2017 FRESHET and Wildfires
Provincial After-Action Review
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Introduction

THIS REPORT PRESENTS THE FINDINGS IDENTIFIED BY PARTICIPANTS in a provincially-organized, multi-tiered After-Action Review (AAR) of the Province of British Columbia’s preparations for, response to, and transition to recovery from the 2017 freshet and wildfire season. It documents the key facts and presents high-level conclusions and actions for consideration based on those facts. Throughout this process, the intent has been to avoid duplicating information collected and provided in other reports; instead of giving an overview of overall performance based on the following principles:

- **OBJECTIVE**: Unbiased and evidence-based analysis and reporting; focused on strengths and areas for improvement.
- **RELEVANT**: Meaningful to the Province and its emergency program partners with a view to improving emergency program outcomes; focused on root causes rather than treating signs, symptoms and minor ailments.
- **RELIABLE**: Analysis and reporting based on verifiable data; focused on optimizing performance to achieve consistent and predictable outcomes.
- **INCLUSIVE**: Collection of all available data and information; eliciting contributions from federal, provincial, local and First Nations governments, non-governmental organizations, private sector partners and volunteers.
Executive Summary

THE UNPRECEDENTED COMBINATION of a major 2017 spring freshet and record-breaking summer wildfire season called for mobilizing significant resources from federal, provincial, local and First Nations governments, non-governmental organizations, private sector partners and volunteers. This report presents the key actions for consideration identified by participants in a provincially-organized, multi-tiered review conducted from July 2017 – April 2018.

While there were many successes, the response to the 2017 freshet and wildfire season also revealed notable challenges in how the Province coordinates internally across ministries and externally with federal, local and First Nations governments, during emergencies and disasters of provincial significance. Recognizing that First Nations were disproportionately impacted reinforced the need to fully incorporate First Nations in the BC emergency program now and in the future.

Experience with the 2017 freshet and wildfire season revealed a number of noteworthy ‘system’ and ‘process’ level challenges as well as capability and capacity shortfalls when dealing with large-scale events. These include:

- How the Province coordinates internally across ministries and externally with federal, local and First Nations governments;
- The integration of all available information sources to develop a comprehensive shared understanding of the situation;
- The activation of a fully functional Provincial Emergency Coordination Centre (PECC) and Provincial Regional Emergency Operations Centres (PREOC) to meet a sustained large scale response;
Surging of Provincial employees and volunteers to support local authorities and First Nations, with a priority focus on support to Emergency Social Services (ESS);

Implementing basic emergency management structures and protocols, which in turn, created difficulties in issuing relevant, timely, and coherent direction; and

Assessing and measuring progress towards achieving desired outcomes to meet the needs of impacted communities.

An analysis of these recent events challenged the resolve of the provincial government to apply the lessons from this large-scale emergency to better prepare British Columbia to ensure its resilience. While the effects of the 2017 freshet and wildfire were significant, the Province of British Columbia must be prepared for incidents that are larger and more complex; such as a catastrophic earthquake and tsunami. B.C. must also be ready for more extreme weather events in the future. The actions for consideration presented in this summary are critical to enhancing the Province’s ability to anticipate, prepare for, respond to and recover from future incidents. Based on these considerations, and in support of continuous improvement efforts, the Province is committed to developing and monitoring a Provincial Improvement Plan in collaboration with partners and stakeholders. This improvement plan will require integration and shared responsibility with all key partners in emergency management. The plan will also be guided by the overarching principles of the United Nations Declaration of the Rights of Indigenous People and the Truth and Reconciliation Calls to Action. Most importantly to be effective this work needs to reach beyond individual ministry/agency authorities and mandates, recognizing many issues have wider provincial, national or international significance.
Section 1: Incident Overview

THE 2017 FRESHET AND FIRE SEASON WAS UNPRECEDENTED, necessitating a coordinated provincial, local, First Nations and federal response. It surpassed previous events in scope, complexity, duration, staffing and expense. The combination of an active spring freshet and raging wildfire season necessitated the mobilization of significant resources from across all stakeholders including, non-governmental organizations, private sector partners and volunteers.

THE FRESHET: 2017 started with a colder and drier winter than usual with inflow forecasts for the months of February and March calling for average or below average lake inflows in the Okanagan and Nicola regions. A wetter than usual spring, including late snowfall, led to saturated soils, slope instability and landslides. The persistent rain accumulation and snow melt caused rivers to overflow their banks and lake levels to rise. The Okanagan Lake area saw some of the highest sustained lake levels in recorded history. Because the surrounding areas were saturated, lake water was not able to be absorbed and high water levels were exacerbated by a series of passing storms and wind events. The figure below illustrates the Basin Snow Water Index as of 1 April 2017 and shows the snow pack well above normal levels on the South Coast (115%), Lower Fraser (123%), Skagit (111%), West Kootenay (119%), and East Kootenay (116%). In addition to significant flooding, the saturation of soils and slope instability resulted in a number of landslides.
Figure 1: Basin Snow Water Index 1 April 2017

First Nations communities were disproportionately impacted by the record-setting freshet. The flooding damaged homes and infrastructure in 15 First Nations communities and forced evacuations in some areas. Many of the 15 First Nations declared States of Local Emergency (SOLE) through Band Council Resolutions (BCRs) and activated their Emergency Operation Centres (EOCs) to coordinate with the Central Region PREOC, which itself activated on 27 April, in support of freshet events in the BC Southern Interior. This was the first in a long series of activations and declarations of States of Local Emergency throughout British Columbia.

The Wildfires: When the wildfire season erupted in early July (101 fires started alone on 7 July with another 80 fires started on 8 July), the Province declared a Provincial State of Emergency on 7 July to allow access to extraordinary powers to expedite the acquisition and movement of critical resources to support Local Authorities, Regional Districts and First Nations communities. The figure below illustrates the number of fire starts per day. The State of Emergency was extended on July 19th, again on August 4th and August 18th, and finally again September 1st, making it the first Provincial State of Emergency in 14 years, and the longest in B.C.’s history. On September 15th, the Provincial State of Emergency ended.
The Elephant Hill fire was one of the most devastating fires on provincial record, eventually growing to more than 192,000 hectares in size. This inferno destroyed 45 homes in Boston Flats, another 45 homes in Loon Lake, and 33 in the Pressy Lake area. The fire eventually burned north across the Thompson-Nicola Region to the Cariboo affecting many communities including Ashcroft, Cache Creek and Clinton.

As with the freshet, many First Nations communities throughout the central interior were affected by the massive scale of the fires. 23 First Nation communities were directly impacted by wildfires with as many as 1,800 Indigenous persons forced to evacuate to other parts of the province. Significant damage and loss occurred to community infrastructure and First Nations traditional territories.

**EMERGENCY MANAGEMENT ACTIVATIONS:** Over the course of the summer, the Provincial Emergency Coordination Centre (PECC) was activated for 124 days, the Central (Kamloops) and Southeast (Nelson) PREOCs were both activated for 140 days, the Northeast (Prince George) PREOC was activated for 81 day., More than 1,700 provincial staff were deployed to various EOCs across the Province.

The figure below illustrates the number of States of Local Emergency (SOLE) over both the freshet and wildfire season.
EMERGENCY SOCIAL SERVICES: EMBC established an Emergency Social Services (ESS) unit and call centre which received approximately 5,000 calls and coordinated nearly 200 individual ESS staff deployments across the province to support local authorities. The ESS required considerable effort, involving many stakeholders from across the provincial government, First Nations, local authorities and Non-Governmental Organizations including Salvation Army and the Canadian Red Cross.

Soon after the Provincial State of Emergency was declared on 7 July, the Government of B.C. provided $100 million in funding to the Canadian Red Cross to help provide relief for those affected by the disaster. By 25 September, almost 55,000 individuals had registered with the Red Cross and over $39 million in financial support had been provided to those evacuated households with the remainder of the funding earmarked to support affected communities.

The figure below shows the number of Reception Centres activated to deal with evacuees. In response to the freshet, seven Reception Centres were activated (no Group Lodgings were activated) providing ESS for approximately 2,500 people. In response to the wildfires, 28 Reception Centres and eight Group Lodging facilities accommodated approximately 62,000 people. It is important to note that the actual number of evacuees is likely higher; the figures described here represent only those who registered.
**IMPACTS:** Overall, approximately 1,212,000 hectares were burned, 502 structures were impacted including 229 homes, and 65,000 people were evacuated and offered ESS. In addition to the human impacts, the Province estimates that approximately 1,030 domestic animals were relocated, over 100,000 livestock were impacted and 12,151 livestock were fed at a cost of $839,000. While the costs are still being tallied, at the writing of this report $72,977,000 had been spent on freshet response and recovery activities and $588,000,000 had been spent on wildfire suppression.¹

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¹ Facts and figures were provided by EMBC in reading packages prepared for the 23 and 24 January 2018 After Action Conference held in Kamloops, BC.
Section 2: After Action Review Methodology

This report constitutes the third of four tiers of provincially-sponsored reviews conducted into the 2017 freshet and wildfire season. It consolidates relevant data and findings from the first and second-tier reviews. Because of the deliberate and comprehensive nature of this report, it is expected to inform the fourth-tier review. The four tiers are described as follows:

**Tier 1 Organization-Specific Response Review**: Internal debriefs conducted by key ministries, local governments, First Nations, and other organizations involved in or impacted by the 2017 wildfire/freshet. A provincially-sponsored approach to reach out to ministry staff, local government staff, First Nations leaders, and other key stakeholders. Designed to provide insights on an annual basis, capture lessons learned to enable continuous improvement, and drive consistency across organizations.

**Tier 2 Provincial Inter-Ministry and Agency Response Review**: Cross-ministry debriefs with government organizations having a role in or impacted by the 2017 wildfire/freshet events. An integrated provincial approach to reach out to ministry staff, local government staff, First Nations leaders, and other key stakeholders. Designed to provide insights on an annual basis, capture lessons learned to enable continuous improvement, and drive consistency across organizations.

**Tier 3 Partners and Province Response Review**: All partners having a role in or impacted by 2017 freshet and wildfire events. An integrated provincial approach to reach out to local authorities, regional districts, First Nation partners, non-governmental organizations and volunteer organizations, stakeholder associations, federal partners, critical infrastructure owners/operators, and health authorities including the First Nations Health Authority. Designed to document lessons learned and to identify opportunities for improvement, gaps and actions for consideration to address and enable broad collective input and debrief of response activities with all partner agencies.

**Tier 4 Provincial Level Response Review**: An independent review of emergency management practices in the province, with a focus on events surrounding the 2017 flood and wildfire season. The report, Addressing the New Normal: 21st Century Disaster Management in British Columbia, focuses on the four phases of emergency management operations: Planning and Preparedness; Prevention and Mitigation; Response; and Recovery.
2.1 DATA COLLECTION PLAN

The C4i team and the Province worked closely to develop a data collection plan to ensure that both structured and unstructured data, surveys, official and unofficial reports, as well as first-hand observations and recollections were obtained from all relevant stakeholders.

Emergency program performance data can be typically analyzed at three levels:

- **TASK-LEVEL**: Helps assess need for training, equipment, personnel, etc. by asking the question: “Did the person or team do the right thing the right way at the right time?”

- **DISCIPLINE/FUNCTIONAL-LEVEL**: Helps assess communication, coordination, planning, budgets, etc. by asking the question: “Did the larger team or organization perform in accordance with plans and policies to achieve the desired effects?”

- **MISSION-LEVEL**: Addresses cross-jurisdictional mitigation, preparedness, response, and recovery across multiple stakeholder communities by asking the question: “Were the high-level provincial, regional and agency-specific desired objectives and outcomes achieved?”

C4i and the Province determined that most task-level, and many discipline/functional-level strengths and areas for improvement, would be best captured through internal exit surveys, debriefs and after-action reviews. It was agreed that for this review the primary focus would be on mission-level data. However, if participants in the data collection effort felt strongly about a particular task or discipline/functional issue, they were encouraged to comment on it.

2.2 DATA ANALYSIS PLAN

The data analysis plan involved entering all collected data into a Microsoft Excel spreadsheet, structured by location and level (i.e. local authority, regional district, First Nation, PREOC, PECC or cross-ministry), by phase (response, recovery, preparedness or mitigation), as an area of strength or for improvement, and under the following headings:

- **DOCTRINE**: How the provincial emergency program is delivered (legislation, regulation, strategy, plans, policies, directives, procedures, protocols, work instructions etc.).

- **ORGANIZATION**: How the provincial emergency program is organized to achieve objectives.

- **TRAINING**: How provincial emergency program practitioners train and exercise (i.e. individual, team, cross-functional, inter-agency, initial and refresher, table top, command post, computer assisted, full scale, functional etc.).

- **MATERIEL**: The physical and virtual equipment and spares necessary for emergency program practitioners to operate effectively.

- **LEADERSHIP**: How organizations involved in the provincial emergency program prepare leaders, managers and supervisors; and how they are recognized for their successes and held accountable for their shortcomings.

- **PERSONNEL**: The availability of suitably qualified, trained and motivated personnel to deliver the provincial emergency program.

- **FACILITIES**: Real property, installations and facilities to support delivery of the provincial emergency program.

- **INTEROPERABILITY**: The ability of provincial emergency program practitioners to be interoperable across all supporting and supported agencies and stakeholders (i.e. multinational, federal, provincial, local authority, First Nations, NGO, private sector, individual citizen).
PUBLIC INFORMATION: Combines government relations, media communications, issues management, corporate and social responsibility, information dissemination and strategic communications advice. Practitioners aim to influence public policy, build and maintain a strong reputation and find common ground with stakeholders.

OTHER: Other factors that, if addressed, will increase the likelihood of achieving the desired/planned outcomes of the provincial emergency program.

The analysis team then applied a variety of techniques as follows to determine patterns and trends:

NOMINAL GROUP TECHNIQUES: Regular discussions between C4i and EMBC Organizational Learning and Public Education (OLPE) staff to share the collected data and agree on common themes and structures for further collection, analysis and reporting.

FLOWCHARTS (PROCESS MAPS): To visualize and understand the sequence of steps used to transform one or more inputs into one or more outputs which may have contributed to positive or negative outcomes.

PARETO DIAGRAM: To help identify the important contributing factors that were responsible for causing most of the desired and undesired outcomes.

CAUSE AND EFFECT DIAGRAM (FISHBONE OR ISHIKAWA DIAGRAM): To identify contributing factors and root causes by examining the facts and asking “why” until a root cause had been determined or until all reasonable possibilities to explain the facts had been exhausted.

The root cause analysis was viewed as a key part of this AAR to focus on both system (program) and process (activity) level analysis. As previously identified, it was agreed that findings would be structured along the seven themes consistent with the key elements of an emergency program as defined in the BC Emergency Management System (BCEMS).

2.3 DATA COLLECTION SUMMARY

Data was collected and collated from all relevant structured and unstructured data sets following the steps outlined below:

- Reviewed relevant Canadian and provincial emergency program legislation, regulations and frameworks.
- Reviewed relevant Canadian and provincial strategies, plans and procedures including the PECC, PREOC and EOC Operational Guidelines developed by EMBC.
- Reviewed relevant literature specific to First Nations emergency program management.
- Reviewed previously completed reports for major events of provincial, national or international significance.
- Reviewed provincial, national and international management accountability and performance measurement direction/guidance.
Reviewed existing data from the 2017 freshet and wildfire seasons in their existing formats (structured or unstructured) and any draft or completed internal or external reports including exit interviews, paper/on-line survey information, directives, action plans, summaries and situation reports.

Designed and delivered facilitated debriefings to reach out to local authorities, NGOs and volunteer sector agencies including the First Nations’ Emergency Services Society of British Columbia (FNESS), the Integrated Disaster Council of BC (IDCBC), stakeholder associations, federal partners, critical infrastructure stakeholders, and health authorities including the First Nations Health Authority (FNHA) to identify, clarify and understand the nature and significance of any noted strength or area for improvement.

Designed and administered a final survey to collect inputs from local authorities, regional districts, or First Nations who were involved in the 2017 freshet and wildfire season but were unable to share their feedback and suggestions during the formal debriefs described above.

Designed and conducted structured/semi-structured interviews with key decision-makers and decision-influencers to clarify and understand how high-level decisions were made and communicated, as well as how progress towards achieving desired outcomes was measured and reported. EMBC and C4i also requested and received responses to numerous requests for information and viewed technology demonstrations.

ANNEX B provides a summary of the data collected and analyzed as part of this AAR.

2.4 QUALITY APPROACH

Through a competitive bid process, the Province hired C4i Consulting to assist in the development of the report, facilitated by a selection of experienced and knowledgeable staff that could work closely and collaboratively with EMBC, provincial partners, local authorities, First Nations and other organizations with an interest or stake in this review. The assembled team have all been members of and led inter-disciplinary teams in the most hazardous and demanding environments both in Canada and overseas, thus understanding the unique challenges and stressors of high intensity emergency management operations over a protracted period.

APPLICATION OF STANDARDS: The team applied knowledge, experience, best practices and standards including, but not limited to:

- Auditor General of British Columbia Guide for Developing Relevant Key Performance Indicators
- BC Emergency Management System (BCEMS)
- BC Comprehensive Emergency Management Plan (CEMP)
- BC All Hazard Plan and annexes which include hazard-specific flood response and wildfire coordination plans
- EMBC PECC, PREOC and EOC Operational Guidelines
- Canadian Federal Emergency Response Plan and Management System (FERMS)
- Canadian Standards Association CAN/CSA Z1600 Emergency Management and Business Continuity Programs
- Canadian Standards Association CAN/CSA-Z1000 Occupational Health and Safety Management
- Incident Command System (ICS) Canada

National Information Exchange Model (NIEM)

Project Management Institute Project Management Book of Knowledge (PMBOK®)

Sendai Framework for Disaster Risk Reduction 2015–2030

Treasury Board Secretariat’s Integrated Risk Management Framework

United States National Incident Management System (NIMS)

2.5 KEY THEMES

After considering all the data, the Province identified the following seven high-level themes. These themes align to the key elements of the British Columbia Emergency Management System (BCEMS) approach to emergency program management:

THEME 1: Governance

THEME 2: First Nations Emergency Management

THEME 3: Planning

THEME 4: Resourcing

THEME 5: Training and Exercises

THEME 6: Public/Stakeholder Awareness and Education

THEME 7: Maintenance and Continuous Improvement

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2 BCEMS [2016] separates training from exercises; however, for this report these two elements have been combined under a single theme heading.
2.6 HOW TO READ AND UNDERSTAND THIS REPORT

Each theme is divided into three sections – what we heard, discussion and actions for consideration.

- **WHAT WE HEARD:** This section presents a few select quotes taken from the collected data. They are used to express the views of those who contributed to or were affected by the 2017 freshet and wildfire events.

- **STRENGTHS:** This section presents areas identified as key strengths in each theme.

- **DISCUSSION:** This section identifies key pieces of information relating to the Province of British Columbia’s preparations for, response to, and transition to recovery during the 2017 freshet and wildfire season. Because of the magnitude, urgency of the response and the sheer number of organizations and individuals involved in the response effort, not all facts can be known with certainty. The report has tried to confirm all significant pieces of information that were not directly collected through formal debriefs and surveys. Confirmation was enhanced by reviewing open source data (media and social media), the recollections of individuals during structured/semi-structured interviews, as well as electronic communication and documentation provided by the Province. Where possible, conclusions were drawn to identify areas of strengths and areas for improvement for each theme based on an examination of contributing factors to try and determine root cause(s). Without understanding the contributing factors and root cause(s), finding effective solutions to prevent recurrence (or to propagate best practices) is unlikely. Without understanding the fundamental cause there is a tendency to fix the signs and symptoms, solve the incorrect problem or correct a single problem when more than one problem exists, or allocating additional resources ineffectively thereby increasing outputs without improving outcomes. The review team therefore focused on both system (program) and process (activity) level analysis.

- **DETAILED ACTIONS FOR CONSIDERATION:** This section provides a summary list of the significant cross-cutting and detailed actions for consideration of this review and tries not to repeat recommendations that were made in other organization-specific reports commissioned as a result of the 2017 freshet and wildfire season.
Section 3: Key Findings By Theme

“It is our government’s priority to give emergency personnel and emergency management representatives the tools necessary to ensure a coordinated and organized approach to emergencies and disasters. To guarantee this priority we have brought in innovative legislation, developed full-scale emergency response exercises, and adopted the British Columbia Emergency Management System (BCEMS) – a comprehensive framework that provides a structure for a standardized approach to developing, coordinating and implementing emergency management programs across the Province.”

— (Forward to the British Columbia Emergency Management System)

3.1 THEME 1: GOVERNANCE

This theme focusses on those requirements set out in emergency program legislation, regulations, and policy; the establishment of authority, lines of communication and reporting for the program, as well as organizational staffing and funding. It also includes considerations and actions for consideration related to First Nations inherent rights and title.
3.1.1 Emergency Program delivery

“...It doesn’t matter how much preparation is done for an EOC and how well equipped it is if the leaders do not know what they are doing and make decisions without consulting those that are affected by their decisions.” (Central Region responder)

“Local Authorities expected much better coordination from the Province.” (Kamloops Local Authority debrief)

“Emergency programs in First Nations communities have not been supported holistically, resulting in limited capacity regarding all four pillars, especially mitigation and preparedness.” (First Nations debrief on 23 January in Kamloops)

“First Nations leadership should be included in the decisions that affect their community.” (First Nations debrief on 23 January in Kamloops)

STRENGTH

Senior Leadership’s ongoing efforts to improve the capability of their departments

DISCUSSION

The 2016 British Columbia Emergency Management System (BCEMS) Guide was developed under the authority set out in the Emergency Program Act (EPA) and Emergency Program Management Regulation (EPMR) and is supposed to be ‘standard practice’ for all provincial government ministries and Crown corporations and is recommended as ‘best practice’ for all other emergency management stakeholders in B.C. Notably, the EPA does not apply to on reserve First Nations; however, EMBC signed a 10-year, bi-lateral agreement with the federal government, which took effect on 1 April 2017 to enhance emergency management support for First Nations communities. With the agreement in place, EMBC provides First Nations communities with the full range of emergency management services that local authorities receive.

BCEMS is intended to:

> Provide a structure for a standardized approach to developing, coordinating, and implementing emergency management programs across the Province;

> Establish guiding principles, processes, and a common terminology, thus enabling a range of stakeholders to participate in all phases of emergency management; and

> Emphasize integration and partnerships that facilitate communication and coordination on all levels.

BCEMS is built on a foundation of ‘shared responsibility’ whereby all levels of government and other stakeholders including business and industry, not-for-profit organizations, and the public comply with applicable legal and regulatory obligations by developing and implementing plans to manage disasters within their jurisdiction, organization, or area of responsibility.
During the ‘response’ phase, BCEMS describes four response levels, which may be activated:

» **SITE-LEVEL:** Command is provided from a single on-site incident command post to manage the tactical response to the emergency/disaster.

» **SITE-SUPPORT LEVEL:** Supports and coordinates the overall emergency response activities within its geographical or functional jurisdiction. Coordinates with, acquires and deploys additional resources obtained locally, from other Emergency Operations Centres (EOCs), or from the provincial regional coordination level.

» **PROVINCIAL REGIONAL COORDINATION:** Provides and coordinates provincial support for local authorities and First Nations within designated regional boundaries. Support and coordination at this level are provided by a Provincial Regional Emergency Operations Centre (PREOC). Where no local authority exists, the PREOC directly manages the response.

» **PROVINCIAL CENTRAL COORDINATION:** Prioritizes provincial government objectives and leads the overall provincial response. It also serves as the coordination and communication link with the other response levels and the federal disaster support system. Central coordination and provincial leadership are provided by the Provincial Emergency Coordination Centre (PECC).

During large-scale emergency responses, the Assistant Deputy Ministers Emergency Council (ADMEC) - formerly known as the Central Coordination Group (CCG) - may be activated to provide strategic direction as well as oversight of provincial integrated emergency response and recovery activities to the PECC. Participation is hazard-based and includes senior representatives from ministries/agencies with responsibilities associated with the event.

In certain circumstances the Ministers-Deputies Emergency Committee (M-DEC), composed of the key ministers and deputies, provides direction for policy and strategic decisions to the ADMEC.

At the federal level, based on the scope of an emergency, federal departments/agencies are assigned responsibility for response to particular hazards and have developed relationships with provincial partners. The Federal Emergency Response Plan (FERP) outlines key agencies for federal emergency support functions. During a major emergency or disaster, federal agencies will be reporting through the Government Operations Centre (GOC) led by Public Safety Canada. The figure below reflects the Provincial and Federal reporting structure:
Figure: Provincial emergency management structure

Legend
Required reporting
Information Sharing

*Agencies = Stakeholders
The review process revealed a lack of a robust organizational structure and depth (at all levels) to be able to handle multiple events in various phases of execution (i.e. recovery from freshet while mobilizing for wildfire response).

During our document review, a number of inconsistencies were noted between BCEMS and the Comprehensive Emergency Management Plan (CEMP) of which the BC All Hazard Plan is the base plan. For example, in the BC All Hazard Plan the Support and Hazard-Specific Annexes (which include the Flood Response and Wildfire Coordination Plans) do not reflect governance considerations related to the new BCEMS phases of mitigation, preparedness, response, and recovery. Given the important role that ESS played in the response, there are significant shortcomings in the BC All Hazard Plan regarding how the Province supports local communities in the provision of ESS. Notably for a large-scale emergency/disaster, the Province has neither a dedicated ESS Plan to support local authorities nor a Mass Care Plan to mobilize capabilities/capacities to provide immediate shelter, feeding centres, basic first aid, bulk distribution of needed items, and related services to persons affected.

It was learned that there have been changes to the titles, roles and responsibilities of individual departments, agencies and other stakeholders since the last amendment to the BC All Hazard Plan. Additionally, there are inconsistencies between the Support and Hazard-Specific Annexes which could be problematic. This could lead to crossed-communication, poor prioritization, inconsistent lines of communication and misunderstandings of authorities, mandates and jurisdictions between the different ministries, external stakeholders and partners.

The BC All Hazard Plan is supposed to be reviewed and updated by EMBC every four years and following Cabinet shuffles or changes in government. Given some of the dated information in the Base Plan and the Support and Hazard-Specific Annexes, it appears that the mandatory review or the quality management of the review is lacking.
### DETAILED ACTIONS FOR CONSIDERATION

It is recommended that EMBC lead a comprehensive review of BCEMS, the CEMP, and the BC All Hazard Plan including the Support and Hazard-Specific Annexes.

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<tr>
<th>THEME 1: GOVERNANCE</th>
<th>ACTIONS FOR CONSIDERATION</th>
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<tbody>
<tr>
<td>3.1.1. Emergency Program Delivery</td>
<td>A. Review cross-ministry organizational structures for the CERRC, PECC, PREOC and Ministry (MOC) and Departmental Operations Centres (DOC) to ensure that there is sufficient depth to be able to handle multiple events in various phases of execution (i.e. recovery from freshet while mobilizing for wildfire response).</td>
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<td>B. Review EMBC organizational staffing levels as well as access to cross-ministry sources of expertise/staff augmentation to ensure that there is sufficient depth to perform financial management and contract management functions to avoid accruing backlogs.</td>
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<td>C. Restructure the on-line CEMP on the EMBC website and update the CEMP as an umbrella plan describing how vertical and horizontal coordination will occur across hazard mitigation plans, emergency response plans, emergency recovery plans and preparedness plans.</td>
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<td>D. Update the CEMP, BC All Hazard Plan and Annexes to reflect BCEMS phases of mitigation, preparedness, response, and EMBC recovery.</td>
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<td>E. Update the CEMP, BC All Hazard Plan and Annexes to reflect changes in titles, roles and responsibilities of individual departments, agencies and other stakeholders.</td>
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<td>F. Update the CEMP, BC All Hazard Plan and Annexes to ensure that they reflect new governance considerations as a result of 2017 First Nations Emergency Management Services Funding Agreement.</td>
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<td>G. Review after action reports from recent exercises and activations, in order to incorporate validated findings into CEMP, BC All Hazard Plan and the Support and Hazard-Specific Annexes, including the Flood Response and Wildfire Coordination Plan.</td>
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<td>H. Incorporate specific ESS and Mass Care plans as support annexes to the BC All Hazard Plan. Identify how these plans apply with First Nations recognizing that there were many significant challenges during the 2017 freshet and fires that arose due to lack of policy/legislation on how these plans interface with First Nations jurisdictions.</td>
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3.1.2 Shared Responsibility and Jurisdiction

“The Ministry with Legislative responsibility for the hazard lacked representation in the Provincial Emergency Coordination Centre.” (PECC)

“Relationships between EMBC, BCWS, local authorities and First Nations communities need to be strengthened.” (First Nations debrief on 23 January in Kamloops)

“EMBC needs to be more flexible and trained with local First Nations governance processes and protocols.” (Southwest Region responder)

“PECC failed to provide effective coordination between regions.” (Central Region responder)

“There is not a very good sense of when and how the Province may get involved when the Emergency Social Services demand for evacuation is beyond the scope and capabilities of a small local government. More clarity on this would be helpful.” (Central Region responder)

DISCUSSION

The breadth of jurisdictions, roles, relationships and inter-dependencies between stakeholders, decision-makers and partners in delivering B.C.’s emergency program is but one among many complexities that drive risk. All emergency management practitioners – whether federal, provincial, local authority, First Nations, volunteer organization or private sector – need to act in a coordinated, aligned fashion with all other stakeholders comprising the emergency management system. EMBC and many other organizations have been in a near-constant state of change for many years due to ministry re-alignment, shifting organizational structure, and new leadership and priorities. At the same time the Province has been shifting course away from solely emergency and disaster response and recovery toward one that encompasses disaster risk management, resilience and mitigation, which have a direct bearing on priorities, resourcing and the delivery of the provincial emergency program.

It is important to distinguish the differences between mitigation, preparedness, response and recovery. Mitigation and preparedness activities are generally considered deliberate measures focused on reducing hazard risk vulnerabilities through deliberate planning and resourcing. Response and recovery put emergency plans into action, testing assumptions and validating or invalidating mitigation and preparedness measures. It is worth noting that the EPA does not specifically mention mitigation, although the term figures prominently in BCEMS.

The EPA does not clearly identify roles and responsibilities for all ministries and other parties under the Act for each phase of mitigation, preparedness, response and recovery. During the wildfires roles and relationships appeared to be relatively clear, while during the freshet it was not clear at the local authority level who was in charge, had the authority to act, and actually exercised that authority.

The legislated responsibility for emergency management on First Nations reserves resides with Indigenous Services Canada (ISC); however, through the bi-lateral agreement between EMBC and ISC, EMBC provides mitigation, preparedness, response and recovery services and supports to First Nations communities. During the freshet and wildfires, it was identified that the bi-lateral agreement was not well-understood by First Nations communities. Since its implementation, EMBC has created the First Nations Coordination Unit (FNCU) which works with Indigenous Services Canada (ISC)\[1], the First Nations Leadership Council (FNLC)

Note: In August 2017, the Prime Minister announced plans for the dissolution of Indigenous and Northern Affairs Canada (INAC) and the creation of two new departments: Indigenous Services Canada (ISC) and Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC). At the time of the writing of this report, information on First Nations Emergency Management was accessible through the Indigenous Services Canada (ISC) website https://www.canada.ca/en/indigenous-services-canada.html.
and several other key stakeholders to lead and coordinate emergency management support for First Nations communities.

The review revealed that the EPMR is out of date as it still refers to the old Provincial Emergency Program (PEP). Additionally, Schedules 1 and 2 do not clearly reflect the current roles and responsibilities for all ministries and other parties under the Act.

During Emergency Management Operations, the foundation of emergency management in B.C. is built upon the notion of ‘shared responsibility’ where overall policy direction is determined by the M-DEC. The PECC prioritizes provincial government objectives and leads the overall provincial response, with PREOCs providing and coordinating provincial support for local authorities and First Nations within the 6 designated regional boundaries.

The BCEMS response management model is based on the tenants of the Incident Command System (ICS). For Site and Site Support-level, the BCEMS/ICS model is built around five primary management functions: Command (site-level); Management (site-support level); Operations; Planning; Logistics; and Finance. The PECC and PREOCs are organized in line with the ICS structure illustrated below, however, there are other organizational structures available such as those described in the 2017 US National Incident Management System (NIMS).⁴

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⁴ Recognizing that the ICS model was designed for site-level incident response, NIMS 2017 provides a number of alternative models for organizing higher-level EOCs, including a structure in which jurisdictions/organizations use their day-to-day departmental/agency structure and relationships.

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Figure: ICS-like structure of PECC and PREOCs (Source NIMS 2017)
The review revealed that the powers of the Minister in a declared state of emergency (EPA Section 10(1)) and the powers of Local Authorities in a state of local emergency (EPA Section 12(1)) are substantial and use strong active-verbs such as “implement, authorize, require, acquire, use, control, prohibit, provide for, construct, cause the demolition or removal of, procure, fix prices, or ration” etc. Despite the strong directive and action-oriented language contained in the EPA, the PECC and PREOC Operational Guidelines are replete with non-directive and bureaucratic language such as “coordinate, operate as a conduit to, gather, facilitate” etc. Analysis of available data reveals that despite the extraordinary powers available to the Province to exercise decisive leadership and direct the overall response, the PECC and PREOCs did not deliver strong leadership. This is not to say that there were not good leaders - in fact there are numerous examples at every level of superb and selfless leadership; however, within the ‘shared responsibility’ construct, the PECC and PREOCs experienced significant shortcomings described later in this section.

At the Local Authority/Regional District level debriefs, it was reported that there are different administrative boundaries and naming conventions for Local Authorities, Regional Districts, Forest Regions and Forest Districts which created inconsistent management and reporting between BCWS and EMBC, as well as inefficiencies and duplication of effort in tracking and reconciling the situation on the ground. It was reported that the overlap of Regional District boundaries with city/municipal boundaries created management issues, notably in the Williams Lake area.

In a number of debriefs, and in particular during the 23 January After Action Review Conference in Kamloops, First Nations raised a number of concerns related to First Nations rights, responsibilities and obligations with respect to emergency program management under federal and provincial legislation and regulation, the United Nations Declaration on the Rights of Indigenous Peoples, the Sendai Framework for Disaster Risk Reduction 2015-2030, and the Tsilhqot’in Nation v British Columbia Decision. Courtney Kirk’s PhD Thesis, The Sound of Silence: First Nations and British Columbia Emergency Management, was specifically raised in plenary discussion and provides a comprehensive overview of the challenges of First Nations emergency program oversight and management. The report specifically identifies the importance of First Nations traditional knowledge and stewardship over their territories.
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3.1.3 States Of Local Emergency and Band Council Resolutions

“Far too much time was invested in tracking the States of Local Emergency/Band Council Resolutions, Orders and Alerts and the numbers were frequently not aligned between the PREOC and PECC. This created unnecessary internal frustration and friction with staff who sought to clarify the numbers. More importantly, the raw numbers that were compiled and presented to senior officials and the public through the media, did not tell a tale of the scope and scale of the event.” (Provincial Duty Manager)

“The flow of information (Orders, Alerts, numbers evacuated etc.) from the Local Authorities to the PREOCs to the PECC is broken. It was extremely difficult to obtain accurate information – a systematic change is needed here.” (PECC staff)

“Evacuation Order was in place for a long period of time, having to do a SOLE every 7 days is too much paperwork. Should be able to do it for longer lengths of time.” (Kamloops RD/LA debrief)

“There seemed to be a political decision to re-enter Williams Lake while fires were still burning which put people and first responders at risk.” (Kamloops RD/LA debrief)

“We faced significant municipal political pressure to lift the alert.” (Kamloops RD/LA debrief)

“Concessions made regarding Emergency Social Services and evacuees due to political pressures by MLA.” (Prince George PREOC)

“BC Wildfire Service was doing ground level evacuations and Local Authorities were not made aware.” (Kamloops Local Authority debrief)

“There were challenges dealing with the PREOC when trying to prepare a SOLE. The PECC was pushing back on why Kamloops needed a new Declaration, and the PREOC was being challenged by the PECC.” (Kamloops Local Authority debrief)
DISCUSSION

Under the Emergency Program Act (EPA) Section 12(1) a local authority, if satisfied that an emergency exists or is imminent in its own jurisdictional area may declare a State of Local Emergency (SOLE) relating to all or any part of its jurisdictional area. For First Nations, if Chief and Council agree the situation warrants, they may issue a Band Council Resolution (BCR) declaring a State of Local Emergency, which may be followed by additional BCRs for an Evacuation Alert or Evacuation Order.

It was reported that there was no hesitation on the part of either Local Authorities or First Nations to issue alerts and orders, or to declare SOLEs or BCRs, suggesting that both Local Authorities and First Nations are aware of their powers/authorities and used them. The review revealed that an order or alert encompassing one or two properties was provided equal weight as one for an entire city. Some jurisdictions amended orders and alerts as conditions on the ground changed, while others continually added new orders or alerts as the situation escalated. The result was that one jurisdiction could have a small number of orders/alerts affecting many residents, while another had many orders/alerts affecting a much smaller populace. During one point in the summer, data revealed that almost 50% of all orders/alerts were reported by one First Nation, thus skewing the size and scope of the emergency and how this might look with a more risk-based reporting methodology.

It was reported that the Province does not have an accurate structure which defines whether it is properties, homes, or individuals that need to be accounted for or how that should be accomplished. Improvements in this area are required.

There were reports that pressure by both Members of the Legislative Assembly (MLA) and locally elected officials had the potential to put people at unnecessary risk. Specifically, elected officials were reported to have tried to grant or influence the granting of entry/re-entry permits to evacuated areas and put pressure on emergency management professionals to lift alerts. Consideration should be given for training elected officials on this topic in support of ethical considerations in emergency management.

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5 Under EPA Section 1(1) a local authority means the municipal council, the board of a regional district, or a park superintendent for a national park under an agreement with the government of Canada. Under the EPA a Band Council or other First Nation governing body is not considered a local authority. First Nations Chief and council are responsible for the actions taken on reserve and are encouraged to consult and coordinate with EMBC as described in the EMBC First Nations Emergency Management Tool Kit.
### ACTIONS FOR CONSIDERATION

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<td>3.1.3 States of Local Emergency and Band Council Resolutions</td>
<td>A. In the short term, it is recommended that the Province implement a system that assigns one SOLE, one order and one alert to each local authority, but include clear criteria for declaring, cancelling or amending additional SOLE on a case-by-case basis.</td>
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|                     | B. In the longer term, the Province should initiate a project to examine options for a comprehensive SOLE tracking, measuring and reporting methodology, drawing upon the experiences of other jurisdictions. Among the considerations:  
  a) How are the statistics being used to ‘paint a picture’ of the emergency event and influence the setting of priorities and objectives and the allocation of resources to the response?  
  b) What measures/metrics should be used? (i.e. potential consequences to individuals, homes, properties, business, public infrastructure, critical infrastructure, reputation, objects of cultural or historic significance etc.) |
|                     | C. It is suggested the Province consider collaborating with First Nations to develop possible for Chief and Council to issue BCRs declaring a SOLE, Evacuation Alert or Evacuation Order as well as suggested criteria for cancelling or amending additional BCRs, Alerts and Orders on a case-by-case basis. This undertaking would support strengthened consistency in approach, although jurisdictional considerations would require discussion with the Federal Government through Public Safety Canada. |
|                     | D. Review the requirement to renew a SOLE every 7 days (EPA Section 12(5)), to relieve the burden on Local Authorities, while ensuring that there is a quality management process in place to ensure that SOLE are cancelled when conditions warrant. |
|                     | E. There is a requirement to build better relationships between all levels of the response including PECC, PREOC, Local Authorities and First Nations to ensure that the ordering of evacuations and the management of evacuees is conducted in a coordinated and unified fashion. To this end, the Province should incorporate a Responsibility Assignment Matrix (RAM) in PECC and PREOC Operational Guidelines to clarify roles and responsibilities for directing, coordinating and supporting evacuations. |
|                     | F. Implement and enforce a provincial standard for obtaining re-entry/access passes to evacuated areas. |
|                     | G. Implement enhanced orientation and training for all local and provincial elected officials related to their role in emergency management. |
3.2 THEME 2: FIRST NATIONS EMERGENCY MANAGEMENT

This theme focuses on how the province coordinates response efforts in partnership with First Nations communities impacted by emergencies and disasters.

“People heard good things about the care being provided at other ESS centers like Tk'emlups te Secwepemc, which was very different from the support they were receiving.” (Ashcroft Indian Band)

“We were beyond tired with no relief in sight.” (Ashcroft Indian Band)

“Treat them the same as local government is flawed logic.” (Anonymous)

STRENGTH

Enhanced levels of communications, outreach and engagement with First Nations communities

DISCUSSION

- Too many agencies were reaching in to community, looking for the same information.
- Information provision to First Nations communities and reports of challenges related to the transfer of information from community emergency coordinators to community members.
- Tracking of evacuated community members was problematic.
- Government knowledge and expertise to respond to First Nations community needs was lacking. Enhanced opportunities for training are required to support emergency management programming within First Nations communities. This training needs to address emergency management essentials, while acknowledging the unique strengths and challenges faced by First Nations communities.
- Through implementation of the agreement, EMBC should work to deliver enhanced services and supports that are reflective of a four pillars approach to Emergency Management.
- Government needs to understand and appreciate the rights of First Nations communities for autonomy and self-determination. Provincial government emergency managers were not understanding and appreciative of the governance structures of First Nations communities. For example First Nations communities want to be better informed on operational decisions made by government that impact their communities.
### ACTIONS FOR CONSIDERATION

#### THEME 2: FIRST NATIONS EMERGENCY MANAGEMENT

| 3.2 | A. Government agencies and supporting organizations need to coordinate community visits. This includes a coordinated and consistent approach to messaging/communication, time in community and appropriate sharing of information across agencies. |

| 3.2 | B. Leadership in First Nations communities must receive all operationally relevant information at the same moment, and to the same extent, as Local Authorities. For example the province should:  

a) Facilitate a more effective transfer of information from government, to communities, during emergency response; and  

b) Provide communication tools and guidance to community leadership to assist with the transfer of information to community members, particularly while located in reception centres and develop better tracking processed for impacted persons and ensure community leadership is kept informed. |

| 3.2 | C. Government change management and learning through increased exposure to cultural understanding.  

a) Through a process of change management, government needs to address employee learning through cultural safety and competency training.  

b) Through recruitment processes, government needs to support employment opportunities for Indigenous peoples. |

| 3.2 | D. Increase training and exercising for First Nations communities.  

a) Enhanced opportunities for training are required to support emergency management programming within First Nations communities. This training needs to address emergency management essentials, while acknowledging the unique strengths and challenges faced by First Nations communities.  

b) Facilitate opportunities for EMBC and BCWS to learn from Indigenous knowledge holders to enhance service delivery and programming to better meet the needs of First Nations communities.  

c) Organizational learning, and the evolution and adaptation of policy and protocols to support First Nations self-determination. |

| 3.2 | E. To support the broader mandate of the provincial government, government emergency managers need to align work goals and priorities to support the objectives of UNDRIP and the TRC. Provincial government emergency managers should work with and learn from each community to honour local governance structures.  

a) EMBC should work with First Nations communities and the federal government to build autonomous emergency management governance structures. |

| 3.2 | F. Through implementation of the agreement EMBC should work to deliver enhanced services and supports that are reflective of a four pillars approach to Emergency Management. |

| 3.2 | G. The Province should offer tools and guidance for managing staff fatigue.  

a) Educate government emergency managers to the capacity challenges faced by First Nations communities.  

b) Develop a tool for succession planning of the community EPC role. |
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H. Communities should self-identify volunteers who meet requirements and indicate community resource and training needs to match further baseline requirements.

a) Build an understanding of community capacity needs and challenges and identify resource requirements to support those needs.

I. Work with First Nations communities and the federal government to identify strategies to better support emergency management.

a) Build on innovative projects led by First Nations communities to improve community capacity for emergency management. For example, providing resources and programming to support First Nations youth in driving emergency management in their communities.

J. Explore a tripartite conversation between DISC, EMBC and First Nations communities to enhance funding capacities for emergency management services in community.

a) Potentially develop an easily accessible electronic database on emergency management funding opportunities for First Nations communities.

K. Conduct a feasibility study of different methods of emergency response in government which are more considerate of Nation to Nation relationships.

L. Progress the Partnership Table format as a way to bring communities closer to decision-making points.

M. Support relationship building and partnerships between local authorities and First Nations communities by:

a) Promoting a First Nations field of practice gathering with additional government and local authority representation.

b) Exploring financial incentives for formal partnerships and tailored training opportunities for partnered groups.

c) Creating a policy of in community engagement between regional emergency managers and community leadership at the outset of emergency response.
3.3 THEME 3: PLANNING

This theme focuses on the development of understanding regarding hazards and risks and preparation of emergency plans that will guide actions before, during, and after an emergency/disaster.

“The process of getting support to communities was problematic.” (Victoria Cross-Ministry)

“Accessibility to smaller communities was difficult due to limited transportation infrastructure.” (Kamloops Local Authority)

“Our biggest challenge was trying to navigate an Emergency Social Services system designed for small groups over a much shorter period of time.” (Northeast PREOC)

“It was difficult to integrate with the Canadian Red Cross.” (Kamloops Local Authority debrief)

“A large shift in Canadian Red Cross support was observed when they received the funding from the B.C. Government. Local Authorities were still expecting CRC support with group lodging etc., but CRC’s focus had changed.” (Kamloops Local Authority debrief)

STRENGTH

Effective, collaborative, cross-ministry participation of senior officials through MDEC/ADMEC

DISCUSSION:

Planning is the mechanism through which the Province and its federal, local authority, regional district, First Nations, non-governmental/volunteer organizations, and private sector partners develop, validate, and maintain plans, policies, and procedures to mitigate, prepare for, respond and recover from emergency/disaster events. A plan describes ‘how’ these organizations will prioritize, coordinate, manage, and support personnel, information, equipment, and resources. Plans should be vertically and horizontally integrated between appropriate ministries, departments, agencies, and jurisdictions and should include, where appropriate, mechanisms to request assistance from other jurisdictions and organizations.

The act of planning and the priority of plan development should be based on the results of a Hazard Risk Vulnerability Assessment (HRVA). Through an HRVA, a community or organization is able to identify hazards that may affect them, estimate the potential for and severity of injury or loss due to these hazards, and set priorities for action. Prior to an emergency/disaster, HRVA information is critical for developing and implementing mitigation and preparedness plans. This information is also useful during the response and recovery as unanticipated hazards and risks are identified, analyzed and managed.

The outcome of planning is a risk-based analysis and assessment to ensure that the right capabilities and capacities to mitigate, prepare for, respond to, and recover from all-hazards events are available when and where required.

While there are many areas of planning which have been captured in the data collection and analysis effort, the scope of this section has been limited to those sub-themes and issues which were validated during the 23 and 24 January After Action Conference held in Kamloops, BC.
3.3.1 Mitigation and Preparedness Planning

“...A lack of mitigation and prevention awareness in communities led to unnecessary damages and First Nations incurred costs for mitigation measures that were not supported under response.” (First Nations debrief on 23 January in Kamloops).

“...Information management for the public lacked process and structure, as local government teams overwhelmed and uncertain of their lanes.” (Prince George PREOC)

“Our biggest challenge was the lack of planning for Emergency Social Services. Our evacuees were shuffled between several different reception centers in two different cities. There was poor communication between Emergency Social Services and evacuees.” (Central Region responder)

“...Look after yourself first...if the general public used the Fire Smart principles to protect their homes and were prepared to evacuate, it would make life simpler in the EOC and Reception Centres.” (Southeast Region responder)

DISCUSSION

Mitigation and preparedness planning for the fire and freshet hazards was mixed. Described in more detail under Theme 6 (Maintenance and Continuous Improvement), the Province has been slow to plan for and mitigate the wildfire hazard as recommended in Firestorm 2003: Provincial Review of the 2003 Fire Season (Filmon Report)\(^6\). During the 23 and 24 January Provincial and First Nations debriefs, there was considerable skepticism among participants about why the Province had failed to implement many of the Filmon Report recommendations.

Regarding Flood Management, the Associated Environmental Consultants Inc. Review of 2017 Flood Response: Okanagan Lake Regulation System and Nicola Dam report for Ministry of Forests, Lands, Natural Resource Operations and Rural Development provides a very thorough analysis of how the River Forecast Centre (RFC) forecasts lake inflow levels, manages water to mitigate floods and droughts, and makes operational decisions. The current prediction models are run once per month from February 1\(^{st}\) to May 1\(^{st}\) and rely on data available on the date that the forecast is made and are unable to look ahead to predict how future weather will influence inflows.

At all levels, it was reported that there is a lack of understanding of the complexity and interdependencies of critical infrastructure and the potential vulnerability of real (and virtual) infrastructure to flood and wildfire hazards. Because of extensive interdependencies across all infrastructure sectors, there are potential cascading

\(^6\) The May 2015 Special Investigation Report of the Forest Practices Board was particularly critical of wildfire management practices, concluding that only about 10 percent of high risk forests around communities had received a single fuel management treatment in the preceding 10 years; the adoption of BC FireSmart principles by communities was not widespread and was progressing slowly; and that there were no incentives in place to addresses hazardous fuels on private property.
impacts that can occur where local incidents may trigger wide-area degradation in services. Plans required more rigour to provide direction and guidance on the management of critical infrastructure and essential services.

» It was reported by First Nations communities that many of the PREOCs were requesting information from First Nations communities in regard to their access roads, which theoretically should be part of planning and preparedness efforts, and good mapping capabilities. Communities should not be the only ones to know their exit routes and interagency collaboration protocols and plans should be strengthened in advance of emergencies and disasters to identify appropriate redundant or alternate transportation routes. It was reported that preparedness plans for support to local authorities in the delivery of ESS or for the provision of Mass Care on a wide scale were inadequate. During all levels of debriefing, participants raised numerous concerns related to the delivery of ESS including the priorities assigned to and provision of support by the Canadian Red Cross (CRC). Notably, the All Hazard Plan dedicates a mere 3 lines which serve to describe ESS assistance to include food, lodging, clothing, emotional support and family reunification services for up to 72 hours. In its current form, the BC All Hazard Plan is not actionable in the areas of support to the delivery of ESS or the provision of Mass Care in the event of a catastrophic event.

» It was reported that preparedness plans for financial management are inadequate or incomplete. The Financial Management of Emergency Response Costs during Provincial Activations is a Support Annex to the BC All Hazard Plan, however, like many of the other Annexes, it is not actionable and the scope of the document is very limited. Specifically, the scope of the document is only limited to the financial management processes directly related to the activation of the PECC, PREOCs, as well as the management of eligible local authority and ministry emergency response claims.

» It was reported that there was a lack of a structured approach to rapidly generate surge staff capacity in responding to a disaster of provincial/national significance. The Provincial Emergency Coordination Centre and Provincial Regional Operations Centres Deployment Support Annex to the BC All Hazard Plan provides general guidance regarding mobilization and worker care, occupational health and safety, however, it is not actionable. An effective mobilization plan needs to describe how the Province will support local authorities and generate surge staff capacity and capability to cover all phases including: anticipating need, warning, mobilization, training, deployment, integration, employment, demobilization, and reconstitution and reintegration into a normal balanced work and personal life.

» It was reported that there were shortcomings in community preparedness plans. While adherence to BCEMS is suggested ‘best practice’, it is evident that many community plans across the spectrum of impacted Local Governments and First Nations communities were not developed, or were inadequate or incomplete.
## ACTIONS FOR CONSIDERATION

### THEME 3: PLANNING

#### 3.3.1. Mitigation and preparedness planning

A. Plan and conduct a province-wide Hazard Risk Vulnerability Assessment (HRVA) with particular focus on the long-range impacts of climate and environmental changes to better inform government prioritization of risk-reduction strategies including funding, pre-positioning resources, prioritizing/siting critical infrastructure, managing key transportation routes, siting logistical staging areas, and locating hubs for the provision of Mass Care.

B. Based on a current HRVA, develop and implement actionable plans with short, medium, and long-term objectives to prevent and/or mitigate flood risk through projects such as, relocation, reinforcement and protection structures/equipment, diking, and installing/upgrading pumping stations; and, to incorporate First Nations traditional land use practices as required.

C. Conduct a comprehensive review of the CEMP, BC All Hazard Plan and supporting annexes applying a cultural safety and humility lens to ensure that they include actionable plans, policies and procedures for ESS, Mass Care, volunteers, non-government organizations (NGOs) and the management of donations contributions.

D. Conduct a comprehensive review of the CEMP, BC All Hazard Plan and supporting annexes to ensure that they include actionable plans, policies and procedures regarding financial management and the administration of disaster financial assistance and sources of funding to ‘build-back stronger, while taking in to consideration how these structures consider and support First Nations communities.

E. Conduct a comprehensive review of the CEMP, BC All Hazard Plan and supporting annexes to rapidly generate surge staff capacity in responding to a disaster of provincial/national significance. An effective mobilization plan needs to describe how the Province will generate surge staff capacity and capability to cover all phases including: anticipating need, warning, mobilization, training, deployment, integration, employment, demobilization, and reconstitution and reintegration into a normal balanced work and personal life.
3.3.2 Response Planning and Execution

“The PREOCs worked so hard to support communities. Everyone in the organization worked very hard to support this response. I was inspired by the amount of local government folks who were deployed all over the province.” (PREOC)

“We need less interference by the PECC. They got too involved in what should have been EOC or PREOC business.” (PREOC)

“There were numerous occasions where the lack of a BC Wildfire Service representative in the PREOC hampered decision making/situational awareness.” (Kamloops PREOC debrief)

“The relationship with BCWS and representation in the PECC must change. It is imperative we have someone in the PECC who can adequately provide updates and information required to communicate important facts about the current situation.” (PECC)

“Canadian Forces were making commitments they couldn’t keep. Regional Liaison Officers lacked the credibility and authority to advocate on behalf of the Province when communicating with Regular Forces officers and important work was dropped or delayed to where life safety was put at risk.” (Northeast Region responder)

DISCUSSION

During the freshet and wildfire, local, regional, provincial operational and strategic decision-making bodies activated as follows:

- Local authority and First Nations Emergency Operations Centres (EOC), as and when required.
- The Central (Kamloops) and Southeast (Nelson) PREOCs were both activated for 140 days.
- The Northeast (Prince George) PREOC activated for 81 days.
- The Provincial Emergency Coordination Centre (Victoria) PECC activated for 124 days after the provincial state of emergency was declared on 7 July.
- The Assistant Deputy Ministers Emergency Council (ADMEC) convened as and when required to support the response.
- The Ministers-Deputies Emergency Committee (M-DEC) convened on 26 occasions during the freshet and wildfire emergency.
- Over 1,700 provincial staff deployed to emergency operations centres throughout the province.

The C4i analysis team reviewed M-DEC agendas and sampled the record of discussions and determined that at the highest levels of government, information exchange and policy discussion routinely occurred. It is a testament to the professionalism and dedication of the most senior ranks of the public service that, despite the uncertainty of overseeing the response during the interregnum period of the provincial election, M-DEC and ADMEC committees functioned as they should have, elected officials were kept informed and the post-election transition generally went smoothly.

BCEMS adheres to the Incident Command System (ICS) tenant of ‘management by objectives,’ a systematic and organized approach that focuses on establishing goals, setting objectives, developing action plans, and monitoring performance to achieve desired outcomes within an operational
period. Objectives are broad descriptions or statements of the desired outcomes or actions needed to achieve them and, in accordance with ICS guidance, they should be Specific, Measurable, Action-oriented, Realistic, and Time-sensitive (i.e. SMART).

It was reported that the PECC objectives were overly focused on looking down into the details and at the ‘current situation’ rather being high level, forward looking and aimed at providing strategic direction to achieve desired outcomes. While the PECC must quickly draw in situational understanding of the unfolding situation, it must strengthen Advanced Planning Unit efforts to ensure that it has an element always looking ahead, beyond the current operational period to anticipate and enable response to both the expected and unexpected.

While a provincial state of emergency was declared on 7 July and despite monitoring province-wide freshet and wildfire incidents during the preceding months, the first Provincial (PECC) Action Plan was not issued until 11 July, and none of the Action Plans provided to the review team by EMBC were ‘executable’ i.e. virtually no description of ‘how’ the Province would actually support response efforts.

In the PECC, content of lower-level PREOC Situation Reports was often ‘cut and pasted’ into PECC ‘Action Plans’ without any real disciplined cross-agency planning having occurred. Consequently, there was no way to determine what the desired outcomes were, or whether progress was being made to achieve them. Most importantly, there was no objective evidence of any cross-ministry accountability for decisions, action, inaction or outcomes.

It was reported that the PECC and PREOC planning cycles, based on the ICS ‘Planning P’ and focused on ‘Management by Objectives’ within a single operational period (typically one work day), was not conducive to planning, directing, monitoring and controlling complex and extended duration operations. A deliberate long-range planning process which looks out several days, weeks or even months is required for extended duration operations, well beyond the three to five-day planning horizon described in the PECC and PREOC Operational Guidelines for the Advanced Planning Unit (APU).

It was reported that organization-specific decisions were sometimes made without consideration of the potential impacts on other stakeholders. This negatively impacts the ability to measure and adjust courses of action to achieve a coherent response across all agencies, thus undermining the ‘shared responsibility’ construct which is at the heart of the provincial emergency program.

7 SPECIFIC: Provides a precise, unambiguous description of what must be done
MEASURABLE: Ensures that progress toward and achievement of the objective are able to be determined
ACTION-ORIENTED: Uses action verbs to describe the expected objective.
REALISTIC: Ensures the objective it is achievable within resourcing constraints, acknowledging that it may take several operational periods to achieve the objective
TIME-SENSITIVE: Specifies the time within the objective must be accomplished.
### ACTIONS FOR CONSIDERATION

#### THEME 3: PLANNING

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<th>3.3.2. Response Planning and Execution</th>
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</table>
| A. The ability of M-DEC and ADMEC participants to quickly absorb key information and to provide timely and well-reasoned strategic direction should be strengthened by developing and implementing:  
  a) A standardized agenda/protocol for all M-DEC and ADMEC decision-making meetings.  
  b) A standardized template (menu) of cross-ministry priorities, SMART objectives, desired outcomes, risk thresholds, and strategic communication/public information messages for public release for a full range of human-caused and natural disasters. This menu of potential response options should be informed by a current HRVA.  
  c) A standardized template for a Record of Discussion to provide complete transparency into the decisions made and actions taken by M-DEC and ADMEC. (Note: the template should include direction on how to separately capture and safeguard Cabinet Confidence or other sensitive information, to allow releasable portions to be shared. This could be done by using a concise record of decisions to provide executive direction). |
| B. Update and implement a standardized PECC and PREOC Operational Guidelines, EOC Operational Guidelines developed by the Justice Institute of BC (JIBC) and other agency/organization-specific standard operating procedures to reinforce the need for forward looking beyond the current operational period to anticipate the future direction of the operation, develop contingency plans to address both the expected and unexpected, and to provide strategic direction and policy advice. This may include the standing up of an Advanced Planning Unit (APU) that is implemented by a repeatable, collaborative/ coordinated protocol (which can be conducted face-to-face or virtual by conference call) to enable timely, well-reasoned information sharing and decision-making. |
3.3.3 Knowledge Management Planning

“Failure to communicate cross-agency to understand the imperatives for certain sections of the farming community to get access to evacuated areas. Decisions were made and actions taken without consideration of the potential impacts on other stakeholders in the agriculture sector.” (Victoria cross-ministry)

“First Nations communities want to be better informed on operational decisions made in government.” (First Nations debrief on 23 January in Kamloops).

“There was a lack of defined mutual support planning protocols and processes between Local Authorities, Regional Districts and First Nations.” (Kamloops Provincial debrief 24 January 2017)

“BC Wildfire Service generated much of the critical information and their role in disseminating it to other stakeholders needs to be resourced.” (Williams Lake Local Authority)

“There were a large number of coordination calls; how do we do that better going forward to make sure everyone is in the loop? Clarification around Sit reps – how do we share information, what is the requirement of my agency, and what is the expected audience for distribution of this information. Where does information end up at end of day?” (Victoria PECC)

“There was a lot of pressure on ESS this summer. It was challenging to move information to next level. The Call Centre required almost hourly updates on what was open, what was closed, what was active etc.” (Victoria PECC)

“Log books need to be positional, not personal. They must remain with the work station for consistency, handover etc.” (Prince George PREOC)

“Situation Reports should be reviewed to focus on operationally important information instead of statistical information.” (Central Region responder)

DISCUSSION

Effective knowledge management is fundamental to every aspect of emergency management. Organizations must have sufficient capability and capacity to meet both their internal and external emergency communication requirements. This means being able to communicate within and across agencies and jurisdictions via radio and associated communications systems, exchanging voice, data and/or video with one another in real time, without interruption, when required. They must also have the ability to collect diverse data from numerous information sources, transform the collected data and information into decision-quality knowledge through fusion and analysis processes and then share knowledge to create a common operating picture. Effective knowledge management is about getting the right information to the right person in the right organization at the right time in the right format and lexicon, with the right confidence, precision, persistence and accuracy to achieve the desired outcome(s).

An effective knowledge management plan must account for the critical components, networks, support systems, personnel, and procedures to ensure a reliable and continuous exchange of critical information across the required emergency responders and decision-makers at all levels for the duration of the emergency operation.

Local authorities indicated that there were shortcomings in vertical communications between local authorities and the PREOCs. This occurred during coordination calls, by email, during telephone and face-to-face interactions. Both the PECC and PREOC Operational Guidelines appear to be more of a checklist rather than offering procedural guidelines for effective communication and knowledge management. Consequently, important information was missed or delayed in transmission and receipt affecting situational awareness, collaborative planning and decision-making.
Critical information needs (requirements) were not developed and shared across all organizations which hampered the ability to achieve a common operational picture, timely and well-reasoned decisions and the ability to react to the unexpected. Not everyone at every level needs to have the same box with the same picture on their desk, however, the data and information which is the backbone for building shared situational awareness needs to be the same.

Throughout the response, a multitude of ‘coordination calls’ at every level were conducted to try and create a common shared understanding of the situation and to inform decision-making. These calls followed different formats, occurred at different times, and were not consistent in terms of purpose or format i.e. for information sharing, for collaborative planning, or for decision-making. They included a wide variety of stakeholders and partners (a good thing), however, it was reported that key information from these calls such as a record of discussion/decisions was not always sent to key partners and decision-makers, particularly those may not have been able to participate in the call.

At all levels, Situation Reports were not easily understood, different formats were used, some were excessively wordy and contained superfluous information, were incorrect or late to add needed information thus hindering the ability to create and maintain a common shared understanding.
### ACTIONS FOR CONSIDERATION

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<th>ACTIONS FOR CONSIDERATION</th>
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<tr>
<td><strong>3.2.3 Knowledge Management Planning</strong></td>
<td><strong>A.</strong> Develop and implement an overarching provincial emergency program knowledge management structure/system that can identify all federal, provincial, regional, First Nations, local authorities, response agencies, critical infrastructure/essential service owners/operators, and volunteer organizations to ensure accurate data is available to these stakeholders/decision-makers.</td>
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<td><strong>B.</strong> Establish a multi-agency and multi-jurisdictional task force to improve communications interoperability planning and coordination with a focus on enhancing E-Team functionality and expanding its use to include local authority and First Nations EOCs, response agencies, as well as critical infrastructure owners/operators and volunteer agencies. (Note: this includes developing and maintaining proper credentialing to ensure the right people gain access to the right information with the right safeguards in place to protect sensitive information.)</td>
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<td><strong>C.</strong> Review/develop and implement communication plans (with necessary back-up/redundancy) that support required communications between the Province, local authority and First Nations EOCs, responders, as well as critical infrastructure owners/operators and volunteer agencies. These plans should be tested and implemented.</td>
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<td><strong>D.</strong> Review/develop and implement procedures to keep local authorities, regional districts and First Nations communities better informed on operational decision making, up to and including the exchange of liaison officers during EOC activations, and by offering a real or virtual presence in the PECC and PREOCs.</td>
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<td><strong>E.</strong> Develop and implement procedures to establish and maintain a common shared understanding of the situation. This should include a concept of operations spelling out roles, responsibilities and expectations for knowledge management, requests for information, requests for support, reporting standards and lexicon.</td>
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<td><strong>F.</strong> Develop and implement business processes for the maintenance of accurate records of decisions from meetings and conference calls, situation reports and action plans to provide a complete, open and transparent history of management oversight and decisions, as well as the rationale for said decisions/actions.</td>
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3.4 THEME 4: RESOURCING

This theme focuses on the identification of adequate personnel, facilities, and equipment; including the establishment of mutual aid agreements and partnerships.

“Paper based ESS registration was a nightmare – it was taking 25 minutes per registrant and we had people waiting in line for hours.”  (Kamloops PREOC)

“The arrival of the Langley based ESS MST was a godsend.”  (Kamloops Local Authority)

“Unclear process for tracking and requesting CAF assets particularly air assets.”  (Prince George PREOC)

“Logistics needs to think outside the box e.g. equipment being ordered needs to get to the destination same day.”  (Prince George PREOC)

STRENGTH

The outstanding, ongoing commitment of TEAMS members and volunteers in coming to assist the response effort, often at a considerable personal sacrifice.

DISCUSSION

It was repeatedly reported that the duration and extent of the freshet and wildfire season placed a demand for the provision of trained personnel to support EOCs and in particular the ESS effort that was only met through ad-hoc measures leading to less than satisfactory outcomes. In particular ESS planning seemed to be based on short-term provision (<72 hrs) with relatively small client numbers (<100). This was inadequate to meet the demand for ESS generated during the summer of 2017 and was further complicated by the shared responsibility between the Province and local authorities.

Common to all debriefs was the reported need to review how local authorities, regional districts and the Province generate trained personnel and in particular the need to take a more proactive rather than reactive approach. It was reported that positions were often filled on an “as available basis” – the warm body is better than a gap concept - often by personnel with no relevant experience. Reports indicate that training was often not provided, provided in only a cursory manner or as a best effort but still with significant gaps. In most cases this put an additional burden on qualified staff to deliver both the training and the close supervision necessary to support their new charges, thus reducing internal organizational capacity. Generic human capacity issues reported were:

- Underestimation of the numbers needed to sustain a response of this size over time.
- Trained ESS staff was a particular issue.
- Delivery of just in time training (will likely always be needed) was not always available.
- Sustaining numbers over time.
- Planning staff rotations, given uncertainty on when and where people would be available.

The Province reported difficulty in finding trained TEAMs members to strengthen the staffing pool. This specific observation refers to the TEAMs system and deployment of staff from other provincial ministries/agencies and locations. During debriefs, there were calls for the number of personnel in the TEAMs program to grow significantly, however, this could be somewhat mitigated with a better understanding of who can be released from their normal assignments – there were a number of anecdotal reports that managers prioritized normal work tasks over releasing staff for TEAMs duties. It is understandable that there is a desire to ensure that where possible government business can be continued as usual – the issue is in so doing there is the possibility of Provincial failure responding to an emergency management event. A key component of the solution is to ensure that TEAMs members will be made available when called for. There also
needs to be consistency with regard to training/expectations and role so that TEAMs members could be slotted straight into the staffing plan. Another related challenge is provincial public servants being expected to cover their normal job in addition to their assigned TEAMs role. It was reported that there were significant consequences in terms of exhaustion and goodwill as people tried to cover both roles.

The ability to staff Regional District and Local Authority EOCs mirrored the provincial concern to build greater capacity and resilience and consider long-term generation of personnel over many seasons. At the local level, this challenge is made more difficult with a much smaller pool to draw from and currently would only be sustainable through the exercising of mutual aid agreements with volunteers stepping forward to deploy to EOCs requiring support. This model has merit and was successfully used to provide planning capacity in the Cariboo Regional District (staff from Nanaimo and the Langley Mobile Support Team deploying into the interior). These deployed staff did an excellent job and relieved pressure on local staff, although it is important to note the need for an effective orientation process. There is merit in considering how mutual aid agreements are planned and whether they should be formalized. As an example of best practice, the City of Kamloops provided useful support to the Thompson Nicola Regional District (TNRD), but in a major event that impacts both jurisdictions, such an agreement may not deliver the support required. The challenge would appear to be to partner in a manner that would allow relationships to be built without constraining either jurisdiction in the event of a major incident involving both jurisdictions.

Registered volunteers stepped forward to assist across B.C., particularly to help deliver a whole range of community-based ESS services, especially for people evacuated from their homes. The registration of evacuees, comforting, meeting and greeting, delivering evacuation notices, attending to pets and many other activities were performed competently and with great compassion by local volunteers.

The 2003 Filmon Report stated that, “volunteers should be kept ‘in the loop’ and fully informed of policies, event status and expectations in recognition of their value as team members, and as communicators to the evacuees and clients of the Emergency Services Centre. Volunteers should be treated with the same respect and kept as well informed as all members of the emergency management staff.” This observation from the Filmon Report appears to have been forgotten in many cases and consequently it was reported that the good will of many volunteers has been eroded. More effort needs to be made to understand how important volunteers are to the provincial response and the capacity gap that would otherwise exist.

The willingness of British Columbians to pull together was well demonstrated by the number of convergent volunteers who stepped forward. As discussed in the Planning Theme, there is a requirement to improve plans, policies and protocols to incentivize volunteering, mobilizing and managing trained and skilled convergent volunteers.

The Filmon Report identified the failure to effectively utilize First Nations fire-fighting personnel and recommended the then Ministry of Forests should explore ways to enhance the participation of First Nations in forest fire fighting and mitigation (through wildfire fuel management activities). During the 2017 wildfires, it was reported that First Nations community capacity for emergency management was still misunderstood and not adequately utilized by the Province, local authorities and communities. In particular, First Nations reported that the expertise that exists in their communities was not appreciated and often their advice and opinion was not sought. In particular, clarity on roles ahead of time rather than ‘bouncing around’ to find out who could help would help baseline the skills inventory and any gaps which in turn could inform training.
It is also important to recognize and legitimize traditional knowledge holders who could assist. This would be of mutual benefit and allow those individuals to attend joint training opportunities and offer their traditional knowledge to existing emergency management practices. The value of having First Nations Liaison Officers present in PREOCs and PECC was clear both in terms of understanding their communities’ capability and complexities and in helping mitigate the lack of cultural sensitivity training. Discussed further under the Training Theme, there is a very real need to improve education and training to ensure that due respect is given to First Nations. There is also a need to build upon current initiatives to work more closely with First Nations to build capacity, especially with regards to EOC operations. Many First Nations reported the need for further joint training and including their staff into regional and provincial exercises. This should be an ongoing engagement between the EMBC, local authorities and First Nations.

It was reported that the demands of supporting ESS and Mass Care delivery were beyond provincial expectations and the whole ESS system came close to failure. This was not just a capacity issue, and this report has addressed aspects of ESS in governance, planning and public awareness sections. Specific issues that need to be addressed include:

- Paper-based processes were overwhelmed by demand, causing lengthy delays. A robust e-system is required for registration.
- Engagement of services needs to be coordinated with those who know the community and its needs – this must include First Nations representatives.
- Local Authorities and First Nations would have benefitted from Health Liaison Officers to help with ESS needs assessment and to assist Reception Centre staff.
- ESS offerings of group lodging versus hotel accommodation did not match community needs/culture, particularly for First Nation communities.
- ESS food grants were inefficient and assumed that evacuees could store significant amounts of food.
- The current Disaster Psychosocial Support model was not sustainable for large scale activations and did not meet the needs of many communities.
- The current Public Safety Lifeline Volunteer model is not suitable for a long-term sustained response.
- There were reports of lower than desired standards of trust in volunteers by some managers, as well as unrealistic expectations of what volunteers could deliver.
The Logistic effort should be seen in the context of the extraordinary demand the freshet and wildfire season placed upon the Province. This was compounded by the duration of the summer 2017 events, the distances involved and locations that were often remote with limited ground access routes. System and process issues then further compounded the delivery of the right item in the right quantity to the right location. Specific logistic resourcing issues that were reported included a lack of strategic advanced planning for pre-positioning supplies and resources at both the local and provincial level. In particular:

» Anticipating / tracking resource needs e.g. ESS Group Lodging.
» Identifying an appropriate and timely distribution plan for deployment of materiel (i.e. sandbags).
» The lack of a practical, manageable, compartmentalized and centralized tracking system for resources and general services.
» Problems in identifying existing availability of contractors, equipment and human resources as well as those responsible for maintaining materiel resource lists.
» Supplier management – the Province must better understand the importance of the in-place supply chain and identify sources of supply before the event and place ‘standing offer on call’ contracts to speed up access to supplies and actively manages the supply chain.
» Timely bill payment is essential; this was not the case and the delay in paying suppliers and service providers may jeopardize willingness particularly of small businesses to renew contracts. Specifically, for ESS at the Williams Lake debriefing session, it was reported that some Prince George businesses would not be interested in supporting ESS in the future due to delay in payments.

» Generally, the logistic system was able to respond to resource requests. Most were responded to on time, but some were incomplete (e.g. the quantity sent did not match the quantity asked for). This should have stimulated a deficiency report but instead the normal process was to generate a further resource request. The efficient operation of the system could not therefore be quantified in terms of the percentage of demands that were satisfied in full based on time, quantity and condition of items on delivery.
## ACTIONS FOR CONSIDERATION

### THEME 4: RESOURCING

#### 3.4 Strengthened Human Resource (HR) Capacity Actions for Consideration:

| A. | Strengthen and better utilize TEAMs, including matching positions with TEAMs member’s skill set and enhanced training efforts. |
| B. | In conjunction with local authorities and First Nations, the Province should identify where provincial staff may need to go to support local EOCs and ESS efforts. This can then be matched to available staff constraints (domestics, geographic and skill factors), to inform on potential deployment and employment. |
| C. | Mutual Aid Agreements should be developed to access resources from neighboring jurisdictions. |
| D. | Sustaining volunteer goodwill needs to be considered at the provincial and local levels and maintaining contact with volunteers should be a key component of communication plans. |
| E. | Increase the capacity to integrate convergent volunteers into the response effort. |
| F. | Increase the capacity for Disaster Psychosocial support and consider developing a new concept based on needs identified. |
| G. | Increase the number of Public Safety Lifeline Volunteers through an attraction campaign and a revision of terms of service e.g. ensure volunteers are compensated/reimbursed for incurred expenses in a timely manner. |
| H. | First Nations represent a resource that has important local knowledge extending back generations. As such they are a source of environmental intelligence that is currently not well used. It is recommended that:

  a) Relationships are built at the provincial, regional and local authority level with respective First Nations.  
  b) Baseline the capabilities and capacities of First Nations to understand resourcing requirements, both in terms of training and potential ways to leverage capability.  
  c) Establish joint training opportunities.  
  d) Establish First Nations Liaisons as permanent members of staff within the PECC and PREOCs. |

#### Strengthened ESS and Mass Care Capacity Actions for Consideration:

| A. | In conjunction with Local Authorities and First Nations, the Province should determine baseline ESS capabilities and capacities throughout the province with the intent of establishing realistic capabilities and capacity that can be delivered for the future. |
| B. | Informed by an HRVA and best practices from other jurisdictions around the world, the Province should determine baseline Mass Care requirements with the intent of establishing realistic capabilities and capacity that can be delivered for the future. |
| C. | Implement a program with Local Authorities to identify and maintain contact with those ESS volunteers who stepped forward in 2017 and recognize them for their service. Understand the numbers that are willing to volunteer again in order to identify the potential delta to be resourced. |
| D. | Implement a robust e-system for ESS registration and tracking and the electronic financial support to replace food grants. |
| E. | Implement procedures including the provision of communications equipment to draw on representatives from local communities and First Nations that have been evacuated to provide advice and confirm ESS needs. |
| F. | Implement procedures to rapidly mobilize Health Liaison Officers to be co-located at Reception Centres to assist ESS staff with needs assessments. |
| G. | Implement procedures to help guide the determination of where vulnerable populations should best be accommodated based on individual/community/cultural needs. |
### ACTIONS FOR CONSIDERATION

**THEME 4: RESOURCING**

**Strengthened Facilities and Material Resource Management and Capacity Actions for Consideration:**

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<tbody>
<tr>
<td>A. Implement a facility development plan for all provincial-operated emergency program facilities to meet the requirements for extended activations.</td>
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<td>B. Conduct a detailed study to review how logistic support was provided during summer 2017 to examine commodities provided, distribution systems used, how local supply chains were leveraged and stores tracked and paid for, with the intent of making improvements to system responsiveness.</td>
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<td>C. Develop and resource a plan for pre-positioning supplies and resources at both the local and provincial level for freshet and wildfire drawing on the example from the Earthquake Immediate Response Plan, Annex I (Critical Resource List).</td>
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<tr>
<td>D. Introduce a practical, manageable, tracking system for key commodities e.g. burlap sandbags.</td>
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<td>E. Identify suppliers/contractors/equipment/HR resources sources before the event and then place “standing offer/on call” contracts to speed up delivery when needed. This should include forecasting demand, especially for more unusual items.</td>
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<td>F. Review and revise regulations/policy to designate pre-positioning requirements at the Regional District and Local Authority level.</td>
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<td>G. Review the bill payment process with the intent of removing nugatory steps and speeding up payment, especially for small businesses.</td>
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<tr>
<td>H. Consider introducing a deficiency report to identify when a resource request has not been correctly satisfied (wrong item, quantity, delivery location, condition) to allow the efficiency of the logistic system to be measured.</td>
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<td>I. Pre-position a small contingency of Information Technology (IT) equipment in PREOCs to enable immediate self-help. IT specialists should be embedded in PREOCs either as part of the core staff or on contract.</td>
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<td>J. Revise the rules for the use of purchasing cards at the local level to better balance the need for probity and flexibility.</td>
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3.5 THEME 5: TRAINING AND EXERCISES

This theme focuses on the development and implementation of activities to train staff, volunteers, stakeholders and the public on their respective roles in emergency management; and exercises to test emergency plans, procedures, equipment and personnel.

“I did not receive any preparatory materials prior to my deployment to Prince George. I had no idea what my role was going to be upon arriving or the appropriate reporting structures either. Having a ‘cheat sheet’ containing roles/responsibilities/reporting structures prior to deployment would have been hugely helpful.” (Northeast Region responder)

“We need more realistic training. I understood the procedures as trained but nothing went by the book.” (Central Region responder)

“There is a need for local authorities to be more prepared in their role for EOC operation.” (Southeast Region responder)

“Staff were not trained or committed to their roles. They were not held accountable.” (Southeast Region responder)

“Local authority senior management is not engaged enough to consider EOCs, EOC training, and EOC readiness important.” (Southwest Region responder)

STRENGTH

Since 2016 the province has invested in a progressive emergency management training and exercise plan.

DISCUSSION

The nature of emergency management is complex. The discipline and practice of emergency management comes with specific knowledge requirements that must be in place across the range of stakeholders. At the same time, the management of an ever-changing, highly complex strategic, operational and politically charged environment requires important leadership and management skill sets.

Training and exercises are cornerstone emergency management activities and are critical for a successful response. Training and exercising supports, tests and validates the effective integration of the response activities of all levels of government and other emergency management partners such as critical infrastructure owners and operators, not-for-profit agencies and volunteers. EMBC has posted a number of informative documents to its website which include but are not limited to:

» EMBC Sponsored Regional Emergency Management Courses that are offered throughout the province to support the training requirements of local government. The primary target audience for this training is local government staff and Public Safety Lifeline Volunteers (PSLV) who function in emergency management operational roles during emergencies.

» Emergency Management Webinar Series which provides participants with up-to-date information on emergency management best practices, approaches, strategies and technologies.

» Emergency Management Training: The Core Participant Guide and supporting PowerPoint slide deck which is built around a two-day workshop to provide a comprehensive overview of emergency management in British Columbia, including, the various emergency management programs and the roles and responsibilities of the people involved.

» Emergency Management in BC Reference Manual which serves as a reference guide to support the core Emergency Management principles applied in B.C.
Despite the availability of these and many more resources and training programs available across the province and across Canada, it was reported that it often took many days for Local Authority EOCs as well as the PREOC and PECC to mobilize and get into the rhythm of directing, coordinating and controlling emergency management operations. A number of contributing factors including shortcomings in supervision and leadership; a lack of familiarity with plans, policies protocols by permanent staff, augmentees and volunteers e.g. EOC/PREOC and PECC Operational Guidelines, ESS Operational Guidelines; E-Team and geospatial information systems (GIS), iMapBC, and other Information Technologies were reported. Of concern some expressed a view that organizational culture and work behaviours were superficial e.g. prioritizing work over safety; as well as a variety of skill-based errors and omissions. In most cases, the root cause could be attributed to shortcomings in training, knowledge and skill.

EMBC is the lead agency for the development and coordination of provincial-level exercises in order to validate plans, test procedures and provide realistic training for staff, as well as to test facilities, equipment and resources. Exercises also foster relationships, confirm expectations and maintain rapport with key partners. In terms of training and certification, it was reported that until recently, the lack of a multi-year all-threats/hazards exercise plan/cycle likely hampered the ability of EMBC, supporting ministries and other stakeholders and partners to refine and validate plans, test procedures and equipment in preparation for an emergency of this magnitude. In recent years, the Province has invested in realistic training exercises such as Exercise Coastal Response 2016 (catastrophic earthquake and tsunami), Exercise Salish Sea 2017 and Exercise Oceanic Down (major marine disaster), and Exercise TerraMoTI 2018 (catastrophic earthquake and tsunami). Together with the ongoing effort to implement improvement plans to address the lessons learned from more recent exercises and activations, the Province’s commitment to developing solutions to identified issues, strengthening best practices and continuous learning will serve British Columbians well.
### ACTIONS FOR CONSIDERATION

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<th>THEME 5: TRAINING &amp; EXERCISES</th>
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<tr>
<td><strong>3.5 Training Programs</strong></td>
<td>Training programs should be designed and delivered through a cultural safety and humility lens to ensure that they provide participants with the knowledge, skills, and abilities to perform the critical emergency program tasks to a proficiency level sufficient to achieve the desired outcomes.</td>
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A. Develop a single repository for all provincial ministry staff emergency management training records.

B. Job Review:
   a) Review/refine expected roles, responsibilities, accountabilities and desired outcomes from all permanent staff, augmentees, volunteer and liaison positions which could be assigned to support the emergency program.
   b) Review/refine the specific requirements of job tasks and apply them to the recruitment and placement of permanent staff, augmentees, volunteer and liaison positions which could be assigned to support the job review.

C. Strengthen Training Practices:
   a) Perform a Training Needs Analysis for each position and role in order to generate the desired capability and capacity. Where possible, consult employees to identify their training needs in relation to performing their work activities competently and safely.
   b) Ensure that validated training needs are transformed into a training program.
   c) Ensure that the training program is applied to all personnel, including management.
   d) Ensure that training is provided on recruitment, transfer, change of task, introduction of new work equipment, changes in work equipment or systems of work, and introduction of new technology.
   e) Ensure that the approved training program is resourced, and participation is enforced.
   f) Ensure that the training program is reviewed on a regular basis and/or when there are changes to equipment or processes, to ensure that the skills and competencies of personnel remain relevant.

D. Develop learning objectives and design/develop training materials.
   Specific areas of instruction should include:
   a) Emergency management plans and procedures, including the process for activating onsite incident management for large and complex events.
   b) Emergency management plans and procedures for:
      i. Activating onsite incident management for large and complex events;
      ii. Establishing incident command/unified command;
      iii. Developing executable Action Plans to measure, monitor, assess and report on progress;
      iv. Addressing command management (i.e. transitioning from Incident Command to Unified Command, interfacing with senior public officials including ADM-EC, M-DEC and elected officials);
      v. Demobilizing – the transition from response to recovery, and procedures to refurbish/reconstitute expended resources; and
      vi. Collecting and sharing public information.
   c) The conduct of Hazard Risk Vulnerability Assessments.
   d) Continuity of Operations/Business Continuity Plans and procedures to safely relocate capability/capacity without loss of operational integrity to include familiarity with ‘secondary’ means to establish and maintain communication services.
## ACTIONS FOR CONSIDERATION

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<tr>
<th>THEME 5: TRAINING &amp; EXERCISES</th>
<th>ACTIONS FOR CONSIDERATION</th>
</tr>
</thead>
</table>
| **3.5 Training Programs**     | e) Knowledge Management plans, procedures and technologies to include:  
   i. Processes and/or technologies to:  
   ii. Maintain, accountability of deployed resources and personnel;  
   iii. Set-up and operate E-Team;  
   iv. Develop and maintain a common shared understanding for knowledge management;  
   v. Manage information and requests for support, situation reports etc.;  
   vi. Operate and maintain standardized large-screen TV/common operating picture, maintain accurate content on virtual/physical status boards;  
   vii. Maintain accurate records of decisions to provide a complete, open and transparent history of management oversight and decisions, as well as the rationale for decisions/actions; and  
   viii. Address shift turnover/staff relief.  
   f) Ensure that personnel are trained to perform their work competently and safely and verify their competency to perform all job tasks. Ensure that all personnel understand the training/instruction provided as well as uses and limitations of their equipment.  
   g) For those selected or appointed to leadership and supervisory roles, in addition to the above, training skills and abilities in:  
   h) Managing workloads, scheduling, and the allocation of job tasks according to employee capability/capacity, and the supervision, tracking of job-related performance and enforce occupational health and safety standards;  
   i) Motivational and interpersonal skills including articulation of roles/responsibilities, expected outcomes/deliverables and quality standards; and  
   j) Design, develop and implement a Training Management System to anticipate upcoming training requirements, flagging overdue training, recording successfully completed training, and recording/managing non-attendance and failures/shortcomings at training.  
| A. Develop a repository or ‘lessons learned cell” for all exercise documents and after-action reviews for provincial ministries in all aspects of provincial emergency program exercises and activations in support of continuous improvement efforts.  
   B. Build on the lessons learned from designing and delivering a full range of exercises that adhere to an approved plan and exercise cycle designed to achieve the following outcomes:  
   a) Validation: Validating plans, policies, doctrine, procedures and the ability to conduct incident management operations.  
   b) Relationships: Building, clarifying, and strengthening relationships with partners and stakeholders prior to an actual incident.  
   c) Readiness: Assessing preparedness/readiness with an emphasis on identifying shortfalls and closing gaps.  
   d) Resourcing: Refining plans, identifying available resources and capabilities, conducting training, and evaluating training plans.  
   e) Training: Providing familiarization and on-the-job training for exercise participants in their roles and responsibilities for conducting incident management operations.  
   f) Familiarization: Familiarizing exercise participants with regulations, policies, plans, processes, tools and procedures.  

3.6 THEME 6: PUBLIC/STAKEHOLDER AWARENESS AND EDUCATION

This theme focuses on the planning and implementation of initiatives to educate the public/stakeholders on emergency mitigation, preparedness, response, and recovery; to increase resilience; and to encourage participation in volunteer programs.

“There is a need to recognize volunteers – a thank you message from the Province would be very meaningful.” (Kamloops Local Authority)

“There was a lack of coordination of public messaging.” (Kamloops Local Authority)

“People didn’t know how to register for services and were standing in line for hours when they didn’t need to be.” (Kamloops PREOC)

“Revamping Emergency Info BC so that accurate and timely information was available would have been very useful.” (PECC Staff)

“Regional District and Local Authority Emergency Operations Centres lack experience and training for EOC duties.” (Prince George PREOC)

“There is a need to have more education for Local Authorities to understand our needs.” (Prince George PREOC)

STRENGTH

Recognition of the need for a Joint Information Centre to support larger scale and sustained events

DISCUSSION

It was reported that there were shortcomings in strategic communication and public communication plans. PREOCs reported that public information lacked process and structure, as local government teams were overwhelmed and uncertain of their lanes. Overarching public information plans, policies and protocols are not sufficiently developed and the concept of how to generate and maintain a Joint Information Centre (JIC) have not been developed to ensure that accurate and timely messages are passed to the public.

Initially, public messaging to communities was coming from Mayors and Local Councils. This was generally accurate tactical level information pertaining only to their communities. However even conducting this task placed significant strain on the local public information staff.

We heard from a number of local authorities that they would have appreciated support from the Province through the deployment of qualified public information officers or a public information team.

It was reported that there is a need for close co-operation between host communities and the evacuated communities’ public information staff, and leadership. There were reports of frustration caused when evacuees were seeking information on what the situation was in their home communities but could only find information staff from the host town or city (who did not have the local knowledge to answer questions). Consideration should be given to establishing a jointly run information centre in the host municipality.
Initially during the freshet, the Province did not stand up a JIC and it was not until after the Provincial Declaration of Emergency that a JIC was established and the Province asserted a leading role. Even after the JIC was established, there were still reports of confusion and a lack of consistent and timely public messaging because MoTI and the BCWS retained the authority to direct and manage public information in their own areas of jurisdiction. It was reported that integrated JIC policies and protocols had not been developed and refined; cross-ministry staff had never conducted joint training, and had little or no chance to integrate prior to arrival. It was also noted that there were significant problems in meeting the demands of synthesising information from numerous sources, ascertaining validity and then passing on accurate and timely information to the public.

It was reported that provincial Internet sites such as Prepared BC and Emergency Info BC were useful but had significant gaps. For example, there is no information on Prepared BC on what it means to be evacuated and what a Reception Centre/Group Lodging means, what support may be available etc. It was reported by PECC staff that they felt that Emergency Info BC could have been used much more extensively. Consideration should be given as to who directs and manages these important information conduits, especially after the JIC is stood up.
### ACTIONS FOR CONSIDERATION

**THEME 6: PUBLIC/STAKEHOLDER AWARENESS AND EDUCATION**

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<td><strong>3.6</strong></td>
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</table>

A. Develop plans, policies and protocols to educate and inform both internal and external audiences of plans/processes as well as authorities, mandates, jurisdiction, capabilities, capacities and limitations of the provincial emergency program.

B. Clearly define the differing roles of the Province, local authorities and First Nations for routine day-to-day operations as compared to and when the PECC, PREOCs, DOCs or EOCs are activated, and/or when operating under provincial declarations of emergency, SOLEs and/or BCRs.

C. Ensure that the provincial risk management framework and supporting plans, policies and processes are communicated regularly with stakeholders to create a shared understanding of how risk is assessed, analyzed and managed.

D. Plan, conduct, and evaluate public education programs to improve citizen prevention, protection/mitigation, response and recovery capabilities.

E. Strengthen public messaging regarding:
   a) individual and community preparedness drawing on best practices from Floodsmart, Firesmart and Earthquake preparedness programs to ensure that all British Columbians are fully aware of their responsibilities and to attract volunteers to support neighborhood, community and provincial emergency programs; and
   b) the Strategic Wildfire Prevention Initiative (SWPI), - the suite of funding programs funding by the Province and administered by UBCM - to encourage communities to mitigate wildland urban interface risks.

F. Provide continuing education and training for the public on mitigation and preparedness programs and resources, community emergency response plans, alerts and warnings, evacuation/remain in place plans, exercise participation, volunteer opportunities and training, and personal/family preparedness plans and emergency kits etc.

G. Develop plans, policies and protocols:
   a) For coordinating, managing, and disseminating public information including alerts, warnings, declarations and orders and post-incident re-entry information.
   b) For collecting, vetting, validating and disseminating the inflow of public-related information from all sources (i.e. social and traditional media, reporting from the public through call-centres etc.) in a timely fashion.
   c) To provide timely, relevant and accurate information to the public in the dominant languages of the community, and appropriate for those with limited language competence, disabilities, cultural or geographic isolation, or vulnerabilities due to age.

H. Develop a “menu” of pre-planned messages which can be easily broadcast and ensure that business processes to broadcast these messages are understood by all those dealing with the public. Ensure that all public messages are synchronized and coordinated at all levels through a JIC (i.e. many voices, one message).
This theme focuses on the establishment of mechanisms to review the emergency program and its emergency plans (after testing or implementation); consider and apply lessons learned; and revise the emergency program and plans accordingly.

**DISCUSSION**

- In British Columbia, the Office of the Auditor General produced the *Guide for Developing Relevant Key Performance Indicators for Public Sector Reporting*. This guide was produced to help public sector organizations develop relevant Key Performance Indicators (KPIs) and to better understand how organizations are doing in the very important area of accountability.

- In 2012, the Auditor General of British Columbia released an *Update on Government’s Implementation of the BC Reporting Principles* which itemized shortcomings in reporting and how it is not being adequately used to track performance.

- Since the release of the 2003 Filmon Report and recommendations, there have been several official, media and academic reports which draw attention to the slow progress made by the B.C. government to implement the Filmon recommendations, in particular addressing fire fuel sources that could pose a threat to homes and businesses.

- In 2010, government released the *BC Wildland Fire Management Strategy* to provide direction for the management of fire that will effectively restore the natural role of fire in ecosystem processes, as well as enhance the wildfire response. While the strategy articulates goals, priorities and actions, as well as cross-agency linkages between plans, programs, and agencies, there is no defined management accountability structure to guide implementation within the ‘shared responsibility’ construct under which the strategy was developed, nor are there any defined processes to collect, measure, assess and report on progress towards achieving desired outcomes.

- The May 2015 *Special Investigation Report of the Forest Practices Board* was particularly critical of wildfire management practices, concluding that only about 10 percent of high risk forests around communities had received a single fuel management treatment in the preceding 10 years. Similarly, the adoption of BC FireSmart principles by communities was not widespread and was progressing slowly, and there were no incentives in place to address hazardous fuels on private property.

- There is no objective information that the Province has a well-defined management accountability structure to collect, measure, assess and report on progress towards achieving desired outcomes in wildfire mitigation and preparedness.
Regarding flood management, BC has not developed a flood management strategy, however, there is a British Columbia Flood Response Plan (2013) which describes the methodology the provincial government will utilize for coordinating activities to manage a flood event, clarifies the roles and responsibilities of the ministries involved in flood management during an integrated provincial response event, and describes a concept of operations that fosters collaboration among organizations managing the consequences of a flood emergency.

Regarding flood mitigation and preparedness, the Associated Environmental Consultants Inc. Review of 2017 Flood Response: Okanagan Lake Regulation System and Nicola Dam report for Ministry of Forests, Lands, Natural Resource Operations and Rural Development provides a very thorough analysis of how the River Forecast Centre (RFC) forecasts lake inflow levels, manages water to mitigate floods and droughts, and makes operational decisions. The current prediction models are run once per month from February 1st to May 1st and rely on data available on the date that the forecast is made and are unable to look ahead to predict how future weather will influence inflows. The operational decisions and rationale are well documented in the 2017 Report. Additionally, the RFC is experimenting with models that incorporate forecast weather and can be updated more often than monthly. They are not sufficiently advanced according to the 2017 Report to be a reliable tool at this point.

The review found no objective evidence that the Province has a well-defined management accountability structure to collect, measure, assess and report on progress towards achieving desired outcomes in flood-hazard mitigation and preparedness. This is in part because the prediction models are not yet sufficiently advanced.

At the local level, while it is recognized that local authorities know their jurisdictions best and should not have their decision-making power eroded, with authority comes responsibility. Section 6(3) of the Emergency Program Act states that local authorities “must establish and maintain an emergency management organization to develop and implement emergency plans and other preparedness, response, and recovery measures for emergencies and disasters.”

The review team was not able to find direction/guidance to compel local authorities or critical infrastructure owners/operators to share or make modifications when required to their local emergency plan/business continuity plans nor were they able to identify standardized emergency plan/business continuity plan templates to ensure consistent and unified planning.

The review team was unable to find any objective and publicly available information regarding how the Province currently collects data and measures, audits and publicly reports on measuring and reporting local authority compliance with Section 6(3) of the EPA.

The Emergency Management BC Strategic Plan 2014/2015 – 2016/2017 describes how EMBC would, during that period, prioritize its work activities. Key deliverables included:

- Publish annual synopsis on EMBC’s overall state of preparedness.
- Review EPA (Note: this effort was halted prior to the 2017 election).
- Review and amend supporting Regulations to the EPA.
- Develop strategy for reporting on provincial government and Crown corporations overall state of preparedness.
- Develop strategy for reporting on British Columbia’s overall state of preparedness.
The review team was not able to find any objective information regarding how EMBC currently collects data and measures, assesses and publicly reports on the delivery of the provincial emergency program to include executing its own Strategic Plan.

The Initial Findings from Exercise Coastal Response 2016 (catastrophic earthquake scenario) were reviewed and it was reported that a number of recommendations from this report have already been implemented, thus supporting a culture of continuous improvement.

The review team was not able to find any objective information regarding how the Province performs ‘system-level’ quality management and continuous improvement of BCEMS (the system, not the guide) through a combination of internal and external audits of compliance by local authorities, regional districts, First Nations, provincial ministries/agencies, volunteer organizations, and private sector stakeholders who contribute to the successful delivery of the provincial emergency program.
## ACTIONS FOR CONSIDERATION

### THEME 7: MAINTENANCE AND CONTINUOUS IMPROVEMENT

### ACTIONS FOR CONSIDERATION

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<td><strong>3.7</strong></td>
<td>A. Given the uncertain but inevitable nature of wildfire, floods and other natural and man-made disasters in B.C., the Province should develop and implement a ‘government-wide’ risk-based emergency program management accountability, performance measurement, and reporting policy which links organizational mandate, vision, mission, and strategic goals and objectives to program outcomes based on guidance contained in the Office of the Auditor General’s Guide for Developing Relevant Key Performance Indicators for Public Sector Reporting. See figure 1.</td>
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<td>B. Update ministry-specific (including EMBC Strategic Plan, Office of the Fire Commissioner Strategic Plans) strategic plans ensuring compliance with the emergency program management accountability, performance measurement, and reporting policy recommended above.</td>
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<td>C. Update the BC Comprehensive Emergency Management Plan, the All-Hazard Plan (as well as the hazard-specific annexes including the Flood Response Plan and Provincial Coordination Plan for Wildland Urban Interface Fires) ensuring that they comply with the emergency program management accountability, performance measurement, and reporting policy recommended above.</td>
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<td>D. Update the BC Wildland Fire Management Strategy to include a management accountability structure. Consider drawing on Alberta’s recently developed Wildfire Management Planning Standard that sets the conditions for the establishment of a reliable basis for decision-making, setting priorities and providing direction to operational activities.</td>
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<td>E. Investigate wildfire and flood-hazard modelling tools tailored to the unique factors of B.C. to better inform Hazard Risk Vulnerability Assessments, planning and operational decision-making.</td>
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<td>F. Develop Key Performance Indicators (KPIs) specifically tailored to the emergency program management accountability, performance measurement, and reporting policy proposed above. Consider drawing from the Technical Guidance for Monitoring and Reporting on Progress in Achieving the Global Targets of the Sendai Framework for Disaster Risk Reduction as well as US Department of Homeland Security Measuring for Results: Key Concepts for Understanding the Performance of DHS Programs and Activities.</td>
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<td>G. Initiate a project to determine and enforce prescribed standards for local authority emergency programs to include, incentivizing/compelling local authorities to: a) Ensure currency of the Hazard Risk Vulnerability Assessment (HRVA), including annual review. b) Ensure the local emergency plan is current, available and communicated. c) Implement standardized emergency plan templates to ensure consistent and unified planning. d) Implement minimum standards for ICS training, exercises and validity periods, and allocation of resources to meet these standards. e) Implement an accountability structure to collect data and measure, audit and publicly report on local authority compliance with legislation and regulation.</td>
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<td>H. Update the EPA, regulation and related plans to identify critical infrastructure and essential services that will be provided in an emergency, as well as how these services will be provided if a disaster or emergency occurred.</td>
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<td>I. Create new or update legislation, regulation and policy to acquire, share, safeguard, archive and dispose of sensitive data related to critical infrastructure and essential services.</td>
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### ACTIONS FOR CONSIDERATION

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<th>THEME 7: MAINTENANCE AND CONTINUOUS IMPROVEMENT</th>
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<td>ACTIONS FOR CONSIDERATION</td>
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**J.** Initiate a project to determine and enforce prescribed standards for critical infrastructure and essential services owners/operators to develop emergency management and business continuity plans to include incentivizing/compelling owners/operators to:

- **a)** Ensure currency of the Hazard Risk Vulnerability Assessment (HRVA), including annual review.
- **b)** Share accurate, relevant, timely and decision-quality information on the location, status and real/potential vulnerabilities to critical infrastructure and essential services.
- **c)** Ensure emergency/business continuity plans are current, available and communicated.
- **d)** Implement standardized emergency/business continuity plan templates to ensure consistent and unified planning.
- **e)** Implement minimum standards for emergency management/business continuity training, exercises and validity periods, and allocation of resources to meet these standards.
- **f)** Implement an accountability structure to collect data, measure, audit, and publicly report on critical infrastructure and essential service provider compliance with legislation and regulation.

**K.** Continue to implement the recommendations from the Initial Findings from Exercise Coastal Response 2016, Exercise Salish Sea 2017, Exercise Oceanic Down 2018, and Exercise TerraMoTI 2018 and future operations and exercises as part of a process of continuous learning.

**L.** Define Key Performance Indicators (KPIs) and targets, implement measurement and reporting framework to determine the degree to which the requirements set out in emergency program legislation, regulations and policy and being achieved.

**M.** Develop and implement ‘system-level’ internal and external audits of BCEMS (the system, not the guide) as part of senior leadership’s accountability for quality management and continuous improvement. C4i suggests that EMBC be assigned to manage and oversee the development and delivery of such a province-wide system and lead regularly scheduled internal audits (supported by subject matter experts as required). On a regular basis (i.e. 4-5 years), external audits should be led by an independent organization familiar with performing system-level emergency program inspections and audits. EMBC should be resourced to be able to lead/perform and support both internal and external audits such that a meaningful sampling of local authorities, regional districts, First Nations, provincial ministries/agencies, volunteer organizations, and private sector stakeholders are internally or externally audited on an annual basis. A basic audit tool already exists in the Emergency Program Self-Assessment Checklist located in the BCEMS Guide.
Acknowledgements

The C4i team and the Province would like to acknowledge the men and women from across British Columbia, Canada and around the world that responded to the call to action and came to the support of British Columbia during the unprecedented freshet and wildfire season.

A special thank you goes out to the hundreds of responders, local authorities, regional districts, First Nations, federal and provincial partners, non-governmental organizations, volunteers and private sector stakeholders who provided thoughtful and respectful observations, insights and important points of view during the data collection efforts.

The Province would also like to express gratitude to all of the participants that supported the multi-tiered review, particularly in light of the many communities and emergency management practitioners who were still in the process of rebuilding their communities during the development of this report.
**ANNEX A – Acronyms**

<table>
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<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>AANDC</td>
<td>Aboriginal Affairs and Northern Development Canada</td>
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<tr>
<td>AAR</td>
<td>After Action Report</td>
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<td>AB</td>
<td>Alberta</td>
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<td>AEMA</td>
<td>Alberta Emergency Management Agency</td>
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<td>APU</td>
<td>Advance Planning Unit</td>
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<td>BC</td>
<td>British Columbia</td>
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<td>BCAS</td>
<td>BC Ambulance Service</td>
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<td>BCCS</td>
<td>BC Coroners Service</td>
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<tr>
<td>BCEHS</td>
<td>BC Emergency Health Services</td>
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<tr>
<td>BCEMS</td>
<td>BC Emergency Management System</td>
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<td>BCR</td>
<td>Band Council Resolution</td>
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<td>BCP</td>
<td>Business Continuity Plan</td>
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<td>CAF</td>
<td>Canadian Armed Forces</td>
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<td>CCG</td>
<td>Central Coordination Group (Province of BC)</td>
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<td>CEMP</td>
<td>Comprehensive Emergency Management Plan</td>
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<td>CERRC</td>
<td>Catastrophic Emergency Response and Recovery Centre</td>
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<td>COP</td>
<td>Common Operational Picture</td>
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<td>CPOD</td>
<td>Community Points of Distribution</td>
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<td>CRC</td>
<td>Canadian Red Cross</td>
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<td>CRD</td>
<td>Capital Regional District</td>
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<td>CSA</td>
<td>Canadian Standards Association</td>
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<td>CTL</td>
<td>Canadian Standards Association</td>
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<td>PREOC</td>
<td>Central Region PREOC (Kamloops)</td>
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<td>DND</td>
<td>Department of National Defence</td>
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<td>DOC</td>
<td>Departmental Operations Centre</td>
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<td>DPS</td>
<td>Disaster Psychosocial Services</td>
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<td>EDMSIM</td>
<td>Emergency and Disaster Management Simulation</td>
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<td>EMBC</td>
<td>Emergency Management British Columbia</td>
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<td>ENDEX</td>
<td>End of Exercise</td>
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<td>EOC</td>
<td>Emergency Operations Centre</td>
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<td>EOCTX</td>
<td>Emergency Operations Centre Exercise</td>
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<td>ESS</td>
<td>Emergency Social Services</td>
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<td>EX</td>
<td>Exercise</td>
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<td>FERMS</td>
<td>Federal Emergency Response Plan and Management System</td>
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<td>FERP</td>
<td>Federal Emergency Response Plan</td>
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<td>FEMA</td>
<td>Federal Emergency Management Agency (US)</td>
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<td>FLNROD</td>
<td>Ministry of Forests, Lands, Natural Resource Operations and Rural Development</td>
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<tr>
<td>FN</td>
<td>First Nation</td>
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<tr>
<td>FNCU</td>
<td>First Nations Coordination Unit (EMBC)</td>
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<td>FNSS</td>
<td>First Nations’ Emergency Services Society of BC</td>
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<td>FNHA</td>
<td>First Nations Health Authority</td>
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<td>FNLC</td>
<td>First Nations Leadership Council</td>
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<tr>
<td>GCPE</td>
<td>Government Communications and Public Engagement</td>
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<tr>
<td>GeoBC</td>
<td>Geomatics Branch of BC Ministry of Forests, Lands and Natural Resource Operations</td>
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<td>GIS</td>
<td>Geographic Information System</td>
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<td>GOC</td>
<td>Government of Canada Operations Centre (Ottawa)</td>
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<td>GVRD</td>
<td>Greater Vancouver Regional District</td>
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<td>HA</td>
<td>Health Authorities</td>
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<td>HECC</td>
<td>Health Emergency Coordination Centre</td>
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<td>HR</td>
<td>Human Resources</td>
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<td>HSSBC</td>
<td>Health Shared Services BC</td>
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<td>IDABC</td>
<td>Integrated Disasters and Accidents Society (B.C.)</td>
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<tr>
<td>ICS</td>
<td>Incident Command System</td>
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<tr>
<td>IGO</td>
<td>Intergovernmental Organization</td>
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<tr>
<td>IM/KM</td>
<td>Information Management/ Knowledge Management</td>
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<tr>
<td>INAC</td>
<td>Indigenous and Northern Affairs Canada (Note: In August 2017, the Prime Minister announced plans for the dissolution of Indigenous and Northern Affairs Canada (INAC) and the creation of two new departments: Indigenous Services Canada (ISC) and Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC))</td>
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<tr>
<td>IRP</td>
<td>BC Earthquake Immediate Response Plan</td>
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<td>ISO</td>
<td>International Standards Organization</td>
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<td>IT</td>
<td>Information Technology</td>
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<td>Abbreviation</td>
<td>Full Form</td>
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<tr>
<td>JIC</td>
<td>Joint Information Centre</td>
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<td>JTFP</td>
<td>Joint Task Force Pacific</td>
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<td>KPI</td>
<td>Key Performance Indicator</td>
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<td>LA</td>
<td>Local Authority</td>
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<td>LMS</td>
<td>Logistics Management System</td>
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<td>MCFD</td>
<td>Ministry of Children and Family Development</td>
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<td>M-DEC</td>
<td>Ministers-Deputies Emergency Committee</td>
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<td>MIRR</td>
<td>Ministry of Indigenous Relations &amp; Reconciliation</td>
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<tr>
<td>MLA</td>
<td>Member of the Legislative Assembly</td>
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<td>MOC</td>
<td>Ministry Operations Centre</td>
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<td>MoE</td>
<td>Ministry of Environment</td>
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<td>MoH</td>
<td>Ministry of Health</td>
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<td>MoTI</td>
<td>Ministry of Transportation and Infrastructure</td>
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<tr>
<td>MOU</td>
<td>Memorandum of Understanding</td>
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<tr>
<td>NEA PREOC</td>
<td>Northeast Region PREOC (Prince George)</td>
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<tr>
<td>NGO</td>
<td>Non-Governmental Organization</td>
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<tr>
<td>NIEM</td>
<td>National Information Exchange Model</td>
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<tr>
<td>NIMS</td>
<td>National Incident Management System (US)</td>
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<td>NR Can</td>
<td>Natural Resources Canada</td>
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<tr>
<td>NWE PREOC</td>
<td>Northwest Region PREOC (Terrace)</td>
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<td>OABC</td>
<td>Office of the Auditor General of BC</td>
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<td>PCT</td>
<td>Provincial Coordination Team</td>
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<td>Provincial Emergency Coordination Centre (Victoria)</td>
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<td>Provincial Emergency Program</td>
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<td>Public Health Agency of Canada</td>
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<td>PMBOK®</td>
<td>Project Management Institute Project Management Book of Knowledge</td>
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<td>PNEMA</td>
<td>Pacific Northwest Emergency Management Arrangement</td>
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<td>PREOC</td>
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<td>PSA</td>
<td>Provincial Staging Area</td>
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<td>PSC</td>
<td>Public Safety Canada</td>
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<td>PTN</td>
<td>Patient Transfer Network</td>
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<td>RAM</td>
<td>Responsibility Accountability Matrix</td>
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<td>RCM</td>
<td>Royal Canadian Mounted Police</td>
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<td>RD</td>
<td>Regional District</td>
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<td>ROD</td>
<td>Record of Discussion</td>
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<td>RSA</td>
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<td>SEA PREOC</td>
<td>Southeast Regional PREOC (Nelson)</td>
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<td>SITREP</td>
<td>Situation Report</td>
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<td>SOLE</td>
<td>State of Local Emergency</td>
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<td>Social Media</td>
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<td>Standard Operating Procedure</td>
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<td>SWE PREOC</td>
<td>Southwest Region PREOC (Surrey)</td>
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<td>TF</td>
<td>Task Force</td>
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<td>UBCM</td>
<td>Union of British Columbia Municipalities</td>
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<td>United States</td>
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<td>VIP</td>
<td>Very Important Person</td>
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<td>VIR PREOC</td>
<td>Vancouver Island Region PREOC (Victoria)</td>
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ANNEX B – Data Collection Summary

REVIEW OF LEGISLATION, REGULATION AND EMERGENCY PROGRAM FRAMEWORKS

As a first step in the after-action review, C4i reviewed relevant Canadian and provincial emergency program legislation and regulations to understand the legal basis, authority, responsibility and powers of various levels of government to mitigate, prepare for, respond to, and enable the recovery from emergencies and disasters. The review included:

International

- NATIONAL INCIDENT MANAGEMENT SYSTEM (NIMS): Developed by the United States Federal Emergency Management Agency (FEMA), NIMS guides all levels of government, non-governmental organizations (NGO), and the private sector to work together to prevent, protect against, mitigate, respond to, and recover from incidents. The jurisdictions and organizations involved in managing incidents vary in their authorities, management structures, communication capabilities and protocols, and many other factors. NIMS provides a common framework to integrate these diverse capabilities and achieve common goals.

National

- EMERGENCY MANAGEMENT ACT: Sets out the leadership role and responsibilities of the Minister of Public Safety and Emergency Preparedness, including coordinating emergency management activities among government institutions and in cooperation with the provinces and other entities.

- EMERGENCY MANAGEMENT FRAMEWORK FOR CANADA: Establishes a common approach for a range of collaborative emergency management initiatives in support of safe and resilient communities.

- NATIONAL EMERGENCY RESPONSE SYSTEM: Provides for the harmonization of joint federal, provincial and territorial response to emergencies. It supports and facilitates procurement and logistics coordination between all levels of government, the private sector, non-governmental organizations and international stakeholders.

- CANADA’S NATIONAL DISASTER MITIGATION STRATEGY: Sets out a common vision for disaster mitigation activities; integrates disaster mitigation into Canada’s evolving emergency management framework; and identifies primary actions to be undertaken by federal, provincial and territorial partners to support implementation of the National Strategy.

- INCIDENT COMMAND SYSTEM (CANADA): Both the federal and provincial emergency management systems draw from the “tenants” of the Incident Command System (ICS), a standardized on-site management system designed to enable effective, efficient incident management by integrating a combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure.

Provincial

- EMERGENCY PROGRAM ACT: Clarifies the roles and responsibilities of the provincial government and local authorities (municipalities or regional districts); provides extraordinary powers to the provincial government and/or local authorities; requires local authorities to create and maintain an emergency management organization; provides support to victims of disasters through the Disaster Financial Assistance (DFA) Program.

- EMERGENCY PROGRAM MANAGEMENT REGULATION: Tasks ministers to develop emergency plans and procedures; identifies ministerial responsibility for coordinating government responses to specific hazards; lists the...
duties of ministries and Crown corporations in an emergency/disaster.

**COMPENSATION AND DISASTER FINANCIAL ASSISTANCE REGULATION:** Provides direction when an event is declared eligible for Disaster Financial Assistance (DFA), providing financial assistance to help individuals and communities recover from catastrophic events, which have resulted in uninsurable damages.

**LOCAL AUTHORITY EMERGENCY MANAGEMENT REGULATION:** Tasks local authorities with establishing and maintaining an emergency management organization; empowers local authorities to appoint committees and a coordinator for emergency management; and requires local authorities to prepare local emergency plans.

**BRITISH COLUMBIA EMERGENCY MANAGEMENT SYSTEM:** A comprehensive framework that ensures a coordinated and organized approach to emergencies and disasters. This is standard practice for all provincial government ministries and Crown corporations and is recommended as best practice for all emergency management stakeholders in B.C.

**PREPARED AND RESILIENT:** A Discussion Paper on the Legislative Framework for Emergency Management in British Columbia: A Minister of State for Emergency Preparedness initiative to seek understanding of several key challenges in the Emergency Program Act and seek input from stakeholders on proposals for possible legislative changes so that government may better understand what improvements, if any, may be needed to ensure the Act is up to date and effective.

**LOCAL GOVERNMENT FEEDBACK TO PREPARED AND RESILIENT:** A Discussion Paper on the Legislative Framework for Emergency Management in British Columbia: The official response of the Union of British Columbia Municipalities (UBCM) which represents 100% of the local governments in B.C., as well as seven post-treaty First Nations members.

**REVIEW OF PLANS AND PROCEDURES**

C4i reviewed relevant Canadian and provincial emergency program plans and procedures to get a better understanding of the expected activities and processes (i.e. understand the ‘who, what, when, where and how’) to be followed by emergency program practitioners:

**National**

**FEDERAL EMERGENCY RESPONSE PLAN:** Designed to harmonize federal emergency response efforts with those of the provinces/territorial governments, non-governmental organizations, and the private sector; applies to domestic emergencies and to international emergencies with a domestic impact.

**NATIONAL DISASTER MITIGATION PROGRAM TERMS AND CONDITIONS:** Establishes the terms and conditions for the provision of funds under the Federal, Provincial/Territorial Mitigation Contribution Component of the National Disaster Mitigation Program.

**NATIONAL DISASTER MITIGATION PROGRAM RISK ASSESSMENT INFORMATION TEMPLATE:** A tool that has been developed by Public Safety Canada (PS) in consultation with other government departments, experts in risk assessment best practices, and international leaders in this area, for the input of risk information by funding applicants, based on a completed risk assessment process.

**GUIDE TO BUSINESS CONTINUITY PLANNING:** Provides guidelines for business continuity planning (BCP). Instead of focusing on resuming a business after critical operations have ceased, or recovering after a disaster, a business continuity plan endeavors to ensure that critical operations continue to be available.

**CANADIAN FORCES OPERATIONAL PLANNING PROCESS:** A comprehensive manual to guide operational planning in the Canadian Armed Forces, but applicable to any organization interested in risk-based decision-making focused on achieving desired outcomes in an environment of uncertainty and high consequences.
COMPREHENSIVE EMERGENCY MANAGEMENT PLAN: The BC Comprehensive Emergency Management Plan (CEMP) is described as Emergency Management BC’s emergency planning structure.

ALL-HAZARD PLAN: The BC All Hazard Plan is the base plan of the CEMP and outlines the provincial concept of operations as well as the roles and responsibilities that are applicable in all emergencies or disasters. Hazard-specific Annexes address provincial response and coordination regarding more common or high-risk hazards including the Flood Response Plan and Provincial Coordination Plan for Wildland Urban Interface Fires.

BRITISH COLUMBIA FLOOD RESPONSE PLAN: Describes the methodology the provincial government will utilize for coordinating activities to manage a flood event, clarifies the roles and responsibilities of the ministries involved in flood management during an integrated provincial response event, and describes a concept of operations that fosters collaboration among organizations managing the consequences of a flood emergency.

BRITISH COLUMBIA PROVINCIAL COORDINATION PLAN FOR WILDLAND URBAN INTERFACE FIRES: Provides a framework for integrated provincial emergency management to wildland urban interface (WUI) fires, sets out a concept of operations that fosters collaboration among multiple organizations, and clarifies the roles and responsibilities of provincial ministries.

EMBC POLICY: 5.13 British Columbia Disaster Mitigation Program: This policy identifies those entities eligible for funding re-distribution under the National Disaster Mitigation Program (NDMP). Notably, the NDMP is focused solely on flooding, and includes funding for risk assessments, flood plain mapping, mitigation planning and small scale structural works that would otherwise not be eligible for funding under a federal infrastructure program.

PROVINCIAL EMERGENCY COORDINATION CENTRE OPERATIONAL GUIDELINES: EMBC internal guidance on the role, responsibilities and functions of the PECC when it activates. The document does not outline the operational guidelines for site, local authority Emergency Operation Centres, Provincial Regional Emergency Operation Centres (PREOCs), the Central Coordination Group (CCG) or the Minister-Deputies Emergency Committee (M-DEC).

PROVINCIAL REGIONAL OPERATIONS CENTRE OPERATIONAL GUIDELINES: EMBC guidelines to achieve consistent application of emergency management functions, position roles and responsibilities, activities, processes and procedures across the six Provincial Regional Emergency Operations Centers (PREOCs).

PROVINCIAL EMERGENCY COORDINATION CENTRE AND PROVINCIAL REGIONAL OPERATIONS CENTRES DEPLOYMENT SUPPORT ANNEX: Outlines how EMBC maximizes the effectiveness of PECC and PREOC personnel while supporting their health and safety.

EMERGENCY OPERATIONS CENTRE OPERATIONAL GUIDELINES: Developed for EMBC by the Justice Institute of BC (JIBC), this document guides the management, organization, responsibilities, and coordination necessary to provide for effective response and recovery from major emergencies or disasters at the Site Support Level. The Guidelines claim to address incidents or events that may cause damage of sufficient severity and magnitude to warrant activation of a Department Operations Centre (DOC) and/or an Emergency Operations Centre (EOC).

EMERGENCY SOCIAL SERVICES RECEPTION CENTRE OPERATIONAL GUIDELINES: EMBC guidance on ESS planning and response, organizational structure, function checklists, and function aids (e.g., forms, instructions, etc.) for a fully expanded ESS Reception Centre.
EMERGENCY SOCIAL SERVICES FIELD GUIDE: EMBC guide to provide information regarding the provincial structure that is in place in order to support the provision of Emergency Social Services (ESS) by local volunteers and staff.

EMERGENCY MANAGEMENT IN BC REFERENCE MANUAL: EMBC manual is designed as a reference guide to support the core Emergency Management principles applied in B.C..

EMERGENCY MANAGEMENT TRAINING – THE CORE PARTICIPANT GUIDE: EMBC guide to provide a comprehensive overview of emergency management in British Columbia, including, the various emergency management programs and the roles and responsibilities of the people involved.

REVIEW OF FIRST NATIONS EMERGENCY PROGRAM MANAGEMENT

While First Nations emergency program management is described in the sections above, because of some reports that First Nations communities were disproportionately impacted by the freshet and wildfires and due to some reports of cultural insensitivity, C4i reviewed additional literature to gain a better perspective of First Nations issues. The review included:

National

Emergency Management Assistance Program: Describes how Indigenous Services Canada (ISC) works with provincial and territorial governments and non-government organizations to support First Nations and ensure they have access to comparable emergency assistance services available to other residents in their respective jurisdiction across all four pillars of emergency management: mitigation, preparedness, response and recovery, as well as forest fire suppression activities.

FIRST NATIONS EMERGENCY MANAGEMENT SERVICES FUNDING AGREEMENT: This agreement between the Department of Indian Affairs and Northern Development (DIAND) and Emergency Management BC renewed in 2017 to ensure the Province provides equivalent emergency management programs, services and activities to on-reserve First Nations communities in the province.

Provincial

FIRST NATIONS EMERGENCY SERVICES SOCIETY OF BRITISH COLUMBIA WEBSITE: This largely outdated website describes how the Society provides assistance to B.C. First Nations communities to develop emergency plans and assists First Nations with classroom/tabletop and other exercises, as required, to test the effectiveness of their plans and response. Of particular interest was the First Nations Emergency Management Level of Preparedness Map which, while dated 2012, revealed significant shortcomings in First Nations emergency plans.

INFORMING DISASTER RESILIENCE THROUGH A NUU-CHAH-NULTH WAY OF KNOWING: In this informative PhD Thesis, Emily Dicken advocates for the inclusion of Indigenous knowledge into the lexicon of emergency management practices and the dialogue on disaster resilience.


INDIGENOUS RELATIONS BEHAVIOURAL COMPETENCIES IMPLEMENTATION GUIDE: This BC Public Service Agency guide is designed for field and line workers, supervisors or hiring managers, strategic directors or executives to continually develop Aboriginal relations competencies, why they are important and how to apply them in the workplace.
EMERGENCY MANAGEMENT SERVICES FUNDING AGREEMENT: This 10-year bilateral emergency management agreement signed in 2017 between Indigenous and Northern Affairs Canada (INAC) and EMBC provides for the delivery of emergency management programs, services and activities by the Province to on-reserve First Nations communities in the province.

FIRST NATIONS EMERGENCY MANAGEMENT TOOL KIT: This EMBC tool kit is designed to provide First Nations communities with resources to support emergency management activities at the community level (it was published in July 2017 during the height of the response).

REVIEW REPORTS FROM PREVIOUS EMERGENCIES/DISASTERS

C4i reviewed previously completed reports for major events of provincial, national or international significance to gain a better understanding of the processes followed in developing these reports as well as the major findings and recommendations. Reports included:

International

CALIFORNIA GOVERNOR’S OFFICE OF EMERGENCY SERVICES AFTER-ACTION REPORT 2014 WILDFIRE SEASON: The California Emergency Services Act mandates that the California Governor’s Office of Emergency Services in cooperation with involved state and local agencies complete an after-action report within 120 days after the close of the incident period of each Governor proclaimed disaster. Unfortunately, the review into the 2017 Napa wildfires was not yet complete and the previous wildfire of significance occurred in 2014.

AUSTRALIAN ROYAL COMMISSION INTO 2009 STATE OF VICTORIA BUSHFIRES: The Commission conducted an extensive investigation into the causes of, the preparation for, the response to and the impact of the fires that burned throughout the Australian State of Victoria in late January and February 2009.

BC Provincial

FIRESTORM 2003 – PROVINCIAL REVIEW OF THE 2003 FIRE SEASON (FILMON REPORT): The review was established by the provincial government to evaluate the overall response to the emergency and make recommendations for improvement in time for the next fire season. Findings and recommendations crossed all levels of government and included individuals.

FUEL MANAGEMENT IN THE WILDLAND URBAN INTERFACE – UPDATE: The 2015 BC Forest Practices Board Special Investigation reviewed progress made in managing fuel in the interface and set out to determine if the current approach to fuel management was working and to identify any opportunities for improvement. While noting that progress had been made since the 2003 Filmon Report, it found that most communities in B.C. remain vulnerable to catastrophic wildfire.

INITIAL FINDINGS FROM EXERCISE COASTAL RESPONSE 2016: EMBC’s initial findings from Exercise Coastal Response, British Columbia’s first, full-scale earthquake and tsunami response exercise. This exercise provided the Province with the first test of the B.C. Earthquake Immediate Response Plan (IRP), a document produced in 2015 that outlines the steps the Province and its partners would undertake in the immediate aftermath of a significant earthquake and tsunami event. While not focused on the wildfire to freshet hazards, this document was deemed important because it was comprehensive, current and included many of the stakeholders involved at all-levels of government in the freshet and wildfire events.

Alberta Provincial

REGIONAL MUNICIPALITY OF WOOD BUFFALO 2016 WILDFIRE RECOVERY PLAN: This plan was developed to guide the recovery of the entire region from a post-disaster state, coordinate rebuilding efforts using a build back better philosophy and enhance community-level resiliency.
MAY 2016 WOOD BUFFALO WILDFIRE POST-INCIDENT ASSESSMENT REPORT: This KPMG report prepared for Alberta Emergency Management Agency provided a review of the Government of Alberta’s support to stakeholders, emergency social services, and community evacuations during the May 2016 Wood Buffalo Wildfire.

REVIEW OF MANAGEMENT ACCOUNTABILITY AND PERFORMANCE MEASUREMENT

Due to the numerous organizational authorities, mandates, jurisdictions and interests involved in mitigation, preparing for, responding to, and enabling recovery from the combined freshet and wildfire events of 2017, C4i reviewed provincial, national and international management accountability and performance measurement direction/guidance and reporting frameworks. Particular focus was spent trying to understand current management practices when there are ‘shared responsibilities’ across multiple organizations to achieve planned/desired outcomes.

International

INTRODUCTION TO THE GUIDELINES FOR THE DOMESTIC FACILITATION AND REGULATION OF INTERNATIONAL DISASTER RELIEF AND INITIAL RECOVERY ASSISTANCE: Developed by the International Red Cross Society and Red Crescent Society, the guidelines are a set of recommendations to governments on how to prepare their disaster laws and plans for the common regulatory problems in international disaster relief operations. They advise them as to the minimal quality standards they should insist upon in humanitarian assistance.

UNITED NATIONS INTERNATIONAL STRATEGY FOR DISASTER REDUCTION: The Sendai Framework for Disaster Risk Reduction 2015–2030 articulates, among other things, the need for improved understanding of disaster risk in all its dimensions of exposure, vulnerability and hazard characteristics; the strengthening of disaster risk governance, including national platforms; accountability for disaster risk management; and preparedness to “Build Back Better”.

TECHNICAL GUIDANCE FOR MONITORING AND REPORTING ON PROGRESS IN ACHIEVING THE GLOBAL TARGETS OF THE SENDAI FRAMEWORK FOR DISASTER RISK REDUCTION: The purpose of this guidance is to support the operationalization of the global indicators to measure progress towards the achievement of the Sendai Framework targets by offering definitions and terminology, possible computation methodologies and data standards to support measurement and reporting.

MEASURING FOR RESULTS: Key Concepts for Understanding the Performance of DHS Programs and Activities: This US Department of Homeland Security document is intended to inform the way that program managers and other stakeholders think about challenging topics in performance measurement, particularly the definition of program outcomes linked to strategic goals or program objectives.

NATIONAL INFORMATION EXCHANGE MODEL (NIEM): Having originated in the Justice and Public Safety industries in the United States (US), NIEM is now widely used in the US, and its adoption is growing in Canada, Mexico and Europe. NIEM is a common vocabulary that enables efficient information exchange across diverse public and private organizations. NIEM can save time and money by providing consistent, reusable data terms and definitions, and repeatable processes.

National

POLICY ON RESULTS: This Treasury Board of Canada Secretariat policy sets out the fundamental requirements for Canadian federal departmental accountability for performance information and evaluation, while highlighting the importance of results in management and expenditure decision making, as well as public reporting.
GUIDE TO INTEGRATED RISK MANAGEMENT: This Treasury Board of Canada Secretariat guide is intended to help strengthen Canadian federal public sector integrated risk management practices by providing organizations with guidance in the design, implementation, conduct and continuous improvement of integrated risk management that will result in a risk-informed approach to management throughout the organization ultimately leading to better performance.

BC Provincial

AUDITOR GENERAL OF BC GUIDE FOR DEVELOPING RELEVANT KEY PERFORMANCE INDICATORS FOR PUBLIC SECTOR REPORTING: This 2010 guide was produced to help public sector organizations develop relevant Key Performance Indicators (KPIs) and to better understand how organizations are doing in the very important area of accountability.

AUDITOR GENERAL OF BC ANNUAL REPORT 2016/17: C4i wanted to determine how the Office of the Auditor General of British Columbia measured and reported on its own performance as a benchmark. The 2016/17 Annual Report provided insights into the development of a new suite of key performance indicators (KPIs) with a more robust range of performance measures that have the Office focusing on outcomes and results, rather than adherence to internal processes.

AUDITOR GENERAL OF BC CATASTROPHIC EARTHQUAKE PREPAREDNESS REPORT: This 2014 report describes the lack of progress by the Province in preparing for a catastrophic earthquake since the last Auditor General report in 1997. The report highlights how successive governments decided to allocate scarce public resources to meet more immediate pressing demands, rather than to adequately prepare the province for a catastrophic earthquake.

AUDITOR GENERAL OF BC SUMMARY REPORT RESULTS OF COMPLETED PROJECTS AND OTHER MATTERS: This 2012 report provides an “Update on Government’s Implementation of the BC Reporting Principles” itemizing the weaknesses identified with the current common reporting framework and how it is not being adequately used to track performance success.

AUDITOR GENERAL OF BC AUDIT OF B.C. PUBLIC SERVICE ETHICS MANAGEMENT: This 2017 audit examined government’s management of ethics within the core BC Public Service – the ministries and central agencies – that manage and oversee government’s programs and activities. The audit found that government has set expectations for ethical behaviour, but with improved coordination, government could better monitor, evaluate and report the results of its efforts to support ethical behaviour.

EMERGENCY MANAGEMENT BC STRATEGIC PLAN 2014/2015 – 2016/2017: This document describes how EMBC planned to prioritize its work activities under six strategic lines of effort: Organizational Capacity, Catastrophic Earthquake Preparedness; Training and Exercises; Partnerships; Public Education; and Business Practices and Governance.

OFFICE OF THE FIRE COMMISSIONER STRATEGIC PLAN 2015/16 – 2017/18: This plan outlines how the Office of the Fire Commissioner will prioritize its efforts under five strategic lines of effort: Legislative; Organizational Capacity; Prevention; Guidance; and Enforcement. The plan is aligned with the objectives of the EMBC Strategic Plan.

BRITISH COLUMBIA WILDLAND FIRE MANAGEMENT STRATEGY (BC): The framework for BC’s Wildland Fire Management Strategy recognizes that a number of organizations share responsibility for how fire will be managed on forest and range lands across the province. The strategy focuses on the largely uninhabited natural landscapes, most of which are provincial Crown
lands, as well as areas where those lands interface with urban and rural communities. The strategy recognizes that wildland fire policies and activities need to be coordinated with broad public policy objectives, other fire and emergency services within the province, and with other landowners.

**INTERIM GUIDELINES – FIRE AND FUEL MANAGEMENT:** This interim guidance developed in 2013 by the Association of British Columbia Forest Professionals, is intended to support forest professionals practising in the area of fire and fuels management including the provincial government, local government, First Nations, land owners or development consultants, utilities and private companies.

**GETTING IT RIGHT:** Achieving Value from Government Information Technology Investments: Because of the province’s reliance on Information Technology (IT) to support its emergency program, C4i wanted to understand how B.C. manages IT programs. This 2016 Auditor General of British Columbia report combines knowledge from previous audits with extensive research on IT-enabled projects in B.C. and other jurisdictions to identify common reasons for success and failure. The report quotes one study that shows that about 19% of IT-enabled projects fail, 52% run into problems and only 29% succeed.

**DATA CUSTODIANSHIP GUIDELINES FOR THE GOVERNMENT OF BRITISH COLUMBIA:** Because knowledge management is important in the field of emergency management, these provincial guidelines were reviewed to better understand data custodianship, the roles and related accountabilities required to manage data.

**Alberta Provincial**

**Alberta Wildfire Management Planning Standard (Draft):** This planning standard sets the conditions for the establishment of a reliable basis for decision-making, setting priorities and providing direction to operational activities. Alberta’s goal is to increase the likelihood of achieving organizational objectives through mitigation, preparedness, response, and recovery strategies that explicitly address the uncertain but inevitable nature of wildfire across the landscape.

**REVIEW 2017 FRESHET AND WILDFIRE DATA AND REPORTS**

As part of its review, the C4i team obtained data from the 2017 freshet and wildfire seasons in their existing formats (structured or unstructured) which consisted of a combination of draft and final external reports; internal reports and personal observations from staff; exit interviews, paper/on-line survey information; and action plans, summaries, maps and situation reports from the actual events.

**External Reports**

Provincial Agencies received two primary external reports based on direct observation:

**EMERGENCY RESPONSE MANAGEMENT CONSULTING LTD. (ERMC) REPORT TO EMBC:** ERMC’s team observed operations in the Provincial Emergency Coordination Centre (PECC) in Victoria and the Provincial Regional Emergency Operations Centres (PREOCs) in Prince George, Kamloops and Nelson. They also assessed the support received from EMBC in four specific communities: The District of 100 Mile House, Cariboo Regional District, City of Kamloops and Thompson-Nicola Regional District. The period for the initial assessment was from July 31 to September 21, 2017, while the PECC and three PREOCs were activated to their highest level (Level 3) responding to the wildfire emergency. This phase was concurrent to their supporting recovery operations from a very active freshet season. This real-time assessment of the PECC and PREOCs’ response to the wildfires aimed to provide observations, comments and recommendations for enhancing the effectiveness of the PECC and PREOCs. This report in entirety was provided to C4i and C4i participated in the ERMC back-briefing to the EMBC Assistant Deputy Minister and Executive Leadership Team on November 24, 2017.
EMERGENCY RESPONSE MANAGEMENT CONSULTING LTD. (ERMC) REPORT FOR BC WILDFIRE SERVICES: C4i was not granted access to this report, however, the significant findings were shared by BCWS in the BCWS After-Action Review Engagement Summaries.

REVIEW OF 2017 FLOOD RESPONSE: Okanagan Lake Regulation System and Nicola Dam: This report conducted by Associated Environmental Consultants Inc. for the Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNR) evaluates the actions taken by FLNR's Okanagan and Nicola Water Managers during the spring 2017 freshet and provides recommendations to improve delivery of the Province’s water management responsibilities.

Internal Reports

The following internal reports were made available to the C4i team:

BC WILDFIRE SERVICE ENGAGEMENT SUMMARY REPORT: This report consolidated the observations from a number of engagement sessions with attendees from all levels of the organization (zone staff, FC staff, fire line staff, auxiliaries, headquarters, management team, and in some cases TEAMs members from other ministries) and included:

» 6 Fire Centre debriefs (Kamloops, Southeast, Prince George, Northwest, Coastal, and Cariboo)
» 10-15 Zone level debriefs (various locations)
» Incident Management Team debrief (Kelowna)
» Sr. Leaders Meeting debrief (Richmond)
» BCWS Leadership debrief (Kelowna and Richmond)
» Working Groups presentation (Richmond)
» Survey – including 1,400 respondents

EMBC FRESHET FLOODING 2017 PRELIMINARY DATA COLLECTION: This report captured preliminary data from the freshet to inform the AAR process. The information is based on interviews and reflects the experiences and opinions of selected individuals involved in the response and recovery. Data was collected at the Provincial Emergency Coordination Centre (24 participants) and Central Region Provincial Regional Emergency Operations Centre (17 participants).

EMBC EMERGENCY SOCIAL SERVICES AFTER-ACTION REVIEW DRAFT REPORT: This report captured observations on the provision of Emergency Social Services from the four impacted EMBC regions. Data was collected between 28 November and 8 December 2017.

EMBC PROVINCIAL DUTY MANAGER INPUTS TO AFTER-ACTION REVIEW: Captured direct observations and recommendations from key senior leadership position involved in both the freshet and wildfire response.

EMBC FIRST NATIONS COORDINATION UNIT REVIEWS: To hear the perspectives of First Nations communities, and government staff who worked to meet their needs of First Nations communities, three AARs were facilitated by the Emergency Management BC (EMBC) First Nations Coordination Unit. These reviews included a session with First Nations Branch staff in Victoria and sessions with Indigenous community leaders in both Kamloops and Williams Lake. These AARs were successful in generating insightful feedback from individuals most cognizant of the needs of First Nations communities and British Columbia’s impacted Indigenous population during the 2017 emergency response.

EMBC FIRST NATIONS LIAISON TO THE PROVINCIAL EMERGENCY COORDINATION CENTRE ADVANCE PLANNING UNIT: Captured direct observations from the First Nations Liaison to the Advance Planning Unit of the Provincial Emergency Coordination Centre.

EMBC NORTHEAST/NORTHWEST PROVINCIAL REGIONAL EMERGENCY OPERATIONS CENTRES SUGGESTIONS FOR IMPROVEMENT: Captured internal changes and clarifications to Northeast and Northwest Provincial procedures for immediate implementation as
well as best practices to maintain. This report also captured recommendations for higher echelons of EMBC which were beyond the span of control of the Regions to implement.

Surveys

Data collected from 3 principle surveys were used to inform C4i’s analysis. The surveys consisted of a combination of open-ended questions, dichotomous (Yes or No), and Likert-type ratings presented on a multi-point scale with the mid-point typically representing a neutral response with the ends of the scales representing the opposite extreme responses. The intent of these tools was to gather feedback related to a specific aspect of a respondent’s knowledge, skill or ability as well as to gain a better understanding of the participant’s experiences when interacting with people, processes, or equipment that are relevant to emergency management operations. The surveys included:

- **BC WILDFIRE SERVICE SURVEY:** Sent to BCWS regular employees, auxiliary employees as well as TEAMs personnel (approximately 1,900 recipients). The goal was to capture broad based themes and to facilitate information gathering from all staff. The survey was distributed on September 13, 2017 and closed on October 31, 2017. Staff received the survey through an all-staff email and the survey was posted to the BCWS intranet page. Survey Monkey® was used as the online survey tool. The survey collected responses from 1,344 staff (71% response rate).

- **EMBC EMERGENCY OPERATIONS CENTRES EXIT SURVEY:** Sent to EMBC regular employees as well as TEAMs personnel (approximately 1,075 recipients) from each of the five Provincial Regional Emergency Operations Centres (PREOCs) and the Provincial Emergency Coordination Centre (PECC). The goal was to capture data on the preparations for and orientation upon deployment, as well as supervision/leadership, work conditions, communications, resourcing and support provided to staff during deployment. Survey data was collected between September 7, 2017 and November 3, 2017. Survey Monkey® was used as the online survey tool with a paper version distributed within the PECC. The survey collected responses from 201 staff (19% response rate).

- **EMBC WEEKLY INCIDENT SITUATION REPORTS:** These weekly reports provided a region-by-region overview and short summary of all significant incidents by time, date, location and numbers of persons impacted. These reports were consolidated from the log of the Emergency Management BC Emergency Coordination Centre (ECC). The ECC is a 24-hour centre that records, reports and monitors emergency incidents across the province 365-days-per-year. If an emergency incident occurs with potential to escalate or has required the activation of the local emergency operation centre(s), the ECC will contact designated EMBC regional and headquarters staff. EMBC staff will activate the PREOC and/or PECC if deemed necessary.

Note: The Emergency Response Management Consulting Ltd. (ERMC) Report to EMBC provided considerable detail on the quality of documentation based on their direct observation of the Provincial Emergency Coordination Centre (PECC) in Victoria, the Provincial Regional Emergency Operations Centres (PREOCs) in Prince George, Kamloops and Nelson and the communities of The District of 100 Mile House, Cariboo Regional District, City of Kamloops and Thompson-Nicola Regional District during the period from July 31 to September 21, 2017.
Facilitated Debriefings

C4i supported the Province in the design and delivery facilitated debriefings to reach out to Local Governments and Regional Districts, Non-Governmental Organizations and Volunteer Sector Agencies, Stakeholder Associations, Federal Partners, Critical Infrastructure Stakeholders, and Health Authorities including the First Nations Health Authority to identify, clarify and understand the nature and significance of any noted strength or area for improvement. Debrief sessions included:

**RECORD OF DISCUSSION:** Regional Districts and Local Authorities Debrief, Kamloops, BC. 8 November 2017: Captured 70 observations from 59 participants.

**RECORD OF DISCUSSION:** Regional Districts and Local Authorities Debrief, Williams Lake, BC. 10 November 2017: Captured 60 observations from 29 participants.

**RECORD OF DISCUSSION:** EMBC Northeast Region Debrief, Prince George, BC. 15 November 2017: Captured 180 observations from 48 participants.

**RECORD OF DISCUSSION:** EMBC Southeast Region Debrief, Nelson, BC. 16 November 2017: Captured 102 observations from 18 participants.

**RECORD OF DISCUSSION:** EMBC Central Region Debrief, Kamloops, BC. 20 November 2017: Captured 281 observations from 58 participants.

**RECORD OF DISCUSSION:** Provincial Emergency Coordination Centre Debrief, Victoria, BC. 21-22 November 2017: Captured 1020 observations from 120 participants.

**RECORD OF DISCUSSION:** Provincial Cross-Ministry Debrief, Victoria, BC. 4 December 2017: Captured 209 observations from 63 participants.

**RECORD OF DISCUSSION:** 2017 Post Freshet and Wildfire After-Action Conference (First Nations Partners), Kamloops, BC. 23 January 2018: The purpose of this conference was to review preliminary findings, discuss and reach consensus on the main issues and four themes identified in previous debrief sessions. Consensus was reached on the four themes: Communications and Information; Knowledge, Understanding, and Expertise; Capacity; and Inclusivity, Relationships, and Partnerships. A list of 120 participants and the organizations they represented is attached in ANNEX E.

**RECORD OF DISCUSSION:** 2017 Post Freshet and Wildfire After-Action Conference (Provincial Partners), Kamloops, BC. 24 January 2018: The purpose of this conference was to discuss and reach consensus on the main issues and five themes identified in previous debrief sessions. Consensus was reached on the five themes: Capability, Capacity, and Training; Communication; Culture and Leadership; Materials, Resources and Technology; and Policy, Plans and Legislation. A list of 146 participants and the organizations they represented is attached in ANNEX E.

Final Data Collection Survey

C4i supported the Province in the design of a final survey to collect inputs from Local Authorities, Regional Districts, or First Nations involved in the 2017 freshet and wildfire season but unable to share their feedback and suggestions during the formal debriefs described above. The goal was to capture data on all emergency program phases including Response, Recovery, Preparedness, and Mitigation with particular focus on Communication, Information Management and Collaboration; Evacuations and Emergency Social Services; Processes, Capabilities and Capacities. Data was collected and managed in accordance with the provisions of BC Privacy Management and Accountability Policy, Privacy Impact Assessment PIA AG/SG16015, and the Tri-Council Policy Statement on Research Ethics. This would ensure survey results were anonymous; no administrative decisions about individuals or organizations would be made as a result of the survey; no individuals would be identified and no comments would be attributed to any individual in any reports resulting
from the survey; and that EMBC would not collect, use or disclose any personal information using the survey. Survey data was collected via Survey Monkey® between November 28, 2017 and January 3, 2018. The survey collected responses from 53 participants and reflected the overall inputs collected during the previous debrief sessions.

**Interviews, Technology Demonstrations And Requests For Information**

C4i designed and conducted structured/semi-structured interviews with key decision-makers and decision-influencers to clarify and understand how high-level decisions were made and communicated, as well as how progress towards achieving desired outcomes was measured and reported.

In order to gain an understanding of how knowledge management is performed, the C4i team requested and received demonstrations on a variety of provincial software technology platforms including GeoBC and the ETeam emergency management suite of tools.

The team submitted several Requests of Information (RFI) in order to obtain specialist perspectives or to clarify a particular area during the data collection and analysis effort. Most RFIs were answered including those related to the conduct of the 26 separate Ministers-Deputies Emergency Committee (M-DEC) meetings convened during the freshet and wildfire emergency as well as the meetings of the Assistant Deputy Ministers Emergency Council (ADMEC) formerly known as the Central Coordination Group (CCG).
ANNEX C – Participating Organizations

The following organizations were invited by EMBC to contribute to this report through the After-Action Review process.

Ministry of Agriculture
Ministry of Advanced Education
Ministry of Environment
Ministry of Health
Ministry of Jobs, Trade and Technology
Ministry of Citizen Services
Ministry of Finance
Ministry of Social Development and Poverty Reduction
Ministry of Tourism, Arts and Culture
Ministry of Indigenous Relations and Reconciliation
Ministry of Forests, Lands, Natural Resources and Rural Development
Ministry of Municipal Affairs and Housing
Ministry of Children and Family Development
Ministry of Public Safety and Solicitor General
Ministry of Transportation and Infrastructure
BC Public Service Agency
Government Communications and Public Engagement
BC Housing
BC Emergency Health Services
Canadian Armed Forces
Albert Emergency Management Agency
First Nations Emergency Social Services
GeoBC
Department of Indigenous Services Canada
BC Wildfire
Emergency Management BC
BC Parks
BC Mail Plus
Canadian Red Cross
Salvation Army
Royal Canadian Mounted Police
Public Safety Canada
Simon Fraser University School of Communication
TEAMS Volunteers
Interior Health Authority
Provincial Health Services Authority Disaster PsychoSocial
Heavy Urban Search and Rescue (CAN-TF1)
Sto:lo Nation
Ts’kwaylaxw First Nation
Nazko First Nation
Tl’etinqox Government
Canim Lake Band
Little Shuswap Lake Indian Band
Bonaparte Indian Band
Esk’etemc First Nation
Ashcroft Indian Band
Xaxli’p First Nation
Ulkatcho First Nation
Alexis Creek First Nation
Splatsin Indian Band
Lower Similkameen Indian Band
Xatsull First Nation
Nicomen Indian Band
Cayoos Creek Indian Band
Penticton Indian Band
High Bar First Nation
Lhoosk’uz Dene First Nation
Tl’etinqox Government
Upper Similkameen Indian Band
Carrier Chilcotin First Nations
Sketchesnt Indian Band
Bridge River Indian Band
Shackan Indian Band
Toosey Indian Band
Lytton First Nation
Nooitatch Indian Band
Lhtako Dene Nation
Shuswap Tribal Nation
Westbank First Nation
Williams Lake Indian Band
Okanagan Indian Band
Osoyoos Indian Band
Nuxalk Nation
Tobacco Plains Indian Band
Te’kumlups te Secwepecm
Simpcw First Nation
Skuppah Indian Band
Upper Nicola Band
Adams Lake Indian Band
Kanaka Bar Indian Band
ANNEX E – References


