also need to be identified and components purchased and put into storage for use if needed. For example, the delivery of a critical pump or a coupler for a large diameter water main may take weeks or months, so should be on hand as a back-up.

11 DOES YOUR LOCAL GOVERNMENT HAVE A BUSINESS CONTINUITY PLAN?

Emergency operations can be delayed or hampered if local government operations are impacted by an emergency or disaster. Business continuity plans are strategic plans concerned with returning a local government's critical services to full operation as soon as possible. They address productivity loss and physical damage that may result from disruptions while normal services and operations are being restored.

Local governments should prepare business continuity plans to ensure that emergency operations and critical services continue despite the loss of power, facilities, IT infrastructure and/or communication systems. Backup power and alternative water source(s) need to be ready to be brought online quickly.

By creating and maintaining a business continuity plan, a local government can help ensure it has the resources and information it needs to deal with an emergency and sustain long-term recovery.



12 DOES YOUR LOCAL GOVERNMENT HAVE AN ALTERNATIVE DRINKING WATER SUPPLY IN CASE OF AN EMERGENCY?

In the event of an emergency affecting a community's water supply (such as contamination, equipment failures or process breakdowns), the scope, scale and duration of the outage will vary according to the severity of the event and the system's condition.

Drinking water is a critical service, so contingency planning is essential. Local governments need to ensure that an alternative supply of potable water is accessible and sufficient to meet community needs as well as for emergency operations such as firefighting (unless non-potable water and pumps are available for firefighting).

For water and other critical services, the local government needs to determine what the acceptable level of service should be following an event. For example, a local government could set a target of providing a minimum of four litres of drinking water per person each day at a quality that is acceptable for human consumption within the first three days, ten days, 21 days and so on.

A local government responsible for drinking water needs to determine what the alternative supply of water will be in case the primary source is contaminated or there is a failure in the distribution system. If a viable alternative water source exists, it should be tested regularly to ensure it is safe, in which case a water quality-monitoring program would need to be in place. Backup treatment also might be needed to provide the appropriate quality of water. Emergency planning should include all possible strategies.

Local governments without a viable alternative water source could address this issue by building redundancy into their systems and having adequate storage for emergencies. Local governments may need to consider trucking in potable water from another community. Storage for fire flows is usually in addition to the above-noted emergency storage.

COMMON FACTORS IN WATER-BORNE DISEASE OUTBREAKS

Human error is usually at the root of waterborne disease outbreaks through:

- Complacency (assuming that everything is fine)
- Failure to thoroughly understand the water supply system
- Failure to recognize warning signs internal or external to the water system
- Failure to respond to changes or seek help
- Failure to put resources toward addressing water supply issues

SOURCE: *B.C. Ministry of Health, Small Water System Guidebook 2017*

13 HOW DOES A LOCAL GOVERNMENT'S ASSET MANAGEMENT PLAN ASSIST IN EMERGENCY PLANNING?

Local governments should assess their infrastructure vulnerabilities and the consequences of plausible emergency and disaster scenarios. Good asset management can facilitate a quick emergency response. For example, knowing where buried assets are and having a reasonable and sufficient inventory of spare parts are measures that can enable a local government to respond quickly and efficiently.

WHAT A GOOD ASSET MANAGEMENT PROGRAM LOOKS LIKE

A local government with a fully-implemented asset management program will have:

- A full inventory of assets including all aspects of the water utility (mains, valves, hydrants, meters, reservoirs, buildings, pumps, instrumentation, etc.)
- Evaluated all asset conditions and will have had a value established for the asset along with a depreciation rate and life expectancy identified
- Established a funding model so that assets can be replaced in a timely fashion and the total asset value does not decline over time (leaving a net unfunded deficit for the community)
- Replaced assets in a timely fashion and not leave them until they fail

A local government with a mature asset management program will have assets that are in good operating condition and much less likely to fail.

HOW GEOGRAPHIC INFORMATION SYSTEM (GIS) MAPPING CAN HELP

GIS can be a valuable resource during an emergency response (it may or may not be associated with an asset management system).

GIS graphically displays the location of hydrants, valves, mains and other key equipment and has information such as potential flow from hydrants, main sizes and sometimes maintenance history.

This tool makes searching for this type of information easy and allows better decision-making at the emergency operations centre – particularly if mains must be shut down and flows re-routed etc.

14 DOES YOUR LOCAL GOVERNMENT HAVE A ROBUST COMMUNICATIONS PLAN?

Local governments are legally required to have a notification procedure to alert officials (such as public health, first responders and emergency services), the public and others of an emergency. Communication practices differ depending on the type of emergency and the audience (for example, in the case of drinking water, a Water Quality Advisory, Boil Water Notice and Do Not Use Water Notice each require different procedures).

1. ALERTING OFFICIALS: Communications with first responders, public health, emergency services and other partners (utilities / railways / transportation services / public works, etc.) are generally a part of the emergency response plan. These communications are generally done expert to expert on a staff level. A robust approach should include:

- Compiling a contact list (this should be updated on an ongoing basis)
- Developing a notification protocol used to alert officials, including public health and other key stakeholders
- Assigning a limited number of persons with responsibility for being the contact persons for those other agencies
- Providing copies of the emergency response plan and communications strategy to all members of the local government's emergency management governance and planning team, as well as local government employees who have key roles and responsibilities (including communications) and other stakeholders
- Placing copies of the plan at key locations throughout the organization, along with instructions for operating equipment, electrical schematics and maps of the system. These should be regularly referenced, and available for exercises. A system needs to be in place to regularly check on their location and to ensure that they include all current updates
- Emergency response plans may need to be confidential and therefore the distribution list should be managed and documentation created listing who has received the plan.

2. COMMUNICATING WITH THE PUBLIC: The notification procedure generally focuses on public announcements, coordination with the media and using all other means available and necessary to get important messages out to the public. A robust notification protocol should include:

- Knowing your audience (for example, type of community, languages and citizens' ability to access information)
- Establishing a system for communication (for example, a phone tree, door-to-door, media, mass email / text and signs, etc.)
- Preparing "ready-made" notification templates in advance that can be easily customized during the event (e.g. flyers, door hangers and electronic notices such as email). During an emergency there may not be time or resources to prepare these. Every notification document will need to be time and date-stamped so that citizens know when the alert has been provided.

ALERT READY

Starting April 2018, Canadian telecommunication companies will begin sending life-threatening emergency alerts to compatible cell phones and wireless devices. This will be in addition to existing TV and radio alerting.

SOURCE: *Emergency Info BC*

15 WHY IT IS IMPORTANT TO TRAIN STAFF IN EMERGENCY RESPONSE PROCEDURES?

Training and exercises are key components of emergency management activities and are critical for a successful response. Training and exercising are necessary to support, test and validate the response of the local government and its integration with the activities of all levels of government and emergency management partners such as critical infrastructure owners and operators, not-for-profit agencies and volunteers. While local governments have emergency response plans these might not always be tested, practised or consistently implemented.

Emergency management training is one of the keys to a successful response. Competency in responding to emergency incidents requires that staff members understand their role and responsibilities. Providing training is part of a complete emergency planning and implementation effort.

Staff training should be done in cooperation with other departments and agencies. It is critical that the staff from the various agencies that will be involved in an emergency response become familiar with one another, their respective duties, responsibilities and the resources potentially at their disposal. These relationships need to be established and built before any emergency takes place.

Emergency response training needs to be in addition to other operator certification. Training should be provided for new employees during their introductory period, for transferred or promoted employees, when new equipment or materials are introduced that affect the response in an emergency, when emergency procedures are revised and after an actual emergency occurs. Training can be expanded to include key stakeholders and the public.

CHALLENGES LOCAL GOVERNMENTS FACE

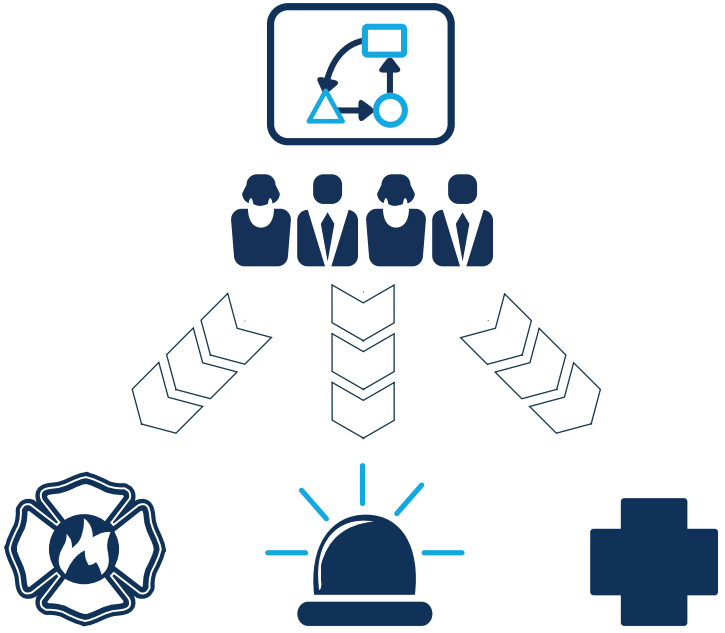
Small and rural local governments have limited staff capacity and financial resources.

In the water and wastewater sector, an additional challenge is a growing shortage of qualified and experienced workers.

Currently, over one-third of B.C.'s operations workforce is close to retirement. This raises concerns over potential knowledge loss and inadequate succession planning.

Over the next decade it is anticipated that 3,319 new workers will be needed in this sector alone, accounting for 53 per cent of the workforce.

SOURCE: *BC Water & Wastewater Sector Workforce Profile 2015*

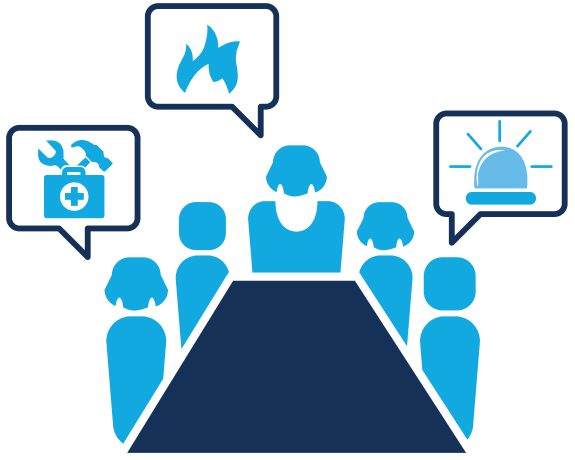


16 WHY IT IS IMPORTANT TO PRACTISE EMERGENCY RESPONSE PROCEDURES REGULARLY?

Practice is another key to a successful response. There are several benefits to conducting exercises. Through exercises, a local government can test and evaluate plans, policies and procedures, reveal planning weaknesses and gaps in resources, improve organizational coordination and communications, clarify roles and responsibilities, improve individual performance and satisfy regulatory requirements.

Exercises provide evidence to help local governments assess emergency preparedness, with a view to strengthening it. Exercises can be designed to test individual elements or the entire emergency management plan. They can take many forms, such as seminars, workshops and tabletop exercises, drills, full-scale exercises and functional exercises.

It is important to test and evaluate emergency response procedures on a regular basis. After exercises have been conducted, debriefings should be undertaken and documented to review lessons learned, identify issues and identify corrective action that should be implemented. The emergency plan should be revised to include the lessons learned from the exercises.



COORDINATED RESPONSE

A local government's response phase is triggered when an emergency occurs that requires it to lead the initial response. The local government's emergency response plan outlines actions that will be taken to manage impacts, minimize loss of life and suffering, reduce personal injury and property damage and minimize the environmental impact.

17 DOES YOUR LOCAL GOVERNMENT HAVE AN ADEQUATE RECORD KEEPING SYSTEM?

It is important that local governments fill out and maintain initial response and recovery logbooks that include all actions undertaken during all stages of emergency response and recovery. For example, the emergency operations centre log needs to track all decisions made about the allocation or placement of resources during the response, including who made the decision, when and, if possible, why. The log also needs to identify when information became available and from where, along with the key events that occurred during the response.

If the disaster is of an extended nature, the leadership in the emergency operations centre will change as relief is brought in. The new leader can refer to the log to determine what has been done, when and why. In a disaster situation, a complete debrief is often not possible as shifts change, since events tend to unfold too quickly. The log provides continuity of leadership.

It is important to use templates prepared in advance to make sure all the important details are recorded. Examples include incident reports, investigation reports, communications reports, witness accounts, site characterization, threat reports, public health information and responses. Documentation may also be important for financial assistance claims and in case of any lawsuits that may arise out of the response.

These documents are also valuable information resources that can support future emergency preparedness activities. It is important to learn as much as you can in the course of an emergency about what did or did not work and to use that information to guide the review and revision of plans, including business continuity and emergency response plans. There may be an investigation after a disaster, in which case the logs will be a critical source of evidence.

Separate financial tracking also needs to take place during an emergency response. A financial person (or team) needs to be at the emergency operations centre tracking all expenditures and resource decisions during an event. This information will be important for insurance claims and government recovery grant programs.

RECOVERY AND RECONSTRUCTION

Recovery is the phase of emergency management in which steps and processes are taken/implemented to repair communities affected by a disaster, restore conditions to an acceptable level (or, when feasible, improve them) and restore self-sufficiency and increase resilience in individuals, families, organizations and communities.

Effective recovery begins during the response phase. Recovery consists of several stages (short-term - days to weeks after the emergency/disaster, medium-term - weeks to months, and long-term- months to years) and works toward minimizing future damage to communities and the environment.

RECOVERY PERIOD

Large-scale disasters (such as Hurricane Katrina and earthquakes in Haiti, Chile, Pakistan and New Zealand) have demonstrated that recovery periods can be considerably longer than 21 days

SOURCE: *US National Homeland Security Research Centre 2011*

Some examples of recovery measures that are initiated as quickly as possible are:

- Temporary housing
- Monitoring of health care needs and continued provision of health services
- Environmental impact assessment
- Economic recovery
- Planning and reconstruction

The recovery phase may include, but is not limited to, the following activities:

- Financial management (e.g., insurance)
- Continued provision of key services
- Business recovery
- Critical infrastructure recovery
- Disaster debris management
- Information and engagement

A local government should consider how quickly it can get critical services back online and how well it can sustain these services over a lengthy period.

18 HOW CAN A LOCAL GOVERNMENT PREPARE TO FINANCIALLY SURVIVE AN EMERGENCY?

Recovery from an emergency can be expensive. It is critical for the local government to have its finances in order.

A local government should not expect that all the costs it incurs in responding to an emergency or disaster will be recovered from the provincial government.

A prudent local government, when developing its emergency management plan, should:

- Understand the Compensation and Disaster Financial Assistance Regulation, including program components
- Identify which of its assets and operations may be eligible and which may not be eligible for financial assistance from other levels of government following an emergency
- Identify how it will deal with assets and operations that are not eligible for such financial assistance

In some cases, the type or cause of damage may determine eligibility, rather than the type of asset. For example, damage from overland flooding may not be insurable. A local government should plan to cover these types of ineligible expenses, where possible, under an insurance policy and/or reserve funds.

A local government should consider what resources it needs to manage an emergency. It should determine whether it has those resources internally or whether it needs to make arrangements with one or more third parties in advance, so the local government does not need to negotiate deals during an emergency.

For example, local governments could:

- Have mutual aid agreements with neighbouring local governments they can call upon when their available complement of staff is insufficient to meet its resourcing needs during an emergency
- Include First Nations neighbours when developing mutual aid agreements
- Work with local vendors and suppliers to negotiate service agreements, which come into effect only in specific situations. Such service agreements can provide the local governments with an idea of the costs they will face in the event of an emergency

EMERGENCY EXPENDITURES ELIGIBILITY

Emergency expenditures covered under provincial funding are outlined in the 1995 Compensation and Disaster Financial Assistance Regulation. Local governments should carefully review the regulation, particularly the following sections and use this information to inform their emergency and recovery planning:

- Division 1 Section 20 (“eligible costs” does not include costs or expenses)
- Division 2 section 22 (acceptable claims)
- Schedule 5 (eligible local government body expenses)

19 HAS YOUR LOCAL GOVERNMENT ESTABLISHED AN EMERGENCY OPERATIONS OPERATING BUDGET?

It is important for local governments to set aside operational funds to enable ongoing emergency operations such as hiring an emergency management coordinator, staff training, and covering costs related to conducting exercises, as well as maintaining and updating manuals and other expenses. Emergency management should be funded as a routine and regular priority line item in the local government's budget.

Having a reserve fund to assist with special emergency management projects such as full-scale exercises (which may not occur annually), or the purchase of specialized equipment from time to time would also be of value.

EXAMPLE OF SAN FRANCISCO'S PUBLIC FINANCING PROGRAM

As part of an earthquake safety implementation program, the City of San Francisco has established a public financing program to help property owners make soft story retrofit improvements to their properties more affordable. The financing is not a loan, it is a non-ad valorem assessment added to property taxes and backed by a municipal bond issuance. The assessment is collected as an additional line item on the regular property tax bill.

SOURCE: *San Francisco's Seismic Retrofit Financing, City and County of San Francisco website*

20 HAS YOUR LOCAL GOVERNMENT ESTABLISHED AN EMERGENCY RESERVE?

Whenever possible, a local government should consider whether to set aside funds on a regular basis to ensure that it has an adequate contingency to assist with the costs of emergencies and disasters or the costs of disaster recovery.

For large local governments facing a high risk of major disaster, an emergency reserve may be prudent. However, in other cases money may be better spent on risk management, preparedness, mitigation and training activities.

Local governments that want to have emergency reserves have a few options:

- A local government may set up a general contingency fund for emergency management, which is similar to any other line item within its financial plan. However, an emergency management contingency fund established in this manner does not guarantee that money placed in the fund will always be used for emergency management
- If a local government wishes to establish an emergency management contingency fund that has limitations on how the fund can be used, then it should consider establishing a reserve fund for emergency management, following rules outlined in the *Community Charter*

A regional district would have to establish emergency management as a separate service and adhere to the usual requirements to establish the emergency management service. This is due to the manner in which regional districts establish services and the monies accounted for regarding them.

THE COMMUNITY CHARTER

Provisions governing reserve funds include the following:

- Division 4 of Part 6 articulates the rules for a municipality to establish a reserve fund
- Section 188 states that a council may establish a reserve fund for a specified purpose and direct money to be put in the reserve fund, provided that the council establishes the reserve fund by bylaw
- Section 189 sets out some restrictions pertaining to the reserve fund. For example:
  - Council may only use the money in a reserve fund and the interest earned on that money for the purpose for which the fund was established
  - If the amount in the reserve fund exceeds the amount required for the purpose for which the reserve fund was established, council may, by bylaw, transfer all or part of the amount to another reserve fund
  - If the reserve fund was for a capital purpose, then that money being transferred out of the initial reserve fund only to another reserve fund with a capital purpose

21 DOES YOUR LOCAL GOVERNMENT HAVE ADEQUATE INSURANCE?

A local government should recognize that, while not all property is insurable for all events, insurance may be an important aspect of its recovery plan.

A local government should discuss with its insurance provider what would be adequate insurance in its specific circumstances. There are a number of steps a local government can take to prepare for that discussion. These include:

- Identifying the risk (in terms of the frequency or likelihood and severity) of certain emergencies or disasters occurring. This should be done in the course of preparing an emergency response plan and emergency recovery/business continuity plan
- Using its asset management plan as a source of preliminary information about the status of its current assets and what would be needed to maintain or return to that status
- Reviewing the Recommended Minimum Levels of Insurance Matrix 2017 prepared by Municipal Insurance Association of B.C. to gain a preliminary idea of acceptable levels of coverage.

BUILDING THE BUSINESS CASE FOR CHANGE

A recent study commissioned by the Insurance Bureau of Canada estimates $75 billion in losses associated with a major earthquake in southwestern British Columbia.

The District of North Vancouver (one of 23 local authorities in Metro Vancouver) has estimated direct economic losses of around $3 billion if a 7.3 earthquake struck the district.

SOURCES: *Insurance Bureau of Canada, Study of Impact and the Insurance and Economic Cost of a Major Earthquake in British Columbia and Ontario/Québec 2013*

Natural Recourses Canada, A Profile of Earthquake Risk for the District of North Vancouver, B.C. 2015

22 WHAT PROVINCIAL RESOURCES ARE AVAILABLE TO SUPPORT EMERGENCY PREPAREDNESS?

Under the *Emergency Program Act* (sections 17 and 19) and the Compensation and Disaster Financial Assistance Regulation, local authorities may receive financial assistance for eligible emergency response costs incurred during a disastrous event. They may also receive assistance with some post-disaster recovery expenses to repair or restore public works and facilities that are essential to their operation.

Sections of the regulation indicate how a local government may determine eligibility for assistance under the *Act*, including when a local government should give notice to the program in order to receive assistance. The regulations outline what constitutes an acceptable claim and how calculations are made.

In order to process claims for financial assistance relating to a disaster, the Province has established B.C.'s Disaster Financial Assistance Program to help local governments and others. A local government must notify the Province as soon as possible in order to activate a claim for compensation.

The amount of compensation available to a local government depends on the nature of the loss. For example, costs arising from emergency response measures may be recovered up to 100 per cent, while costs for repairs to infrastructure and public works may be recovered up to 80 per cent.

It is important to understand that funding for repairs is only to restore the property to its previous state; the funding cannot be used to pay for upgrades needed to comply with current standards.

Some costs cannot be covered under this program. For example, costs that can be compensated through other means such as legal remedies, insurance policies, other government programs or disaster relief agencies will not be covered. In addition, it is important to note that the situation faced by a local government must be a type of disaster that is deemed eligible by the Province. The B.C. Government may also require the local government to complete a "Local Government Body Recovery Plan Description" in order to process a claim.

DRINKING WATER EMERGENCIES

Since a state of emergency cannot be declared for a water emergency, the Province of B.C. does not offer any assistance. For example, if a Boil Water Advisory (BWA) were issued, the affected local government would be unable to recoup any associated expenses from the Province.

COMPENSATION AND DISASTER FINANCIAL ASSISTANCE REGULATION

Division 2: describes how a local government may determine if it is eligible to receive assistance from the Province under the *Act*

Section 21: indicates that the local government must give notice to the Provincial Emergency Program in order begin the process of accessing financial assistance

Section 22: outlines what are acceptable claims

Sections 23-27: sets out details about calculating the amount of assistance for different categories eligible for financial assistance

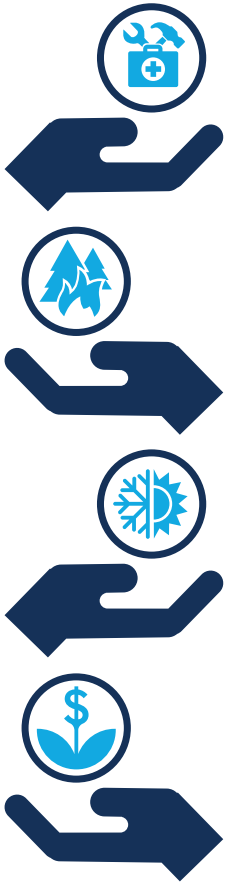
Sections 28-32: discusses various limits on the payment of financial assistances on claims that have been accepted

Section 33: informs what the local government must do to make a claim for financial assistance

Schedule 5: provides a detailed list of what are and what are not eligible local government body expenses for which a local government may claim relief

23 WHAT FEDERAL RESOURCES ARE AVAILABLE TO SUPPORT EMERGENCY PREPAREDNESS?

The federal government has a range of disaster assistance programs that may be accessed by provinces affected by an emergency or disaster. For example, Environment and Climate Change Canada administers the Environmental Damages Fund to help with the remediation or restoration of the environment and natural resources. A full list of federal disaster assistance programs can be found online[6] (see resources).



[6] *https://www.publicsafety.gc.ca/cnt/mrgnc-mngmnt/rcvr-dsstrs/dsstr-ssst-nc-prgrms/dsstr-ssstnc-prgrms-ll-en.aspx*

EMERGENCY MANAGEMENT AND DRINKING WATER RESOURCES

There are numerous emergency management and drinking water resources[7] (reports and tools) already available to local governments.

MITIGATION AND PREVENTION OF RISKS

EMERGENCY MANAGEMENT

- The Province of British Columbia (2012). *The All-Hazard Plan: Emergency Management of British Columbia*

DRINKING WATER TOOLS

- Health Canada (2004). *From the source to tap: Guidance on the multi-barrier approach to safe drinking water*[8]. Prepared by the Federal-Provincial-Territorial Committee on Drinking Water and the CCME Water Quality Task Group
- B.C. Ministry of Health (Health Protection Branch) (2016). *Emergency response and contingency planning for small water systems*
- B.C. Ministry of Health (Health Protection Branch) (2004). *Drinking Water Source-to-Tap Screening Tool and the Water System Assessment User's Guide*
- Government of Alberta (Alberta Environment and Water) (2015). *Drinking Water Safety Plan (WSP)*[9]

PREPAREDNESS ACTIVITIES

EMERGENCY MANAGEMENT

- Government of British Columbia (2016). *British Columbia Emergency Management System (BCEMS)*
  Note: This system is intended to standardize the process for delivering a coordinated response to emergencies/disasters.
- Government of British Columbia (2015). *B.C. Earthquake Immediate Response Plan (IRP)*
- Justice Institute of British Columbia (Emergency Management Division) and Emergency Management BC. *Emergency Operations Centre (EOC) - Operational Guidelines 2nd Division.*
- Government of Canada (Ministers Responsible for Emergency Management) (2011). *Emergency management framework for Canada.*

DRINKING WATER TOOLS

- B.C. Ministry of Health (Health Protection Branch) (2016). *Emergency response and contingency planning for small water systems*
- Government of Saskatchewan (Water Security Agency) (2012). *Waterworks Emergency Response Planning Standard*
- Gover, R. (2012) *Boil Water Advisory Protocol.*[10] In, Dunn, G., (Ed.) Chapter 7, Water Security Guidance document.
  Note: This chapter provides step-by-step instructions for government regulatory officials and water suppliers involved in the decision to issue and rescind boil water advisories.

COORDINATED RESPONSE

EMERGENCY MANAGEMENT

- Justice Institute of British Columbia (Emergency Management Division) and Emergency Management BC. *Emergency Operations Centre (EOC) - Operational Guidelines 2nd Edition.*
- Government of Canada (2011). *The Federal Emergency Response Plan (FERP)*

DRINKING WATER TOOLS

- B.C. Ministry of Health (2017). *Drinking Water Officer's Guide Part B: Best practices and technical assistance*
  Note: There is a Decision Tree for Responding to a Turbidity Event.[11]
- Ministry of Environment (2016). *British Columbia Drought Response Plan.*

RECOVERY AND RECONSTRUCTION

- Ministry of Public Safety and Solicitor General Provincial Emergency Program (2008). *Financial Assistance for Emergency Response and Recovery Costs: A Guide for BC Local Authorities and First Nations*
  Note: This resource includes information about this type of financial assistance.
- The Government of Canada has provided a list of Disaster Assistance Programs[12] online
- The Province of B.C. has also issued a "Summary of Disaster Financial Assistance" which highlights critical points of which a local government should be aware and provided a list of documents[13] that a local government may need concerning the Disaster Financial Assistance Program.

[7] *https://www2.gov.bc.ca/gov/content/safety/emergency-preparedness-response-recovery*

[8] *https://www.ccme.ca/en/resources/water/from_source_to_tap_the_multi_barrier_approach.html*

[9] *http://environment.alberta.ca/apps/regulateddwq/DWSP.aspx*

[10] *http://watergovernance.sites.olt.ubc.ca/files/2011/12/PART-3-SECTION-7.pdf*

[11] *https://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/waterquality/how-drinking-water-is-protected-in-bc/front_matter.pdf*

[12] *https://www.publicsafety.gc.ca/cnt/mrgnc-mngmnt/rcvr-dsstrs/dsstr-ssst-nc-prgrms/dsstr-ssstnc-prgrms-ll-en.aspx*

[13] *https://www2.gov.bc.ca/gov/content/safety/emergency-preparedness-response-recovery/emergency-response-and-recovery/disaster-financial-assistance/forms-and-information*

AGLG CONTACT INFORMATION

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