

Appendix “A”

Emergency Management British Columbia – National Disaster Mitigation Program 2021 Program and Application Guide.

Section I – National Disaster Mitigation Program

1.1 Introduction

In recognition of increasing disaster risks and costs, Budget 2014 earmarked a total of \$200 million over five years to establish the National Disaster Mitigation Program (NDMP) as part of the Government's commitment to building safer and more resilient communities. Of that \$200 million, \$183.8 million is allocated as NDMP contribution funds for NDMP projects that will be cost-shared with provinces and territories. The remaining NDMP funds will be used to fund specific targeted investments, including: developing specific tools, research activities, and public awareness activities at the national level. The NDMP will address rising flood risks and costs, and build the foundation for future informed mitigation investments that could reduce, or even negate, the effects of flood events.

The NDMP fills a critical gap in Canada's ability to effectively mitigate, prepare for, respond to and recover from, flood-related events foremost by building a body of knowledge of flood risks in Canada, and investing in foundational flood mitigation activities (e.g. risk assessments and flood mapping). Knowledge that is up-to-date and accessible will not only help governments, communities and individuals to understand flood risks and employ effective mitigation strategies to reduce the impacts of flooding, but will also further discussions on residential flood insurance.

These Guidelines must be used in conjunction with the approved Terms and Conditions under which the NDMP is managed. **The approved Terms and Conditions take precedence over any element of the guidelines in the event of any apparent inconsistency with these guidelines.** The [NDMP Terms and Conditions](#) are available on the Public Safety Canada (PS) website.

1.2 Objectives

The objective of the NDMP is to reduce the impacts of natural disasters on Canadians by:

1. Focusing investments on significant, recurring flood risks and costs; and
2. Advancing work to facilitate private residential insurance for overland flooding.

1.3 Definitions

For the purposes of these Guidelines, the following definitions apply:

Definitions

Allocation	The amount of funding approved by Treasury Board for the administration of the NDMP in a given fiscal year.
Annual Updates	This document is published annually by PS and describes any changes to the administration of the Program and any updates regarding funding allocations. Changes generally come into effect in the fiscal year following the publication date, unless otherwise indicated.
Community Resilience	Resilience is the capacity of a system, community or society to adapt to disturbances resulting from hazards by persevering, recuperating or changing to reach and maintain an acceptable level of functioning. It is built through a process of empowering citizens, responders, organizations, communities, governments, systems and society to share the responsibility to keep hazards from becoming disasters.
Flooding	<p>The overflow of natural drainage channels, natural shorelines and/or human-made facsimiles leading to partial or complete inundation from the overflow of inland or tidal waters, and/or the accumulation or runoff of surface waters from any source.</p> <p>Types of flooding (non-exhaustive):</p> <ul style="list-style-type: none"> • Riverine: including overflow of any natural drainage channels (e.g. rivulets, brooks, streams, rivers) and of various nature (e.g. rainfall, snowmelt, frazil, ice jam, break-up) • Coastal: including overflow of all natural shorelines (e.g. lake shorelines, ocean coasts) • Urban: including overflow of human-made facsimiles (e.g. swales, ditches, streets, sewers, foundation drains) • Accidental breakage of water retaining structures (dams, dikes protecting against floods and check valves for storm / sanitary sewers, dams and dikes protecting polders) • Debris/mud flow
Fiscal Year (FY)	The period from April 1 to March 31.
Flood Mapping	<p>The delineation of flood lines and elevations on a base map, typically takes the form of flood lines on a map that show the area that will be covered by water, or the elevation that water would reach during a flood event. The data shown on the maps, for more complex scenarios, may also include flow velocities, depth, other risk parameters, and vulnerabilities.</p> <p>Current/Valid Flood Map: The age of the flood map and the context in which the map may be used must be considered when determining whether it is current or valid, including changes in the demography or environment covered by and surrounding the map, the techniques utilized to create the map, the age of the information and data used to complete the map, the flood map's interoperability with other maps, whether or not it is shareable, and if it has been approved by council and/or the affected communities.</p>

In-kind Contribution	A contribution of goods or services as opposed to money (i.e. existing equipment, supplies, use of space or staff time).
Interim Claim	An interim payment made for expenditures incurred once a pre-identified progress point has been reached.
Local Government	A settlement, which has municipal equivalency status under provincial legislation or functions in a manner similar to a municipality, including a "council of the band" within the meaning of Section 2 of the <i>Indian Act</i> (R.S.C. 1985, c. I-5) or a government or authority of an Aboriginal community (First Nation or Inuit) established by an act of Parliament or legislature.
Merit-Based Competitive Process	The process by which annual NDMP funds will be allocated by comparing similar projects to one another using specific merit criteria to determine which projects receive approval.
Multi-Year Project	A project that will take more than one fiscal year to complete.
Non-structural Mitigation	Non-physical measures that incorporate the measurement and assessment of the risk environment and contribute to comprehensive, proactive risk reduction investments (e.g., floodplain mapping, risk assessments; insurance incentives; public awareness programs; regulating land use (building codes and enforcement); acquiring property on the floodplain and relocating structures; and reusable equipment used to undertake flood mitigation)
Prevention/mitigation measures	Proactive measures taken to eliminate or reduce the negative impact of natural disasters in order to protect lives, the property, the environment, and reduce economic disruption. There are two types of mitigation measures: Structural mitigation and non-structural mitigation.
Risk	Risk is the probability of a negative consequence to something of value. The measure of consequence is the function of the measures of the intensity of a hazard event, the exposure to that hazard event and the vulnerability to that hazard event.
Structural Mitigation	Physical measures designed to mitigate the impact of hazards (e.g., channel improvement [construction of floodways and dykes], flow regulation [diversions, creating upstream storage], flood proofing measures [reinforcing or raising homes to minimize vulnerability to floods]).

Section II – Eligibility Criteria

2.1 Eligible Recipients

Eligible recipients of NDMP funds are Provincial/Territorial governments.

However, Provinces/Territories (P/Ts) may collaborate with, and redistribute funding to the following entities:

- a. A municipality and other local governments, including a “council of the band” within the meaning of section 2 of the *Indian Act* (R.S.C. 1985, c. I-5) or a government or authority of an Aboriginal community (First Nation or Inuit) established by an act of Parliament or legislature.
- b. A public sector entity that is established by or under provincial or territorial statute or by regulation or is wholly owned by a province, territory, municipal or other local government.
- c. A private sector entity that is incorporated and capable of entering into a legal agreement with the recipient, including for-profit and not-for-profit organizations, charitable organizations and private academic institutions.
- d. International non-governmental organizations, including bodies associated/affiliated with organizations of which Canada is a member, which have as their purpose supporting public safety as a priority, and capable of entering into a legal agreement with the recipient.
- e. A combination of the aforementioned entities.

Federal entities, including Crown corporations, are not eligible recipients.

If the proposed project is a submission for two or more jurisdictions, one P/T would be the recipient for the funding, with the other(s) identified as project partners.

2.2 Eligible Projects

NDMP funds may be provided for the following types of mitigation projects:

- a. New projects or next stage of existing projects that have been developed and not commenced, and as such have not made any expenditures from any approved funding; and
- b. Non-structural or small scale structural mitigation projects.

The NDMP is a merit-based program consisting of four project streams: Risk Assessments (Stream 1), Flood Mapping (Stream 2), Mitigation Planning (Stream 3), and Investments in Non-Structural and Small Scale Structural Mitigation Projects (Stream 4).

P/Ts may submit a project proposal for any project stream; however, they must demonstrate that they have met the requirements for that stream, as applicable.

2.3 Eligible and Ineligible Costs

The list of eligible and ineligible costs is included in these guidelines at pages 25 and 26, and in the NDMP Terms and Conditions.

A list of all eligible and ineligible costs for the NDMP is also included in the NDMP form (Section D: Budget template).

Section III - Program Administration and Cycle

3.1 Funding Allocation

NDMP funding allocations for upcoming NDMP cycles will be determined as part of the call for proposals and review process. This prioritization exercise is intended to maximize the use of available funds for approved and anticipated project proposals. These funding allocations are set out in the Annual Updates (AUs), along with other modifications to the NDMP, such as updated requirements and deadlines.

3.2 Maximum Amount Payable and Duration

The maximum federal NDMP funding allotment for P/Ts is \$183.8 million over five (5) years starting in fiscal year 2015-2016 and continuing through to the end of fiscal year 2019-2020. The maximum amount payable for an individual project submitted by a P/T shall not exceed the identified level of funding for any given fiscal year or stream.

The maximum federal contribution amount for eligible small-scale structural projects (Stream 4) is \$1.5 million for provinces and \$2.25 million for territories.

3.3 Funding Share

The Program operates through a (up to) 50% federal and 50% provincial funding model for provinces. For the territories, the funding model is (up to) 75% federal and 25% territorial (with the exception of private sector businesses in territories, which will be cost-shared at (up to) 50%).

On a case-by-case basis, PS may allow on-Reserve First Nations to utilize Aboriginal Affairs and Northern Development Canada (AANDC) mitigation funding to contribute to the P/T portion of the NDMP project. In these cases, the federal contribution, through the AANDC and NDMP, could be up to 100% of the project costs.

3.4 Multi-Year Projects

Depending on the time frame of an initiative, single year or multiyear funding agreements may be used. The maximum length of time that a contribution shall be approved for the same project shall not exceed 24 months (i.e. 2 fiscal years, starting April 1 and ending March 31), and not exceed the 2019-2020 fiscal year.

3.5 Stacking

For this contribution program, the maximum level of assistance from all federal institutions, including PS, must not exceed 50% of total eligible project costs for provinces. The maximum level of assistance from all federal institutions, including PS, must not exceed 75% of total eligible project costs for territories (with the exception of private sector businesses in territories, which will be cost-shared at 50%). In the event that actual total federal government funding to a recipient exceeds the stacking limit, it will be necessary for PS to adjust its level of funding to ensure the stacking limit is not exceeded.

On a case-by-case basis, PS may allow on-Reserve First Nations to utilize Aboriginal Affairs and Northern Development Canada (AANDC) mitigation funding to contribute to the P/T portion of the NDMP project. In these cases, the federal contribution, through the AANDC and NDMP, could be up to 100% of the project costs.

3.6 In-kind Contributions

In-kind contributions involve non-cash transactions (e.g. securities, land, buildings, equipment, use of facilities, labour, goods) that are provided by interested parties such as recipients, stakeholders,

departments or other government bodies, in support of a federally approved transfer payment project or initiative.

The maximum amount of in-kind contribution may not exceed 15% of the P/T's cash contribution toward their funding share.

Calculation for determining a P/T's maximum "in-kind" amount:

Total P/T cash contribution x 0.15 = P/T's maximum "in-kind" amount.

3.7 Monitoring and Reporting of Approved Projects

P/Ts must monitor the progress of all of their respective projects and report on their status in accordance with their respective contribution agreement(s). These reports must be submitted to the appropriate PS Regional Office, and outline the results achieved for each project funded under the NDMP. The report should include, for example, project titles, completion dates, related costs, project outcomes, any change in project risk, explanations and comments.

Provincial/territorial reports must be received by Public Safety Canada for approval in accordance with the project's contribution agreement.

3.8 Amendments

The PS Regional Office is the point of contact for all amendments and any changes to the original project or its accompanying detailed cost breakdown. The PS Regional Office must be promptly advised of any proposed amendments in order to obtain the required approval. Once a project is approved and started, it is expected to be completed as per the arrangements outlined in the contribution agreement. If/when a P/T becomes aware that the project is unlikely to meet its completion deadline, the PS Regional Office must be informed immediately.

3.9 Information Management

All information/data obtained from P/Ts will be safeguarded and the appropriate storage, maintenance and management of this information will be done in accordance with Government of Canada policies.

At present, files will be saved electronically in PS's information management system and saved at the unclassified level. Files that cannot be saved electronically (due to format type, size, etc.) will be stored in a secure container at PS.

P/Ts are responsible for reviewing the sensitivity of their materials prior to sending them to PS.

3.10 Information Sharing

NDMP Project Proposals: During the submission, review, assessment and approval phases of the NDMP, all NDMP project proposals will be stored securely and the information will be kept secure and confidential. Only PS staff members that have a clear role in the reviewing and administration of these project proposals will have access to these files. Some P/T members may also have limited access to the NDMP project proposals as part of their responsibilities for the NDMP's Technical Assessment Committee (TAC).

PS will set access rights to allow only specific PS staff to access this information (i.e. access rights in PS will be on a "need-to-know" basis).

PS will not share P/Ts' submitted materials outside of interested Government of Canada departments without the explicit written consent of that P/T.

Approved NDMP Projects: Following the approval of a NDMP project by the Minister of Public Safety and Emergency Preparedness, the P/T will be required to sign a Contribution Agreement before starting the project and incurring eligible costs for the approved project.

Information resulting from a P/T's approved NDMP project(s) is required to be shared with the Government of Canada. This information includes:

- Risk information/data, including the completed risk assessment information template;
- Flood maps and associated data, based on the criteria established by PS, for inclusion in a national flood database; and
- Other relevant project information, such as lessons learned.

The information that arises out of or under a P/T's approved NDMP project may be copied and made available to Canada's government institutions and any province:

- a. In order to verify the P/T's compliance with the terms of the Contribution Agreement;
- b. In order to verify the P/T's project compliance with the terms and conditions of the Program and/or evaluate the Program; and
- c. To promote a better understanding of disaster mitigation in Canada and support their emergency management activities.

The information may also be copied and made available to any foreign state, international organization or any other entity to promote a better understanding of disaster mitigation in Canada and support their emergency management activities.

3.11 Intellectual Property

If a NDMP funded project produces intellectual property, the recipient retains copyright for any work produced by its project. PS will encourage the recipient to transfer knowledge acquired or developed through NDMP projects to PS and the emergency management community.

However, in situations where PS wishes to use the intellectual property produced by a specific project, the department will negotiate with the recipient, a non-exclusive license for the Crown to have the right to use, or to confer to a third party the right to use, the intellectual rights acquired or developed through the project.

Section IV – Preparation of Applications

The NDMP has four distinct project streams: Risk Assessments (Stream 1), Flood Mapping (Stream 2), Mitigation Planning (Stream 3), and Investments in Non-Structural and Small Scale Structural Mitigation Projects (Stream 4).

Stream 1: Risk Assessment(s)

Generally, a risk assessment includes the identification of the potential hazards that are present within a defined geographical area, and an assessment of their likelihoods of occurrence, potential impact(s) to people, economy, structures and networks, the natural environment, etc., and the community's vulnerabilities with respect to each of the aforementioned elements.

Once the hazards have been identified and assessed, a risk tolerance or "risk threshold" for managing these hazards should be determined. Risk thresholds serve as an informal decision-making support tool, and help to communicate the level of effort to be deployed to reduce the likelihood of a risk event occurring, or of the consequences should it occur. Risk thresholds can also be used to inform the prioritization and selection of mitigation projects identified as beneficial to address risk(s) identified within the area studied.

Note: Approved Stream 1 projects will receive NDMP funding to produce a comprehensive risk assessment. However, a comprehensive assessment of a flooding risk cannot be completed in this Stream. While it is understood that flooding is a hazard risk which commonly requires flood mapping and/or modelling to be fully understood and assessed, these flood-specific assessment activities are eligible in a separate stream in the NDMP (Stream 2). P/Ts that undertake a Stream 1 project may identify and assess flooding as a hazard risk using the best information that is available.

A completed risk assessment that identified flooding as a hazard risk and provided a current assessment of that hazard risk may be used as part of a NDMP proposal for a Stream 2 project (Flood Mapping).

Stream 2: Flood Mapping

The need to undertake a flood mapping project is informed by a risk assessment. If flooding was identified as a significant risk for a community, that community should consider undertaking a flood mapping activity to further assess how it would be specifically affected by a flooding event. A flood map identifies the geographical boundaries of a flooding event based on the type and likelihood (e.g. “1 in 100 years”, “1 in 300 years”, etc.), and this information is used to help identify the structures, people and assets that are within the flood zone that are most likely to be impacted by the defined flood event. **Flood mapping information and data that is acquired from a flood mapping activity should then be used to update an area's existing risk assessment(s).** With this information, a community can more accurately determine its vulnerability(ies) in relation to a flooding event, and the flooding risk to the community.

Stream 3: Mitigation Planning

Mitigation planning is the process by which a community reflects on its identified risks, and uses this information to make more informed planning decisions. First, it must identify its broad mitigation goals. Second, it should identify the objectives/strategies required to meet those goals. Finally, the key activities that will be required to accomplish those objectives and meet the stated mitigation goals should be clearly identified and explained. The key activities that are identified in the mitigation plan may also be planned mitigation projects.

A good mitigation plan provides a roadmap for action, a justification for the implementation of specific mitigation projects, and a demonstration of the engagement of the community in its success.

Stream 4: Investments in Non-Structural and Small Scale Structural Mitigation Projects

Stream 4 is the actual implementation of a specific mitigation project. The proposed mitigation project must have a detailed implementation plan including the resources, time, costs, agreements, materials and other factors required to complete the mitigation project.

Some examples of disaster mitigation projects are: delivering education programs, updating building codes and enforcement policies, acquiring property in high risk areas and relocating structures to safer areas, create hydro flow regulation measures such as diversions and upstream storage, and flood proofing structures by reinforcing and/or raising them to minimize their vulnerability to floods.

4.1 Application Requirements

To be eligible for NDMP funding, each project proposal must:

- Identify the project stream for the proposed project;
- Describe how the proposed project addresses one or more high-risk communities, and/or advances flood mapping in the jurisdiction;
- Demonstrate how the proposed project would benefit implicated and adjacent communities and how it may also be of interest to surrounding communities;
- Describe how the proposed project meets the specific criteria identified within the stream for which funding is requested;
- Explain how the proposed project objectives align with the NDMP's overall objectives;

- Describe the expected outcomes for each of its objectives;
- Include a proposed budget that clearly outlines the categories of work and expenditures for which the financial contribution is being requested for each fiscal year, as well as other sources of revenue and in-kind support where applicable;
- Include a clearly articulated work plan outlining all activities for which the financial contribution is being requested for each fiscal year;
- Identify potential stakeholders/partnerships and describe their level of engagement, as applicable;
- Identify potential project implementation risks that may impact the recipient's ability to deliver on the project, and outline mitigation measures to address them;
- Include a commitment to share information with the Government of Canada, including: risk information/data and overall risk assessment; flood maps and associated data; and all relevant project information such as lessons learned;
- Include a commitment to publicly recognize the federal government's contribution in any announcement;
- Describe the internal measures to conduct implementation monitoring and performance management;
- Include a declaration to prevent the risk of conflicts of interest; and
- Indicate whether and how the needs of official language minority communities were considered, where appropriate (such as for proposed stakeholder engagement activities)

4.2 Specific Merit Criteria and Requirements

In addition to the application requirements, streams 2, 3 and 4 also have specific eligibility requirements. All of the NDMP project streams also have specific merit criteria against which they will be assessed.

Project proposals are assessed and given an overall score. Project proposals are then compared with others in the same project stream (e.g. Stream 1 projects are only compared to other Stream 1 projects).

Stream 1: Risk Assessment(s)

Information/Document(s) Required for Merit Criteria Assessment

- Identification of the proposed Methodology/Tool that will be used for the proposed Risk Assessment
- List of the **community stakeholders** who will be engaged in the undertaking of a risk, hazard, impact and/or vulnerability assessment
- Prioritized list of all projects proposed for the Risk Assessment stream
- Rationale/Justification paragraph for each Stream 1 criterion

Stream 2: Flood Mapping

To be eligible for funding under Stream 2, NDMP applicants must demonstrate that they have completed a risk assessment and provide the completed risk assessment information template (RAIT - see Annex A) for the geographic area of their proposal.

Information/Document(s) Required for Merit Criteria Assessment

- Copy of completed NDMP risk assessment information template (RAIT)
- Copies of all existing Flood Maps for the area being proposed (i.e. paper and digital formats)
- Prioritized list of all projects proposed for the Flood Mapping stream
- Rationale/Justification paragraph for each Stream 2 criterion

Stream 3: Mitigation Planning

To be eligible for funding under Stream 3, NDMP applicants must:

1. Demonstrate that they have completed a risk assessment and a valid flood map for their geographic area of their proposal; and
2. Complete the risk assessment information template (RAIT - see Annex A) for the geographic area of their proposal.

Information/Document(s) Required for Merit Criteria Assessment

- Copy of up-to-date NDMP risk assessment information template (RAIT)
- List of the community stakeholders who will be engaged in the mitigation planning process
- Prioritized list of all projects proposed for the Mitigation Planning stream
- Rationale/Justification paragraph for each Stream 3 criterion

Stream 4: Investments in Non-Structural and Small Scale Structural Mitigation Projects

To be eligible for funding under Stream 4, NDMP applicants must:

1. Demonstrate that they have completed a risk assessment, a valid flood map and a mitigation plan for the geographic area of the proposal; and
2. Complete the risk assessment information template for the geographic area of their proposal.

Information/Document(s) Required for Merit Criteria Assessment

- Copy of up-to-date NDMP risk assessment information template (the risk assessment information template and guidelines are at Annex A)
- List of the community stakeholders who will be engaged in the project implementation process
- Estimated Return on Investment (ROI)
- Description/summary of the work that determined the project's ROI (ROI guidelines are at Annex B)
- Description on how the proposed project aligns with the goals, objectives and key activities identified in the mitigation plan
- Prioritized list of all projects proposed for the Mitigation Project stream and
- Rationale/Justification paragraph for each Stream 4 criterion

Note:

Under certain conditions, P/Ts may submit non-structural projects for Stream 4 funding without having met the requirements of Streams 1 to 3. To apply directly for Stream 4 funding, projects must demonstrate that failure to meet the requirements of Streams 1 to 3 have little or no impact on non-structural projects. Examples of potential projects that can be submitted directly for Stream 4 funding are: communication projects focusing on education regarding general flood mitigation; development of databases for the collection and analysis of flood data; and building community partnerships.

4.3 NDMP Project Proposal Form

How to Fill Out the NDMP Project Proposal Form

The Project Proposal Form instructions are embedded within the form itself. To access the instructions for a specific section, click on the button with a question mark included in that section. For your reference, the [NDMP Project Proposal Form \(PDF 572 MB\)](#) can be found on the Public Safety Canada website.

[View to instructions as a whole.](#)

In cases where you cannot access/use the electronic NDMP Project Proposal Form due to extenuating circumstances, please contact your Public Safety Regional Office in order to request a basic form.

Section V – Assessment and Approval Process

5.1 Project Proposal Assessment Process

Each P/T must prepare a **list of prioritized projects** for each of the NDMP project streams (1-4) and provide it to the appropriate **PS Regional Office**. A P/T's list of prioritized projects identifies each project proposal for each NDMP project stream in a numerical fashion, with "1" being the top priority, "2" being the second priority, and so on.

Each P/T's NDMP project proposal template must be **fully completed** to be considered eligible. The PS Regional Offices review the project proposals to ensure that they meet the eligibility criteria and application requirements (screening criteria). Project proposals that meet the screening criteria are then further assessed.

All NDMP project proposals that meet the screening criteria are assessed by an assessment committee, which is chaired by PS and made up of provincial and territorial government representatives and officials from federal departments and agencies responsible for emergency management, mitigation, flooding, or other relevant areas. Members of the assessment committee are appointed by their respective department/agencies or governments. Each project proposal is assessed and given a score in relation to how well it meets the merit and general assessment criteria for its respective project stream.

PS uses these scores to compare and rank each project proposal in relation to all other project proposals in the same project stream.

PS will then create a list of recommended projects for consideration by the Minister of Public Safety and Emergency Preparedness.

Section VI: Key Activities and Required Outputs

Stream 1: Risk Assessments

Key Activities

- Produce a risk assessment for a defined geographic area (i. e. P/T, watershed, community, etc.).

Required Outputs

- All Stream 1 projects must provide PS with a completed NDMP risk assessment information template (RAIT) after project completion.

Stream 2: Flood Mapping

Key Activities

- Acquisition of elevation data and mapping;
- Plotting of historical data and inundation mapping; and
- Modelling of hydrological and hydrometric data and other geospatial, mapping and modelling activities.

Required Outputs

- NDMP-funded flood maps must be compliant with relevant Treasury Board standards and guidelines (for reference, see: <http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=16553>);

- All Stream 2 projects must provide a copy of the flood map(s) to PS, in the appropriate format as outlined in the contribution agreement;
- All Stream 2 projects must provide PS with an updated NDMP risk assessment information template (RAIT), which incorporates the flood mapping information.

Stream 3: Mitigation Planning

Key Activities

- Mitigation planning that incorporates the community, neighbouring First Nations communities, and other key local stakeholders to address areas of flood vulnerability.

Required Outputs

- All Stream 3 projects must produce a comprehensive mitigation plan and provide it to PS upon completion.

Stream 4: Investments in Non-Structural and Small Scale Structural Mitigation Projects

Key Activities

- Non-structural mitigation measures and small-scale structural mitigation measures.

Required Outputs

- All Stream 4 projects must provide a project report to PS upon completion of the project.

Annex A

National Disaster Mitigation Program (NDMP) Risk Assessment Information Template (RAIT) Users' Guide

1. Overview

Following severe flooding in Saskatchewan, Manitoba and Quebec in 2011, Economic Action Plan 2012 proposed the Government discuss with provinces and territories (P/Ts) the development of a National Disaster Mitigation Program (NDMP), recognizing that mitigation can lessen the impact of natural disasters on vulnerable communities and reduce the costs associated with these events.

Of the four components of emergency management, mitigation is the most effective means to reduce or eliminate the impacts of disasters. While preparedness, response and recovery help ensure that, once a disaster strikes, the impacts are managed efficiently, mitigation measures can prevent the impacts from occurring at all, or reduce the negative consequences if they do occur.

Investment in disaster mitigation leads to significant relative savings in future response and recovery costs (compared to costs if no mitigation measures were taken). While future disaster costs cannot be predicted with certainty, the relative savings generated by mitigation investments have been demonstrated by governments, international organizations, and private industry world-wide.

A key element of any sound mitigation program is an understanding of both the potential risk of an event occurring, as well as the potential impacts should the risk be realized. Utilizing a risk assessment process, emergency management planners can begin to make proactive, risk-based decisions regarding the

potential events that might impact their communities, and determine what priority measures can be taken, if possible, to improve the safety and resilience of their communities.

Risk assessments can be used by federal, provincial/territorial and municipal governments, as well as other stakeholders, to inform emergency management (EM) decision making across all four components of EM. The assessment process allows stakeholders to identify and prioritize those risks that are likely to create the most disruption to them. The assessment also helps decision-makers to identify and describe hazards and assess impacts and consequences based upon the vulnerability or exposure of the local area, or its functions to that hazard.

The risk assessment approach aims to understand the likely impacts of a range of emergency scenarios upon community assets, values and functions. As such, risk assessments provide an opportunity for multiple impacts and consequences to be considered enabling collaborative risk treatment plans and emergency management measures to be described.

The outputs of the assessment process can be used to better inform emergency management planning and priority setting, introduce risk action plans, and ensure that communities are aware of and better informed about hazards and the associated risks that may affect them.

2. NDMP Data and Information Collection for Identified Hazards

The NDMP risk assessment information template (RAIT) is a basic 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. The template was designed to allow comparability of information and data outputs from a variety of risk assessment methodologies that may be used.

The risk information will be used to support the application for which mitigation funding is being sought. All applicants must complete a risk assessment information template (RAIT) for funding consideration under streams two, three and four of the NDMP. In addition to the risk assessment information template (RAIT), PS encourages all applicants to submit their detailed risk assessments as supporting documentation, thereby providing PS with a broader understanding of risk across Canada.

The completed risk assessment information template (RAIT) should outline and describe local risk, including an estimate of the likelihood of occurrence, potential magnitude and type of consequences or impacts. This should present factual supporting information.

Risk event descriptions should include, where possible, historical context, which allows for research into trends and longer term analysis. Information based on current risk, as well as future risk such as that brought upon by climate change, should be included.

Applicants should also ensure that prevention, mitigation and preparedness activities for the proposed area take into account existing infrastructure, technologies and community/regional capabilities. Local experts and experts from agencies at other government levels, may be invaluable resources to help gain important information regarding specific risk criteria.

3. Consequence/Impact Assessment

The following section provides a description of the different impact criteria that should be completed within the risk assessment information template (RAIT). In addition, descriptions of the risk ranking and definitions associated with the five-point scale used to define the impacts are presented. The impact risk rating definitions are based on qualitative and quantitative elements referenced from a diverse array of risk and resilience methodologies and external risk management models.

a. People and Societal Impacts

It is a priority at the municipal, provincial and federal levels to protect the health and safety of

Canadians. Impacts on people are considered pertinent in the assessment process given that natural hazards can result in significant societal disruptions such as evacuations and relocations as well as injuries, immediate deaths, and deaths resulting from unattended injuries or displacement. As such, the following impact criteria will be assessed on a 1 to 5 scale:

- number of fatalities;
- ability for local healthcare resources to address injuries; and
- number of individuals displaced and duration of displacement.

b. Environmental Impacts

A priority for municipal, provincial and federal governments is to protect Canada's natural environment for current and future generations. As such, environmental impacts were included in the assessment to measure the risk event in relation to the degree of damage and predicted scope of clean-up and restoration needed following an event. The definitions consider the direct and indirect environmental impacts within the defined geographic area on a 1 to 5 scale, and include an assessment of air quality, water quality and availability (exclusive to on land and in-ground water), and various other nature indicators.

c. Local Economic Impacts

There may be impacts on the local economy that are the result of a risk event occurring. Local economic impacts attempt to capture the value of damages or losses to local economically productive assets, as well as disruptions to the normal functioning of the community/region's local economic system. The definitions consider the local economic impacts within the defined geographic area on a 1 to 5 scale, and should consider direct and indirect economic losses (i.e. productivity losses, capital losses, operating costs, financial institutions and other financial losses).

d. Local Infrastructure Impacts

There are several local infrastructure components, as per a variety of risk assessment and management sources and guidelines that are fundamental to the viability and sustainability of a community/region. Those components that appear most pertinent to assess impacts resulting from natural hazards, such as floods, include: energy and utilities; information and communication technology; transportation; health, food and water; and safety and security. At a minimum, an assessment of the aforementioned components must be completed, defined on a 1 to 5 scale, and should consider both direct and indirect impacts.

It is important to note that Critical Infrastructure, in Canada, includes the following ten sectors: energy and utilities, information and communications technology, finance, healthcare, food, water, transportation, safety, government and manufacturing. Currently, the National Disaster Mitigation Program attempts to leverage those elements thought to be most relevant to identify and assess local flood risk to communities while complementing other Government initiatives, such as the *National Strategy and Action Plan for Critical Infrastructure*.

e. Public Sensitivity Impacts

Public sensitivity was included as an impact criterion given that credibility of governments is founded on the public's trust that all levels of government will respond effectively to a disaster event. The definitions consider the impacts on public visibility on a 1 to 5 scale, and include an assessment of public perception of government institutions, and trust and confidence in public institutions.

4. Confidence Levels

The risk assessment process requires confidence levels to be defined, particularly since confidence levels can vary considerably depending on the availability of quality data, availability of relevant expertise to feed the risk assessment process, and the existing Canadian body of knowledge associated with specific natural hazards and natural disaster events.

Confidence levels have been defined using letters ranging from A to E, where 'A' is the highest confidence level and 'E' is the lowest. This approach was taken to ensure all applicants can determine the

confidence in their risk assessment in a simplified, straightforward manner, which also ensures that a more consistent representation of confidence levels is being determined across all submissions.

Applicants are required to indicate in the risk assessment information template (RAIT), their level of confidence in the likelihood estimate and impact risk ratings associated with the natural hazard risk event. Applicants can also provide a justification for the confidence level in the risk assessment information template (RAIT), including references and sources to support the assigned confidence level.

Annex B

Return on Investment Guidelines

Applicants for stream 4 projects can use any recognized methodology for determining the Return on Investment (ROI) of the proposal. However, applicants are encouraged to clearly demonstrate the following two steps associated with the ROI:

1. Loss Estimation Analysis; and
2. Return on Mitigation Investment.

All costs associated with the ROI calculation should be based on the direct losses that would be incurred if the proposed project was not undertaken. Similarly, only costs that can be directly attributed to the proposed mitigation activity should be used in assessing the ROI. For proposed projects that are part of a broader program or series of activities related to flood mitigation, please determine the impact for only the project activity being proposed.

Loss Estimation Analysis

Loss Estimation Analysis (LEA) determines the dollar value estimate of the damage that would have resulted from flooding, had the mitigation project not been completed versus the costs that would be incurred if the mitigation project were completed. The losses (damages) are calculated for scenarios where no mitigation actions are taken for a given flood depth for a storm/flow event. Similarly, the losses (damages) are calculated for the same flood depth if the mitigation project were completed. The difference between the costs associated with each of the two scenarios determines the estimated loss avoided (in dollars).

The loss estimation analysis can be presented as follows:

$$MP_A - MP_C = LA$$

Where:

MP_A = Mitigation Project Absent

MP_C = Mitigation Project Complete

LA = Loss Avoided

Categories of loss generally include physical damage to assets and infrastructure, loss of function, and emergency management costs.

Table 1: Loss estimation categories and types

Loss Type	Loss Category
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Physical	Buildings Contents Roads and Bridges Landscaping Environmental Impacts Vehicles/Equipment
Loss of Function	Displacement Expense Loss of Rental Income Loss of Business Income Loss of Wages Disruption Time of Residents Loss of Public Services Economic Impact of Utility Loss Economic Impact of Road/Bridge Closure
Emergency Management	Debris Cleanup Government Expense

(FEMA 2007)

Finally, all losses avoided should be calculated in present-day values.

Return on Mitigation Investment

The return on investment (ROI) is calculated using the Loss Avoided (calculated above) in relation to the proposed Project Cost (PC). These results can vary depending on the number of events evaluated for different assets and the resulting level of damage. For instance, if the mitigation measure is determined to protect an asset from more than one event during the course of the amortization period, the multiple cost avoidance should be calculated.

The proposed Project Cost (PC), is the total investment estimated for the project being evaluated, or in the case of acquisition projects, the fair market cost to acquire and restore the property. Project cost should represent the total investment for the project made by all parties involved.

Based on the information from the Loss Avoided and the determination of the Project Cost, the ROI should represent the following:

$$\frac{\text{LA (\$)}}{\text{PC (\$)}} = (\%) \text{ROI}$$

Where:

LA (\$) = Loss Avoided in dollars

PC (\$) = Project Cost in Dollars

ROI = Return on Investment (percentage)

Amortization

All ROI calculations should be amortized over a 25 year period. If an alternative timeframe is used for the ROI calculation, clearly indicate the proposed timeframe.