



Report of the Auditor General of the Ville de Montréal to the City Council and to the Urban Agglomeration Council

For the Year Ended December 31, 2014

4.9

BUSINESS CONTINUITY MANAGEMENT



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List of Acronyms

BIA	Business Impact Analysis	SIM	Service de sécurité incendie de Montréal
CCTI	Centre de commandement et de traitement de l'information	SPVM	Service de police de la Ville de Montréal
CO	Centres opérationnels	STI	Service des technologies de l'information
DEP	Direction de l'eau potable		
PDQ	Poste de quartier		

Note to Readers

The implementation of our recommendations by the business units depends on Recommendations 4.1.B and 4.2.B, which we issued to the Direction générale, concerning the development of management frameworks for the City's business continuity program and ensuing allocation of resources.

In response to these recommendations, the Direction générale informed us that it intends to broaden the mandate of the emergency management centre within the Service de sécurité incendie de Montréal (SIM) and give it the added responsibility of ensuring resilience. The emergency management centre explained that, as part of its broader mandate, it will submit to the Direction générale a comprehensive business continuity action plan in December 2015.

Accordingly, the business units' responses to our recommendations, set out in this report, must be read in light of this comprehensive action plan, which will prescribe more specifically the nature of the actions the business plans are to implement as well as timelines for their implementation.

We also plan to evaluate this comprehensive action plan in order to ensure that it will help meet our recommendations adequately.

4.9. Business Continuity Management

1. Introduction

Organizations such as Ville de Montréal (the City) are more vulnerable now than ever, because natural, technological and social incidents occurring at the local or regional level now have major impacts on their normal operations.

The City provides services to approximately 1.8 million people. Some of these are essential services such as:

- **The Service de sécurité incendie de Montréal (SIM):** Its mandate is to make the Montreal agglomeration safer by protecting lives, property and the environment;
- **The Service de l'eau – Direction de l'eau potable (DEP):** Its mandate includes the production and distribution of drinking water to the population, organizations and industries of Montreal;
- **The Service des technologies de l'information (STI):** It is mandated to support the delivery of the City's information and communications technology services;
- **The Service de police de la Ville de Montréal (SPVM):** Its mission is to protect the lives and property of citizens, to maintain the peace and ensure public safety, to prevent and fight crime and to enforce existing laws and regulations.

Since these essential services must be operational at all times, it is crucially important that the City be prepared for any emergency situation that could cause a shutdown or major disruption in their operations. The business continuity management process takes this into account and is designed to minimize impacts in the event of a disaster or major event affecting the City's business units.

1.1. Business Continuity Management

Business continuity management is a process of planning to ensure that critical operations are resumed when an event interrupts a business unit's regular operations. It provides for measures and procedures to resume these operations in another location within a reasonable time (based on the maximum interruption time allowed).

Business continuity management must be based on a program that includes the following components:

- **Governance:**

The City has established a governance structure (e.g., assignment of responsibilities; management, administration and accountability mechanisms) for the purpose of managing business continuity effectively.
- **Business continuity program structure:**

The structure of the business continuity program includes the minimum elements providing for the establishment of effective strategies, a business continuity culture, and relevant, measurable and achievable objectives.
- **Crisis management structure:**

The City has established a crisis management structure responsible for the strategic and operational responses that ensure coordination and communication among business units and external stakeholders.
- **Business impact analysis and business continuity strategies:**

For each of the City's business units, a business impact analysis helps identify its functions properly in order to establish their criticality level and a chronological order for resuming operations in the event that they are interrupted. It helps determine the maximum interruption time for each operation. A business continuity strategy corresponds to the needs that were established when the impact analysis was conducted. In particular, it helps ensure that the maximum acceptable interruption time is not exceeded and it helps in the planning of premises, resources and equipment required to meet these needs.
- **Business continuity plans and procedures:**

Business continuity documentation ensures the City reacts appropriately to a crisis and provides all instructions needed to resume critical activities.
- **Business continuity training:**

Following a disaster, all stakeholders involved in resuming operations have received appropriate training, in particular by participating in the establishment of recovery processes and by taking part in exercise drills to validate business continuity procedures.
- **Business continuity exercise programs:**

The only way to validate business continuity procedures adequately is to carry out evaluation exercises regularly. The exercises are prepared on the basis of objectives to be achieved, and the debriefing objectively assesses whether the objectives were achieved.
- **Updating business continuity documentation:**

In order to ensure effectiveness and business sustainability, business continuity documentation is always updated in accordance with a process.

1.2. Differences Between Emergency Management Measures and Business Continuity Management

Emergency management measures are used to react to a major event that has a direct impact on the City's residents. They are aimed at maintaining the capacity of crisis and emergency management services to respond so that they can:

- come to residents' assistance as promptly as possible;
- save lives;
- protect residents and stakeholders;
- provide residents with safe housing;
- inform the population;
- reduce social and economic losses.

While the City has emergency management measures in place, it must also have a business continuity management program. This program ensures that the City's critical activities are maintained in the event of a disaster that jeopardizes its operations. Without such a program, the City's ability to respond could be reduced, jeopardizing the welfare of its residents.

2. Purpose and Scope of the Audit

The purpose of our audit was to determine whether the City takes the necessary steps to address risks that a disaster could affect its operations, and to ensure the continuity of those considered critical.

Our audit was conducted in accordance with the value-for-money auditing standard in the public sector included in the CPA¹ Canada Handbook – Certification.

For this audit, we relied on the following international standards:

- ISO 27001 – Information security management systems;
- ISO 22301 – Business continuity management systems;
- ISO 31000 – Risk management.

Our audit was conducted with the participation of specialists recognized in the field of business continuity management.

¹ Handbook published by Chartered Professional Accountants Canada.

As a follow-up to the results of our risks analysis, our audit focused on the following business units, which we considered critical:

- Direction générale;
- DEP;
- SIM;
- STI;
- SPVM.

A separate detailed report was produced for the SPVM because of the highly sensitive, confidential information that it contains. Nevertheless, this report discusses our public findings in Section 5.

Our audit evaluated the following sections:

- Section 1 – Governance;
- Section 2 – Business continuity program structure;
- Section 3 – Crisis management structure;
- Section 4 – Business impact analysis and business continuity strategies;
- Section 5 – Business continuity plans and procedures;
- Section 6 – Business continuity training;
- Section 7 – Business continuity exercise programs;
- Section 8 – Updating business continuity documentation.

Our audit did not cover the following:

- SPVM Postes de quartier (PDQ), because each PDQ can be relieved by the others as a result of their numbers and proximity;
- Information technologies recovery management, which is the subject of a separate audit;
- Emergency management, which was covered by a separate report in 2007.

Our audit was conducted from September 2013 to December 2014.

3. Summary of Findings (Direction générale, DEP, SIM and STI)

Overall, we noted that neither the Direction générale nor the other business units audited had established a business continuity program. Table 1 presents a summary of our findings.

Table 1 – Summary of Findings

Report section	Finding	Risk level ^[a]
4.1	Governance	MODERATE
4.2	Business continuity program structure	HIGH
4.3	Crisis management structure	HIGH
4.4	Business impact analysis and business continuity strategies	HIGH
4.5	Business continuity plans and procedures	CRITICAL
4.6	Business continuity training	HIGH
4.7	Business continuity exercise programs	CRITICAL
4.8	Updating business continuity documentation	HIGH

^[a] A description of risk levels is given in Appendix 7.1.

4. Detailed Findings and Recommendations (Direction générale, DEP, SIM and STI)

4.1. Governance

4.1.A. Background and Findings

To manage business continuity effectively, organizations such as the City establish sound governance in the areas of management frameworks; assignment of responsibilities; and management, administration and accountability mechanisms.

Management frameworks are documents that determine the scope, requirements, roles and responsibilities of members of the City's management and its business units under a business continuity program. These documents generally take the form of administrative policies and guidelines, and rather than establishing what the program must consist of or how it is to be implemented, they establish the objectives to be achieved.

The goal is to develop a single coordinated approach that is aligned for all the City's business units, in order to provide an effective response and maintain the City's critical functions when a disaster occurs.

The City must clearly define its objectives and expectations in the area of business continuity, by means of an administrative policy, in order to ensure that critical activities are resumed at the time of a disaster or any other event that could affect operations and the services provided

to the population. Management frameworks should cover the organizational structure, the roles and responsibilities of the key stakeholders, as well as the program tools and requirements. The policy will guide business units in the establishment and implementation of business continuity plans.

For business units, management frameworks can take the form of guidelines and procedures, determining how these will achieve the objectives and meet the requirements of the municipal policy through a process adapted to their operational reality. They must establish an organizational structure, assign roles and responsibilities to stakeholders and specify the tools and activities established in response to the management frameworks of the Direction générale.

During our audit, we noted the following deficiencies:

- There is no business continuity program in the City, either within the Direction générale or the other business units audited, in case of serious incidents that would interfere with a unit's activities, even though this is required by emergency management. It should be pointed out that the business units we took into account in our audit are critical for the welfare of City residents;
- No business continuity management framework was developed by the Direction générale or by the other business units audited.

Since the scope of the business continuity program must cover all the City's activities, the senior levels of its administration must be ultimately responsible for its implementation, its objectives and monitoring progress. According to sound management practices, the business continuity program should be assigned to a member of the executive committee and its development coordinated by the Direction générale. At the same time, it should also be assigned to a member of each business unit's management team.

The result of the City not having a business continuity program is that:

- Business continuity is not represented within the executive committee and the Direction générale. It is not assigned to a member of the executive committee or the Direction générale;
- Business continuity is not monitored by municipal authorities;
- No objectives are established or communicated to business units. These objectives can set out expectations regarding continuity (e.g., determine the critical activities, establish continuity strategies and plans and keep them up to date to reduce the impacts of an interruption and report annually on preparedness). Business units are not held accountable for ensuring that they have in fact established adequate plans;

- No accountability or representation mechanisms and no objectives have been defined for business continuity for the DEP, the SIM and the STI.

We consider the risk level to be **moderate** (see Table 2), because the Direction générale, the DEP, the SIM and the STI face the following potential risks:

- No systematic, standardized approach is possible without management frameworks showing the support of the City's management. For business units, this could result in an inadequate process that fails to meet their business continuity objectives. These efforts would be incomplete, uneven, inconsistently applied and erratic in their effectiveness, making them more difficult to align. The terminology, sequence of activities and program components would be different, which would have significant impacts on the ability of the business units' stakeholders to coordinate their responses;
- With a continuity process that is not framed by overall and specific objectives, no coherent development of continuity plans is possible within the various business units' management teams and their critical functions. The continuity processes would be uneven, inconsistent and lacking in direction in the short, medium and long term.

Table 2 – Risk Level

Impact ^[a]	Probability ^[a]				
	Highly probable	PROBABLE	Possible	Unlikely	Improbable
Catastrophic	Critical	Critical	High	High	Moderate
Major	Critical	High	High	Moderate	Low
MODERATE	High	MODERATE	Moderate	Low	Low
Minor	Low	Low	Low	Low	Low

^[a] A description of impact and probability levels is given in Appendix 7.1.

4.1.B. Recommendation

We recommend that the Direction générale develop specific management frameworks for the City's business continuity program that include:

- a description of general objectives;
- a definition of the roles and responsibilities of members of the City's and business units' management teams;
- the scope of management frameworks (e.g., business units and paramunicipal corporations);
- business continuity requirements imposed on business units.

Business unit's response:

[TRANSLATION] The Direction générale intends to broaden the mandate of the emergency management office and give it the added responsibility of ensuring resilience. This decision is in keeping with the program established by the Rockefeller Foundation for which Ville de Montréal was selected. (Planned completion: 2015–2020)

4.1.C. Recommendation

Subject to Recommendation 4.1.B., addressed to the Direction générale, we recommend that the Direction de l'eau potable, the Service de sécurité incendie de Montréal and the Service des technologies de l'information:

- **develop their management frameworks along the same lines as the City's, and ensure that, at the very least, they provide for:**
 - a definition of the department's continuity objectives,
 - a detailed impact analysis of interruptions,
 - a continuity strategy for reducing these impacts,
 - continuity plans that describe in detail activities carried out to resume critical operations within an acceptable time,
 - a review and regular exercise drill schedule;
- **assign responsibility for business continuity to a member of each of their management teams;**
- **establish specific business continuity objectives for each of their management teams;**
- **establish a coordinated communication, monitoring and accountability process on the achievement of objectives.**

Business units' responses:**DIRECTION DE L'EAU POTABLE**

[TRANSLATION] In order to develop its business continuity program, the Direction de l'eau potable must comply with the management framework of the City's Direction générale.

Since the Direction générale mandated the City's emergency management division to develop this management framework, we must wait for it to be implemented in order to develop ours in a coherent manner.

We have already identified Myriam Beaudoin as the person who will be responsible on this front in our management team.

*The associated management structures and budgets will be identified as soon as we familiarize ourselves with the City's management framework. **(Planned completion: 8 months after the Direction générale establishes the management framework)***

SERVICE DE SÉCURITÉ INCENDIE DE MONTRÉAL

[TRANSLATION] The Direction générale asked SIM's management to broaden the mandate of Montreal's emergency management centre to include the concepts of resilience and business continuity.

*Under the 100 Resilient Cities program, overseen by the Rockefeller Foundation, the emergency management centre must establish a resilience strategy for the Montreal community in the fall of 2015. As part of this reflection process, a comprehensive business continuity action plan will be submitted to the Direction générale by the end of the year. **(Planned completion: December 2015)***

SERVICE DES TECHNOLOGIES DE L'INFORMATION

*[TRANSLATION] The Service des technologies de l'information will follow the City's business continuity guidelines as set out in the corporate framework that will be announced by the Direction générale. **(Planned completion: undetermined)***

The STI is currently conducting a reorganization. Its control and continuous improvement division will be responsible for the department's business continuity.

*The IT services continuity manager will be appointed no later than December 31, 2015. **(Planned completion: December 2015)***

4.2. Business Continuity Program Structure

4.2.A. Background and Findings

At the very least, the structure of a business continuity program contains components for establishing effective strategies; a culture of business continuity; and relevant, measurable and achievable objectives.

These components are:

- The organizational structure of the program;
- Allocation of resources and operating budgets;
- Tools, common approach and municipal coordination of the program.

Organizational Structure of the Program

The organizational structure of the business continuity program is made up of committees and stakeholders to supervise, coordinate and ensure a structured, aligned and effective implementation of business continuity initiatives.

The structure is based on roles and responsibilities designed according to the City's hierarchy and management levels. It must provide for an approval level and ultimate responsibility and provide the broad guidelines of the program. The Direction générale directs and supervises the work of business units, which propose and implement program activities.

This structure must be representative of all the City's activities and provide for communication and accountability mechanisms in order to ensure that information is shared and that there is a common perception of the issues, objectives and results of the program.

During our audit, we noted that the Direction générale, the DEP, the SIM and the STI did not have a business continuity organizational structure.

Allocation of Resources and Operating Budgets

The establishment of a business continuity program and its activities cannot be a one-time process that is carried out on a project-by-project basis and is not integrated into ongoing operations. It must be based on a recurring allocation of financial, material and human resources.

We noted that in the case of both the Direction générale and the other business units audited, no budget was allocated specifically to business continuity.

Tools, Common Approach and Municipal Coordination of the Program

To ensure the development and the establishment of a coherent, effective continuity program, the City must have a step-by-step procedure in place to properly frame the efforts of each business unit and ensure that the business continuity objectives are achieved. To facilitate their development and establishment, tools will also be needed, such as:

- training on the desired process;
- manuals or templates for each development phase;
- models or procedures to follow for performing exercises;
- tools for sharing and exchanging ideas (e.g., collaboration websites).

Similarly, coordination and overall monitoring of the business continuity program, centralized within a single municipal entity, would facilitate accountability and evaluation of the City's actual emergency preparedness. This same entity could provide business units with content expertise and keep the continuity process up to date while integrating the latest advances in the field into it.

As mentioned in the previous section, without a business continuity program, the Direction générale and the other business units audited do not have centralized processes and tools.

We consider the risk level to be **high** (see Table 3), because the Direction générale, the DEP, the SIM and the STI face the following potential risks:

- When an organizational structure is absent or deficient, it is not possible to manage all levels of a crisis (strategic, tactical and operational). Some aspects of event management might be overlooked and staff required to assume these responsibilities would not be properly equipped to respond. Stakeholders would remedy these deficiencies by improvising, increasing the risk that the situation would degenerate into a crisis.
- Without recurring financial or human resources, the process would lack cohesiveness and relevance to business units' ongoing operations. The continuity objectives would probably not be achieved, putting operations at risk in the event of a disaster. Without sustained funding, efforts already undertaken might be wasted because components established in the past might have become obsolete.
- Without tools and without a common business continuity process, in the event of a disaster, recovery activities would be improvised, substantially increasing the time required to resume normal operations. The terminology, sequence of activities and program components would be different, adversely affecting stakeholders' ability to discuss and share information, to collaborate, and to coordinate their work, their initiatives and their responses. When staff members are replaced, knowledge of critical program components could not be communicated.

It should be pointed out that with regard to emergency management, several advisory and management committees are already in place that could be used in a business continuity process.

Table 3 – Risk Level

Impact ^[a]	Probability ^[a]				
	Highly probable	PROBABLE	Possible	Unlikely	Improbable
Catastrophic	Critical	Critical	High	High	Moderate
MAJOR	Critical	HIGH	High	Moderate	Low
Moderate	High	Moderate	Moderate	Low	Low
Minor	Low	Low	Low	Low	Low

^[a] A description of impact and probability levels is given in Appendix 7.1.

4.2.B. Recommendation

We recommend that the Direction générale:

- provide specific recurring budgets for the development, implementation and maintenance of a business continuity program;
- make municipal tools (recipe books) available to business units, such as:
 - the operational structure of the business continuity program,
 - training sessions on the desired process,
 - manuals or templates for each development phase,
 - models or procedures to follow for performing exercises,
 - tools for sharing and exchanging ideas (e.g., collaboration websites).

Business unit's response:

[TRANSLATION] Implementation of this recommendation will ensue from the implementation of Recommendation 4.1.B. (Planned completion: 2015–2020)

4.2.C. Recommendation

We recommend that the Direction de l'eau potable, the Service de sécurité incendie de Montréal and the Service des technologies de l'information:

- develop their management structures for the implementation of the business continuity program, including:
 - determining the persons responsible,
 - describing the roles and responsibilities of each,
 - defining the communication and accountability process;
- provide specific recurring business continuity budgets in connection with the established objectives.

Business units' responses:

DIRECTION DE L'EAU POTABLE

[TRANSLATION] In order to develop its business continuity program, the Direction de l'eau potable must comply with the management framework of the City's Direction générale.

*Since the Direction générale mandated the City's emergency management division to develop this management framework, we must wait for it to be implemented in order to develop ours in a coherent manner. **(Planned completion: undetermined)***

SERVICE DE SÉCURITÉ INCENDIE DE MONTRÉAL

[TRANSLATION] The Direction générale asked the SIM's management to broaden the mandate of Montreal's emergency management centre to include concepts of resilience and business continuity.

*Under the 100 Resilient Cities program overseen by the Rockefeller Foundation, the emergency management centre must establish a resilience strategy for the Montreal community in the fall of 2015. As part of this reflection process, a comprehensive business continuity action plan will be submitted to the Direction générale by the end of the year. **(Planned completion: December 2015)***

SERVICE DES TECHNOLOGIES DE L'INFORMATION

*[TRANSLATION] The Service des technologies de l'information will follow the City's business continuity guidelines as set out in the corporate framework that will be announced by the Direction générale. **(Planned completion: undetermined)***

*The STI is currently conducting a reorganization. Its control and continuous improvement division will be responsible for the department's business continuity. The management structure will depend on the guidelines introduced by the Direction générale. **(Planned completion: undetermined)***

4.3. Crisis Management Structure

4.3.A. Background and Findings

When a disaster occurs, the City must react quickly and efficiently to minimize its impacts and quickly resume operations.

In order for a response structure to be effective, its members must have a thorough understanding of their roles and responsibilities, their areas of concern, tools to be used and communication protocols to be applied.

During our audit, we noted the following:

- The DEP does not have a business continuity response structure integrating all critical operations. However, it established a response structure in its emergency plans for the operations of drinking water production plants and for responding to major water main breaks. This structure was reviewed when the pandemic plan (2009–2010, revised in 2013) was developed. It is integrated into the municipal emergency management structure, because drinking water production and distribution are defined as one of its critical missions.
- The SIM developed a response structure for its service continuity plans that does not take into account business continuity of the SIM as a whole, i.e., events that could affect its own operations and facilities outside fire stations.
- The STI has an emergency response structure in the form of a document called “Plan de mobilisation,” which was revised in 2013. However, it does not take business continuity into account.

We consider the risk level to be **high** (see Table 4), because without a comprehensive response structure, the DEP, the SIM and the STI face the following potential risks:

- It will probably be difficult to react promptly to an event affecting their own operations and ensure cohesion in recovery activities.
- The business units audited will probably no longer have the ability to deliver all essential public services. This could result in serious consequences for the welfare of City residents and in other areas.

Business continuity could be integrated into the SIM's and STI's existing crisis management structures.

Table 4 – Risk Level

Impact ^[a]	Probability ^[a]				
	Highly probable	PROBABLE	Possible	Unlikely	Improbable
Catastrophic	Critical	Critical	High	High	Moderate
MAJOR	Critical	HIGH	High	Moderate	Low
Moderate	High	Moderate	Moderate	Low	Low
Minor	Low	Low	Low	Low	Low

^[a] A description of impact and probability levels is given in Appendix 7.1.

4.3.B. Recommendation

We recommend that the Direction de l'eau potable, the Service de sécurité incendie de Montréal and the Service des technologies de l'information develop a response structure to meet business continuity needs and objectives that integrates all their critical operations.

Business units' responses:

DIRECTION DE L'EAU POTABLE

[TRANSLATION] In order to develop its business continuity program, the Direction de l'eau potable must comply with the management framework of the City's Direction générale.

Since the Direction générale mandated the City's emergency management division to develop this management framework, we must wait for it to be implemented in order to develop ours in a coherent manner. (Planned completion: undetermined)

SERVICE DE SÉCURITÉ INCENDIE DE MONTRÉAL

[TRANSLATION] The Direction générale asked SIM's management to broaden the mandate of Montreal's emergency management centre to include the concepts of resilience and business continuity.

Under the 100 Resilient Cities program, overseen by the Rockefeller Foundation, the emergency management centre must establish a resilience strategy for the Montreal community in the fall of 2015. As part of this reflection process, a comprehensive business continuity action plan will be submitted to the Direction générale by the end of the year. (Planned completion: December 2015)

SERVICE DES TECHNOLOGIES DE L'INFORMATION

[TRANSLATION] With respect to a response structure, the STI has a mobilization plan that can be updated to meet the IT services business continuity objectives that will be developed as a result of the City's business continuity guidelines. (Planned completion: undetermined)

4.4. Business Impact Analysis and Business Continuity Strategies

4.4.A. Background and Findings

A business impact analysis (BIA) is aimed at evaluating the consequences of an interruption in an entity's operations, including on its ability to perform its mission. The process is intended for all the City's business units and generally classifies impacts into four areas: financial, legal, operational and "the organization's image and reputation."

This analysis compiles an inventory of each business unit's operations and helps prioritize them while establishing their maximum tolerance to an interruption in operations. At the same time, it clarifies interdependent relationships and determines the resources required to maintain the minimum acceptable level of operation.

This analysis also helps develop a common vision of priorities and align different perceptions of the City's operations and its critical functions. It forms the basis of any business continuity process. The City's management then has a clear, detailed and prioritized profile of its operations, which will serve as the basis for the process of developing the City's business continuity strategies.

During our audit, we noted the following:

- The DEP and the STI did not conduct impact analyses and did not have business continuity strategies.
- The SIM had conducted a simplified impact analysis of some of its activities in the event of a pandemic, which helped determine the criticality of some of its operations. However, we were not able to obtain comprehensive documentation justifying the conclusions of the analysis. Many of the continuity strategies documented were not implemented and no updates were made since the analysis in 2009. Furthermore, it was concerned only with pandemic scenarios, whereas the range of potential events that are likely to affect the SIM's continuity of operations is much greater.

We consider the risk level to be **high** (see Table 5), because the DEP, the SIM and the STI face the following potential risks:

- Without a comprehensive, detailed BIA, several critical functions may not be detected and as a result, they would not benefit from any continuity strategy or plan.
- In the event of a disaster, these business units would most likely not be able to recover all the critical functions required to maintain essential public services.

Table 5 – Risk Level

Impact ^[a]	Probability ^[a]				
	Highly probable	PROBABLE	Possible	Unlikely	Improbable
Catastrophic	Critical	Critical	High	High	Moderate
MAJOR	Critical	HIGH	High	Moderate	Low
Moderate	High	Moderate	Moderate	Low	Low
Minor	Low	Low	Low	Low	Low

^[a] A description of impact and probability levels is given in Appendix 7.1.

4.4.B. Recommendation

We recommend that the Direction de l'eau potable, the Service de sécurité incendie de Montréal and the Service des technologies de l'information:

- conduct an impact analysis for all their operations;
- communicate the results of the impact analysis to all business continuity program stakeholders;
- develop continuity strategies based on the results of the business impact analysis.

Business units' responses:

DIRECTION DE L'EAU POTABLE

[TRANSLATION] In order to develop its business continuity program, the Direction de l'eau potable must comply with the management framework of the City's Direction générale.

Since the Direction générale mandated the City's emergency management division to develop this management framework, we must wait for it to be implemented in order to develop ours in a coherent manner. **(Planned completion: undetermined)**

SERVICE DE SÉCURITÉ INCENDIE DE MONTRÉAL

[TRANSLATION] The Direction générale asked SIM's management to broaden the mandate of Montreal's emergency management centre to include the concepts of resilience and business continuity.

Under the 100 Resilient Cities program, overseen by the Rockefeller Foundation, the emergency management centre must establish a resilience strategy for the Montreal community in the fall of 2015. As part of this reflection process, a comprehensive business continuity action plan will be submitted to the Direction générale by the end of the year. **(Planned completion: December 2015)**

SERVICE DES TECHNOLOGIES DE L'INFORMATION

[TRANSLATION] The Service des technologies de l'information will follow the City's business continuity guidelines as set out in the corporate framework that will be announced by the Direction générale. **(Planned completion: undetermined)**

4.5. Business Continuity Plans and Procedures

4.5.A. Background and Findings

When a disaster strikes, the City must respond quickly in order to minimize its impacts and quickly resume normal operations. It is important that organizations destabilized by an

incident be able to perform critical activities in an orderly fashion in order to resume operations as quickly as possible.

As a way of facilitating decision-making under pressure, the business continuity plan must account for all the activities and procedures established in the organization to maintain or quickly resume operations based on the priorities defined in the impact analysis.

Management tools that give clear details on “who does what, when, how and where” for specific situations help reduce uncertainty time due to any incident, as well as develop the optimum response reflexes within the continuity teams.

During our audit, we identified the following deficiencies:

- The STI does not have a business continuity plan.
- The DEP has no business continuity plan. In 2009 and 2010, the Service de l'eau developed a draft plan for dealing with the eventuality of an H1N1 flu pandemic (chapter 9 of the document “Plan de mesures d'urgence”), specifying the affected operations that would be maintained with the reduced levels of staff available. This document was updated in 2013 and does not include business continuity elements.
- The SIM does not have an up-to-date business continuity plan that covers all its operations. Nevertheless, in 2009 and 2010, the SIM developed a service continuity plan for dealing with the eventuality of an H1N1 flu pandemic, specifying the affected operations that would be maintained with the reduced levels of staff available. This plan provides an initial glimpse into SIM operations and possible strategies for maintaining them in a pandemic or disaster situation. It has not been updated since that time, and we were not able to track down all the supporting documents.

The SIM established a disaster relief process for its communications centre. This process is activated several times a year and will be explored in greater detail in our audit of information technology recovery management.

We consider the risk level to be **critical** (see Table 6), because the DEP, the SIM and the STI face the following potential risks:

- Without a business continuity plan, employees involved in resuming operations would improvise. The responses would probably be incoherent and adversely affect other activities.
- These business units might not recover their critical operations in a timely manner. Essential public services might not be maintained, which would have serious consequences for the welfare of City residents.

Table 6 – Risk Level

Impact ^[a]	Probability ^[a]				
	HIGHLY PROBABLE	Probable	Possible	Unlikely	Improbable
Catastrophic	Critical	Critical	High	High	Moderate
MAJOR	CRITICAL	High	High	Moderate	Low
Moderate	High	Moderate	Moderate	Low	Low
Minor	Low	Low	Low	Low	Low

^[a] A description of impact and probability levels is given in Appendix 7.1.

4.5.B. Recommendation

We recommend that the Direction de l'eau potable, the Service de sécurité incendie de Montréal and the Service des technologies de l'information develop business continuity plans for all their critical functions, including:

- defining the criteria for continuity plan activation;
- defining the roles and responsibilities of each stakeholder or each continuity team;
- defining activities to be performed in the event of a disaster in order to maintain an adequate level of service;
- determining critical resources (staff, equipment, etc.) required to relocate essential operations;
- listing employees and third parties who must participate in continuity activities, including ways to contact them;
- developing operational procedures in the event of a disaster.

Business units' responses:

DIRECTION DE L'EAU POTABLE

[TRANSLATION] In order to develop its business continuity program, the Direction de l'eau potable must comply with the management framework of the Direction générale de la Ville de Montréal.

Since the Direction générale mandated the City's emergency management division to develop this management framework, we must wait for it to be implemented in order to develop ours in a coherent manner. (Planned completion: undetermined)

SERVICE DE SÉCURITÉ INCENDIE DE MONTRÉAL

[TRANSLATION] The Direction générale asked SIM's management to broaden the mandate of Montreal's emergency management centre to include the concepts of resilience and business continuity.

Under the 100 Resilient Cities program, overseen by the Rockefeller Foundation, the emergency management centre must establish a resilience strategy for the Montreal community in the fall of 2015. As part of this reflection process, a comprehensive business continuity action plan will be submitted to the Direction générale by the end of the year. (Planned completion: December 2015)

SERVICE DES TECHNOLOGIES DE L'INFORMATION

[TRANSLATION] The current mobilization plan includes roles of the various key stakeholders and their contact information. It will be realigned with the City's business continuity guidelines as set out in the corporate framework that will be announced by the Direction générale. (Planned completion: undetermined)

4.6. Business Continuity Training

4.6.A. Background and Findings

A business continuity process cannot succeed without an educational component. In order to maximize the effectiveness of responses in the event of a disaster, it is important that all employees be trained on the response process, the steps to take and the procedures to follow.

Training promotes a common understanding of objectives, decision-making processes and standard response methods within the organization when an emergency situation arises. During training sessions, participants have the opportunity to develop and consolidate their knowledge and skills. The training program must take into account the needs of staff and requirements of business units.

As mentioned in previous sections, in the absence of a business continuity program, the business units audited had not developed any training and awareness programs.

We consider the risk level to be **high** (see Table 7), because the DEP, the SIM and the STI face the following potential risks:

- Without a training and awareness program, staff members who need to respond during interruptions in operations would not be prepared to take action. Their responses would be improvised and largely ineffective.
- These business units could probably not recover their operations in a timely manner. Essential public services might not be maintained.

Table 7 – Risk Level

Impact ^[a]	Probability ^[a]				
	Highly probable	PROBABLE	Possible	Unlikely	Improbable
Catastrophic	Critical	Critical	High	High	Moderate
MAJOR	Critical	HIGH	High	Moderate	Low
Moderate	High	Moderate	Moderate	Low	Low
Minor	Low	Low	Low	Low	Low

^[a] A description of impact and probability levels is given in Appendix 7.1.

4.6.B. Recommendation

We recommend that the Direction de l'eau potable, the Service de sécurité incendie de Montréal and the Service des technologies de l'information develop a training program for all business continuity plan stakeholders.

Business units' responses:

DIRECTION DE L'EAU POTABLE

[TRANSLATION] In order to develop its business continuity program, the Direction de l'eau potable must comply with the management framework of the Direction générale de la Ville de Montréal.

Since the Direction générale mandated the City's emergency management division to develop this management framework, we must wait for it to be implemented in order to develop ours in a coherent manner. (Planned completion: undetermined)

SERVICE DE SÉCURITÉ INCENDIE DE MONTRÉAL

[TRANSLATION] The Direction générale asked the SIM's management to broaden the mandate of Montreal's emergency management centre to include the concepts of resilience and business continuity.

Under the 100 Resilient Cities program, overseen by the Rockefeller Foundation, the emergency management centre must establish a resilience strategy for the Montreal community in the fall of 2015. As part of this reflection process, a comprehensive business continuity action plan will be submitted to the Direction générale by the end of the year. (Planned completion: December 2015)

SERVICE DES TECHNOLOGIES DE L'INFORMATION

[TRANSLATION] The Service des technologies de l'information will follow the City's business continuity guidelines as set out in the corporate framework that will be announced by the Direction générale. (Planned completion: undetermined)

4.7. Business Continuity Exercise Programs

4.7.A. Background and Findings

The effectiveness with which an organization reacts to an emergency or crisis depends largely on the exercise programs it has set up.

Business continuity exercises give participants the opportunity to put theoretical learning into practice, become familiar with their roles and responsibilities and test the different procedures. They also help participants develop positive response reflexes, so that getting procedures under way, making decisions quickly and communicating effectively become automatic reflexes. The response as a whole therefore becomes more efficient.

In a spirit of continuous improvement in disaster preparedness, exercises play a key role in assessing the effectiveness of existing plans and procedures, as well as in determining concrete ways of improving action taken to correct existing deficiencies.

A business continuity process is a balanced mixture of exercises and training. Closely associated with the training program, an exercise program helps make the transition from theory to practice in the area of business continuity activities.

As mentioned in previous sections, in the absence of a business continuity program, the business units audited had not developed a business continuity exercise program, except for the SIM's communications centre.

In fact, the SIM periodically uses its disaster recovery centre as a communications centre. It moves staff to the recovery centre when events are planned that can interfere with access to its headquarters (located at 4040 avenue du Parc), for example, during demonstrations or when important work is being done at the main site, so this recovery serves as exercises because it validates the recovery facilities.

However, these activities are not part of a formal business continuity exercise program.

We consider the risk level to be **critical** (see Table 8), because the DEP, the SIM and the STI face the following potential risks:

- If drill exercises are not performed regularly or adequately for business continuity plans, the plans cannot be effectively validated. Stakeholders who are not given the opportunity to perform exercises with the aid of simulations would probably not develop the reflexes required to respond effectively to destabilizing events;

- Furthermore, without formal exercise programs, existing weaknesses in continuity plans would not be detected promptly;
- These business units might not recover their operations in a timely manner. Essential public services might not be maintained.

Table 8 – Risk Level

Impact ^[a]	Probability ^[a]				
	HIGHLY PROBABLE	Probable	Possible	Unlikely	Improbable
Catastrophic	Critical	Critical	High	High	Moderate
MAJOR	CRITICAL	High	High	Moderate	Low
Moderate	High	Moderate	Moderate	Low	Low
Minor	Low	Low	Low	Low	Low

^[a] A description of impact and probability levels is given in Appendix 7.1.

4.7.B. Recommendation

We recommend that the Direction de l'eau potable, the Service de sécurité incendie de Montréal and the Service des technologies de l'information develop exercise programs for members of business continuity response teams. Specifically:

- **determine the types of exercises required;**
- **develop the objectives to be achieved for each type;**
- **develop an exercise drill schedule;**
- **document the learning acquired during exercises.**

Business units' responses:

DIRECTION DE L'EAU POTABLE

[TRANSLATION] In order to develop its business continuity program, the Direction de l'eau potable must comply with the management framework of the City's Direction générale.

Since the Direction générale mandated the City's emergency management division to develop this management framework, we must wait for it to be implemented in order to develop ours in a coherent manner. (Planned completion: undetermined)

SERVICE DE SÉCURITÉ INCENDIE DE MONTRÉAL

[TRANSLATION] The Direction générale asked SIM's management to broaden the mandate of Montreal's emergency management centre to include the concepts of resilience and business continuity.

Under the 100 Resilient Cities program, overseen by the Rockefeller Foundation, the emergency management centre must establish a resilience strategy for the Montreal community in the fall of 2015. As part of this reflection process, a comprehensive business continuity action plan will be submitted to the Direction générale by the end of the year. (Planned completion: December 2015)

SERVICE DES TECHNOLOGIES DE L'INFORMATION

[TRANSLATION] The Service des technologies de l'information will follow the City's business continuity guidelines as set out in the corporate framework that will be announced by the Direction générale. (Planned completion: undetermined)

4.8. Updating Business Continuity Documentation

4.8.A. Background and Findings

All organizations like the City go through changes over time, with evolving business processes, staff turnover and operations being redefined. The result of these changes is that some aspects of continuity plans no longer apply to the reality of the business units.

Updating the components of a business continuity program ensures that information on continuity of operations is reliable and accurate. Time frames are determined on the basis of the type of information to be kept up to date. This updating can also be done following a continuity exercise.

Without a business continuity program, no process for updating documentation was developed by the business units audited.

We consider the risk level to be **high** (see Table 9), because the DEP, the SIM and the STI face the following potential risks:

- Without a review schedule or a continuous improvement process, the business continuity program would quickly become obsolete, significantly reducing the business unit's ability to maintain its essential operations in the event of a disaster;
- The initial investment for establishing plans could be lost, the planning would have to be redone, which would require a substantial investment to return to the original business continuity objectives.

Table 9 – Risk Level

Impact ^[a]	Probability ^[a]				
	Highly probable	PROBABLE	Possible	Unlikely	Improbable
Catastrophic	Critical	Critical	High	High	Moderate
MAJOR	Critical	HIGH	High	Moderate	Low
Moderate	High	Moderate	Moderate	Low	Low
Minor	Low	Low	Low	Low	Low

^[a] A description of impact and probability levels is given in Appendix 7.1.

4.8.B. Recommendation

We recommend that the Direction de l'eau potable, the Service de sécurité incendie de Montréal and the Service des technologies de l'information establish a process for updating business continuity documentation that includes the following activities:

- determining components that need to be updated;
- developing a periodic review schedule;
- communicating changes to the various stakeholders;
- amending plans to take into account learning acquired during exercises or when the plans are used during interruptions in operations.

Business units' responses:

DIRECTION DE L'EAU POTABLE

[TRANSLATION] In order to develop its business continuity program, the Direction de l'eau potable must comply with the management framework of the City's Direction générale.

Since the Direction générale mandated the City's emergency management division to develop this management framework, we must wait for it to be implemented in order to develop ours in a coherent manner. (Planned completion: undetermined)

SERVICE DE SÉCURITÉ INCENDIE DE MONTRÉAL

[TRANSLATION] The Direction générale asked SIM's management to broaden the mandate of Montreal's emergency management centre to include the concepts of resilience and business continuity.

Under the 100 Resilient Cities program, overseen by the Rockefeller Foundation, the emergency management centre must establish a resilience strategy for the Montreal community in the fall of 2015. As part of this reflection process, a comprehensive business continuity action plan will be submitted to the Direction générale by the end of the year. (Planned completion: December 2015)

SERVICE DES TECHNOLOGIES DE L'INFORMATION

[TRANSLATION] The Service des technologies de l'information will follow the City's business continuity guidelines as set out in the corporate framework that will be announced by the Direction générale. (Planned completion: undetermined)

5. Findings of a Public Nature for the SPVM

A separate detailed report was produced for the SPVM because of the highly sensitive and confidential information that it contains. Nevertheless, in this section we present those of our findings that can be made public.

Overall, we noted that the SPVM's business functions for the 9-1-1 Emergency Centre, the Centre de commandement et de traitement de l'information (CCTI) and the operational centres (OCs) considered critical have continuity of operations in the event of a disaster. However, the other business functions categorized as having their "services covered"² in the event of a disaster, do not have a business continuity process.

Table 10 presents a summary of our findings for the business functions of the 9-1-1 Emergency Centre, the CCTI and the Centres opérationnels (COs), while Table 11 presents a summary of findings for the SPVM's other business functions categorized as having their "services covered" in the event of a disaster.

² Business functions categorized as having their "services covered" in the SPVM operational planning document entitled *Plan de continuité des opérations*, dated November 19, 2009.

Table 10 – Summary of Findings for Operations of the 9-1-1 Emergency Centre, the CCTI and the COs

Report section	Finding	Risk level ^[a]
5.1	Governance	LOW
5.2	Business continuity program structure	MODERATE
5.3	Crisis management structure	LOW
5.4	Business impact analysis and business continuity strategies	LOW
5.5	Business continuity plans and procedures	LOW
5.6	Business continuity training	LOW
5.7	Business continuity exercise programs	LOW
5.8	Updating business continuity documentation	MODERATE

^[a] A description of risk levels is given in Appendix 7.1.

Table 11 – Summary of Findings for the Other Business Functions Requiring Continuity of Operations

Report section	Finding	Risk level ^[a]
5.1	Governance	MODERATE
5.2	Business continuity program structure	HIGH
5.3	Crisis management structure	LOW
5.4	Business impact analysis and business continuity strategies	HIGH
5.5	Business continuity plans and procedures	HIGH
5.6	Business continuity training	HIGH
5.7	Business continuity exercise programs	HIGH
5.8	Updating business continuity documentation	HIGH

^[a] A description of risk levels is given in Appendix 7.1.

5.1. Governance

5.1.A. Background and Findings

To manage business continuity effectively, organizations such as the City and the SPVM establish sound governance in the areas of management frameworks; assignment of responsibilities; and management, administration and accountability mechanisms.

During our audit, we noted the following:

- Business continuity procedures are in place for the 9-1-1 Emergency Centre, the CCTI and COs. The SPVM has no management framework for the other business functions categorized as having their “services covered” in the event of a disaster;
- Apart from the 9-1-1 Emergency Centre, the CCTI and the COs, no accountability mechanisms, no representation mechanisms and no business continuity objectives were defined for the other business functions that the SPVM categorizes as having their “services covered” in the event of a disaster.

9-1-1 Emergency Centre, CCTI and COs

We consider the risk level to be **low** (see Table 12) for the operation of the COs, the 9-1-1 Emergency Centre and the CCTI because they have accountability and representation mechanisms and business continuity objectives and procedures.

Table 12 – Risk Level

Impact ^[a]	Probability ^[a]				
	Highly probable	PROBABLE	Possible	Unlikely	Improbable
Catastrophic	Critical	Critical	High	High	Moderate
MAJOR	Critical	High	High	Moderate	Low
Moderate	High	Moderate	Moderate	Low	Low
MINOR	Low	LOW	Low	Low	Low

^[a] A description of impact and probability levels is given in Appendix 7.1.

Other Business Functions Categorized as Having Their “Services Covered” in the Event of a Disaster

We consider the risk level to be **moderate** (see Table 13), because the SPVM faces the following potential risks:

- The absence of management frameworks could result in an inadequate process that does not meet the business continuity objectives. These efforts would be incomplete, uneven, and inconsistent in their effectiveness and application, making them more difficult to align. The terminology, sequence of activities and program components would be different and would have significant impacts on SPVM stakeholders’ ability to coordinate their responses;
- With a continuity process that is not framed by overall and specific objectives, there would be no coherent development of continuity plans within the SPVM’s various management teams and business functions categorized as having their “services covered” in the event of a disaster. The continuity processes would be uneven, inconsistent and lacking in direction in the short, medium and long term.

Table 13 – Risk Level

Impact ^[a]	Probability ^[a]				
	Highly probable	PROBABLE	Possible	Unlikely	Improbable
Catastrophic	Critical	Critical	High	High	Moderate
Major	Critical	High	High	Moderate	Low
MODERATE	High	MODERATE	Moderate	Low	Low
Minor	Low	Low	Low	Low	Low

^[a] A description of impact and probability levels is given in Appendix 7.1.

5.1.B. Recommendation

Subject to Recommendation 4.1.B., addressed to the Direction générale, we recommend that the Service de police de la Ville de Montréal:

- develop its management frameworks along the lines of the City's, and ensure that, at the very least, they provide for:
 - a definition of the department's continuity objectives,
 - a detailed impact analysis of interruptions,
 - a continuity strategy to reduce these impacts,
 - continuity plans that describe in detail activities carried out to resume critical operations within an acceptable timeframe,
 - a review and periodic exercise drill schedule;
- assign responsibility for business continuity to a member of its management team;
- establish specific business continuity objectives for each of its management units;
- establish a coordinated communication, monitoring and accountability process on the achievement of objectives.

Remark: This recommendation has already been issued to the SPVM as part of a detailed report issued separately because of the confidential information it contains.

Business unit's response:

The plan cannot be disclosed due to security-related confidentiality constraints.

5.2. Business Continuity Program Structure

5.2.A. Background and Findings

The structure of a business continuity program contains minimum elements providing for the establishment of effective strategies; a culture of business continuity; and relevant, measurable and achievable objectives.

During our audit, we noted the following:

- Apart from the 9-1-1 Emergency Centre, the CCTI and the COs, the SPVM did not have an organizational structure or budget for business continuity for its other business functions categorized as having their "services covered" in the event of a disaster;
- The SPVM does not have centralized processes and tools. The 9-1-1 Emergency Centre, the CCTI and the COs each have their own processes and tools.

9-1-1 Emergency Centre, CCTI and COs

We consider the risk level to be **moderate** (see Table 14) for the operations of the COs, the 9-1-1 Emergency Centre and the CCTI, because the SPVM is exposed to the following potential risk. Without tools or a common business continuity process, the terminology, sequence of activities and program components would be different, adversely affecting stakeholders' ability to discuss and share information, to collaborate, and to coordinate their work, their initiatives and their responses.

Table 14 – Risk Level

Impact ^[a]	Probability ^[a]				
	Highly probable	PROBABLE	Possible	Unlikely	Improbable
Catastrophic	Critical	Critical	High	High	Moderate
Major	Critical	High	High	Moderate	Low
MODERATE	High	MODERATE	Moderate	Low	Low
Minor	Low	Low	Low	Low	Low

^[a] A description of impact and probability levels is given in Appendix 7.1.

Other Business Functions Categorized as Having Their “Services Covered” in the Event of a Disaster

We consider the risk level to be **high** (see Table 15), because the SPVM faces the following potential risks:

- Because the organizational structure is lacking or deficient, all levels of a crisis (strategic, tactical and operational) might not be managed. Some aspects of event management might be overlooked, and the staff required to assume these responsibilities would not be properly equipped to respond. The stakeholders might remedy these deficiencies by improvising, thereby increasing the risk that the situation would degenerate into a crisis;
- Without recurring financial or human resources, the process would lack coherence and would not be linked with the SPVM's ongoing operations. The continuity objectives would probably not be achieved, putting operations at risk in the event of a disaster. Without sustained funding, efforts already undertaken might be wasted because components established in the past would have become obsolete;
- Without tools or a common business continuity process, if a disaster were to strike, recovery activities would be improvised, significantly increasing the time required to resume normal operations. The terminology, sequence of activities and program

components would be different, adversely affecting stakeholders' ability to discuss and share information, to collaborate, and to coordinate their work, their initiatives and their responses. When staff members are replaced, knowledge of critical components of the program might not be communicated.

Table 15 – Risk Level

Impact ^[a]	Probability ^[a]				
	Highly probable	PROBABLE	Possible	Unlikely	Improbable
Catastrophic	Critical	Critical	High	High	Moderate
MAJOR	Critical	HIGH	High	Moderate	Low
Moderate	High	Moderate	Moderate	Low	Low
Minor	Low	Low	Low	Low	Low

^[a] A description of impact and probability levels is given in Appendix 7.1.

5.2.B. Recommendation

We recommend that the Service de police de la Ville de Montréal:

- **develop its management structures for the implementation of the business continuity program, including:**
 - **determining persons responsible,**
 - **describing the roles and responsibilities of each,**
 - **defining the communication and accountability process;**
- **provide specific recurring business continuity budgets in connection with the established objectives.**

Remark: This recommendation has already been issued to the SPVM as part of a detailed report issued separately because of the confidential information it contains.

Business unit's response:

The plan cannot be disclosed due to security-related confidentiality constraints.

5.3. Crisis Management Structure

5.3.A. Background and Findings

When a disaster strikes, the SPVM must react quickly and effectively to minimize its impacts and resume normal operations quickly.

During our audit, we noted the following:

- The SPVM developed a response structure for the continuity plans of the 9-1-1 Emergency Centre, the operations of the CCTI and the CO. These structures are operational at all times. Exercise drills are held for them frequently, either during exercises planned for the certification of the 9-1-1 Emergency Centre, or, in the case of the CCTI, during special events;
- For the other business functions categorized by the SPVM as having their “services covered,” no other crisis management structure is documented.

We consider the risk level to be **low** (see Table 16), because the existing structure of the CCTI could be used to manage a disaster situation. Even so, the SPVM faces the following potential risks:

- It would be difficult to react promptly to an event affecting their own operations and ensure coherence in recovery activities for operations other than those of the 9-1-1 Emergency Centre, the CCTI and the COs;
- Some SPVM services might require more time to resume operations.

Table 16 – Risk Level

Impact ^[a]	Probability ^[a]				
	Highly probable	PROBABLE	Possible	Unlikely	Improbable
Catastrophic	Critical	Critical	High	High	Moderate
MAJOR	Critical	High	High	Moderate	Low
Moderate	High	Moderate	Moderate	Low	Low
MINOR	Low	LOW	Low	Low	Low

^[a] A description of impact and probability levels is given in Appendix 7.1.

5.3.B. Recommendation

We recommend that the Service de police de la Ville de Montréal develop a response structure to meet business continuity needs and objectives that integrates all operations that need to be recovered in the event of a disaster.

Remark: This recommendation has already been issued to the SPVM as part of a detailed report issued separately because of the confidential information it contains.

Business unit’s response:

The plan cannot be disclosed due to security-related confidentiality constraints.

5.4. Business Impact Analysis and Business Continuity Strategies

5.4.A. Background and Findings

A business impact analysis (BIA) is aimed at evaluating the consequences of an interruption in an entity's operations, including on its ability to perform its mission. This process generally classifies impacts into four areas: financial, legal, operational and "the organization's image and reputation."

During our audit, we noted the following:

- The SPVM obtains risk analyses, particularly for locations where the 9-1-1 Emergency Centre is maintained or is likely to be located in a disaster recovery situation;
- While we did not track down a formal impact analysis, in 2009, the SPVM identified business activities that would need to be maintained (services covered), partially maintained (services partially covered) and interrupted (services not covered) in an operational planning document entitled *Plan de continuité des opérations*. However, this list does not prioritize functions within the categories;
- Continuity strategies are in place for operations of the COs, the 9-1-1 Emergency Centre and the CCTI;
- For the other business functions that the SPVM has categorized as having their "services covered" in the event of a disaster, no continuity strategy has been developed.

9-1-1 Emergency Centre, CCTI and COs

We consider the risk level to be **low** (see Table 17) for the operations of the COs, the 9-1-1 Emergency Centre and the CCTI because they have business continuity strategies.

Table 17 – Risk Level

Impact ^[a]	Probability ^[a]				
	Highly probable	PROBABLE	Possible	Unlikely	Improbable
Catastrophic	Critical	Critical	High	High	Moderate
MAJOR	Critical	High	High	Moderate	Low
Moderate	High	Moderate	Moderate	Low	Low
MINOR	Low	LOW	Low	Low	Low

^[a] A description of impact and probability levels is given in Appendix 7.1.

Other Business Functions Categorized as Having Their “Services Covered” in the Event of a Disaster

We consider the risk level to be **high** (see Table 18) for the other business functions that the SPVM has categorized as having their “services covered” in the event of a disaster because the SPVM faces the following potential risks:

- Without a comprehensive, detailed BIA, several functions requiring disaster recovery might not be detected and, as a result, would not have a continuity strategy or plan;
- Without continuity strategies for the other business functions categorized as having their “services covered” in the event of a disaster, the SPVM would not be able to recover them in order to maintain public services.

Table 18 – Risk Level

Impact ^[a]	Probability ^[a]				
	Highly probable	PROBABLE	Possible	Unlikely	Improbable
Catastrophic	Critical	Critical	High	High	Moderate
MAJOR	Critical	HIGH	High	Moderate	Low
Moderate	High	Moderate	Moderate	Low	Low
Minor	Low	Low	Low	Low	Low

^[a] A description of impact and probability levels is given in Appendix 7.1.

5.4.B. Recommendation

We recommend that the Service de police de la Ville de Montréal:

- **conduct an impact analysis for all its operations;**
- **communicate the results of the impact analysis to all business continuity program stakeholders;**
- **develop continuity strategies based on the results of the business impact analysis.**

Remark: This recommendation has already been issued to the SPVM as part of a detailed report issued separately because of the confidential information it contains.

Business unit’s response:

The plan cannot be disclosed due to security-related confidentiality constraints.

5.5. Business Continuity Plans and Procedures

5.5.A. Background and Findings

When a disaster occurs, the SPVM must respond quickly to minimize its impacts and quickly resume operations. When organizations are destabilized by an incident, it is important that they be able to carry out critical activities in an orderly fashion in order to resume operations as quickly as possible.

During our audit, we identified the following:

- The 9-1-1 Emergency Centre has a business continuity plan and disaster recovery sites. Drills are carried out for this plan periodically;
- The CCTI also has a recovery site, and some procedures are already in place to ensure rapid transfer of operations if necessary;
- Each CO is paired with another, so that if one CO is evacuated and temporarily shut down, the other can take over its operations;
- The SPVM has no business continuity plan covering all the other business functions categorized as having their “services covered” in the event of a disaster.

9-1-1 Emergency Centre, CCTI and COs

We consider the risk level to be **low** (see Table 19) for the operations of the COs, the 9-1-1 Emergency Centre and the CCTI because they have business continuity plans and procedures in place.

Table 19 – Risk Level

Impact ^[a]	Probability ^[a]				
	HIGHLY PROBABLE	Probable	Possible	Unlikely	Improbable
Catastrophic	Critical	Critical	High	High	Moderate
MAJOR	Critical	High	High	Moderate	Low
Moderate	High	Moderate	Moderate	Low	Low
MINOR	LOW	Low	Low	Low	Low

^[a] A description of impact and probability levels is given in Appendix 7.1.

Other Business Functions Categorized as Having Their “Services Covered” in the Event of a Disaster

We consider the risk level to be **high** (see Table 20) for the other business functions categorized as having their “services covered” in the event of a disaster because the SPVM faces the following potential risks:

- Without a business continuity plan, employees involved in resuming operations would improvise. The responses would probably be incoherent and adversely affect other activities;
- The SPVM might not be able to recover all its business functions categorized as having their “services covered” in the event of a disaster in order to maintain public services.

Table 20 – Risk Level

Impact ^[a]	Probability ^[a]				
	Highly probable	PROBABLE	Possible	Unlikely	Improbable
Catastrophic	Critical	Critical	High	High	Moderate
MAJOR	Critical	HIGH	High	Moderate	Low
Moderate	High	Moderate	Moderate	Low	Low
Minor	Low	Low	Low	Low	Low

^[a] A description of impact and probability levels is given in Appendix 7.1.

5.5.B. Recommendation

We recommend that the Service de police de la Ville de Montréal develop business continuity plans for all its business functions categorized as having their “services covered” in the event of a disaster, including:

- defining criteria for continuity plan activation;
- defining the roles and responsibilities of each stakeholder or each continuity team;
- defining activities in the event of a disaster to maintain an adequate level of service;
- determining critical resources (staff, equipment, etc.) required to relocate essential operations;
- listing employees and third parties who must participate in continuity activities, including ways to contact them;
- developing operational procedures in the event of a disaster.

Remark: This recommendation has already been issued to the SPVM as part of a detailed report issued separately because of the confidential information it contains.

Business unit’s response:

The plan cannot be disclosed due to security-related confidentiality constraints.

5.6. Business Continuity Training

5.6.A. Background and Findings

A business continuity process cannot succeed without an educational component. In order to maximize the effectiveness of responses in the event of a disaster, it is important that all employees be trained on the response process, the steps to take and the procedures to follow.

During our audit, we identified the following:

- Continuity plans for the 9-1-1 Emergency Centre and the CCTI are implemented regularly and employees are provided with procedures for this purpose. In our opinion, this constitutes business continuity staff training;
- Operational procedures associated with the implementation of temporary operational centres or the transfer of operations from one centre or one neighbourhood police station to another are commonly used. In our opinion, this constitutes business continuity staff training;

- For the other business functions categorized as having their “services covered” in the event of a disaster, the SPVM had not developed a business continuity training and awareness program.

9-1-1 Emergency Centre, CCTI and COs

We consider the risk level to be **low** (see Table 21) for operations of the 9-1-1 Emergency Centre, the CCTI and the COs because continuity plans are implemented regularly and this provides adequate training.

Table 21 – Risk Level

Impact ^[a]	Probability ^[a]				
	Highly probable	PROBABLE	Possible	Unlikely	Improbable
Catastrophic	Critical	Critical	High	High	Moderate
MAJOR	Critical	High	High	Moderate	Low
Moderate	High	Moderate	Moderate	Low	Low
MINOR	Low	LOW	Low	Low	Low

^[a] A description of impact and probability levels is given in Appendix 7.1.

Other Business Functions Categorized as Having Their “Services Covered” in the Event of a Disaster

We consider the risk level to be **high** (see Table 22) for the other business functions categorized as having their “services covered” in the event of a disaster, because the SPVM faces the following potential risks:

- Without a training and awareness program, staff that need to respond to interruptions would not be prepared to take action. Their responses would then be improvised and largely inefficient;
- The SPVM would probably not be able to recover, in a timely manner, all business functions categorized as having their “services covered” in the event of a disaster. Certain public services might not be maintained.

Table 22 – Risk Level

Impact ^[a]	Probability ^[a]				
	Highly probable	PROBABLE	Possible	Unlikely	Improbable
Catastrophic	Critical	Critical	High	High	Moderate
MAJOR	Critical	HIGH	High	Moderate	Low
Moderate	High	Moderate	Moderate	Low	Low
Minor	Low	Low	Low	Low	Low

^[a] A description of impact and probability levels is given in Appendix 7.1.

5.6.B. Recommendation

We recommend that the Service de police de la Ville de Montréal develop a training program for all business continuity plan stakeholders.

Remark: This recommendation has already been issued to the SPVM as part of a detailed report issued separately because of the confidential information it contains.

Business unit's response:

The plan cannot be disclosed due to security-related confidentiality constraints.

5.7. Business Continuity Exercise Programs

5.7.A. Background and Findings

The effectiveness with which an organization reacts to an emergency or crisis depends largely on the exercise drill programs it has set up.

During our audit, we identified the following:

- Drill exercises are performed several times a year for the 9-1-1 Emergency Centre. A register of the use of the 9-1-1 recovery centre is kept. In addition to the regular exercises, the disaster recovery centre is used when work is planned for the equipment or in the usual places of work. The technological aspects of recovery at the 9-1-1 Emergency Centre will be covered in detail in our audit on information technology recovery management.

The CCTI disaster recovery site is occasionally used during power failures or while renovation or other work is being done in its main premises.

Operational procedures associated with the implementation of temporary operational centres or the transfer of operations from one centre or one neighbourhood police station to another are commonly used.

For the other business functions categorized as having their “services covered” in the event of a disaster, no exercise program has been developed by the SPVM.

9-1-1 Emergency Centre, CCTI and COs

We consider the risk level to be **low** (see Table 23) for operations of the COs, the 9-1-1 Emergency Centre and the CCTI.

Table 23 – Risk Level

Impact ^[a]	Probability ^[a]				
	HIGHLY PROBABLE	Probable	Possible	Unlikely	Improbable
Catastrophic	Critical	Critical	High	High	Moderate
MAJOR	Critical	High	High	Moderate	Low
Moderate	High	Moderate	Moderate	Low	Low
MINOR	LOW	Low	Low	Low	Low

^[a] A description of impact and probability levels is given in Appendix 7.1.

Other Business Functions Categorized as Having Their “Services Covered” in the Event of a Disaster

We consider the risk level to be **high** (see Table 24) for the other business functions categorized as having their “services covered” in the event of a disaster, because the SPVM faces the following potential risks:

- If drill exercises are not performed regularly or adequately for business continuity plans, the plans cannot be validated effectively. Stakeholders who are not given the opportunity to perform exercises with the aid of simulations would probably not develop the reflexes required to respond effectively to destabilizing events;
- In the absence of formal exercise programs, existing weaknesses in continuity plans would not be detected promptly;
- The SPVM probably could not recover in a timely manner all business functions categorized as having their “services covered” in the event of a disaster. Some public services might not be maintained.

Table 24 – Risk Level

Impact ^[a]	Probability ^[a]				
	Highly probable	PROBABLE	Possible	Unlikely	Improbable
Catastrophic	Critical	Critical	High	High	Moderate
MAJOR	Critical	HIGH	High	Moderate	Low
Moderate	High	Moderate	Moderate	Low	Low
Minor	Low	Low	Low	Low	Low

^[a] A description of impact and probability levels is given in Appendix 7.1.

5.7.B. Recommendation

We recommend that the Service de police de la Ville de Montréal develop business continuity exercise programs for response team members. Specifically:

- determine the types of exercises required;
- define the objectives to be achieved for each type;
- establish a drill exercise schedule;
- document the learning acquired during the exercises.

Remark: This recommendation has already been issued to the SPVM as part of a detailed report issued separately because of the confidential information it contains.

Business unit's response:

The plan cannot be disclosed due to security-related confidentiality constraints.

5.8. Updating Business Continuity Documentation

5.8.A. Background and Findings

All organizations like the SPVM go through changes over time, with evolving business processes, staff turnover and operations being redefined. The result of these changes is that some aspects of continuity plans no longer apply to the reality of the department.

During our audit, we identified the following:

- There is no review schedule or continuous improvement process for the business continuity documentation;
- For the 9-1-1 Emergency Centre and the CCTI, the business continuity documentation was updated in October 2013 and August 2014. These documents are highly technical

and do not need to be updated systematically, but mainly when changes are made to work methods, infrastructure and essential systems. This will be explored in greater detail in our audit on technological recovery management;

- For the other business functions categorized as having their “services covered” in the event of a disaster by the SPVM, since they do not have formal documentation, no updating process has been developed.

9-1-1 Emergency Centre, CCTI and COs

We consider the risk level to be **moderate** (see Table 25) for the operations of the 9-1-1 Emergency Centre and the CCTI, because without a review schedule or a continuous improvement process, business continuity plans could become obsolete and reduce the department’s ability to maintain those of its operations that must be recovered in the event of a disaster.

Table 25 – Risk Level

Impact ^[a]	Probability ^[a]				
	Highly probable	PROBABLE	Possible	Unlikely	Improbable
Catastrophic	Critical	Critical	High	High	Moderate
Major	Critical	High	High	Moderate	Low
MODERATE	High	MODERATE	Moderate	Low	Low
Minor	Low	Low	Low	Low	Low

^[a] A description of impact and probability levels is given in Appendix 7.1.

Other Business Functions Categorized as Having Their “Services Covered” in the Event of a Disaster

We consider the risk level to be **high** (see Table 26) for the other business functions categorized as having their “services covered” in the event of a disaster, because the SPVM faces the following potential risks:

- Without a review schedule and a continuous improvement process, the business continuity program could quickly become obsolete, significantly reducing the department’s ability to maintain those of its operations that must be recovered in the event of a disaster;

- The initial investment for establishing plans might be lost, the planning would need to be redone and a substantial investment would be required to return to the level of the original business continuity objectives.

Table 26 – Risk Level

Impact ^[a]	Probability ^[a]				
	Highly probable	PROBABLE	Possible	Unlikely	Improbable
Catastrophic	Critical	Critical	High	High	Moderate
MAJOR	Critical	HIGH	High	Moderate	Low
Moderate	High	Moderate	Moderate	Low	Low
Minor	Low	Low	Low	Low	Low

^[a] A description of impact and probability levels is given in Appendix 7.1.

5.8.B. Recommendation

We recommend that the Service de police de la Ville de Montréal establish a process for updating business continuity documentation, including, among other things:

- determining components that need to be updated;
- developing a regular review schedule;
- communicating changes to the various stakeholders;
- amending plans to take into account the learning acquired during exercises or when the plans must be used due to operations being interrupted.

Remark: This recommendation has already been issued to the SPVM as part of a detailed report issued separately because of the confidential information it contains.

Business unit's response:

The plan cannot be disclosed due to security-related confidentiality constraints.

6. General Conclusion

While the City has emergency management measures in place that enable it to react to a major event with a direct impact on its residents, we may conclude that it does not have the necessary measures in place to deal with the risk of a disaster affecting its operations, especially essential activities. Indeed, based on the results of our audit, we did not find evidence of business continuity programs within either the Direction générale or some of the

most critical business units: the Direction de l'eau potable (DEP), the Service de sécurité incendie de Montréal (SIM) and the Service des technologies de l'information (STI).

Nonetheless, the SIM's communications centre has a working disaster recovery plan that will be explored in greater detail in our audit of information technology recovery management.

We may conclude that the Service de police de la Ville de Montréal (SPVM) does not have the necessary measures in place to address the risk of a disaster for all its business functions categorized as having their "services covered"³ in the event of a disaster. Indeed, we found that the SPVM had business continuity plans only for the following critical activities:

- The SPVM's 9-1-1 Emergency Centre and its Centre de commandement et de traitement de l'information (CCTI) have a working disaster recovery plan that will be explored in greater detail in our audit of information technology recovery management. Exercise drills are held for these plans, and employees have access to procedures for implementing them;
- With respect to operational centres (OCs), procedures associated with the implementation of temporary Centres opérationnels (COs) or the transfer of operations from one centre to another are commonly used.

Like the City's other business units, the SPVM has emergency management measures in place that enable it to deal adequately with events that have a direct impact on the population.

If a disaster were to affect essential operations, there is no doubt that the City would resort to improvising its responses. As a result, it is unlikely that critical activities could be recovered in a timely manner. Essential public services would be difficult to maintain.

Even though emergency management requires that the City's business units have a business continuity program, this is not part of the strategic planning of the Direction générale.

Table 27 shows the overall results of our audit for each of the risk areas identified.

³ Business functions categorized as having their "services covered" in the operational planning document entitled *Plan de continuité des opérations*, dated November 19, 2009.

Table 27 – Overall Results for Each Risk Area

Risk Area	Inherent risk ^[a]	Residual risk ^[b] (Direction générale, DEP, SIM, STI)	Residual risk ^[b] SPVM (9-1-1, CCTI, COs)	Residual risk ^[b] SPVM (Other “services covered”)
Governance Inefficient business continuity management without an adequate governance structure (assignment of responsibilities, management frameworks, management, administration and accountability mechanisms).	MODERATE ^[c]	MODERATE	LOW	MODERATE
Business continuity program structure Ineffective business continuity strategies; business continuity objectives that are not relevant, measurable or achievable. No business continuity culture.	HIGH	HIGH	MODERATE	HIGH
Crisis management structure No coordination or decision-making elements are in place in the occurrence of an event, emergency or disaster. This situation leads to a loss of efficiency, a risk of interference and poor communication among stakeholders.	CRITICAL	HIGH	LOW	LOW
Business impact analysis and business continuity strategies Without a comprehensive, detailed business impact analysis (BIA), several critical functions are not detected and cannot be properly recovered. Essential public services are not maintained.	HIGH	HIGH	LOW	HIGH
Business continuity plans and procedures The plans and procedures required to implement the business continuity strategies do not exist, with the result that the continuity of critical functions in the event of a disaster is not assured, putting public health at risk.	CRITICAL	CRITICAL	LOW	HIGH
Business continuity training Those responsible for implementing the continuity plan are poorly informed or receive no training on their roles and responsibilities. As a result, they will not be able to maintain essential services if a disaster strikes.	HIGH	HIGH	LOW	HIGH
Business continuity exercise programs If drill exercises are not performed regularly or adequately for business continuity plans, the plans cannot be validated effectively. This loss of efficiency in emergency management can put public health at risk in the event of a disaster.	CRITICAL	CRITICAL	LOW	HIGH
Updating business continuity documentation Documentation and information on business continuity are not updated and are therefore obsolete. In the event of a disaster, critical operations will not be recovered in a timely manner. Essential public services will no longer be available.	HIGH	HIGH	MODERATE	HIGH

^[a] Gross risk without consideration of monitoring mechanisms.

^[b] Exposure to risk following an evaluation of the monitoring mechanisms in place.

^[c] See Appendix 7.1.

In the interest of managing its operations responsibly, the City should promote a business continuity culture within its business units. In this regard, the Direction générale should implement the following constituent parts of a business continuity program:

- specific management frameworks on the business continuity program that will establish the program's objectives, scope and requirements, as well as the roles and responsibilities of managers within the City and its business units. These management frameworks must cover the managements of all business units that maintain critical operations;
- a standardized accountability process that is based on an understanding of the objectives, goals and expectations for the program;
- definition of roles and responsibilities.

In order to manage their business continuity adequately, the DEP, the SIM and the STI should implement the measures required to achieve the program objectives and follow the guidelines set out by the Direction générale. More specifically:

- in internal management frameworks for the business continuity program requirements that will establish its objectives, scope, requirements, roles and responsibilities;
- in the business continuity program structure;
- in the business impact analysis (BIA) and continuity strategies;
- in continuity plans and the crisis management structure;
- in training, exercises and updates.

We believe that if the Direction générale sets up a business continuity program within the City, the DEP, the SIM, the STI, the SPVM and the other business units will benefit from a standardized problem-solving process in the event of a disaster, reducing the time required to resume critical operations.

7. Appendices

7.1. Description of Risk Levels

Impact	Probability				
	Highly probable	Probable	Possible	Unlikely	Improbable
Catastrophic	CRITICAL	CRITICAL	HIGH	HIGH	MODERATE
Major	CRITICAL	HIGH	HIGH	MODERATE	LOW
Moderate	HIGH	MODERATE	MODERATE	LOW	LOW
Minor	LOW	LOW	LOW	LOW	LOW

7.2. Description of Impact Levels

Impact Level	Description
Catastrophic	Direct consequences on public health, major threat to essential services, the environment, the City's reputation and public confidence.
Major	Consequences for public health, undermining of essential services, damage to the environment, the City's reputation and public confidence.
Moderate	Possible consequences for public health, moderate impacts on essential services, the environment, the City's reputation and public confidence.
Minor	Minor impacts on the City's operations and business units. Loss of public confidence in the City is unlikely.

7.3. Description of Probability Levels

Probability	Description
Highly probable	Will occur in most circumstances.
Probable	Will probably occur in most circumstances.
Possible	Should occur at some point.
Unlikely	Should not occur.
Improbable	Can occur only in exceptional circumstances.