



2021 ANNUAL REPORT

Report of the Auditor General of the Ville de Montréal

For the Year Ended December 31, 2021
to the City Council and to the Urban Agglomeration Council

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Legal deposit – Second Quarter 2022

Bibliothèque et Archives nationales du Québec

ISSN 1925-6787 [print]

ISSN 1925-6795 [PDF]

ISBN 978-2-7647-1890-2 [print]

ISBN 978-2-7647-1891-9 [PDF]

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According to the Charter of the French Language and the Office québécois de la langue française, municipalities shall designate all official names, such as boroughs, departments, paramunicipal corporations as well as municipal and associated bodies by their French names alone, even in the English version.

This report is available on our website at: bvgmtl.ca.

May 13, 2022

Mrs Valérie Plante
Mayor of the Ville de Montréal
275, Notre-Dame East
Montreal, Quebec H2Y 1C6

**Subject: Auditor General of the Ville de Montréal's Annual Report
for the year ended December 31, 2021**

Dear Mrs Mayor,

Please find enclosed my Annual Report, for the year ended December 31, 2021, as per Section 107.13 of the *Cities and Towns Act* (CQLR, chapter C-19), for deposit at the next ordinary meeting of the Municipal Council, that of May 16, 2022, and of the Agglomeration Council, that of May 19, 2022.

Yours truly,



Michèle Galipeau FCPA Auditrice, FCA

Michèle Galipeau, FCPA Auditor, FCA
Auditor General

MG/dds

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1.

Observations of the Auditor General

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1. Observations of the Auditor General

The Bureau du vérificateur général (BVG) is dedicated to delivering **“an objective and independent look at the quality of the management of public funds.”**

This sixth report that I am submitting to city council presents the results of the important work carried out by the BVG team. I wish to thank all the team members for their quality work.

I am beginning my seventh and final year as Auditor General of the Ville de Montréal (the City). I consider that planning for the successor to my position should be undertaken in the coming year to ensure an adequate transfer of knowledge of the complex organization that is the City and of the entities that are part of the auditor general’s area of activity.

Recommendations Late in Being Implemented

Following up the implementation of the recommendations contained in our reports is one way to measure the extent to which the business units have complied with their commitments. For more than six years, the majority of commitments have clearly not been honoured, despite the City’s putting in place measures in recent years, including all action plans being approved by the Direction générale prior to being sent to the Auditor General, a resource being hired by the Bureau du contrôleur général whose duties include aspects related to this process, and the naming and training of coordinators for each business unit. Add to this the review and optimization of our practices and our involvement in training the various stakeholders concerned.

While certain delays can be attributed to the pandemic of the past 2 years, more than 37% of the recommendations resolved in 2021 had action plans whose timelines dated back more than 2 years. Furthermore, at December 31, 2021, more than 75% of the open recommendations were late in being implemented compared with the commitments made by the business units – more than 2 years late in 36% of cases.

As for the action plans that had expired more than 5 years earlier, the validation exercise we conducted in the fall of 2021 with the business units showed that almost 87% of them are still relevant. These recommendations stemmed from shortcomings observed and noted in reports issued between 2009 and 2015.

This situation is unacceptable. I reiterate my recommendation, therefore, to the Direction générale to equip itself with indicators to follow up the commitments of the business units regarding the implementation of our recommendations.

Five-year Trends That Persist

Beyond the delays in the individual implementation of recommendations, I noticed again this year the same trends as last year. The City needs to explore them with a comprehensive view to developing solutions aimed at improving its practices and optimizing its management of public funds.

1.1. Accountability

Accountability is a fully transparent mechanism that enables decision makers to have a better view of operations, measure the impact of the choices that they have made, and take corrective action, when needed, to achieve the planned objectives and targets.

Last year, I mentioned that 61% of the audit reports in the past 5 years contained recommendations aimed at improving accountability. Again this year, this is the most common type of recommendation, found in 44% of reports we issued. Over a 5 year period, i.e., 2017 to 2021, 56% of the reports we issued contained a total of 46 recommendations for improving accountability.

1.2. Documentation

In the past 5 years, we issued recommendations in 42% of our reports aimed at improving the documentation of actions taken and processes used by the business units, an increase of 3 percentage points compared with the period 2016–2020. Documentation is crucial. It is the memory of the business units. It not only ensures business continuity but also preserves the traceability of actions taken.

1.3. Data Control Mechanisms

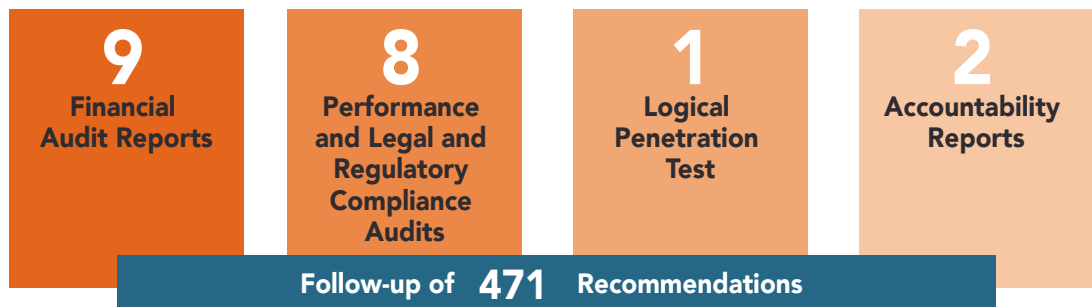
In 38% of the reports issued between 2017 and 2021, up 3 percentage points from the period 2016–2020, we made recommendations regarding the implementation of control mechanisms for data generated and used by the business units as part of their activities. Throughout the lifecycle of a project or program, be it follow-up or accountability, decisions are made based on the data collected. It is vital that the inputs used be reliable and of quality to ensure proper decision-making.

1.4. Legal and Regulatory Compliance

Compliance with the City's policies and by-laws continues to be the subject of recommendations made by us. We noticed that 34% of the reports issued between 2017 and 2021 contained recommendations to this effect, a decrease of 1 percentage point compared with the period 2016-2020. A reminder here of the importance of all City employees complying with these by-laws and policies and ensuring that citizens, retailers and businesses interacting with the City do the same.

1.5. Summary of the Audits Conducted in 2021

OUR YEAR 2021



89% of Targets in the 2019-2023 Strategic Plan Achieved

1.5.1. Financial Audit

The continuation of the Québec government's pandemic-related Emergency Assistance Program for Small and Medium-Sized Businesses (PAUPME) and the implementation of the increased requirements of revised standard CAS 540, "Auditing Accounting Estimates and Related Disclosures", continued to have an impact on our 2021 audit.

Financial assistance within the framework of the PAUPME, totalling \$67.1M at the end of 2020, rose to almost \$150M at December 31, 2021. Audits were again performed this year in coordination with the agencies of the PME MTL network, which was entrusted with managing the program and financial assistance by the City and their auditors.

We are also concerned about the loss of expertise in the Service des finances resulting from the departure of various people who were key in the preparation of financial statements, as well as the loss of experienced staff in other City departments involved in this process. This had an impact on the delivery schedule of documents and on the completion of our audit.

1. Observations of the Auditor General

At the time of producing the annual report, we still had not issued the joint auditor's report for the consolidated financial statements of the City at December 31, 2021, since the financial report will be tabled by the treasurer at the May 2022 session of the city council.

Unqualified auditor reports are issued jointly by the external auditor for the following agencies: the Société de transport de Montréal (2 reports), the Société d'habitation et de développement de Montréal, the Société du parc Jean Drapeau, the Agence de mobilité durable, and Transgesco.

A detailed summary of the financial audits can be found in Chapter 2.

1.5.2. Performance and Information Technology Audits

The full reports of the performance and information technology (IT) audits are presented in Chapter 3 of this report.

Management of the Information Technology Used to Work Remotely

On March 13, 2020, government guidelines to mitigate the risk of COVID-19 contamination imposed remote work. The City ensured the sound management of the information technology used to work remotely by quickly deploying all the necessary efforts to put in place the technological environment and security mechanisms required to allow all its employees (up to 4,500 simultaneously) to continue their professional activities from home.

Management of the Emergency Program for Small and Medium-Sized Businesses

In order to support businesses with cash shortages due to the COVID-19 pandemic, the Ministère de l'Économie et de l'Innovation (MEI) entrusted the management of the Emergency Assistance Program for Small and Medium-Sized Businesses (PAUPME) to the City, through a \$150M loan. In turn, the City delegated the management to the PME MTL network. The delegation to PME MTL does not relieve the City of its obligations to the MEI. As of September 30, 2021, 3,453 loans had been granted, for a total of \$117.6M. A review of the files of businesses that received a loan identified a lack of compliance with certain eligibility criteria, discrepancies in the assessment of the businesses' overall financial situation, failure to comply with the loan requirements of the MEI and the City, and irregularities in the disbursement of the financial assistance. The City did not provide adequate monitoring to identify these non-compliances. Finally, accountability is often inaccurate and limited to the volume of activity, which does not enable the City's decision makers to ensure the City's compliance with its obligations to the MEI.

Centralized Identity and Access Management

Centralized Identity and Access Management (IAM) is defined as all processes and tools used in the centralized management of users and their access rights to information systems and applications. In 2016, the City launched the GIA Citoyens project, which serves about 255,000 citizen accounts, and the GIA Employés project, which serves 30,200 employee accounts. In the case of GIA Citoyens, the process and control mechanisms put in place show sound management. In the case of GIA Employés, given that the project is being relaunched, our findings do not make it possible to conclude that this IAM ensures adequate risk management pertaining to the confidentiality, integrity and availability of data.

Plan d'action montréalais en itinérance

The goal of the 3rd *Plan d'action montréalais en itinérance* (PAMI) 2018–2020, adopted in March 2018, consisted of 40 actions to promote the maintenance and development of the services needed to improve living conditions and prevent homelessness. The City's efforts with respect to homelessness are commendable. However, given the measurement tools proposed in the PAMI, the lack of comparative data on met and unmet needs, and the limited number of impact indicators identified in the PAMI, it was not possible to assess the extent to which the expected benefits were achieved. Furthermore, our analysis could not confirm that the PAMI was implemented using a fair and impartial project selection process.

Management of Public Roadwork – Integrated Planning and Coordination Component

The City is known for the multitude of roadwork projects being carried out on the municipal road system. The planning and coordination processes for infrastructure projects are not effective in providing a comprehensive proactive view of all the roadwork and minimizing its impact. The roles and responsibilities of all the stakeholders in this process are not clearly defined, documented and communicated. There is no centralization of all the projects that could impede traffic since the boroughs do not systematically share the projects for which they issue permits. The planning process is not carried out within appropriate timelines to enable all planned projects to be completed. Finally, the City has established mobility corridors to limit roadwork and impediments, but the boroughs nevertheless issue permits to complete work in these corridors.

Management of the Quality of Geolocation Data

Access to geolocation data, such as the exact location of a sewer line, the date of its last inspection and an indication of its structural condition, is an asset for project planning and management at the City. Due to several deficiencies in the governance of the geolocation data, including with respect to the assignment of roles and responsibilities, the lack of defined minimum data quality criteria, and incomplete attributes for the geolocation data, not all the geolocation data made available to City employees is of good quality. In addition, due to the lack of an inventory of all geolocation data, not all the data is known and available to employees.

Management of Industrial Control Systems

The City manages 6 drinking water production plants whose production capacity of approximately 3 million cubic metres of drinking water per day serves some 2 million citizens. The City has put in place mechanisms to ensure the sound management and high degree of accessibility of the ICS and IT for the production of drinking water.

Implementation of the *Tree Policy* – Maintenance Component

The City *Tree Policy*, adopted in 2005, established actions aimed at ensuring the maintenance and development of Montréal's urban forest, whose benefits to the ecosystem contribute to the quality of the living environment and to fighting the effects of climate change. The City has not implemented and followed up the public tree maintenance actions set out in its Policy. The composition and condition of public trees are unknown, orientations and maintenance programs are not established, maintenance practices are inconsistent, and the required budgets are not evaluated or specifically allocated. The result is that the maintenance and development of Montréal's arboreal heritage are compromised.

1.6. Accountability

1.6.1. Legal Persons Having Received a Subsidy of at Least \$100,000 from the Ville de Montréal during the Year 2020

For the year ended December 31, 2020, the City recorded a total of \$180.3 million in subsidies to various legal persons. Of this amount, \$149.4 million (or 83%) concerned 283 legal persons that had received subsidies totalling at least \$100,000, which were subject to the requirements of Section 107.9 of the *Cities and Towns Act* (CTA) and resolution CM13 1157 adopted by city council.

Most of the agreements included a clause indicating that the financial statements of the recipient organization must be provided 90 days following the end of its fiscal year. As of December 23, 2021, the BVG had received the 2020 audited financial statements for 278 (or 98.23%) of the 283 organizations that were subject

to this CTA requirement, for a total of \$148.8M. Five organizations that had received \$665,027 did not provide audited financial statements and thus failed to meet the requirements of the CTA and resolution CM13 1157.

I encourage the City to continue its work to educate organizations about the requirements of section 107.9 of the CTA and resolution CM13 1157.

Chapter 5.1. deals with the work done by the BVG to ensure the agencies' compliance with the laws.

1.6.2. Application of the Auditor General's Recommendations

We followed up the implementation of our recommendations for the calendar year of our report, i.e., January 1 to December 31, 2021. Based on the business units' action plans and their implementation in the past, a total of 465 recommendations should have been implemented during 2021, approximately 71% of which were late in being implemented at January 1, 2021. The business units also considered 6 recommendations to have been resolved prior to their date of implementation. Thus, a total of 471 recommendations were followed up in 2021. During the 12 months of 2021, the business units considered that they had implemented 313 of these recommendations, i.e., 66% of the total that should have been implemented. Based on the evidence provided by the business units to show the implementation of the recommendations, we confirmed and closed 222 of these, for a 47.1% rate of implementation of our recommendations. The vast majority of the recommendations that were closed, i.e., 93.7%, were late in being implemented by the business units relative to the date that they had set in their action plans.

Detailed results of the application of the recommendations can be found in Chapter 5.2.

1.7. Management Reports

Chapter 6.1. of our management report contains the situation of the BVG for the year 2021, and Chapter 6.2. contains the follow-up of the 2019–2023 strategic plan, for which we achieved 89% of our commitments despite the pandemic.

In recent years, we have met the challenge of attracting new talent while encouraging promotions within the BVG, thereby ensuring a smooth succession. As of the date of this report, we had staffed more than 21 positions (18 at December 31, 2021), 50% of which were filled by visible minorities, and had promoted more than 5 employees, all this despite the retirement of 8 employees. As of the date of this report, the BVG had 36 employees (33 at December 31, 2021), 58% of whom had joined our team during the past 5 years.

The BVG's expenditures for 2021, along with the independent auditor's report, appear in Appendix 7.2.



2.

Financial Statement Audits and Other Reports

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2. Financial Statement Audits and Other Reports

2.1. Introduction

The *Cities and Towns Act* (CTA) no longer subjects the Auditor General to the obligation of conducting the financial audit of the Ville de Montréal (the City), paramunicipal bodies, the breakdown of mixed expenditures and the overall tax rate, but he may continue to do so if he deems it appropriate. We still consider it appropriate to continue our financial audits of the City and the breakdown of mixed expenditures. For paramunicipal bodies, we maintained our strategy of the last three years, which was to use a risk assessment matrix to assess entities for which the Auditor General deemed it appropriate to continue conducting audits and, consequently, to conduct a co-audit with the external auditor appointed by the City.

The Auditor General conducts audits in accordance with Canadian generally accepted auditing standards. The audit is planned and performed to provide reasonable assurance that the financial statements are free of material misstatement. It involves implementing procedures to obtain evidence about the amounts and information provided in the financial statements. An audit also includes assessing the appropriateness of the accounting methods used and the reasonableness of accounting estimates made by management, as well as assessing the overall presentation of the financial statements.

The Auditor General's audit of the financial statements does not in any way relieve management of its responsibilities, which include the preparation and fair presentation of the financial statements in accordance with the applicable accounting framework and the internal control it considers necessary to enable the preparation of financial statements that are free of material misstatement.

The work done on the risk of fraud by the Bureau du vérificateur général as part of the audit of the financial statements does not relieve the management of the City and of the organizations subject to section 107.7 of the CTA of their responsibility for the prevention and detection of fraud. Therefore, due to the limitations inherent in the financial audit, the risk that some material misstatements resulting from the risk of fraud are not detected remains despite the fact that the audit work has been planned and performed in accordance with Canadian Auditing Standards (CAS).

2.2. Consolidated Financial Statements of the Ville de Montréal

In accordance with the provisions of the CTA in force on December 31, 2021, to the extent deemed appropriate by the Auditor General, we audited the City's financial statements.

After Bill 49 was passed into law, the *Charter of Ville de Montréal, Québec's Metropolis* (the Charter) was amended to remove the obligation to file financial statements on March 31, given that the CTA requires the City to submit its financial statements to the Service du greffe of the City, which will then forward them to the Ministère des Affaires municipales et de l'Habitation (MAMH) in the prescribed form by May 15.

The audit of the financial statements was planned and performed jointly with Deloitte, the independent auditor appointed by the City. Doing this work together avoids duplication of work and costs for the municipality.

The consolidated financial statements include the activities of organizations belonging to the City's reporting entity. The inclusion of an organization in the reporting entity is based on the concept of control, that is, the power to direct the financial and administrative policies of another organization so that its activities will provide the expected benefits to the municipal organization or expose it to a risk of loss. These organizations are the Société de transport de Montréal (STM), the Société d'habitation et de développement de Montréal (SHDM), the Société du parc Jean-Drapeau (SPJD), the Conseil des arts de Montréal, the Office de consultation publique de Montréal (OCPM), Anjou 80, the Agence de mobilité durable (AMD), the Bureau du taxi de Montréal (BTM) and BIXI Montréal.

At the time of publishing our annual report, we had not yet issued the auditor's report for the City's consolidated financial statements at December 31, 2021, given that the financial report was in preparation and had not yet been filed with city council by the treasurer.

Organization and Governance of Public Transit in the Montréal Metropolitan Area

For the year ended December 31, 2021, the status quo was maintained in terms of the governance of the STM, since the 2017–2019 agreement between the Autorité régionale de transport métropolitain (ARTM) and the STM expired two years ago and no new agreement has been reached because of the pandemic. When a new agreement is reached, we will review it and analyze its impacts in the light of the existing legislative and contractual framework and any resulting new practices. Management will assess the potential impacts of this new agreement.

Mixed Expenditures

Under the *Act respecting the exercise of certain municipal powers in certain urban agglomerations* (CQLR, chapter E-20.001), completed by the *Montréal Agglomeration Order* (order-in-council 1229-2005) as subsequently amended, expenditures incurred by the City in the performance by the municipal administration of an act that comes under both urban agglomeration power and another power are considered mixed expenditures. They are broken down between local and agglomeration powers in accordance with the criteria established by management pursuant to by-law RCG06 054 adopted by the urban agglomeration council on December 13, 2006, and its subsequent amendments.

At the time of publishing our annual report, we had not produced a compliance report, given that the financial report was in preparation and had not yet been filed with city council by the treasurer.

2.3. Financial Statements of Other Legal Entities Subject to the *Cities and Towns Act*

Pursuant to sections 107.7 and 107.8 of the CTA, the Auditor General must, to the extent deemed appropriate, audit the financial statements of the other legal persons covered by the CTA who meet any of the following conditions:

- It is part of the reporting entity defined in the municipality's financial statements;
- The municipality or a mandatary of the municipality appoints more than 50% of the members of the board of directors;
- The municipality or a mandatary of the municipality holds more than 50% of the outstanding voting shares or units;
- Any body covered in the first paragraph of section 573.3.5 of the CTA when any of the following conditions is met:¹
 - i) its budget is adopted or approved by the municipality;
 - ii) more than half of the body's funding is secured by funds from a municipality and its annual revenues are equal to or greater than \$1,000,000;
 - iii) it is a mandatary or agent of the municipality or is designated by the Minister of the MAMH as being subject to municipal contractual regulations and its main place of business is on the territory of the municipality.

¹ Amended in December 2019, thereby offering the possibility of going back two years.

2. Financial Statement Audits and Other Reports

The following table identifies the other legal persons covered by the CTA for which, following our risk assessment, we deemed it appropriate to continue the financial audit work and produce a joint report on the financial statements with the auditor appointed by the City.

TABLE 1

Legal Entities Subject to Section 107.7 of the *Cities and Towns Act* for which the Auditor General has Deemed it Appropriate to Continue the Financial Audit Work as of December 31, 2021

Other legal entities subject to the <i>Cities and Towns Act</i>	Reporting entity	Date of the auditor's report for the fiscal year ending December 31, 2021
Société de transport de Montréal (Financial report and form required by the ministère des Affaires municipales et de l'Habitation)	●	April 6, 2022
Société d'habitation et de développement de Montréal	●	March 29, 2022
Société du parc Jean-Drapeau	●	March 31, 2022
Agence de mobilité durable	●	March 31, 2022
Société en commandite Transgesco	(1)	March 29, 2022

(1) Subsidiary of the Société de transport de Montréal.

Société de transport de Montréal

The STM was incorporated under the *Act respecting public transit authorities* (CQLR, chapter S-30.01).

Its mission is to provide the ARTM with the public transportation services covered by an agreement concluded under section 8 of the *Act respecting the Autorité régionale de transport métropolitain* (chapter A-33.3) and collaborate, at its request, in the planning, coordination, development, support and promotion of public transportation.

Report

Its mission is to provide the ARTM with the public transportation services covered by an agreement concluded under section 8 of the *Act respecting the Autorité régionale de transport métropolitain* (chapter A-33.3) and collaborate, at its request, in the planning, coordination, development, support and promotion of public transportation.

This is an extract from the report:

Opinion

In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the STM as of December 31, 2021, and the results of its operations, changes in its net debt and cash flows for the year then ended in accordance with Canadian public sector accounting standards.

Société d'habitation et de développement de Montréal

The SHDM is a non-profit organization that reports to the City, incorporated by letters patent on June 15, 2010, by the Government of Québec pursuant to chapter V of schedule C of the *Charter of Ville de Montréal* (CQLR, chapter C-11.4).

Its objectives are:

- to contribute to economic and social development through the enhancement of residential, institutional, industrial, commercial and cultural property assets in the City's territory;
- to acquire, renovate, restore, build, demolish, sell, lease or administer buildings in the City's territory;
- grant subsidies and administer programs for the construction, renovation, restoration, demolition and relocation of buildings in the City's territory.

Report

On March 29, 2022, we issued an unqualified joint auditors' report for this organization.

This is an extract from the report:

Opinion

In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the SHDM as of December 31, 2021, and the results of its operations, revaluation gains and losses, changes in its net debt and cash flows for the year then ended in accordance with Canadian public sector accounting standards.

Société du Parc Jean-Drapeau

The SPJD is a non-profit organization that was incorporated on August 9, 1983, under section 223 of the Charter.

Its purpose is to operate, administer and develop SPJD, which includes Sainte-Hélène and Notre-Dame islands in Montréal. It manages recreational, cultural and tourist activities and carries out any other mandate entrusted to it by the City.

Report

On March 31, 2022, we issued an unqualified joint auditors' report for this organization.

This is an extract from the report:

Opinion

In our opinion, the financial statements present fairly, in all material respects, the financial position of the SPJD as of December 31, 2021, and the results of its operations, changes in its net financial assets and cash flows for the year then ended in accordance with Canadian public sector accounting standards.

Agence de mobilité durable

The AMD is a non-profit organization that was incorporated on February 21, 2019, under section 220.4 of the Charter.

The mission of the AMD is to ensure the management, regulatory enforcement and development of paid on-street and off-street parking throughout the City's territory.

| Report

On March 31, 2022, we issued a joint auditors' report without reserve for this organization.

This is an extract from the report:

| Opinion

In our opinion, the financial statements present fairly, in all material aspects, the financial situation of the AMD as of December 31, 2021, and the results of its operations, changes in its net financial assets and cash flows for the year then ended, in accordance with Canadian public sector accounting standards.

Société en commandite Transgesco

The Société en commandite Transgesco was formed under a partnership agreement on July 2, 2003, within the meaning of the *Civil Code of Québec*.

Its purpose is to manage various partnerships with private sector stakeholders in connection with business activities related to the STM.

Report

On March 29, 2022, we issued an unqualified joint auditors' report for this organization.

This is an extract from the report:

Opinion

In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of Société en commandite Transgesco as of December 31, 2021, and the results of its operations, changes in its net debt and cash flows for the year then ended in accordance with Canadian public sector accounting standards.



3.

Performance Audit and Information Technology

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Auditor General of the Ville de Montréal



3.1.

Information Technology Management Used For Remote Work

Service des technologies de l'information

January 19, 2022

2021 ANNUAL REPORT

Auditor General of the Ville de Montréal

3.1. Information Technology Management Used For Remote Work

Information Technology Management Used For Remote Work

Background

Remote work is a way of organizing work that has progressed over the last decades. Technology has made it possible for employees to do some of their regular work from home while still being connected to the office. This is often referred to as “telework” or “remote work.”

On March 13, 2020, government guidelines to control the risk of contamination imposed remote work as the employment configuration that replaced all other forms.

Although this practice already exists within the City of Montréal (the City), a shift to remote work on a larger scale was necessary. Up to 4,500 employees work from home in remote work mode simultaneously, accessing the City’s network remotely.

Purpose of the Audit

To determine whether the control mechanisms, put in place for managing the information technology (IT) used for remote work within the City, allow to provide the necessary equipment and secure remote access to the City’s information technology assets to ensure that employees can continue to perform their work.

Results

We conclude that the City has put in place the control mechanisms to ensure the sound management of the information technology used for remote work.

Indeed, despite the public health emergency caused by the COVID-19 crisis, the City’s Service des technologies de l’information (STI) quickly deployed all the necessary efforts in an exceptional context to put in place the technological environment as well as the security mechanisms required to allow all of its employees working remotely to continue their professional activities from home without any interruption of service.

These mechanisms include the STI’s guidance on IT used for remote work, the remote work awareness and training strategy, the protection mechanisms surrounding City data access and the operations management surrounding remote workers’ corporate equipment.

Main Findings

Remote Work Framework

- Several guidelines on good practices to be adopted by employees working remotely were developed within the organization. They were approved and distributed to all employees through the City's intranet.
- These guidelines provide the information required for employees to safely use IT to work remotely.

Remote Work Training

- Appropriate awareness and training on remote work and its components have been in place since March 2020.

Data Access Protection

- Appropriate authentication mechanisms are used by employees to access data located in the City's network in accordance with sound security practices. The screen lock on City laptops is automatically activated after a centrally defined period of inactivity.
- Appropriate software is installed and updated on all City devices remotely connected to the City's network to protect them from malicious attacks.

Operations Management

- In order to allow employees to work remotely, the STI put in place secure mechanisms to enable employees who do not have a City computer to use their personal computer. Since the beginning of 2021, nearly 2,200 laptops have been distributed to employees allowing them to work remotely. The STI has provided adequate computer support for remote workers.

The infrastructure in place allows for appropriate redundancy of key components and includes a secure environment for remote work.

Glossary

Centralized Security Information and Event Management System (SIEM): is used to collect, track, and correlate logs and generate dashboards and reports.

Firewall: a device that protects all network traffic and has the ability to identify and block unwanted data traffic.

Intrusion Detection System (IDS): protects organizations from cyberattacks by monitoring network traffic for suspicious activity.

Intrusion Prevention System (IPS): monitors a network to reduce the impact of an attack by stopping malicious requests.

IT: information technology

Malware: contraction of malicious software, refers to software intended to harm the user, which can take the form of, for example, a computer virus.

RDP: Remote Desktop Protocol

Spyware: refers to software that collects personal data in order to send it to a third party.

STI: Service des technologies de l'information

Two-factor or strong authentication: combines something you know (password, confidential code) with something else that can be a biometric element, an object you own or an action you know how to do.

Virtual Private Network (VPN): a method of linking two remote computers through a single private connection, or tunnel, while using a larger network infrastructure, such as the web or a wide area network (WAN). Once activated, a VPN acts as a direct connection to a private network.

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3.1. Information Technology Management Used For Remote Work

1. Background

Remote work is a way of organizing work that has progressed over the last decades. New technologies have made remote work possible and are even essential to many companies' continued operation.

On March 13, 2020, government guidelines to control the risk of contamination imposed remote work as the employment configuration that replaced all other forms. At the end of March, 39.1% of Canadian workers were working remotely. Although this practice already exists within the City of Montréal (the City), a shift to remote work on a larger scale was required. Up to 4,500 employees simultaneously work from home in remote work mode, accessing the City's network from a distance. These resources come from the various business units.

The generalized rise of remote work multiplies exchanges and access to sensitive company data. Also, personal networks may be less well protected from cyberattacks than private corporate networks.

It is therefore essential to limit the risks as much as possible by putting in place the right tools and establishing secure practices to ensure sound management of the information technology used for remote work.

1.1. Definition of Remote Work

It is increasingly common for people to do at least some of their regular work at home rather than in the office. Technology has made it possible for workers to stay at home while being connected to the office by phone, Internet or email. This is often referred to as "remote work" or "telework."

There is no official definition of remote work in Québec. Studies on this topic define it based on two main components¹:

- The existence of a remote workplace outside the conventional workplace;
- Remote work being performed using information and communication technology (ICT)².

Organizations therefore need to develop an internal policy or guideline to define remote work.

¹ Remote work – Chaire BMO – Université de Montréal.

² Smartphones, tablets, laptops and desktop computers.

1.2. Description of the Information Technology Used for Remote Work

The IT used to work remotely includes the City's remote computers, which are configured with remote access solutions. In addition, telecommunications equipment is in place to ensure the sound management of data transfers between remote computers and the City's computer network.

The City uses Remote Desktop Protocol (RDP) technology for personal computers and Virtual Private Network (VPN) technology for the City's computers as a method of authentication to access corporate data and applications.

1.3. Main Benefits Associated with Working Remotely

The main benefits of remote work for any organization, other than the square footage savings and productivity gains, are listed as follows:

- Accelerated ability to maintain or recover operations in the event of a disaster (power failure or ice storm);
- Pandemic preparedness (reducing the risk of contagion, managing collective stress levels);
- Accommodation of people with disabilities or reduced mobility (on a temporary or permanent basis);
- Increased recruitment assets and retention.

1.4. Main Challenges Associated with Working Remotely

The main challenges associated with working remotely for an organization are as follows:

- Increased online fraud (e.g., exploiting unsecured network connections to monitor traffic as well as sending fake password reset reminders);
- Data theft;
- Connection overload;
- Poor management of logical access, including unreinforced password security;
- Inappropriate use of equipment by third parties in private homes;
- Unlicensed tools, software and applications;
- Non-progressive or non-existent deployment of updates;
- Overworked IT help desk teams and employees receiving less support from those teams.

2. Purpose and Scope of the Audit

Pursuant to the provisions of the *Cities and Towns Act*, we conducted a performance audit of the Information Technology Management Used for Remote Work. We carried out this mission in accordance with the *Canadian Standard on Assurance Engagements (CSAE) 3001* of the *CPA Canada Handbook–Assurance*.

The purpose of this audit was to determine whether the controls in place for managing the information technology that the City uses for remote work are sufficient to provide the necessary equipment and secure remote access to the City's IT assets to ensure that employees can continue to perform their work.

The role of the Auditor General of the Ville de Montréal is to provide a conclusion regarding the purpose of the audit. To that end, we gathered sufficient and appropriate relevant evidence on which to base our conclusion and obtain a reasonable level of assurance. Our assessment is based on criteria we deemed valid for the purposes of this audit. These criteria are presented in Appendix 5.1.

The Auditor General of the Ville de Montréal applies the *Canadian Standard on Quality Control (CSQC) 1* of the *CPA Canada Handbook–Assurance* and, accordingly, maintains a comprehensive quality control system that includes documented policies and procedures with respect to compliance with ethical requirements, professional standards and applicable legal and regulatory requirements. The Auditor General also complies with the independence and other ethical requirements of the *Code of ethics of chartered professional accountants*, which are based on the fundamental principles of integrity, professional competence and due diligence, confidentiality and professional conduct.

The purpose of our audit dealt solely on the information technology management used for remote work to provide the necessary equipment and secure remote access to the City's IT assets to ensure that employees can continue to perform their work.

In order to perform our audit work, we audited the STI, which is responsible for managing the IT used to work remotely.

We excluded the Service de Police de la Ville de Montréal (SPVM) from the scope of our audit, as its IT management criteria differ greatly from the City's. In fact, the SPVM must respect specific security rules in order to protect access to the Centre de renseignements policiers du Québec. This is a database that police officers use on a daily basis.

Our audit work covered the period from February 2021 to October 2021. Our work consisted in conducting interviews with employees, reviewing various documents and conducting surveys that we deemed appropriate to gather the necessary evidence. We also took into account information that was sent to us up to January 19, 2022.

At the end of our work, a draft audit report was presented for discussion to the relevant managers in the audited business unit. The final report was then forwarded to the management of the business unit concerned as well as to the City's Direction générale.

3. Audit Results

3.1. Remote Work Framework

Establishing guidelines on the technology used for remote work consists in developing a normative framework on the use of dedicated computer equipment, a VPN and a data-filtering firewall as well as limiting the addition of applications, protecting networks and ensuring devices are configured in a secure manner according to the *Politique de sécurité de l'information*.

In addition, this framework must be approved by the appropriate authorities, kept up to date and distributed to all of the City's employees working remotely to prevent unsafe practices on their part that could result in significant security breaches.

The City has a number of frameworks in place that address, one way or another, best practices for remote workers. These frameworks are as follows:

- The STI's guideline *Utilisation des appareils et des technologies mis à la disposition des employés de la Ville de Montréal*, dated June 15, 2018, provides a framework for the use of computing devices and technology services to prevent illegal, wrongful, abusive or unreasonable use by certain users. This guideline clarifies the rules for using the Internet, the City's email, cell phones and remote access services;
- The consent form referenced in Section 9.5–*Utilisation d'appareils qui n'appartiennent pas à la Ville* of the above guideline states the following: [TRANSLATION] "Applicable users must sign a consent form ahead of time for the use of a personal device in a business setting and comply with the security requirements set out in that form." This form, updated in the context of the pandemic, includes useful links to the remote work guideline and cybersecurity capsules;
- The guideline *Directive sur le télétravail des employés de la Ville de Montréal* of the Service des ressources humaines came into force on March 13, 2020 in emergency mode. It aims to provide a framework for the practice of remote work. It specifies the nature of the privileges granted, the eligibility conditions, the roles and responsibilities as well as the rules and measures to be observed. It also refers to complementary frameworks, including the above-mentioned guideline;
- The *Guide de sécurité de l'information pour l'employé en télétravail* was developed in March 2021 by the STI's Direction Sécurité de l'information. This guide can be found in the *Zone TI, Cybersécurité*. It details, for example, good practices, secure workstation configurations (including laptops) and secure configurations of connection networks (i.e., home wired and wireless networks);
- The *Encadrement administratif sur le modèle hybride d'organisation du travail*, dated June 28, 2021, of the Service des ressources humaines, makes references to the frameworks cited above. In the section on rules

for the use of computer equipment, it includes the guideline on using the City's technology and, in the section on security and data protection, the information security guide for employees working remotely.

These frameworks were approved and distributed to all employees through the City's intranet.

We believe that the frameworks in place prior to the pandemic and those developed subsequently provided the information required for employees to safely use IT for remote work.

No recommendation is necessary.

3.2. Remote Work Training

Remote work training typically consists of training on detecting email scams and phishing attempts, using strong passwords and secure wireless networks, monitoring devices and communicating when security issues arise. Such training can be done through different media such as conferences, training capsules or recognized websites.

To increase awareness and maintain employee reflexes on these key topics, the key is repeating the messages.

We found that through hyperlinks on the City's intranet, remote workers could learn about the various remote access solutions put in place by the City, important updated new items and information related to remote work, and email scam awareness with a link that redirects the user to a video released by the City on YouTube in February 2019. The video is titled *Cybersécurité: l'accès à distance en toute sécurité*³ and explains *Comment sécuriser vos informations et vos outils avec le téléaccès de la Ville pour ceux qui travaillent à distance*. In addition, the form *Consentement pour l'autorisation d'utilisation d'un ordinateur personnel en télétravail* to be completed by employees redirects them to useful links, including the cybersecurity capsules available on the City's training portal.

We also noted that, during the month of October 2021⁴, two conferences were held on remote work cybersecurity and cybersecurity trends. The STI should facilitate additional conferences throughout the awareness campaign based on the identified needs of their target audiences.

In addition, the security capsules developed by the STI's Direction Sécurité de l'information are monitored to ensure that all connected employees view and complete them within a reasonable time frame. If necessary, a manager is notified by the STI that an employee should promptly retake a given training.

We have been informed that as part of the project *Sensibilisation et formation des employés*, the training capsules on various cybersecurity topics are being revised.

³ [https://www.youtube.com/l'accès à distance en toute sécurité](https://www.youtube.com/l'accès_à_distance_en_toute_sécurité)

⁴ October is *Cybersecurity Awareness Month*. This international campaign aims to educate the public about the importance of cybersecurity.

3.1. Information Technology Management Used For Remote Work

In fact, according to this project, the gradual release of these capsules should take place throughout the current awareness campaign until fall 2022. All “connected” employees, approximately 12,000, will be required to complete the capsules.

We estimate that appropriate awareness and training on remote work and its components have been in place since March 2020.

No recommendation is necessary.

3.3. Data Access Protection

Protecting remote access involves several technical approaches, including the use of two-factor or strong authentication⁵, through a secure VPN⁶ and a firewall⁷ that filters incoming and outgoing data. City computers that provide remote access should have a screen lock automatically activated after a period of inactivity and have up-to-date anti-malware software⁸.

3.3.1. Authentication Mechanisms

Strong authentication mechanisms are in place to enable remote computers to access City data. Indeed, during our audit, we observed the use of two types of authentication mechanisms: the VPN used on the City’s workstations and the RDP used on personal computers. An employee working remotely could connect using the VPN or the RDP.

3.3.1.1. Virtual Private Network—Used on City of Montréal Workstations

Remote VPN client access was implemented during the large-scale deployment of the remote working mode with a robust two-factor authentication. We considered, among other things, the configuration of the key components of the VPN environment, the two factors used during session length authentication and the user documentation made available to remote workers.

We believe that the above-mentioned items are in line with what is normally expected.

No recommendation is necessary.

3.3.1.2. Remote Desktop Protocol—Used on Personal Computers

To expedite the implementation of remote work, and depending on laptop delivery deadlines, RDP authentication was enabled on personal computers for employees authorized to log on to their office workstations and access City data. However, the City could revoke this privilege at any time.

-
- ⁵ The two-factor, or strong, authentication method combines something you know (password, confidential code) with something else that can be a biometric element, an object you own or an action you know how to do.
 - ⁶ A VPN is a method of linking two remote computers through a single private connection, or tunnel, while using a larger network infrastructure, such as the web or a wide area network (WAN). Once activated, a VPN acts as a direct connection to a private network.
 - ⁷ A firewall is a device that protects all network traffic and has the ability to identify and block unwanted data traffic.
 - ⁸ Malware or malicious software refers to software intended to harm the user which can take the form of, for example, a Trojan horse or computer virus.

We examined the configuration of the RDP environment, the password change process, the login process, the multi-factor authentication process, the duration of RDP sessions, the functionalities for copying or saving data, as well as the end-user and technical documentation for this option.

We believe that the above-mentioned items are adequate and provide a secure multiple authentication environment.

No recommendation is necessary.

3.3.2. Screen Lock

We were informed that City laptops used by workers are configured with an automatic screen lock after a period of Windows session inactivity that varies according to the nature of the information asset (critical or not).

We found that the Windows session on these laptops locks in accordance with the logical access management standard as of November 2, 2020. We believe that this is adequate.

No recommendation is necessary.

3.3.3. Anti-malware Software

We were informed that all City workstations and laptops are equipped with anti-malware software. This tool is used to filter emails and web pages consulted by employees.

We found that the configuration of this anti-malware environment is consistent with sound practices, including hourly updates of the server components hosting this software and security agents (i.e., virus signatures, spyware⁹, etc.), intelligent scanning of anti-malware and anti-spyware signatures, automatic website reputation assessment¹⁰ and predictive machine learning¹¹. In addition, detection of suspicious malicious connections and monitoring of malware behaviour are enabled on the server.

We were also informed that the hardening of security agents installed on all workstations, including laptops, is under way and that an increase in the security level of its firewall component is planned based on best practices, vendor recommendations and the City's business and operational needs. This is in line with one of the initiatives of the Acquisition of Security Technology Infrastructure project currently under way.

We consider that this solution with its different layers is adequate.

No recommendation is necessary.

⁹ Spyware refers to software that collects personal data in order to send it to a third party.

¹⁰ The website reputation feature assesses the security risk associated with a requested URL.

¹¹ This learning is an advanced technology that detects new and unknown security risks in suspicious processes or files with low prevalence.

3.4. Operations Management

Sound operations management aims to supply corporate equipment with communications tools for remote workers. This includes providing IT support to employees to respond to security incidents related to remote access and monitoring the data links between the computers that employees are using and the City's network.

Redundancy of the different types of authentication servers with data replication is essential to maintain service availability and load balancing of remote access requests. Network segmentation¹² between office workstations and remote computers should be implemented to prevent suspicious communications from infiltrating the City's computer network.

3.4.1. Supply of Laptops

In the current pandemic context, the STI has been gradually rolling out measures to expand remote work. Initially, the STI did not have enough laptops available for all remote workers. As a result, employees without City laptops who required access to the City's computer network were allowed to use their personal computers to perform their work. This use of personal computers follows a rigorous process of requesting authorization from the employee's manager. The City could revoke the privilege of using a personal device to access its technological environment at any time.

We noted that since the beginning of 2021, a distribution of corporate laptops is under way, with nearly 2,200 laptops already distributed to employees working remotely.

No recommendation is necessary.

3.4.2. Technical Support

The STI's teams helped the Centre de services TI to expedite the implementation of remote work in March 2020. Employees were asked to provide telephone support to help remote workers connect to the City's computer network remotely. This continued during the first weeks of the emergency caused by the pandemic. Once the situation had stabilized, the Centre de services TI resumed management of the calls.

The Centre de services TI has 20 dedicated support agents for the City, of which five have been hired since March 2020 to meet needs. For support requests regarding technological tools in the context of remote work, users can signal an incident using the self-service IT system or call them.

We found that the support process for remote workers includes sending emails with online user documents on VPN and RDP connection methods with links and videos to guide users. In addition, calls are redirected to IT technicians specialized in these areas to resolve complex situations.

¹² Network segmentation refers to dividing a network into several sub-networks.

We analyzed the list of incidents that occurred from March 20, 2020, to September 14, 2021, and found that there were no incidents related to remote access.

We believe that the Centre de services TI has the resource capacity and tools needed to provide IT remote access support to remote workers.

No recommendation is necessary.

3.4.3. Monitoring the Virtual Private Network Link

We found that administrator access to the VPN gateway console remains open during office hours. This console continuously monitors the performance of the hard drives and resources used by this gateway. The administrator thus conducts spot checks.

The Centralized Security Information and Event Management System (SIEM)¹³ was implemented and training was provided to the administrator of the telecommunications network. In addition, monitoring through the SIEM is being configured with the integration of security logs for automated alerts and security data analysis.

Currently, alerts are logged and sent to the log management application (Graylog), and no alerts are sent to the administrators. The SIEM will address this issue.

It is our opinion that the implementation and configuration of the SIEM currently under way will allow for continuous monitoring through the collection, storage and real-time analysis of events on the data link between the computer used by the employee and the City's network (i.e., the VPN link for remote access).

We already issued a recommendation in this regard during a previous audit. No new recommendation is necessary.

3.4.4. Equipment Redundancy

We obtained documentation on remote work solutions. One document provides high-level details on the remote access solutions—RDP and VPN—with infrastructure diagrams. Another document presents a more detailed diagram of the RDP environment. From the documentation and resources we consulted, we found that there is indeed redundancy at the equipment level.

We consider that the different types of authentication servers with data replication between them are in place and that there exists an adequate level of redundancy between all key components.

No recommendation is necessary.

¹³ A SIEM is used to collect, track and correlate logs as well as to generate dashboards and reports.

4. Conclusion

We conclude that the City of Montréal (the City) has the control mechanisms in place to ensure the sound management of the information technology (IT) used for remote work.

Indeed, despite the public health emergency caused by the COVID-19 crisis, the City's Service des technologies de l'information (STI) very quickly deployed all the necessary efforts to put in place the technological environment as well as the security mechanisms required to allow all of its remote workers to continue their professional activities from home without any interruption of service.

These mechanisms include the STI's guidance on IT used to work remotely, the remote work awareness and training strategy, the protection mechanisms surrounding City data access and the operations management surrounding remote workers' corporate equipment.

More specifically, here are the details according to the following evaluation criteria:

Evaluation Criterion – Remote Work Framework

Several guidelines on sound practices to be adopted by remote workers were developed within the organization. They were approved and distributed to all employees through the City's intranet.

These frameworks provide the information required for employees to safely use IT for remote work.

Evaluation Criterion – Remote Work Training

Appropriate awareness and training on remote work and its components have been implemented since March 2020 and expected to continue through fall 2022.

The STI follows up on the cybersecurity training capsules to ensure that all employees who are "connected" to the City's network successfully complete these capsules within a reasonable time frame.

Evaluation Criterion – Data Access Protection

Strong authentication mechanisms are used by employees to access data located on the City's network in accordance with sound security practices. The screen lock of corporate laptops is automatically activated after a centrally defined period of inactivity.

Appropriate anti-malware software is installed and updated on all corporate devices remotely connected to the City's computer network. Among other things, this software filters emails and web pages visited by employees and scans files according to the configured analysis parameters.

Evaluation Criterion – Operations Management

In order to allow employees to work remotely, the STI put in place secure mechanisms to enable employees who do not have a City computer to use their personal computer. Since the beginning of 2021, nearly 2,200 laptops have been distributed to employees to allow them to work remotely.

The Centre de services TI has the resource capacity and tools needed to provide adequate IT support to remote workers.

There is appropriate redundancy of key components of the Virtual Private Network and Remote Desktop Protocol authentication solution environments.

5. Appendix

5.1. Objective and Evaluation Criteria

Objective

To determine whether the control mechanisms, put in place for managing the information technology (IT) used for remote work within the City of Montréal (the City), allow to provide the necessary equipment and secure remote access to the City's IT assets to ensure that employees can continue to perform their work.

Evaluation Criteria

Our work focused on the following evaluation criteria:

Criterion 1: Governance

A normative framework for information technology used for remote work was developed by the Service des technologies de l'information (STI), approved and distributed to City employees.

Criterion 2: Remote Work Training

Ongoing training is provided to employees to raise awareness of security issues related to remote work and to remind them of good practices. The STI monitors this training.

Criterion 3: Data Access Protection

Robust authentication mechanisms are in place to access data. Remote computers are equipped with appropriate security mechanisms (e.g., anti-malware software).

Criterion 4: Operations Management

The STI provides laptops with remote communication tools to remote workers in a timely manner. The STI also provides oversight of remote work operations to ensure that they remain available to employees (e.g., IT support).



3.2.

Management of the Emergency Assistance Program for Small and Medium-Sized Businesses by PME MTL

April 8, 2022

2021 ANNUAL REPORT

Auditor General of the Ville de Montréal

3.2. Management of the Emergency Assistance Program for Small and Medium-Sized Businesses by PME MTL

Management of the Emergency Assistance Program for Small and Medium-Sized Businesses by PME MTL

Background

Since March 2020, businesses have been exposed to numerous financial challenges due to the restrictive measures instituted by the Québec government in the context of the COVID-19 public health crisis, resulting in an exceptional and circumstantial economic situation. In order to support businesses with cash shortages due to the COVID-19 pandemic, the Ministère de l'Économie et de l'Innovation (MEI) set up the Emergency Assistance Program for Small and Medium-Sized Businesses (PAUPME) and concluded a \$150 million loan with the Ville de Montréal (the City) to offer the PAUPME to Montréal-based businesses, including the Assistance for Businesses in Regions on Maximum Alert (AERAM) component. In turn, through its Fonds d'aide d'urgence (FAU), the City delegated the management of the PAUPME to PME MTL, a network of six independent non-profit organizations in place since 2016 to support Montréal businesses. The delegation to PME MTL does not relieve the City of its obligations to the MEI. Failure to comply with these conditions could result in the City being forced to repay all or part of the MEI's loan prior to the maturity of the loan in March 2030. As of September 30, 2021, the total loans granted amounted to \$117.6 million for a total of 3,453 files.

Purpose of the audit

To ensure that the Emergency Assistance Program for Small and Medium-Sized Businesses granted by the PME MTL network to beneficiaries is managed in accordance with the management frameworks established by the Ville de Montréal.

Results

The management of the PAUPME by the PME MTL network is not fully compliant with the management frameworks established by the City.

Of a sample of 81 files reviewed that received a loan, 19% did not meet at least one of the PAUPME's eligibility criteria. The assessment of the overall financial condition of the businesses receiving financial assistance was not sufficiently documented to support the decision to award loans in several of the files reviewed. Due to the use of loan agreements that do not comply with the requirements of the MEI and the City, as well as irregularities in the disbursement of financial assistance, PME MTL is in breach of its delegation agreements with the City.

On the one hand, the lack of follow-up on the aid disbursed does not contribute to PME MTL respecting its obligations towards the City as stipulated in the delegation agreements, nor to the beneficiaries' contractual obligations. On the other hand, the Service du développement économique (SDÉ) does not monitor the management of the PAUPME, which means that it cannot identify non-compliance with the commitments pursuant to the delegation agreements.

Finally, the information in the accountability report is often erroneous, including the information sent to the MEI, and is limited to the volume of activity, which does not allow the City's decision-makers to have an appropriate vision to ensure that the obligations towards the MEI regarding the management of the PAUPME—the City's responsibility—are respected.

Main Findings

Evaluation of Loan Applications

- At least one eligibility requirement is not met for 19% of the selected financial assistance files. This is due to insufficient evidence of a causal link between financial or operational problems and the COVID-19 pandemic.
- Documentary requirements are not met in 44% of the selected financial assistance files.
- Comments made in support of the loan authorization do not always indicate that an assessment of the business's overall financial situation was conducted for the selected files.
- Also, the amortization of the loan over a period of more than 36 months, allowed by the PAUPME on an exceptional basis, is not justified for 85% of the selected files.

Implementation

- Two of the three PME MTL centres audited did not respect their commitments to the City, since their loan agreements, which were nevertheless validated by the SDÉ, did not inform the business that it was being financed by the City and the MEI.
- The disbursement dates entered in the loan management system do not always correspond to the disbursements' effective dates. In the case of PAUPME loans, gaps ranging from a few days to more than two months were observed, which penalizes businesses in terms of interest charges due to capitalization of the loans after the first six months of moratorium.
- The financial assistance from the AERAM component was disbursed to businesses by PME MTL before the City adopted the addition of the AERAM component to the MEI-City loan agreement for 17% of the files observed.

Monitoring and Oversight

- There is no monitoring mechanisms to obtain financial statements from the businesses that benefited from the PAUPME, which is contrary to the delegation agreement with the City.
- The SDÉ does not adequately monitor compliance with the various obligations stipulated in the delegation agreement, which allows shortcomings to persist.

Accountability

- Incorrect and inconsistent information was found during the reporting of the cumulative claims to the status of the PAUPME.
- Accountability to the City's decision-makers is limited to the volume of activity and fund balance and not to compliance with the FAU's obligations as stipulated in the delegation agreement.

In addition to these results, we made various recommendations to the business units, which are presented in the following pages.

Please note that although several shortcomings were observed in the management of the program and the granting of loans by PME MTL, due to the uncertain future of this MEI program, a single recommendation was made to PME MTL. If a similar new program is implemented in the future, the Bureau du vérificateur général could audit PME MTL again in this regard.

List of Acronyms

ACEST	Assistance for Some Businesses in the Tourism Sector
AERAM	Assistance for Businesses in Regions on Maximum Alert
ARPII	<i>Act respecting the protection of personal information in the private sector</i>
BVG	Bureau du vérificateur général
CIE	comité d'investissement exceptionnel
City	Ville de Montréal
FAU	Fonds d'aide d'urgence
MEI	Ministère de l'Économie et de l'Innovation
PAUPME	Emergency Assistance Program for Small and Medium-Sized Businesses
PME CE	PME MTL Centre-Est
PME CV	PME MTL Centre-Ville
PME GSO	PME MTL Grand Sud-Ouest
SDÉ	Service du développement économique

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1. Background

Emergency Assistance Program for Small and Medium-Sized Businesses of the Ministère de l'Économie et de l'Innovation

Since March 2020, the restrictive measures implemented because of the COVID-19 pandemic have exposed businesses to many financial challenges. In this context, the Ministère de l'Économie et de l'Innovation (MEI) set up the Emergency Assistance Program for Small and Medium-Sized Businesses (PAUPME) to support businesses with cash-flow problems as a result of these measures and the ensuing economic slowdown.

The PAUPME is aimed at for-profit businesses, including cooperatives and social economy enterprises that have been in business for at least six months. As the COVID-19 pandemic evolved, the MEI made several changes to the terms and conditions of the PAUPME. For example, until December 2020, only enterprises that had been in business for at least one year were eligible for the program. This period was later reduced to six months. The PAUPME seeks to support the working capital of businesses affected by the COVID-19 pandemic to enable them to maintain, consolidate or relaunch their operations. According to the MEI,¹ the funding is intended to address the cash shortage caused by:

- the inability or significantly reduced capacity to deliver products (goods and services) or merchandise;
- problems in obtaining raw materials or products (goods or services).

The PAUPME comprises the following components:

1. PAUPME loan

- Assistance in the form of a loan of up to \$50,000, at a 3% interest rate with an automatic six-month moratorium on principal and interest, including three months offered by the Ville de Montréal (the City). The loan is repayable over 36 months following the moratorium. On an exceptional basis, the repayment period can be extended to 60 months;

2. Assistance for Businesses in Regions on Maximum Alert (AERAM) component

- As of October 1, 2020, businesses located in areas affected by a closure order by decree of the Québec government could benefit from a maximum of \$50,000 in financial assistance to cover cash-flow needs. In addition, as of December 2020, these businesses could receive up to \$50,000

¹ Based on clause 3 of the PAUPME's intervention framework ("Projets admissibles") of the loan agreement between the MEI and the City.

3.2. Management of the Emergency Assistance Program for Small and Medium-Sized Businesses by PME MTL

in additional financial assistance, not to exceed the PAUPME's \$150,000 cap. The AERAM component provides for loan forgiveness, i.e., the conversion of a portion of the loan granted, subject to certain conditions defined in the PAUPME's intervention framework, into a non-repayable contribution,² which would then be the equivalent of a subsidy;

- Enhancement of the AERAM component to promote the resumption of activities by businesses that have had to cease operations in compliance with a closure order by providing additional assistance of up to \$50,000 to businesses that benefited from the AERAM component, without exceeding the PAUPME's \$150,000 cap. This assistance is a non-repayable contribution to offset some of the losses accumulated during the closure.

3. Assistance for Some Businesses in the Tourism Sector (ACEST)

- Ability to convert a loan to forgiveness for up to 40% of the amount repaid (principal and interest) in the first 24 months after repayment begins, to a maximum of \$20,000 per establishment with an automatic 12-month moratorium. The loan is repayable over 36 months following the moratorium, and on an exceptional basis, the amortization period could be extended to up to 60 months.

Implementation of the Emergency Assistance Program for Small and Medium-Sized Businesses by the Ville de Montréal

The MEI and the City entered into a \$150 million loan agreement³ to delegate the establishment and management of the PAUPME on the territory of the island of Montréal. The purpose, terms, roles and responsibilities of the City in adapting the PAUPME, as well as the terms and conditions for granting assistance to businesses, are described in the agreement. The City agrees to repay the full amount of the loan by March 31, 2030. The City may not have to repay the entire loan to the MEI if:

- the City demonstrates that it will not be able to recover the funds due to the permanent closure of the businesses receiving assistance, in which case the MEI would eventually write off a portion of the loan;
- businesses are granted a loan forgiveness under the AERAM component, in which case the City would not have to repay the forgiven portion.

However, conversely, the City may be required to repay the MEI in whole or in part for the PAUPME loan prior to the end of the term (March 2030) if it fails to meet its obligations under the agreement with the MEI.

² A business eligible for this component could convert a portion of its loan into a loan forgiveness (100% of the allowable fixed costs for a maximum of 80% of the amount of the loan granted), which is the equivalent of a subsidy, according to specific conditions established by the PAUPME.

³ Amount of the loan as of September 30, 2021. In March 2022, the MEI added \$15 million to this contract.

In turn, the City has entrusted the responsibility of granting financial assistance to businesses and managing the PAUPME to the PME MTL network,⁴ which is made up of the following six independent non-profit organizations, based on the territories served:

- PME MTL Est-de-l'Île;
- PME MTL Centre-Est;
- PME MTL Centre-Ville;
- PME MTL Centre-Ouest;
- PME MTL Grand Sud-Ouest;
- PME MTL Ouest-de-l'Île.

As a result, the City has entered into delegation agreements with each of the PME MTL centres, pursuant to which the City delegates to the PME MTL centre the requirements it has with the MEI. However, this does not relieve the City of its obligations under the law or under the loan agreement⁵ with the MEI.

The MEI's PAUPME has been renamed in these agreements between the City and each of the PME MTL centres as the Fonds d'aide d'urgence (FAU). These agreements describe the obligations and administrative terms and conditions of the PME MTL centres with respect to the FAU loan granted to them by the City to establish, implement and manage the PAUPME. The FAU loans total \$150 million for the six PME MTL centres and correspond to the total amount of the loan between the MEI and the City. The terms and conditions of the PAUPME emergency assistance are described in the FAU's intervention framework within the delegation agreement.

The amount of the FAU (\$150 million) to be managed by PME MTL, over a 16-month period since the launch of the PAUPME, is significant considering that, as of March 2021, this network has had to manage contributions and loans for the City with a total value of \$138.5 million,⁶ since 2015.⁷ As of September 30, 2021, i.e., 16 months after the PAUPME was implemented within the City, the PME MTL centres had granted \$117.6 million in assistance from the program's various components out of the \$150 million delegated by the City (see Table 1).

⁴ In 2016, the agglomeration of Montréal delegated to these non-profit organizations the exercise of its powers relating to supporting entrepreneurship provided for in s. 126.2 of the *Municipal Powers Act* (agglomeration council meeting of April 21, 2016, resolution CG16 0347).

⁵ Sections 3, 7 and 9 of the loan agreement.

⁶ Source: SDÉ, overview of the PME MTL network.

⁷ In 2015, the City created the PME MTL network, replacing the network of local development centres in Montréal that had played a local development role on the territory.

TABLE 1

Statistics on the Files Accepted by the PME MTL Centres for the Emergency Assistance Program for Small and Medium-Sized Businesses

	PME MTL Centre-Est	PME MTL Centre-Ville	PME MTL Grand Sud-Ouest	PME MTL Centre-Ouest	PME MTL West-Island	PME MTL Est-de-l'Île	Total
Total applications analyzed	584	1,868	516	401	419	409	4,197
Applications accepted	563	1,611	382	274	347	276	3,453
Amount granted	\$20,982,600	\$47,555,400	\$12,155,900	\$11,780,100	\$13,565,000	\$11,570,000	\$117,609,000
Applications denied	21 ^[a]	257	103	60	60	67	568
Withdrawal	-	-	31	67	12	66	176
Percentage of files accepted	96%	86%	74%	68%	83%	67%	82%

^[a] Depending on whether a report from the Service du développement économique (SDÉ) sent to the MEI or an accountability report from PME MTL Centre-Est (PME CE) is used, the number of files refused for this PME MTL centre stands at 21 or 165. The data quality issue is detailed in Section 3.4.1. of this report.

Source: Data compiled by the City's Bureau du vérificateur général (BVG) using documents provided by the SDÉ. Follow-up on PAUPME loans as of September 30, 2021. This file is periodically compiled by all of the PME MTL centres in a shared directory.

As the COVID-19 pandemic evolved, the MEI made several amendments to the terms and conditions of the PAUPME. As of September 30, 2021, there had been nine amendments. This has resulted in changes to the loan agreement between the MEI and the City, including increasing the amount of the City's loan to assist businesses and reflecting changes to the terms and conditions of the assistance provided to businesses. Multiple amendments have been made to the delegation agreements with the PME MTL centres to reflect the changes brought about by the MEI. Amendments to delegation agreements must be adopted by the City before they can be implemented.⁸

At the time of the audit, the moratorium for PAUPME loans ended on September 30, 2021. For the assistance granted under the AERAM component of the PAUPME, the moratorium for the repayment of principal and interest has been extended until March 31, 2022.⁹ Businesses were required to submit the necessary documentation to the PME MTL centres by November 30, 2021, to enable the latter to proceed with the evaluation and confirmation of loan forgiveness by January 31, 2022.

Roles and Responsibilities of the Parties in Managing the Fonds d'aide d'urgence

The role of the City's SDÉ is to establish the City's economic development strategy, strategic plan and development guidelines. The SDÉ maintains relationships with the MEI and other government departments and acts as an intermediary between the MEI and PME MTL. In this capacity, it manages delegation agreements, including those for the FAU. It also provides the PAUPME frameworks and guidelines to PME MTL and forwards the information received from the MEI. It further acts as a guide and coach to PME MTL in implementing the PAUPME and participates in an observatory capacity in certain meetings of the boards of directors of the PME MTL centres.

As far as PME MTL is concerned, its centres carry out the mandate given to them by the City through a bylaw or agreements—including delegation agreements—and manage financial assistance according to the applicable frameworks. The responsibility for evaluating and authorizing applications for financial assistance within each PME MTL centre is assumed by its comité d'investissement exceptionnel (CIE). This committee is composed of the director general of the PME MTL centre and the centre's director of investments or financing, who reports to the director general concerned.

⁸ These various amendments needed to be adopted by the executive committee, the city council and the urban agglomeration council.

⁹ Information from the Québec government's website, "Emergency Assistance for Small and Medium-Sized Businesses (COVID-19)" section, updated on January 11, 2022.

2. Purpose and Scope of the Audit

Under the provisions of the *Cities and Towns Act (CTA)*, we completed a performance audit mission of the Management of the Emergency Assistance Program for Small and Medium-Sized Businesses by PME MTL. We performed this mission in accordance with the *Canadian Standard on Assurance Engagement (CSAE) 3001*, described in the *CPA Canada Handbook – Certification*.

The objective of this audit was to ensure that the PME MTL network's management of the PAUPME granted to the beneficiaries was carried out in compliance with the frameworks established by the City.

The role of the Auditor General of the Ville de Montréal is to provide a conclusion regarding the objectives of the audit. To do so, we collected a sufficient amount of relevant evidence on which to base our conclusion and to obtain a reasonable level of assurance. Our assessment is based on criteria we have deemed valid for the purposes of this audit. They are presented in Appendix 5.1.

The Auditor General of the Ville de Montréal applies *Canadian Standard on Quality Control (CSQC) 1* from the *CPA Canada Handbook – Certification* and, accordingly, maintains a comprehensive system of quality control, including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements. In addition, it complies with the independence and other ethical requirements of the *Code of ethics of chartered professional accountants*, which are founded on fundamental principles of integrity, professional competence and due diligence, confidentiality and professional conduct.

Our audit work covered the period from April 1, 2020, to September 30, 2021. However, with respect to certain aspects, data from before and after this period was also taken into consideration. Our work consisted of conducting interviews with employees, reviewing various documents and conducting surveys that we deemed appropriate to gather the necessary evidence. Our work was mainly carried out between May and December 2021, but we also took into account information that was sent to us up to April 2022.

The work on the files reviewed is based on the documents recorded in the audited files provided by the PME MTL centres. We requested the full documentation having led to the decision to authorize each of the selected emergency assistance loans granted and to the disbursement of the loan. Follow-up was done to confirm that all of the documents had been sent. We carried out our tests on the basis of documents transmitted by the PME MTL centres.

We excluded from the scope of our mission the evaluation and confirmation of the loans forgiven under the AERAM component, as the moratorium on the repayment of principal and interest was in effect until November 30, 2021. The MEI's loan forgiveness evaluation procedure was communicated after September 30, 2021. In addition, the ACEST component was excluded from the audit due to the low number of loans granted.

Most of the work was carried out with the following business units:

- Service du développement économique (Direction Entrepreneuriat);
- PME MTL centres:
 - PME MTL Centre-Est (PME CE);
 - PME MTL Centre-Ville (PME CV);
 - PME MTL Grand Sud-Ouest (PME GSO).

At the end of our work, a draft audit report was presented for discussion purposes to the relevant managers in the audited business units. The final report was then sent to the management of each of the business units concerned for the purpose of obtaining action plans and timelines for the implementation of the recommendations that concerned them. A copy of the final report was also sent, for information purposes, to the Direction générale, the acting deputy director-general – Qualité de vie and the directors general of the PME MTL centres not directly concerned by our audit, the goal being to enable them to implement the recommendations when the situation warrants it.

3. Audit Results

3.1. Insufficient Assessment of the Overall Financial Situation of the Businesses that Received Financial Assistance

When assessing files and granting emergency financial assistance, PME MTL must ensure that the businesses adequately meet the requirements set out in the PAUPME's intervention framework. In order to verify whether the evaluation of the files ensured that the assistance granted complied with the intervention framework and the applicable management frameworks, a random sample¹⁰ of 81 (4%) of the 2,039 files accepted by the three PME MTL centres audited between April 1, 2020, and September 30, 2021, was used. This sample represented an amount of nearly \$3.3 million, or 5% of the total amount granted in assistance by the three PME MTL centres. The distribution of the sample is presented in Appendix 5.2. The objective of the audit was not to express an opinion on the credit risk and the appropriateness of granting assistance to the beneficiaries, but rather to ensure compliance with the PAUPME's management frameworks.

¹⁰ The sample was selected based on the extractions of the PAUPME and the AERAM component received from the three PME MTL centres and not on all of the active loans in the loan management system (Margill) or any other system. The assistance granted through the AERAM component of PME CV is entered in Excel files rather than in the Margill system. For these reasons, we do not have the assurance of having obtained all of the loans.

3.1.1. Failure to Meet Certain Eligibility Requirements

Table 2 presents a profile of the deficiencies observed in relation to compliance with the eligibility requirements for the sample of financial assistance files pursuant to the FAU on behalf of the PAUPME. The files represent loans granted pursuant to the PAUPME and assistance provided pursuant to the AERAM component. A total of 19% of the files making up this sample did not meet at least one of the eligibility requirements based on the information obtained during the work.

TABLE 2

Profile of the Deficiencies Observed in Relation to Compliance with the Eligibility Requirements for a Sample of Financial Assistance Files Pursuant to the Fonds d'aide d'urgence

Non-compliant files by audited centre	PME MTL Centre-Est	PME MTL Centre-ville	PME MTL Grand Sud-Ouest	Total
Number of files analyzed	31	34	16	81
Emergency Assistance Program for Small and Medium-Sized Businesses	14	20	7	41
Assistance for Businesses in Regions on Maximum Alert component	17	14	9	40
ELIGIBILITY NOT MET^[a]				
Number of files that did not meet the eligibility criteria	6	8	1	15
Emergency Assistance Program for Small and Medium-Sized Businesses	2	4	1	7
Assistance for Businesses in Regions on Maximum Alert component	4	4	0	8
Proportion of files that did not meet the eligibility criteria	19%	24%	6%	19%
Emergency Assistance Program for Small and Medium-Sized Businesses	14%	20%	14%	17%
Assistance for Businesses in Regions on Maximum Alert component	24%	29%	0%	20%

^[a] Some files may have multiple cases of non-compliance.

Source: Data compiled by the City's BVG on the basis of information recorded in the audited files provided by the PME MTL centres.

Eligibility Requirements Applicable to Businesses

The FAU's intervention framework details the PAUPME's eligibility requirements that must be met, including that the business must:

- have operated in Québec for at least 6 months;
- not be under the protection of the *Companies' Creditors Arrangement Act* (R.S.C., 1985, c. C-36) or the *Bankruptcy and Insolvency Act* (R.S.C., 1985, c. B-3);
- be closed temporarily, be liable to close or display early warning signs of closing;
- be in the process of maintaining, consolidating or relaunching its operations (which excludes start-ups);
- have demonstrated¹¹ a causal link between its financial or operational problems and the COVID-19 pandemic.

To be eligible for the AERAM component, the business must first be eligible for the PAUPME and be located in a region on high alert. Also, its cash flow must be affected by a closure order for a certain number of days for specific months.

Overall, for the files sampled, all of the businesses financed by the PME MTL centres as part of the PAUPME operate in eligible sectors of activity. Also, all of the sampled businesses that benefited from the AERAM component operate in sectors of activity affected by a closure order.

However, among the assistance granted, there were files that did not meet one or more of the eligibility requirements presented above (see Table 2 above), including, for example:

- one business had been operating for less than six months at the time the application for financial assistance was filed. There was no documentation on file regarding the business's context and financial situation, since the analysis was based on the parent company (PME CV);
- in two cases, the causal link was not commented on in the analysis grid, other than by a box checked to that effect, and for which there is no document showing that the business's financial problems are related to the COVID-19 pandemic (PME CE and PME CV);
- for 9 (11%) of the 81 assistance files observed, there is no justification for the eligibility requirement relating to operations, i.e., whether the business is in the process of maintaining, consolidating or relaunching its activities. It is therefore impossible to determine whether these businesses, which received assistance, complied with this requirement.

¹¹ Definition of demonstrate according to *Le Petit Robert*: to establish the truth of something in an obvious and rigorous way.

Errors or omissions in the information were observed on the assistance file analysis grid approved by the CIE, such as:

- the assistance was granted to a business whereas the analysis grid makes no mention of the causal link (the box is not checked in this regard);
- in the case of another business, it is clearly indicated in the analysis grid that the financing requested is not to meet short-term cash-flow needs to fulfil financial obligations, which corresponds to working capital needs. There are no further arguments as to how the business will use the loan. The loan is nevertheless granted.

In the context of the program's emergency management, the boards of directors of PME CE and PME GSO were informed by their respective directors general in March 2021 that the implementation of the mandate to manage the PAUPME and its AERAM component could have been a source of errors due to the high volume of files processed in an emergency context, combined with the numerous changes the PAUPME underwent, which made the analysis and follow-up very complex. In the case of PME GSO, a resolution was unanimously adopted by its board of directors acknowledging this situation.

Project Eligibility

In addition to qualifying as a business, the organization must demonstrate that the purpose of its application for financing (the project) addresses its working capital needs, determined on the basis of justified and reasonable expenses, whose financial situation is precarious due to cash-flow problems caused by:

- the inability or significantly reduced capacity to deliver products (goods and services) or merchandise;
- problems in obtaining raw materials or products (goods or services).

For the vast majority of the files, evidence of working capital needs was provided. However, for 2 of the 41 PAUPME loan files and 5 of the 40 AERAM component loan files (total of 9%) observed, these needs related to a precarious financial situation due to the COVID-19 pandemic are not clearly demonstrated. The assistance provided was to support businesses whose financial situation became precarious due to the COVID-19 pandemic. Of these 7 files, some did not contain comments in the analysis grid that were supported by reliable and evidentiary information to conclude that the business was facing a cash shortage due to the COVID-19 pandemic. Among the cases raised in the sample was a \$50,000 AERAM component loan that was granted in May 2021 to a restaurant that was not experiencing working capital difficulties, as its forecast showed a cash surplus of between \$500,000 and \$600,000 for the period from January to June 2021.

3.1.2. Documentary Requirements not Met and Insufficient Rationale to Support the Assessment and Granting of the Loan

Insufficient Documentation to Support the Analysis of the File

As prescribed by the SDÉ and the MEI, specific documents are required to assess the business's cash-flow needs, as these documents provide an understanding of the client's profile, including sales and expenses, profitability history (viability), financial structure (e.g., assets, liabilities, equity), obligations to the various governments and the monetary impact of the COVID-19 pandemic.

Although the analysis grid used by PME MTL to evaluate an application for financial assistance indicates the presence of documents supporting the application, these were not tracked for 36 (24 PAUPME and 12 AERAM component) of the 81 files selected (i.e., 44%), as shown in Table 3.

3.2. Management of the Emergency Assistance Program for Small and Medium-Sized Businesses by PME MTL

TABLE 3

Number of Files in the Sample with Insufficient Documentation to Support the Loan Decision

Missing documentation to support the application	PME MTL Centre-Est	PME MTL Centre-Ville	PME MTL Grand Sud-Ouest	Total ^[a]
EMERGENCY ASSISTANCE PROGRAM FOR SMALL AND MEDIUM-SIZED BUSINESSES				
12-month financial statements at 12/31/2019 or more recent are missing or incomplete	3	5	0	8 (10%)
Lack of evidence of the impact of the crisis	4	6	0	10 (12%)
Missing or incomplete proof of payment (GST/QST, payroll deductions, income taxes) (analyzed for the Emergency Assistance Program for Small and Medium-Sized Businesses only)	9	5	3	17 (21%)
Number of files with at least one missing or incomplete document	10	11	3	24 (30%)
ASSISTANCE FOR BUSINESSES IN REGIONS ON MAXIMUM ALERT COMPONENT				
Missing or incomplete annual financial statements and recent interim financial statements	4	5	1	10 (12%)
Lack of evidence of the impact of the crisis	4	2	1	7 (9%)
Absence of the schedule of allowable fixed costs	1	0	1	2 (2%)
Lack of a cash budget	1	0	0	1 (1%)
Number of files with at least one missing or incomplete document	6	5	1	12 (15%)

^[a] Percentage based on the 81 files making up the sample and rounded.

Source: Data compiled by the City's BVG based on information recorded in the audited files provided by the PME MTL centres.

The result is that 18 (8 PAUPME and 10 AERAM component) of the 81 financial assistance files observed (i.e., 22%) had incomplete or missing financial statements. As an example, here are some of the types of problematic situations observed in the evaluation of the application concerning the financial statements:

- Absence of a balance sheet in the annual and/or interim financial statements (3 cases);
- Presence of obsolete financial statements (3 cases);
- No financial statements of the business receiving assistance (2 cases), but presence of financial statements of the parent company on which the analysis is based (1 case).

Evidence of the impact of the crisis linking the business's financial or operational issues and the COVID-19 pandemic is not supported by documentation for 17 (10 PAUPME and 7 AERAM component) of the 81 files observed (i.e., 21%). On many occasions, PME MTL relies on the client's declaration on the application form without any documentary evidence of the impact of the crisis. For cases where the evidence was adequately documented, there was, for example, a comparative sales statement for March 2019 and March 2020 or a comparative income statement for the same period along with the previous year or, for instance, documents indicating that orders had been cancelled.

In addition, 17 (41%) of the 41 PAUPME loan files observed did not have proof of complete payment of government debt, even though this is a requirement on the assistance application file for this type of loan. Businesses with debts owed to governments are eligible for the PAUPME, provided they can demonstrate that a payment agreement has been reached with the government and that a comprehensive analysis of their financial health is conducted during the review of the file. In the case of almost half of the PAUPME loans, PME MTL could not know whether the business had debts owed to governments and was therefore not able to conduct the overall financial analysis required by the MEI.

During our audit work, PME CV was not able to provide us with documents for 4 PAUPME loan files, because, according to the justification provided, these documents had not been archived and would no longer be available after the electronic platform had been replaced in June 2020. Thus, PME CV cannot in fact demonstrate to the City and the MEI that the program was properly managed in the case of these files.

Considering the number of files in the sample for which the required documents were missing, according to the program requirements, we wonder how the PME MTL centres were able to determine that these businesses were eligible for the PAUPME. It should be noted that the annual or interim financial statements make it possible to evaluate, among other things, the company's financial problems in relation to the COVID-19 pandemic and its cash-flow needs, as well as the business's financial situation.

Lack of Consent to Conduct Personal Credit Checks on the Shareholder

In a complementary document intended to help PME MTL with the PAUPME titled “Questions et réponses,” the SDÉ recommended that PME MTL carry out a personal credit investigation of the business’s shareholder when evaluating the file. This is a sound management practice, as it allows the lender to shed light on the shareholder’s credit behaviour by looking at how the shareholder repays credit obligations to various creditors.

While our work shows that this recommendation was applied by PME MTL for nearly 60% of the files audited, it nevertheless reveals that for 13 (27%) of the 48 loan files in the sample that had been subject to such a personal credit check, the check was carried out without first obtaining the written consent of the person concerned. According to the *Act respecting the protection of personal information in the private sector* (ARPP),¹² PME MTL was required to obtain the shareholder’s consent¹³ to collect and use personal information¹⁴ for the purpose of evaluating the business’s application for financial assistance. Table 4 shows the distribution of cases in which a personal credit check was conducted without consent.

¹² The object of the *Act respecting the protection of personal information in the private sector* (ARPP) (chapter P-39.1) is to establish particular rules with respect to personal information relating to other persons which a person collects, holds, uses or communicates to third parties in the course of operating an enterprise within the meaning of article 1525 of the *Civil Code* (section 1).

¹³ Section 14 of the ARPP: “Consent to the collection, communication or use of personal information must be manifest, free, and enlightened, and must be given for specific purposes. Such consent is valid only for the length of time needed to achieve the purposes for which it was requested. Consent given otherwise than in accordance with the first paragraph is without effect.”

¹⁴ “Personal information is any information which relates to a natural person and allows that person to be identified” (Section 2 of the ARPP).

TABLE 4**Proportion of Sampled Files with a Personal Credit Check**

Personal consent to conduct a personal credit check	PME MTL Centre-Est	PME MTL Centre-Ville	PME MTL Grand Sud-Ouest	Total
EMERGENCY ASSISTANCE PROGRAM FOR SMALL AND MEDIUM-SIZED BUSINESSES				
Number of loans granted pursuant to the Emergency Assistance Program for Small and Medium-Sized Businesses with a personal credit check	10	17	3	30
Number of loans granted pursuant to the Emergency Assistance Program for Small and Medium-Sized Businesses without evidence of a signed consent	1	0	2	3
ASSISTANCE FOR BUSINESSES IN REGIONS ON MAXIMUM ALERT COMPONENT				
Number of loans granted pursuant to the Assistance for Businesses in Regions on Maximum Alert component with a personal credit check	4	12	2	18
Number of loans granted pursuant to the Assistance for Businesses in Regions on Maximum Alert component without evidence of a signed consent	1	8	1	10
Percentage of loans granted pursuant to the Emergency Assistance Program for Small and Medium-Sized Businesses and the Assistance for Businesses in Regions on Maximum Alert component without evidence of consent	14%	28%	60%	27%

Source: Data compiled by the City's BVG on the basis of information recorded in the audited files provided by the PME MTL centres.

The irregularities observed are detailed as follows:

- One individual's consent was obtained whereas the personal credit check was conducted for a different individual (2 cases);
- Consent was obtained after the personal credit check was conducted (1 case);
- Lack of consent to conduct a personal credit check for AERAM component loans whereas a check was indeed conducted (9 cases);
- A personal credit check was conducted in the case of an additional application pursuant to the AERAM component without evidence of consent (1 case).

The majority of the irregularities (9 out of 13 cases, or 69%) can be explained by the fact that the application form used at the time for the AERAM component (developed by PME MTL on the basis of an MEI template) did not provide for obtaining the consent of the person concerned for the purpose of conducting a personal credit check. In fact, the AERAM component application form asks for consent to be obtained to check whether the shareholders had previous convictions and to check the credit rating of the business, unlike the PAUPME form, which asks for consent to check personal credit. Thus, for the AERAM component loans, the shareholder did not consent to a personal credit check. The form has since been modified. As for the other situations of irregularities, PME MTL states that the consents may have been obtained verbally in certain cases or for other related business files but is, however, unable to provide evidence of this.

Insufficient Rationale to Support the Assessment and Granting of the Loan

Table 5 presents a profile of the deficiencies observed in relation to the assessment and granting of loans for the sample of financial assistance files pursuant to the FAU. The files represent loans granted pursuant to the PAUPME and assistance provided pursuant to the AERAM component. Regarding the analysis of the business's overall financial situation, the arguments for authorization do not demonstrate that the analysis's various elements were taken into consideration in the case of 74 (91%) of the 81 files selected. Our work was based on the arguments documented in the analysis grid used to demonstrate that the elements were evaluated by the PME MTL centre. While these elements may have been taken into consideration during the evaluation, we were not able to find any evidence that they had been commented on by the analysts of the PME MTL centre, which raises questions about granting assistance in the context of a large volume of files.

TABLE 5

Proportion of Sampled Files with Insufficient Analysis of the Overall Financial Situation of the Business to Support the Decision to Grant the Loan

Non-compliant files by audited centre	PME MTL Centre-Est	PME MTL Centre-ville	PME MTL Grand Sud-Ouest	Total
Number of files analyzed	31	34	16	81
Total number of files examined under the Emergency Assistance Program for Small and Medium-Sized Businesses	14	20	7	41
Total number of files examined under the Assistance for Businesses in Regions on Maximum Alert component	17	14	9	40
Elements of analysis considered^[a]				
Reconciliation of expenditures (justified and reasonable) not demonstrated	24	32	11	67
Medium-term prospects of profitability not demonstrated (based on history)	11	13	4	28
Very limited comments on the business's financial health	16	26	3	45
Unjustified amortization of more than 36 months	6	1	4	11
Number of files with an insufficient overall analysis	28	33	13	74
Emergency Assistance Program for Small and Medium-Sized Businesses	12	20	7	39
Assistance for Businesses in Regions on Maximum Alert component	16	13	6	35
Proportion of files with insufficient analysis	90%	97%	81%	91%
Emergency Assistance Program for Small and Medium-Sized Businesses	86%	100%	100%	95%
Assistance for Businesses in Regions on Maximum Alert component	94%	93%	67%	88%

^[a] Some files may have multiple cases of non-compliance.

Source: Data compiled by the City's BVG on the basis of information recorded in the audited files provided by the PME MTL centres.

Insufficient Demonstration of Expenditure Reconciliation

Of the 67 files for which expenditure reconciliations were not demonstrated, 34 (83%) of the 41 PAUPME loans reviewed did not have sufficient evidence to demonstrate that funding was determined on the basis of justified and reasonable expenditures. For example, a \$40,000 PAUPME loan was granted to a business selling food products that was unable to participate in trade shows. The loan authorization does not demonstrate a reconciliation between the expenditures reported at the time the application was filed and the expenditure history in the financial statements. In fact, annual sales total \$46,000 in February 2020 and \$51,000 in August 2020 (six months later). There is no history of profitability on file and no comment on the business's repayment capacity and the outlook of its financial viability. For the AERAM component, the analyses carried out by the audited PME MTL centres do not show a reconciliation between the allowable fixed costs (equivalent to expenses) submitted by the business and its financial statements. Under the program, non-allowable fixed costs will not be forgiven and must be repaid at maturity. It is therefore important that these two types of fixed costs be clearly distinguished during the analysis of the application.

Also, of these 67 files, for 33 AERAM component loans (i.e., 83% of the 40 files reviewed), the loan amount granted was mainly based on the expenses presented by the business in the monthly expense table (including allowable fixed costs) without any argument for the reasonableness of the expenses, despite certain visible inconsistencies. As an example, \$50,000 in AERAM component assistance was granted to a business with expenses that are not eligible for the loan forgiveness but were included in the estimate of the forgivable amount, including \$6,000 used to pay for vehicle leasing costs and to make monthly payments on a commercial loan to a financial institution for the period of October through December 2020. Also, in the case of another AERAM component loan of \$39,000 granted to a restaurant, the authorization refers to incompatible charges for allowable fixed costs including mortgage interest charges and three months' rent.

Medium-Term Prospects of Profitability Not Demonstrated

In general, the comments entered in the analytical grid were not sufficient to conclude that the PME MTL centre had adequately assessed the borrower's medium-term viability. When the viability assessment was presented, either the financial information was incomplete or the link between the business's financial structure and its ability to repay the loan was not explicit. For example, in the case of a \$50,000 AERAM component loan granted to a business, the authorization concludes that the business has an excellent repayment capacity. Nonetheless, according to the 2019 financial statements, the business had experienced financial losses of 5% to 10% for the past 2 years, directly impacting its ability to repay.

Based on the additional analysis performed, for 28 (35%) of the 81 loans audited, borrowers were in deficit in the year prior to the COVID-19 pandemic (i.e., 16 [39%] of the 41 firms that received a PAUPME loan and 12 [30%] of the 40 firms that received assistance from the AERAM component). Two examples can illustrate this:

- A \$25,000 PAUPME loan to a business that had had no revenue since August 2019, i.e., more than eight months before the COVID-19 pandemic. The business says the COVID-19 pandemic reduced its ability to find revenue streams following a change in the business model;
- A \$50,000 PAUPME loan is granted to a business for which the authorization mentions serious doubts about the business's ability to repay, since the business is in arrears with various governments and the shareholder has a poor credit history. In addition, the financial statements for the last 12 consecutive months were not tracked because the application platform was changed.

While the financing program does not preclude lending to businesses in deficit, the assessment of the business's viability is a factor to be considered, primarily in the case of PAUPME loans, as these cannot be forgiven.

Very Limited Comments on the Business's Financial Health

For 45 (55%) of the 81 files reviewed, the comments on the business's financial health were brief. The financial analysis was either limited to reproducing a few items from the balance sheet and income statement, without drawing any conclusions about the business's financial risk, its medium-term viability and its ability to meet its obligations, or to identifying inconsistencies. For example, a \$24,000 AERAM component loan was granted to a business incorporated less than 6 months before the date of the application. The analysis of this file focused only on the financial statements of the parent company, without any financial information on the new daughter company.

Also, a loan from the AERAM component to a restaurant that was initially refused because of its precarious financial situation was reconsidered by the CIE without any argument and subject to certain conditions defined in the analysis grid, which we were not able to demonstrate were met.

Unjustified Amortization of More than 36 Months

For 13 (32%) of the 41 PAUPME loans, the loan amortization, excluding the program's repayment moratorium, exceeded the 36-month standard and went up to a period of 60 months. Also, for 11 of these 13 files (85%), no evidence of an analysis of the client's ability to repay was found, nor was there any justification provided in the analysis grid to support this exception.

An incomplete or poorly documented assessment may miss risks that should otherwise have been factored into the decision to grant the loan and possibly adjust the amount as well as the terms and conditions to mitigate the impacts of such risks.

For the three PME MTL centres audited, the comments justifying the financial analysis are of variable geometry and do not always make it possible to properly capture the business's risk and support granting the loan. In addition, the insufficiency of the analyses, particularly with regard to compliance with eligibility requirements, as well as the supporting documentation, does not provide assurance that the assistance granted to the beneficiaries was analyzed and authorized in compliance with the applicable management frameworks.

It should also be noted that in its 2021–2022 report to the National Assembly,¹⁵ the Auditor General of Québec notes a different interpretation of the eligibility criteria and the varying requirements concerning the information requested to process financial applications under the PAUPME by the audited regional county municipalities.

3.1.3. Reservation of the Bureau du vérificateur général to Conduct Future Work

Although several shortcomings were observed in PME MTL's management of the program and granting of loans, due to the uncertain future of this MEI program, no recommendation was made to PME MTL regarding the findings raised in this section of the report. Should a similar program be introduced in the future, the City should put in place more stringent controls to ensure its sound management. The BVG could re-audit PME MTL to ensure that it has changed its practices, thereby reducing the risk to the City of not meeting its commitments to the Québec government.

3.2. Non-Compliance of Loan Agreements and Insufficient Due Diligence Regarding Loan Disbursements

3.2.1. Non-Compliance with Certain Clauses of the Delegation Agreement between PME MTL and the Ville de Montréal in the Loan Agreements

Waiver of Certain Commitments in the Ville de Montréal-PME MTL Delegation Agreement in the Contract Templates

The delegation agreement requires that the terms and conditions for the disbursement and repayment of aid to businesses be specified in a loan agreement signed with the beneficiary businesses. The agreement must specify the terms and conditions of the loan and forgiveness of the loan, the terms and conditions of repayment of the financial assistance and the responsibilities of both the lender and the beneficiary.

¹⁵ Chapter 5 of the 2021–2022 report of the Auditor General of Québec to the National Assembly, November 2021.

The agreement also provides a systematic six-month moratorium on all loan contracts.

Although the PME MTL centres have committed in the delegation agreement to mention to the beneficiary that it is funded by the City and the MEI, the PME CE and PME GSO do not indicate this in their loan agreements. Also, the common loan agreement templates for the PME MTL centres validated by the SDÉ do not indicate that the funding is provided by the City and the MEI. However, PME CV has customized its PAUPME loan contract template to specify the source of the funding.

Reconciliation of Loan Agreements with Comité d'investissement exceptionnel Approvals

In the delegation agreement, the PME MTL centres have committed to having the CIE approve the financing of businesses that meet the eligibility requirements. Therefore, the loan agreements must reflect the terms and conditions of the CIE's loan.

The terms and conditions for repayment of the CIE-approved loans were met for 94% of the selected loans.

Justifications for changes to the terms and conditions approved by the CIE were not tracked for files that did not meet those terms and conditions.

Incorrect Valuation of Interest and Duration of the Moratorium in the Loan Agreements

To establish the loan repayment schedule, the PME MTL centres use the disbursement date entered in the Margill application.¹⁶ This schedule shows the amounts to be paid by the beneficiaries on specific dates. The calculation of the repayment (principal and interest) is based on the date of disbursement, the interest rate as well as the amount and amortization period of the loan.

The loan disbursement dates entered in the loan management software do not always correspond to the effective dates of the transfers of funds to the businesses. For example, in the case of:

- PME CE, 11 (35%) of the 31 loan files in the sample (4 PAUPME loans and 7 AERAM component loans) showed a gap of between 7 and 18 days for PAUPME loans and between 7 and 102 days for AERAM component loans, between the date of disbursement recorded in the loan management software and the actual date on which the funds were disbursed to the beneficiaries;
- PME GSO, the only two files audited show a difference of 74 days for the PAUPME loan and 21 days for assistance from the AERAM component, between the date of transfer to the beneficiary and the date of disbursement in the loan management software.

¹⁶ Loan management software used to establish the terms of repayment of loans, i.e., the calculation of monthly payments (principal and interest).

This has an impact on the interest charges for PAUPME loans due to their capitalization after the first six months of the moratorium. For the AERAM component, no interest had been capitalized at the time of our audit.

As for PME CV, the situation was different because it disbursed financial assistance by issuing cheques. These were to be signed by a board member in batches of several cheques at a time and remitted to the beneficiaries in exchange for the signed agreements. Because of this process, we were unable to verify that the beneficiary had possession of the cheque on the day the agreement was signed.

Table 6 illustrates three cases of PAUPME loans for which the date the cheque was remitted to the client cannot be determined with certainty.

TABLE 6

PME MTL Centre-Ville PAUPME Loan Files with Inconsistent Disbursement Dates

	Date of disbursement entered in the system (A)	Date of the cheque	Date of signature of the agreement (B)	Date of check cashing by the beneficiary	Months of interest overpayment capitalization (B-A) ^[a]
Case A	05/30/2020	05/30/2020	07/27/2020	09/30/2020	2
Case B	05/30/2020	05/31/2020	07/16/2020	07/24/2020	1
Case C	05/30/2020	05/30/2020	07/08/2020	07/17/2020	1

^[a] The number of months in excess for interest capitalization is rounded to the nearest whole number, and the cases observed used the 10th day of the month following the date of disbursement in the system (column A) as the start date for the calculation.

Source: Data compiled by the City’s BVG on the basis of information recorded in the audited files provided by the PME MTL centres.

Since a moratorium on the repayment of principal and interest applies for the first six months, if the loan is entered into the loan management software before the beneficiary signs the agreement, the actual moratorium to which he or she will be entitled will be shorter and they will have to pay more interest than required. This situation remains despite the fact that the moratorium on the repayment of principal was extended to September 30, 2021.

By not adhering to the terms and conditions of the loan as set out in the delegation agreement and as approved by the CIE, the PME MTL centres are in breach of one of their commitments to the City.

3.2.2. Irregularities in the Disbursement of Financial Assistance

By virtue of the delegation agreements, the PME MTL centres undertake to use the assets of the FAU solely for the purposes of carrying out the activities of this program, in accordance with the conditions set out therein. Due diligence prior to the disbursement of the loans extended to the businesses helps to meet this commitment, particularly by ensuring that the loan agreement is signed by the beneficiary and that authorization is obtained to disburse the loan.

Loans Disbursed with Authorizations

The vast majority of the financial assistance was disbursed after the loan agreements had been signed by the beneficiaries and the disbursements had been approved by the authorized persons. This approval is part of the control system established by the PME MTL centres. All approved disbursements were tracked for PME GSO and PME CE.

For PME CV, payments were made by cheque, and there was a request for the preparation of the cheque by a person who had not authorized the loan and could not sign the cheque. Such a request acts as a control mechanism, as the director general authorizes the loan with a member of the CIE and signs the cheque along with a director. Although all of the cheques in the sample were traced and signed by the director general of the PME MTL centre, the cheque preparation request was traced for 17 of the 20 PAUPME loan files analyzed. We did not find evidence of the full implementation of this control mechanism for 3 (15%) of the 20 files analyzed.

Assistance for Businesses in Regions on Maximum Alert Disbursed by PME MTL before the Adoption of the Agreements by the Bodies of the Ville de Montréal

The addition of the AERAM component to the PAUPME entrusted to the City by the MEI led to the updating of the contract signed by these two parties and adopted¹⁷ on December 17, 2020, by the City's decision-making bodies. This constitutes the City's acceptance of the terms and conditions of the AERAM component proposed by the MEI.

Amendments to the delegation agreements must usually be adopted by the City before they can be implemented. However, a review broader in scope than the sample used for our audit reveals that 237 (17%) of the 1,400 AERAM component loans (see Table 7) in the AERAM component loan portfolio of the three PME MTL centres audited were disbursed prior to¹⁸ the adoption by the City of the decision to delegate the management of the FAU.

¹⁷ December 17, 2020, resolution of the urban agglomeration council.

¹⁸ Based on the dates of the disbursements entered in the loan management software.

TABLE 7

Proportion of the Assistance for Businesses in Regions on Maximum Alert Component Loans Disbursed Before December 17, 2020 by PME MTL Centre Audited

Loans disbursed by audited centre	PME MTL Centre-Est	PME MTL Centre-Ville	PME MTL Grand Sud-Ouest	Total
Total loans disbursed as of 08/30/2021	316	930	154	1,400
Loans disbursed before 12/17/2020	106	68	63	237
Percentage of loans disbursed before 12/17/2020	34%	7%	41%	17%
Loans disbursed between 12/17/2020 and 01/28/2021	0	207	0	207
Percentage of loans disbursed between 12/17/2020 and 01/28/2021	0%	22%	0%	15%

Source: Data compiled by the City’s BVG on the basis of information recorded in the audited files provided by the PME MTL centres.

No evidence of written communication from the SDÉ to PME MTL was provided indicating that the PME MTL centres were not to sign or disburse AERAM component loans prior to the adoption by City authorities of the updated loan agreement between the MEI and the City. Similarly, PME MTL was unable to demonstrate that it had obtained authorization to disburse the loans prior to the adoption of the updated agreement by the City.

Moreover, given the crisis context, the SDÉ made the decision to allow the PME MTL centres to sign loan agreements and disburse loans between December 17, 2020, and January 28, 2021, i.e., without waiting for the update of the City’s delegation agreement with PME MTL, which was adopted on January 28, 2021. Only PME CV disbursed 207 additional AERAM component loans (based on the disbursement date provided by the PME MTL centre) during this period.

Prematurely signing loan agreements with businesses may not fully reflect the terms and conditions required by the MEI and creates a risk that the City may have to repay the loan to the MEI if the business is unable to do so.

3.2.2.A. Recommendation

We recommend that the Service du développement économique implement control mechanisms to ensure that the PME MTL centres make use of the powers delegated to them as part of the Fonds d’aide d’urgence only after the adoption of the delegation agreements by the Ville de Montréal’s authorities.

3.3. Follow-up

3.3.1. Mechanisms for Tracking Disbursed Emergency Assistance Not Defined and/or Not Applied

No Tracking Mechanisms in Place to Obtain Financial Statements from the Beneficiaries of Emergency Assistance

Sound loan management practice requires that the portfolio be monitored periodically, as risk changes over time. Borrowers' financial statements are obtained through rigorous monitoring to ensure that the borrowers' financial situation does not deteriorate. Considering the exceptional and circumstantial economic situation brought on by the COVID-19 pandemic, such monitoring could proactively identify signs of deterioration and make it possible to act accordingly.

The PAUPME loan agreement and that of the AERAM component of PME MTL contain a section detailing the borrower's commitments. Among the commitments, it is specified that:

"l'Emprunteur déclare et s'engage à:

Fournir au Prêteur des états financiers à tous les 12 mois suivant le versement (ou au plus tard 90 jours après la fin d'année financière pour le prêt PAUPME de PME CE) ainsi que les preuves des remises gouvernementales (TPS/TVQ/DAS) et ce durant la durée de la convention;"

In addition, the loan agreement provides that in the event of the occurrence of a case of default referred to in the appropriate section of the loan agreement:

"l'Emprunteur [...] sera déchu du bénéfice du terme et le solde entier (capital et intérêt) deviendra immédiatement dû et exigible et mis en demeure."

Among the cases of default identified in the agreement, it is specified that:

"Si l'Emprunteur fait défaut de déposer ou de soumettre au Prêteur dans les délais prescrits, tout document ou rapport dont le dépôt est requis aux termes des présentes.

Si l'Emprunteur fait défaut de respecter une quelconque de ses obligations aux termes des présentes."

As stipulated in the delegation agreement, PME MTL is responsible for taking all measures to ensure the proper administrative operation of the FAU and to ensure that the terms and conditions and the clauses of the loan agreement are respected and that the Borrower does not become in default. For this reason, each PME MTL centre must have follow-up mechanisms in place to obtain financial statements annually and process the information received.

However, according to the information obtained, there were no mechanisms in place to follow up on the financial statements and government receivables

of the businesses benefiting from the PAUPME before September 30, 2021, for PME CE and PME CV. As for PME GSO, there is a documented tracking mechanism in place, but its application could not be demonstrated for the period before September 30, 2021. For the three PME MTL centres, the treatment of the information received, such as assessing an update or a documented annual review, is not yet determined. The same is true when it comes to the documented analysis report format.

In short, contrary to the expectations of the delegation agreement, the PME MTL centres are not able to enforce certain conditions of the loan agreement seeing as they do not obtain the requested documentation. Thus, the PME MTL centres are not aware of the evolution of the PAUPME aid portfolio, which hinders the possibility of a proactive intervention in the event of signs of deterioration.

Procedure for Recovery of Defaulted Loans Not Defined Since Implementation of the Emergency Assistance Program for Small and Medium-Sized Businesses

As a result of the delegation agreement, the PME MTL centres must undertake all steps and remedies, including legal action, to ensure that the businesses comply with the loan agreements and any other commitments they have entered into under the FAU. The City did not require a guarantee (e.g., a bond, security interest) to mitigate the risk of business default for the PAUPME subsidies.

Typically, any lender will have collection guidelines and procedures in place to recover money from borrowers who fall behind in their payments. In addition, the implementation of management tools helps to monitor cases of delinquency. Although the PME MTL centres audited had collection procedures for all the funds they manage, they are not specifically applicable to the PAUPME and AERAM component loans, particularly since no guarantee is taken on these loans.

The PME MTL centres use the Perceptech application¹⁹ to manage preauthorized monthly loan repayments. This application provides management tools to track loan portfolio delinquency. The PME MTL centres we met with use management reports (rejects-anomalies) to identify missed payments. These reports are provided to the deputy director-general to follow up on the delinquency and contact the clients involved to remedy the situation.

At the time of our audit, moratoriums on the repayment of financial assistance under the PAUPME remained in effect. The moratorium on the repayment of principal for PAUPME loans ended on September 30, 2021, while the moratorium for AERAM component loans was extended to March 31, 2022.

Although the moratoriums were in effect at the time of our audit, the PME MTL centres we met with and the SDÉ stated that they did not have defined collection processes and procedures for handling delinquent loans under the PAUPME. It should be noted that PAUPME emergency loans differ from the loans usually extended by PME MTL

¹⁹ Preauthorized payment management system for monthly loan payments (transfers of funds in lieu of payments by cheque).

in that they are not accompanied by a bond or security (the equivalent of a guarantee) to mitigate the risk of financial loss. As of September 30, 2021, the total loans granted amounted to \$117.6 million for a total of 3,453 files.

3.3.1.A. Recommendation

We recommend that PME MTL Centre-Est, PME MTL Centre-Ville and PME MTL Grand Sud-Ouest implement a follow-up mechanism to obtain the financial statements and other documents indicated in the loan agreement and process the information obtained, for example through an annual review or an update of the file, for unfunded financial assistance, in order to monitor the emergency assistance portfolio and identify signs of deterioration so that they can take proactive action.

3.3.1.B. Recommendation

We recommend that the Service du développement économique obtain from the PME MTL Centre-Est, PME MTL Centre-Ville and PME MTL Grand Sud-Ouest centres the collection procedure established for the Emergency Assistance Program for Small and Medium-Sized Businesses, detailing, in particular, the various activities involved in collecting defaulted loans and the related supporting documents in order to demonstrate the collection procedures applied in an optic of sound management.

3.3.2. Inadequate Oversight of the Delivery and Management of the Emergency Assistance Program for Small and Medium-Sized Businesses by the Service du développement économique

The development of work tools and the implementation of the PAUPME were done in an emergency context for which the SDÉ accompanied the PME MTL network. The volumes of applications analyzed and of assistance awarded under the FAU are significant for the years 2020 and 2021, not including the multiple changes made to the PAUPME by the MEI. Although the City delegated the establishment and management of the PAUPME to PME MTL, it is not relieved of its contractual obligations towards the MEI. Consequently, the SDÉ would be expected to monitor the management of the FAU to ensure compliance with the intervention framework, as well as PME MTL's contractual obligations as prescribed in the delegation agreement.

Although the SDÉ was planning to conduct random audits of the PAUPME files, according to the information received, it has yet to implement monitoring mechanisms to ensure compliance with the delegation agreement with respect to managing the FAU. At most, it has requested periodic, mostly weekly, accountability reports from the PME MTL centres.

3.2. Management of the Emergency Assistance Program for Small and Medium-Sized Businesses by PME MTL

Our work shows that there are deficiencies in compliance with the obligations and administrative clauses of the delegation agreement with respect to the FAU, including the following:

- The contract with the MEI specifies that if the management of the PAUPME is contracted out to a delegated organization, that entity will be required to adopt a code of ethics and professional conduct that meets the City's requirements. When PME MTL was created, its centres adopted rules of ethics and professional conduct to the satisfaction of the City. The SDÉ participates in several meetings of the boards of directors of the PME MTL centres to ensure governance. However, according to the documents obtained, it appears that the rules of ethics and professional conduct are not applied by the PME MTL centres as indicated in their general regulations. Consequently:
 - PME CV was unable to demonstrate that it obtains annual signatures on codes of ethics and declarations of interest for employees involved in processing the PAUPME, and the conflict of interest policy for the two assistant directors was signed in 2015 and 2016;
 - the code of ethics and professional conduct at PME GSO is not signed annually by employees and directors as prescribed in the general regulations.
- The presentation of the monthly summary of applications for financial assistance approved by the CIE for ratification by the board of directors, as prescribed by the administrative procedure of the FAU's intervention framework, is not respected by any of the three PME MTL centres audited;
- PME GSO, although it has had a separate bank account for the FAU since November 30, 2020, uses the bank account of the PME MTL fund (as well as the bank account of the Fonds locaux d'investissement [FLI] for 2020, a fund used to finance entrepreneurship projects) to disburse aid to businesses and deposit preauthorized debits. PME GSO maintains separate accounting for the FAU but uses inter-fund transfers between different funds to record these transactions. This means that the clause²⁰ of the delegation agreement which states "*...tenir une comptabilité distincte et un compte bancaire distinct des sommes inscrites au crédit du Fonds d'Urgence*" is not respected. As of April 1, 2022, the situation had been resolved, and PME GSO was making its first transfers directly from the separate bank account for the FAU.

By not adequately monitoring compliance with the various obligations of the FAU delegation agreement, the SDÉ cannot intercept management shortcomings and non-compliance with the terms and obligations of the FAU by PME MTL.

²⁰ Section 2, Clause #2.9 (titled "Engagement de l'organisme") of the loan to PME MTL for the establishment of the FAU in the 2021–2025 delegation agreement.

3.3.2.A. Recommendation

We recommend that the Service du développement économique implement monitoring mechanisms to ensure that the requirements and administrative provisions relating to the Fonds d'aide d'urgence detailed in the delegation agreement concluded with the PME MTL centres, including the intervention framework of the Fonds d'aide d'urgence, are respected, in order to ensure that the Ville de Montréal properly manages financial assistance under the Emergency Assistance Program for Small and Medium-Sized Businesses.

3.4. Accountability

3.4.1. Incorrect Information for External Reporting on Cumulative Claims (Status)

The delegation agreement between the City and PME MTL details the reports, accounts and other documents to be submitted to the City in terms of deadlines and format, as well as the requirements and tools made available to the PME MTL centres by the City or the MEI.

Since the implementation of the FAU for the PAUPME from May 2020 to September 2021, several of the City's accountability requirements have been removed or simplified, in part because the PAUPME was implemented in an emergency context and the SDÉ claims to have relied on the accountability requirements already in place for other programs included in the delegation agreement. Thus, over a 16-month period, the changes represent:

- 6 changes in the required reports and documents;
- 8 withdrawals of required reports and documents;
- 4 changes in the content of the required reports and documents;
- 2 withdrawals in the content of the required reports and documents;
- 8 changes to deadlines.

However, some of the initial accountability requirements were required by the City in order to implement controls for the PAUPME managed by the PME MTL centres.

The SDÉ has a mechanism in place for tracking accountability requirements for 2020 and 2021. However, in 2020, the SDÉ analyzed five of the eight accountability requirements, whereas in 2021, six of the seven existing requirements were assessed. The incompleteness of these mechanisms for tracking requirements are said to be explained by the fact that the SDÉ was not able to validate all the requirements requested and by PME MTL not being able to provide all of the information requested. It should be noted that the SDÉ took steps at the beginning of 2021 to obtain the resources and specific expertise required to carry out monitoring for the management of the FAU by the PME MTL centres.

3.2. Management of the Emergency Assistance Program for Small and Medium-Sized Businesses by PME MTL

Among the accountability requirements, a cumulative summary of the financial assistance granted under the FAU is required on a weekly basis,²¹ which is the status as prescribed by the MEI. This document presents the loans and forgivenesses granted by business under the PAUPME. The assistance is compiled and recorded in a spreadsheet file provided by the MEI, which is updated weekly by the PME MTL centres. The SDÉ verifies that each PME MTL centre enters the required information in its respective section. It does not, however, verify the data entered or establish whether loans were granted in compliance with the program. In the event of errors identified by the SDÉ, corrections could be made by the PME MTL centres.

Based on the work performed during our audit, the following irregularities were identified in the data presented in the September 30, 2021, status report for the entire PME MTL network submitted to the MEI:

- the cumulative amount of the assistance granted is incorrect because columns have been shifted for 54% of the rows in the file, with the result that the column showing the amount of assistance does not contain all the numbers;
- there are 9 cases where the date of approval (decision) by the CIE is prior to the implementation of the program;
- there are 42 cases where the date of creation of the business is missing, of which 41 with PME CE;
- there are 18 cases in which there is less than 6 months between the date of the creation of the business and the date of the CIE's decision, whereas a condition of eligibility for the program is that the business have been in operation for at least 6 months.

In addition, the PME MTL centres were late in submitting their weekly monitoring reports to the SDÉ, which indirectly involved the transmission of information to the MEI that was either incomplete or not up to date. Among 14 status transmissions to the MEI between January and September 2021, there are six overdue situations for all PME MTL centres combined. As a result, the accountability report provided by the SDÉ to the MEI does not reflect the true status of the program, and the City is not meeting some of its obligations towards the MEI.

²¹ The loan agreement between the MEI and the City requires monthly accountability status reporting. However, this accountability was produced weekly at the request of the MEI during the period of our audit. Since October 2021, the status report has been produced monthly as prescribed.

3.4.1.A. Recommendation

We recommend that the Service du développement économique implement mechanisms for monitoring and validating the accountability documents received from the PME MTL centres, to ensure that the accountability requirements are met in full and that the information transmitted to the Ministère de l'Économie et de l'Innovation and the Ville de Montréal provides a picture that ensures the integrity and reliability of the data.

3.4.2. Accountability to Ville de Montréal Decision-Makers Limited to the Volume of Assistance Granted by the Emergency Assistance Program for Small and Medium-Sized Businesses

A weekly report²² is made to the City's decision-makers (i.e., to the economic development officer, a member of city council and the deputy director-general – Qualité de vie) by the SDÉ, which sends a cumulative report of the assistance granted from all of the emergency programs. This report includes the number of applications received, analyzed, refused and disbursed for the PAUPME, as well as the balances of funds available in the FAU program.

In March 2021, the SDÉ made an annual accounting to the urban agglomeration council and the MEI by filing the "Rapport annuel des activités réalisées du 1^{er} janvier au 31 décembre 2020," as required under the financial contribution agreement.²³ This report mainly reflects activities related to the "Montréal All Geared up for tomorrow"²⁴ strategy and emergency measures in the context of the pandemic. Of these measures, the volume of activity of the MEI's PAUPME is presented in terms of budgeted loans and loans made as of December 31, 2020 (in amounts and numbers).

According to the information obtained, accountability to the decision-makers for the FAU is focused on the volume of activity of financial assistance granted and not on the management of the FAU. With the delegation of the management of the FAU to the PME MTL network (\$150 million to date), good governance practices would dictate that the SDÉ periodically report to decision-makers on the management of the FAU, given this fund exceeds the \$138.5 million in contributions and loans managed by PME MTL for the City since 2015. This accountability should not be limited to the volume of activity and fund balances, but rather to compliance with the obligations stipulated in the delegation agreement for the FAU.

²² The frequency of reporting to the City's decision-makers was weekly for the audited period. Since October 2021, the frequency of reporting to the City's decision-makers has been biweekly.

²³ Financial assistance agreement to provide financial assistance to implement the City's economic development strategy (Réflexe agreement between the MEI and the City) dated March 2018.

²⁴ The City's economic development strategy, titled "2018–2022 Economic Development Strategy – Montréal All Geared up for tomorrow," has five orientations.

3.2. Management of the Emergency Assistance Program for Small and Medium-Sized Businesses by PME MTL

Considering that the City has obligations towards the MEI and although it delegates the management of the FAU to PME MTL, accountability to decision-making bodies limited to the volume of activities is insufficient. As a result, decision-makers are not in a position to ensure that obligations towards the MEI for the \$150 million loan are being met and to have all the information they need to make informed decisions regarding the management of the FAU.

3.4.2.A. Recommendation

We recommend that the Service du développement économique carry out periodic accountability reporting in order to inform the decision-making bodies and, by extension, the City's elected officials and managers concerned of the management of the Fonds d'aide d'urgence and of compliance with the obligations of the PME MTL centres under the delegation agreement, in order to favour informed decision-making.

4. Conclusion

We conclude that the management of the Emergency Assistance Program for Small and Medium-Sized Businesses (PAUPME) granted by the PME MTL network to beneficiaries is not carried out in accordance with the frameworks established by the Ville de Montréal (the City).

The audit results show that 19% of the files reviewed that were granted a loan did not meet at least one of the eligibility criteria for the program established by the Ministère de l'Économie et de l'Innovation (MEI).

Furthermore, the comments justifying the financial analysis are of variable geometry and do not always make it possible to properly capture the business's risk and support granting the loan. Thus, the issues raised do not provide assurance that the assistance granted to the businesses has been evaluated and authorized in compliance with the applicable frameworks. Discrepancies were observed between the assistance authorized by the comité d'investissement exceptionnel and the loan agreements signed by the businesses. Shortcomings in the monitoring of disbursed assistance do not contribute to compliance with the contractual obligations the beneficiaries have committed to. In fact, the lack of follow-up by PME MTL to obtain financial statements from the businesses does not meet the expectations of the delegation agreements and may lead businesses to be in default of their obligations described in the loan agreement.

Although several shortcomings were observed in the management of the program and the granting of loans by PME MTL, due to the uncertain future of this MEI program, a single recommendation was made to PME MTL. Should a similar program be introduced in the future, the City should put in place more stringent controls to ensure its sound management. The Bureau du vérificateur général could audit PME MTL again in this regard.

More specifically, the major findings that we draw in relation to the evaluation criteria are as follows:

Evaluation Criterion – Evaluation of the Financial Assistance According to the Management Frameworks

Documentary requirements are not met in several financial assistance files.

At least one of the eligibility requirements of the MEI is not met in 19% of the files reviewed.

Comments made in support of the loan authorization analysis do not always indicate that an assessment of the business's overall financial condition was conducted for 91% of the selected files. Also, authorizing the amortization of the loan over a period of more than 36 months, allowed on an exceptional basis, is not justified for 85% of the selected files.

Evaluation Criterion – Implementation of Financial Assistance (Validation of Loan Agreements and Disbursements)

Two of the three PME MTL centres audited did not respect their commitments to the City, since their loan agreements, which were nevertheless validated by the Service du développement économique (SDÉ), did not inform the business that it was being financed by the City and the MEI.

The dates of actual disbursements do not always match the dates entered into the loan management system used to calculate interest charges. The observed discrepancies range from a few days to more than two months in the case of the PAUPME loans. This has the consequence of penalizing the beneficiaries of these loans by impacting the calculation of the interest due to their capitalization after the first six months of moratorium. For the assistance provided by the Assistance for Businesses in Regions on Maximum Alert (AERAM) component, no interest had been capitalized at the time of our audit.

Prior to the adoption by the City of the addition of the AERAM component to the MEI-City loan agreement, 17% of the AERAM component files had been disbursed. We did not find evidence of any communication allowing this practice.

Evaluation Criterion – Monitoring the Financial Assistance Portfolio

The mechanisms for monitoring the assistance disbursed to borrowers are not clearly defined, and those for monitoring the granting and management of PAUPME loans by the SDÉ are inadequate.

The collection process and procedures for dealing with delinquent loans had not yet been defined 16 months after the launch of the PAUPME.

The SDÉ does not adequately monitor compliance with the various obligations stipulated in the delegation agreement, which allows shortcomings to persist.

Evaluation Criterion – Accountability

Incorrect and inconsistent information was found during the reporting of the cumulative claims to the status of the PAUPME.

Accountability to the City's decision-makers is limited to the volume of activity and fund balance and there is no mention of compliance with the obligations pursuant to the delegation agreement for the Fonds d'aide d'urgence.

5. Appendices

5.1. Objective and Evaluation Criteria

Objective

To ensure that the management of the Emergency Assistance Program for Small and Medium-Sized Businesses (PAUPME) granted by the PME MTL network to beneficiaries is carried out in accordance with the frameworks established by the Ville de Montréal.

Evaluation Criteria

- The financial assistance granted to the beneficiaries is analyzed and authorized in accordance with the management frameworks applicable to the PAUPME.
- The authorized financial assistance is disbursed to the beneficiaries when all applicable conditions for disbursement are met.
- Periodic monitoring mechanisms are in place to ensure portfolio oversight.
- Accountability mechanisms are in place to inform decision-makers on the management of the mechanisms for granting financial assistance to the beneficiaries.

5.2. Distribution of the Sample

Details of the Sample of the Loans to be Analyzed

	PME MTL Centre-Est	PME MTL Centre-Ville	PME MTL Grand Sud- Ouest	Total
Applications accepted	511	1,260	268	2,039
Applications accepted – Assistance Program for Small and Medium-Sized Businesses	195	331	108	634
Applications accepted – Assistance for Businesses in Regions on Maximum Alert component	316	929	160	1,405
Amount loaned	\$19,741,600	\$39,827,600	\$9,846,100	\$69,415,300
Amount granted – Assistance Program for Small and Medium-Sized Businesses	\$7,890,000	\$15,055,200	\$4,179,000	\$27,124,200
Amount granted – Assistance for Businesses in Regions on Maximum Alert component	\$11,851,600	\$24,772,400	\$5,667,100	\$42,291,100
Selected files				
EMERGENCY ASSISTANCE PROGRAM FOR SMALL AND MEDIUM-SIZED BUSINESSES				
Number of files selected	14	20	7	41
Percentage of files accepted by the centre	7%	6%	6%	6%
Amount granted	\$616,000	\$913,000	\$245,000	\$1,774,000
Percentage of the amount granted by the centre	8%	6%	6%	7%
ASSISTANCE FOR BUSINESSES IN REGIONS ON MAXIMUM ALERT COMPONENT				
Number of files	17	14	9	40
Percentage of files accepted by the centre	5%	2%	6%	3%
Amount granted	\$764,000	\$404,800	\$341,000	\$1,509,800
Percentage of the amount granted by the centre	6%	2%	6%	4%

Source: Data compiled by the City's BVG on the basis of information obtained from the PME MTL centres.



3.3.

Centralized Identity and Access Management

Service des technologies de l'information

February 8, 2022

2021 ANNUAL REPORT

Auditor General of the Ville de Montréal

3.3. Centralized Identity and Access Management

Centralized Identity and Access Management

Background

Centralized Identity and Access Management (IAM) is defined as all processes and technological tools used in the centralized management of users and their access rights to information systems and applications. IAM provides all users, internal and external, appropriate access in a timely manner, while reducing the number of identifiers and passwords that need to be remembered. IAM control mechanisms are adapted to the security and sensitivity levels of the information being accessed. To achieve this, organizations adopt standards and industry best practices. They enable the implementation of standardized policies and control mechanisms that ensure the protection of data.

In 2016, the Ville de Montréal (the City) has launched two projects to meet the IAM needs of citizens and employees, they're known as GIA Citoyens and GIA Employés, respectively. The GIA Citoyens project is currently under the responsibility of the Division solutions numériques of the Service des technologies de l'information (STI), while the GIA Employés project comes under the responsibility of the STI's Direction sécurité de l'information. Because of the departure of key employees and changes in their duties and responsibilities, the GIA Employés project is being relaunched.

In the meantime, the GIA Employés serves about 30,200 employee accounts, 1,700 external user accounts, 560 application accounts and integrates 125 applications. As for the GIA Citoyens, it serves more than 255,000 citizen accounts and integrates 70 applications.

Purpose of the Audit

To determine whether the IAM process and its control mechanisms implemented by the City provide assurance that they do not present any major risk to the confidentiality, integrity and availability of data.

Results

In the case of GIA Citoyens, we can conclude that the process and control mechanisms put in place do not present any major risk to the confidentiality, integrity and availability of data. However, we believe that ongoing work to adopt the Pan-Canadian Trust Framework (PCTF) for digital identities must continue. Note that the Trust Framework defines and standardizes processes and specifies privacy requirements, which would optimize the security of data and services available to citizens.

For GIA Employés, given that the project is being relaunched, our findings do not allow us to conclude that this IAM provides adequate risk management for data confidentiality, integrity and availability. We identified gaps in the areas of governance, definition of roles and responsibilities, project strategy, as well as in risk analysis and process documentation. Moreover, the technological tools currently in use will be replaced. Therefore, there is no IAM process yet. Rather, the controls in place respond to decentralized administrative mechanisms.

Main Findings

Governance

GIA Citoyens:

- The IAM strategy is properly documented;
- The process owner is not formally identified and the roles and responsibilities are not fully documented;
- The risk analysis is not completed;
- Assurance levels, which establish security requirements based on the confidentiality level of the information to be accessed, are not formally established.

GIA Employés:

- The process owner is not formally identified and the roles and responsibilities are not properly defined. Moreover, management frameworks are not finalized;
- The GIA Employés project has shortcomings regarding the active involvement of the Comité de sécurité de l'information (CSI) and business units, the inclusion of all types of users, the analysis of the current context (processes and technologies), the documentation of business requirements, the standardization of phases and deliverables, as well as the absence of the target architecture;
- The risk analysis and proposed controls do not meet the requirements of an IAM;
- The assurance levels, which establish security requirements in accordance with the confidentiality level of the information being accessed, are not yet formally established.

User Management (Identities)

- Citizen identity management is adequate apart from the lack of an account deletion mechanism.

Authentication Management

- The GIA Employés and GIA Citoyens authentication are not adapted to the different confidentiality levels of the information being accessed.

Access Management

- Citizen access management meets the least-privilege and need-to-know criteria;
- The process for periodic review of citizens' access is not in place.

Integration of Applications into IAM

- This process is adequate in GIA Citoyens. However, teams must ensure that the applications integrated into GIA Citoyens are also integrated into the Dossier citoyen intégré (DCI) and that any exceptions are formally justified.

In addition to these results, we formulated various recommendations to the business units, which are presented in the following pages. The business units concerned were given the opportunity to agree to these recommendations.

List of Acronyms

CISO	Chief Information Security Officer
CSI	Comité de sécurité de l'information
DCI	Dossier citoyen intégré
DIACC	Digital ID & Authentication Council of Canada
GIA	Gestion centralisée des identités et des accès <i>(french translation of IAM)</i>
IAM	Centralized Identity and Access Management
RASCI	Responsible, Accountable, Support, Consulted and Informed
SRH	Service des ressources humaines
STI	Service des technologies de l'information

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1. Background

Large-scale organizations such as the Ville de Montréal (the City) have extensive information resources that serve many trades and administrative functions. Users often require many passwords to access those resources. This can lead to a downgrade in security, since users tend to neglect security instructions by reusing the same passwords from one application to another.

Protecting access to information resources is even more important nowadays because of the increased number of people working remotely. Users' computers do not fall within the traditional limits of the organization's network. An environment that is insufficiently secured could be the target of cybercriminals, and a compromised identifier is often the entry point for more serious attacks, such as mass data theft and ransomware.

In order to render its IT environment more secure, an organization must implement Centralized Identity and Access Management (IAM). IAM is defined as all processes and technological tools used in the centralized management of users and their access rights to information systems and applications. IAM provides all users, internal and external, appropriate access in a timely manner. IAM control mechanisms are adapted to the security and sensitivity levels of the information being accessed. To achieve this, organizations adopt standards and industry best practices, which include standardized policies and control mechanisms to protect identities and access to data.

The organizational benefits of IAM include:

- Improved user experience by reducing the number of identifiers and passwords to remember when accessing information assets;
- Less administrative overload related to account management thanks to self-serve technological tools and automated processes for authorizing, approving, modifying and revoking access rights;
- Optimized security for accounts and information assets through the implementation of multi-factor authentication and the application of risk-based policies;
- Standardization of access profiles in compliance with best practices, such as the principles of least privilege and need-to-know and the segregation of incompatible duties;
- Simplified mechanisms available to information asset owners for periodic access reviews;
- Warning and monitoring mechanisms capable of detecting and dealing with unauthorized accesses.

1.1. Overview of Centralized Identity and Access Management at the Ville de Montréal

For the purpose of standardizing applicable requirements to access to non-public information under its responsibility, the City issued a directive and a standard pertaining to logical access management. These management frameworks are applicable to all employees as well as individuals from outside firms and partners having access to the City's information. The directive defines the responsibilities of the main stakeholders, including the Comité de sécurité de l'information (CSI) and the Chief Information Security Officer (CISO). The CSI oversees the adoption of a cross-sector approach to logical access management that is common to all business units but adapted to the business context of each. This should ensure adequate risk management. The CISO's responsibilities include delivering and administering identifiers, as well as implementing security measures to mitigate the risks related to logical access.

In terms of solutions currently in place, the City initiated two projects to meet the IAM needs of employees and citizens. This led to the implementation of two distinct solutions, one for citizens and the other for employees. GIA Citoyens, known as the "*identité numérique des citoyens*" was an initiative arising out of the "Présence numérique–Fondation" project. It began in 2016 under the responsibility of the "Bureau de l'expérience citoyenne". When that unit was disbanded, the Division solutions numériques of the Service des technologies de l'information (STI) assumed management responsibility. The GIA Employés project, on the other hand, is under the responsibility of the STI's Direction sécurité de l'information. That initiative also began in 2016 as part of the IT security and continuity program. However, due to the departure of key employees and changes in responsibility, the project is being relaunched.

The approach adopted by the "*identité numérique des citoyens*" project was focused on citizens and on improving the services offered. For this project, the City implemented a portal where citizens could create an account and receive services online. GIA Citoyens currently serves more than 255,000 citizen accounts and integrates 70 applications.

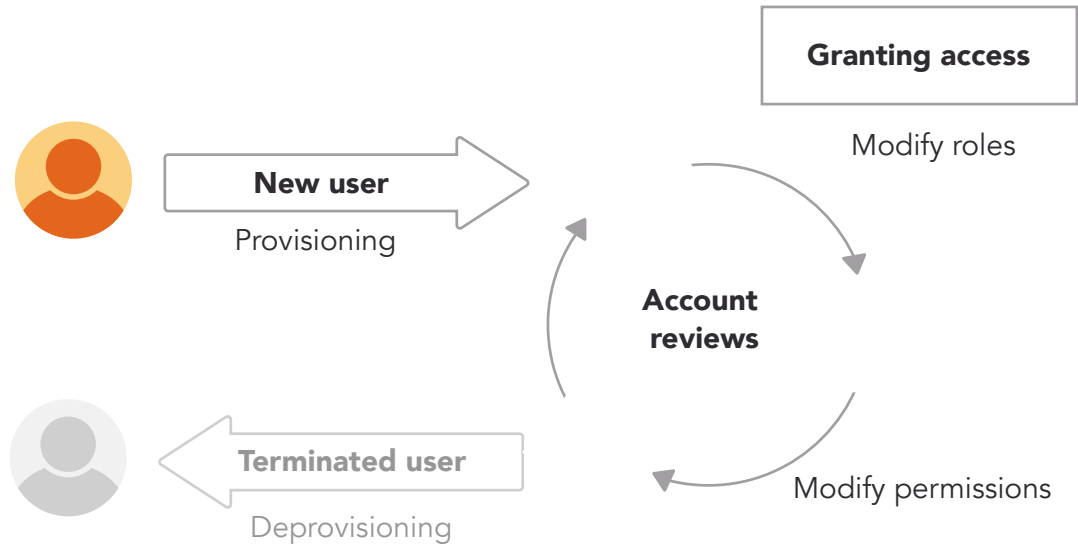
The GIA Employés project adopted a more technological approach. The team has prioritized improved access and authentication. Due to technological and financial issues, however, the tools selected for the project need to be replaced. In the meantime, the tools in place currently serve more than 30,200 employee accounts, about 1,700 external user accounts and nearly 560 accounts for the 125 integrated applications. IAM processes are currently based in decentralized administrative procedures under the responsibility of each business unit. Work pertaining to business needs, processes and the selection of standards to adopt should resume in 2022. Moreover, interim solutions will be deployed.

1.2. Account Life Cycle

In this section, we provide a theoretical description of the various components in the life cycle of a user account:

FIGURE 1

Account Life Cycle



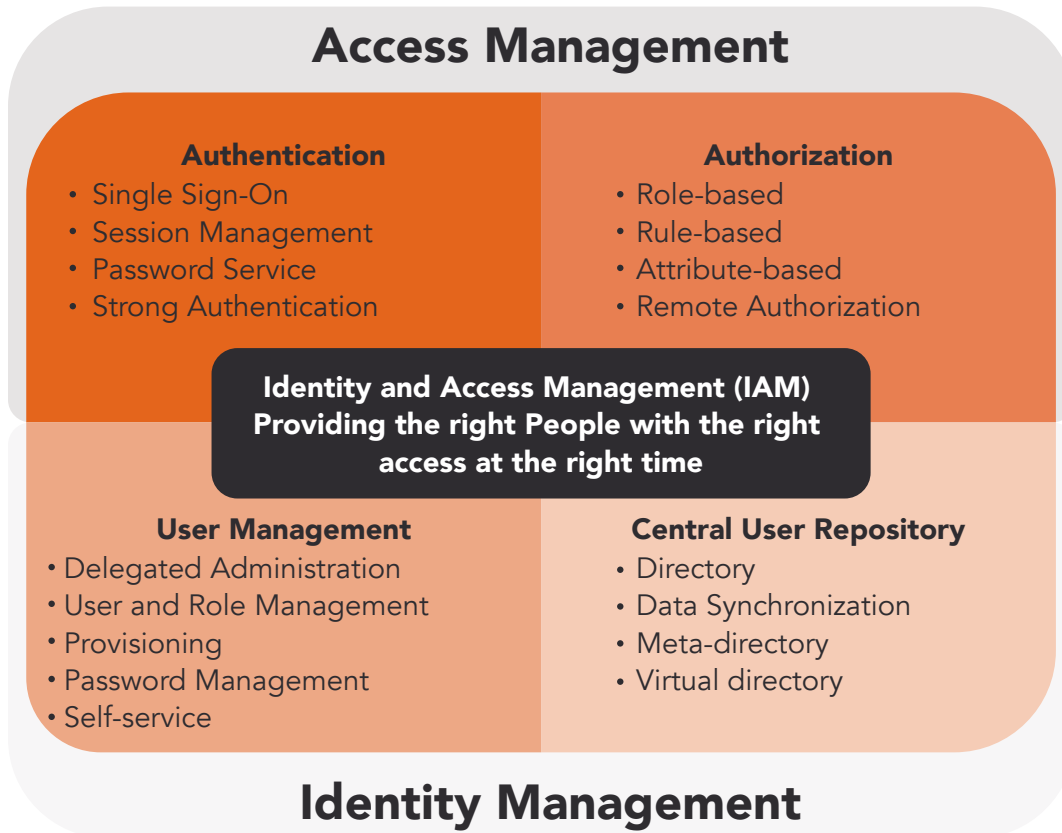
- **Provisioning:** An account is created when a new user arrives. The identity of the new user is verified to ensure that it meets the security requirements of the assets being accessed. For example, an email address is sufficient to register for an informative website. However, access to a highly confidential asset may require, for instance, a criminal record check;
- **Granting access:** Once the account has been created, authorization is granted to access the necessary assets. Granting access is always the result of an automated or manual approval process. Assigning roles is a simplified way of granting access rights. For example, assigning the role of accountant defines access to the appropriate finance systems and is automatically granted to accountants when they are hired;
- **Modify access:** When access needs modification because the user has assumed a new job, role or duties, or when assets are added or withdrawn, the user's access privileges need to be updated. Modifying access requires prior approval;
- **Account reviews:** Access is reviewed periodically by the asset owners to ensure that there are no unauthorized users. Access is monitored continually to ensure proper use and to detect any incidents;
- **Deprovisioning:** When a user leaves or no longer requires their account, access owners request that the account be closed, which results in its deactivation. Deactivated accounts are destroyed in accordance with each organization's information preservation standards.

3.3. Centralized Identity and Access Management

The entire life cycle of accounts just described can be implemented simply and securely using IAM. To achieve this, processes and technological tools are put in place to cover the following four areas (see Figure 2):

FIGURE 2

Framework for Centralized Identity and Access Management



▪ ***Identity Management:***

- ***User management:*** Used to manage the accounts and roles of identities from provisioning to deactivation and destruction. This includes user provisioning, password management, granting and maintaining profiles, as well as setting up self-serve tools. These simplify identity management through features such as self-managed profiles and the automatic reset of multifactor authentication mechanisms and passwords;
- ***Central user repository:*** It presents an aggregated view of an organization’s identities. The central directory provides identity information to other departments and is used to verify identification information submitted by clients. By acting as a single infrastructure that centralizes all accounts and user rights for every application, the central directory simplifies operations and facilitates access for users;

- **Access Management:**
 - **Authentication:** Management feature that allows a user to provide sufficient identification information to obtain initial access to a specific system or resource. Authentication can be achieved by using one or more authentication factors such as passwords, access tokens, text messages and so forth. Once a user has been authenticated, a session is created and referenced throughout the interaction between the user and the system. A session is locked when the user disconnects or when other events are triggered (e.g., user inactivity timeout);
 - **Authorization:** Feature used to determine whether a user is authorized to access a particular resource. Generally speaking, authorization is managed in accordance with predetermined roles. IAM also provides mechanisms that simplify the periodic review of access, detect authorization conflicts and automatically withdraw access rights when an employee leaves, changes role, is suspended, etc.

2. Purpose and Scope of the Audit

Pursuant to the provisions of the *Cities and Towns Act*, we conducted a performance audit of the IAM system. We carried out this mission in accordance with the *Canadian Standard on Assurance Engagement (CSAE) 3001* of the *CPA Canada Handbook – Assurance*.

The purpose of this audit was to evaluate the IAM process and control mechanisms in place at the City in order to ensure that they present no major risk to the confidentiality, integrity and availability of data.

The role of the Auditor General of the Ville de Montréal is to provide a conclusion regarding the purpose of the audit. To that end, we gathered sufficient and appropriate relevant evidence on which to base our conclusion and obtain a reasonable level of assurance. Our assessment is based on criteria we deemed valid for the purposes of this audit. These criteria are presented in Appendix 5.1.

The Auditor General of the Ville de Montréal applies the *Canadian Standard on Quality Control (CSQC) 1* of the *CPA Canada Handbook – Assurance* and, accordingly, maintains a comprehensive quality control system that includes documented policies and procedures with respect to compliance with ethical requirements, professional standards and applicable legal and regulatory requirements. The Auditor General also complies with the independence and other ethical requirements of the *Code of ethics of chartered professional accountants*, which are based on the fundamental principles of integrity, professional competence and due diligence, confidentiality and professional conduct.

Our audit covered the period from April to November 2021. It comprised holding employee interviews, examining various documents and conducting surveys that we deemed appropriate in order to obtain the necessary evidentiary information. We took into account information that was sent to us up until February 8, 2022.

3.3. Centralized Identity and Access Management

Upon completing our audit, we submitted a draft audit report to the managers concerned in each audited business unit for discussion purposes and to obtain action plans and timelines for implementing the recommendations.

3. Audit Results

3.1. Governance

3.1.1. Roles, Responsibilities and the Process Owner

Sound governance of IAM consists in defining the roles and responsibilities of the various stakeholders for each management-related task. This is formalized in a RASCI (Responsible, Accountable, Support, Consulted and Informed) responsibility matrix.

It is also important, for a process of this scale, to define the person responsible for it, thereby establishing clear accountability for every action that requires a chain of validation. The process owner is responsible for operational management. That person must be involved in every major change and every application migration.

GIA Employés

In the audited documents, we found several RASCI responsibility matrices for the management of specific IAM tools.

Only the RASCI responsibility matrix for the single sign-on tool and for two-factor authentication¹ has been formally approved.

Our content review of the other RASCI responsibility matrices revealed the following deficiencies:

- There is no RASCI responsibility matrix covering IAM as a whole;
- For the most part, defined tasks pertain to technological tools;
- For most tasks, the person accountable is not indicated;
- The roles and responsibilities of the other stakeholders are not specified (e.g., the Service des ressources humaines (SRH), users, application developers and other administrative units).

The City's access management directive identifies the following responsibilities:

- The CSI for the adoption of a cross-sector approach to access management;
- The CISO for identity management and security.

¹ Two-factor authentication: Authentication requiring the user to provide two credentials belonging to two distinct authentication factors, e.g., a password and a token installed on a telephone. (Source: Office québécois de la langue française)

Despite what is stipulated in the directive, we found that there was some confusion in the responsibilities related to IAM. When we met the security team, we were informed, among other things, that:

- Identity management is the responsibility of the SRH;
- Access management for consultants is the responsibility of the STI's Bureau de projets;
- The Centre de services TI is responsible for the access service requests it processes;
- Each business unit is responsible for managing its own access to applications.

On the other hand, during our meetings with the SRH, the Bureau de projets and the Centre de services, we learned that while they do have a role to play, those units do not consider the above-mentioned areas to be under their responsibility.

We conclude that the roles and responsibilities set out in the directive were not properly communicated. In addition, there is a deficiency in the definition, documentation and approval of roles and responsibilities for the IAM process overall.

The lack of a formal definition of an owner, as well as deficiencies in the definition of roles and responsibilities pertaining to IAM, could result in operational shortcomings such as:

- Failure to take responsibility for decisions pertaining to IAM;
- Ineffective collaboration among teams (e.g., users being redirected to the wrong teams for access or incident management);
- Granting access to applications without prior validation;
- Unperformed tasks, omissions and uneven actions taken with respect to IAM.

3.1.1.A. Recommendation

We recommend that the Direction sécurité de l'information of the Service des technologies de l'information formally define the owner of the Centralized Identity and Access Management process.

3.1.1.B. Recommendation

We recommend that the Direction sécurité de l'information of the Service des technologies de l'information communicate the roles and responsibilities of the access management directive to the various stakeholders.

3.1.1.C. Recommendation

We recommend that the Direction sécurité de l'information of the Service des technologies de l'information document, approve and diffuse the roles and responsibilities pertaining to Centralized Identity and Access Management as a whole.

3.3. Centralized Identity and Access Management

GIA Citoyens

During our audit tests, we found that:

- The roles and responsibilities are well known to the main stakeholders. This was confirmed during interviews and in documents collected pertaining to the processes and technological tools in place;
- A RASCI responsibility matrix has been defined and covers development, support, changes in technology and citizen communications;
- The various stakeholders have been identified;
- The owner of GIA Citoyens has not been formally identified;
- The RASCI responsibility matrix has not been formally approved;
- Certain functions have not yet been documented and accountability has not been assigned.

The failure to formally identify an owner, as well as deficiencies in the RASCI responsibility matrix documentation, could lead to operational shortcomings such as:

- Failure to assume responsibility for decisions pertaining to IAM;
- Unperformed tasks, omissions and uneven actions taken with respect to IAM.

3.1.1.D. Recommendation

We recommend that the Division solutions numériques of the Service des technologies de l'information officially identify the owner of GIA Citoyens.

3.1.1.E. Recommendation

We recommend that the Division solutions numériques of the Service des technologies de l'information complete, approve and distribute roles and responsibilities for GIA Citoyens.

3.1.2. Management Frameworks for Centralized Identity and Access Management

The publication of policies and directives provides a management framework for certain processes, thereby limiting the risk of inconsistency in the actions taken and preventing access procedures from being bypassed and privileges abused. Typically, IAM should set out basic principles to clarify the following:

- Centralized identity management: from provisioning to deactivation or deprovisioning;
- Centralized access management: for the authentication and management of access rights to information assets (granting, modification, monitoring, withdrawal and periodic review).

GIA Employés

The directive and standard for logical access management are published on the City's intranet. It should be noted that these management frameworks concern access management as a whole and target all identities and assets managed by the City. These documents are up to date, complete and formally approved. In addition, the directive has been sent to all employees.

As for more specific management frameworks pertaining to the life cycle of IAM accounts, we examined the following processes:

- Processes and procedures for the arrival, suspension and departure of an employee;
- Granting and withdrawal of privileged accounts;
- Access management for consultants;
- Guiding principles for the management of contracts that specify certain tasks pertaining to access management;
- Compendium of guides and instructions related to IAM drawn from the Centre de services TI knowledge base used by their agents.

We noted that the processes and procedure listed above do not correspond to IAM.

We also found a lack of procedures for the following:

- Access management specifically for GIA Employés in compliance with the management frameworks;
- Periodic access reviews;
- Life-cycle management of third-party accounts (suppliers, partners, consultants, volunteers and other similar categories);
- Life-cycle management of accounts related to hardware assets (such as servers, printers and workstations) and software (including databases, software applications and websites).

Given that the IAM project is ongoing, processes and procedures pertaining to IAM have not yet been documented.

A lack of IAM processes and procedures could lead to the risk of non-uniform IAM practices, as well as to non-compliance with the roles and responsibilities of stakeholders in terms of access to the City's information assets. This could result in unauthorized access to sensitive information.

3.1.2.A. Recommendation

We recommend that the Direction sécurité de l'information of the Service des technologies de l'information document the processes and procedures specific to Centralized Identity and Access Management and ensure that they are distributed to the stakeholders.

3.3. Centralized Identity and Access Management

GIA Citoyens

Citizen identities are managed using the Dossier citoyen intégré (DCI) platform, which has two web interfaces:

- Mon Compte pour les citoyens;
- Mon Compte–vue employés, which employees use to process the online requests of citizens.

- **Citizens Web Interface**

A privacy policy and account terms of use are accessible on the City’s portal. The policy is also accessible when a citizen account is created or a password changed. We identified the following procedures on the citizen portal:

- Account provisioning;
- Citizen and business account modification;
- Account deletion at the request of the citizen.

These documents are up to date, complete, formally approved and duly published.

On the other hand, we found that:

- No procedure is in place for the periodic review of accounts;
- The procedure triggered by a request to delete a citizen account is manual and undocumented.

- **Employees Web Interface**

Employees can use “*Mon compte–vue employés*” to manage citizen accounts. The Service de concertation des arrondissements has deployed a website for this purpose. The website provides access to procedures, guides and training for managing features of citizen accounts and related services. During interviews, however, we confirmed that the withdrawal of employee access rights is not systematic and is the responsibility of each business unit.

A lack of procedures for the periodic review and deletion of accounts could lead to non-uniform practices in the performance of those tasks. This could result in unauthorized access to sensitive information by some users.

3.1.2.B. Recommendation

We recommend that the Division solutions numériques of the Service des technologies de l’information formalize management frameworks for the periodic review and deletion of GIA Citoyens accounts and ensure that they are distributed to the stakeholders.

3.1.3. Centralized Identity and Access Management Strategy

When planning and implementing IAM, it is essential to establish an overall strategy that involves all stakeholders. The components of a good strategy include:

- Scope of the project;
- Business needs;
- Software benchmarking;
- Standards and best practices;
- Current and target architectures.

GIA Employés

- **Current Status of the Project**

After the GIA Employés project was launched in 2016, it was impacted by the departure of key employees, including the business and security solutions architects and the delivery manager. Those departures created issues around project continuity and standardization of the work. In addition, the committee initiative, with the involvement of business units, was abandoned.

As a result, the current project is focused on technology and therefore prioritizes:

- Software benchmarking;
- Delivery of tools to improve authentication;
- Deployment of infrastructure in all environments for the selected tools;
- Documentation of the architectures and RASCI responsibility matrices for each tool.

The following mechanisms have been put into operation:

- The two-factor authentication;
- Single sign-on. This allows users to access several applications based on a single authentication;
- Requirements for more complex passwords.

Nevertheless, the lack of detailed documentation of architectures (current and target), the technology in place, as well as the needs and risks, have led to major issues, including:

- Delayed detection of the incompatibility of the former directory with the new one;
- The high cost of supporting the authentication tool, preventing an update to the latest version;

3.3. Centralized Identity and Access Management

- The tool selected for the centralized governance and management of identities was abandoned;
- The need to re-evaluate the high-privilege accounts solution due to issues pertaining to support and functions.

Given the current situation, the project has slipped into emergency mode. The team is working to correct the situation and reviewing the IAM strategy.

- **Project Scope**

Documents provided by the project team concerning this criterion include:

- The roadmap for the IT security and continuity program (approved in 2018), whose scope takes into consideration:
 - All users (employees and external resources) except for citizens;
 - All hardware assets representing an access point (such as servers, printers and workstations);
 - All software assets (including databases, applications and Internet services);
- The identity management project charter (approved in 2020) contains inconsistencies between certain sections pertaining to user types. In the purpose, for example, all users and connected systems are listed, whereas in the table of end users, only elected officials, employees, interns and outside consultants are included.

We observed that the initial scope concerning the population served changed in 2020. It is now ambiguous and does not formally list all the identities managed by the City (e.g., business partners, suppliers, and physical and software assets).

As for deliverables, the new project charter identifies the requirements for the new solution (including architecture documents, technological solutions and target processes). We noted, however, the lack of:

- Documentation of business needs;
- Documentation about use cases that demonstrate the operational relationship between the stakeholders and the IAM;
- A detailed analysis of the processes and technologies already implemented;
- Issues and constraints that the project needs to take into consideration.

- **Overall Strategy and Business Needs**

- **Organizational Commitment**

IAM is a process that requires the support of senior management and the commitment of various business units. The directive concerning logical access management states that the adoption of a global approach to access management is the responsibility of the CSI. The CSI should therefore have formal ongoing

involvement in the IAM project. However, we found that the only meeting with the committee about access management took place in January 2020. The minutes show that discussions took place concerning the new directive addressing logical access management but that the roles and responsibilities of the CSI in terms of access management were not presented.

Project Phases

In reviewing the roadmap for the IAM project, which details the main implementation phases, we observed that:

- The deficiencies mentioned in the project charter (project scope section) are also reflected in the roadmap;
- Process activities are related to technological tools, and there's no activity for IAM processes as a whole;
- No follow-up (progress and tasks completed) is specified for related activities;
- Standardization of the activities for each project phase is lacking. For example:
 - Activities related to the GA access tool were not completed;
 - For the high-privilege accounts solution, release activities has preceded process documentation.

These deficiencies do not allow to fully respond to the scope of the project and the needs of users.

• **Software Benchmarking**

A first software benchmarking for IAM took place in 2016 and was updated in 2020. The compliance of several products with identified functions was evaluated. The benchmarking showed that the access authentication and management tool selected and implemented did not fully meet the City's needs.

Finally, in 2021, the STI conducted a new benchmarking that only includes the selected technological tool's functions.

The team may therefore once again end up selecting a solution that does not include all the functions identified in the earlier benchmarking, which would result in shortcomings with respect to the objectives of the IAM project.

• **Standards and Best Practices**

The document "*Contexte et impacts de la GIA*" lists the laws and management frameworks requiring compliance. The architecture documents for the directory and the access and authentication management tools also refer to the City's internal directives, guides and standards.

However, these documents do not mention standards or best practices for IAM such as the *National Institute of Standards and Technology (NIST)* or the pan-Canadian identity management framework of the Digital ID & Authentication Council

3.3. Centralized Identity and Access Management

of Canada (DIACC).² These standards establish control mechanisms and security requirements specifically for IAM in accordance with the security and sensitivity levels of the assets being accessed. They would enable the City to implement standardized IAM infrastructure and processes that ensure satisfactory protection of its information assets.

- **Current and Target Architectures**

No document currently exists about the overall IAM architecture (current and target), including identities, services and their interaction. The architecture documents provided are specific to each technological tool and present only the components with which each solution interacts.

In conclusion, deficiencies in the City's IAM strategy could have a significant impact on IAM, making it non-standardized and insecure and thereby depriving users of a coherent and simplified access to information assets. These shortcomings could eventually result in needs not being met, incomplete processes and procedures, and technological tools lacking the necessary features. Moreover, the lack of information and interaction with CSI may lead to a failure to:

- Adopt a cross-sector approach to standardize access management across all business units;
- Properly manage the risks associated with logical access management;
- Ensure collaboration among the various stakeholders in effectively implementing best practices for access management.

3.1.3.A. Recommendation

We recommend that, for GIA Employés, the Direction sécurité de l'information of the Service des technologies de l'information specify the scope of the project and ensure that the following components are included:

- User types;
- All deliverables pertaining to the current and target situations (management frameworks, processes and technologies).

3.1.3.B. Recommendation

We recommend that, for GIA Employés, the Direction sécurité de l'information of the Service des technologies de l'information ensure that the Comité de sécurité de l'information is aware of and assumes its responsibilities as set out in the Directive de gestion des accès logiques.

² The Trust Framework Expert Committee (TFEC) of the Digital ID & Authentication Council of Canada (DIACC) has been developing the Pan-Canadian Trust Framework™ since 2016.

3.1.3.C. Recommendation

We recommend that, for GIA Employés, the Direction sécurité de l'information of the Service des technologies de l'information ensure the standardization of all milestones in each phase of the Centralized Identity and Access Management project.

3.1.3.D. Recommendation

We recommend that, for GIA Employés, the Direction sécurité de l'information of the Service des technologies de l'information integrate the following components into the project strategy:

- An analysis of the technological context and current processes;
- The business needs and use cases of the different business units.

3.1.3.E. Recommendation

We recommend that, for GIA Employés, the Direction sécurité de l'information of the Service des technologies de l'information integrate the identified business needs and functions into the software benchmarking.

3.1.3.F. Recommendation

We recommend that, for GIA Employés, the Direction sécurité de l'information of the Service des technologies de l'information formally specify the best practices adopted as part of the Centralized Identity and access Management project.

3.1.3.G. Recommendation

We recommend that, for GIA Employés, the Direction sécurité de l'information of the Service des technologies de l'information define the current and target architectures for all Centralized Identity and Access Management processes.

GIA Citoyens

- **Project Scope**

The project known as DCI meets the needs of citizens and integrates their digital identity. The scope includes mechanisms for managing citizen identities and access in accordance with the services they request. Citizen identities also take into consideration their relationships with businesses. Moreover, the project team plans to address the user needs of citizens in terms of family groups (e.g., parents and children).

As for the implementation of the authentication tool, its functional scope is properly defined in the architecture document, including the use cases.

3.3. Centralized Identity and Access Management

- **Overall Strategy and Business Needs**

We found that the current DCI architecture has a global perspective that accurately represents the current situation. It presents a high-level view of citizens' interactions with the systems that provide them with services.

For the target architecture, the steps to be followed are laid out with priorities for integrating services into the DCI portal in accordance with the population served.

- **Software Benchmarking**

The same solution is used for managing the identities of both citizens and employees. No benchmarking specific to GIA Citoyens exists.

- **Standards and Best Practices**

The project has adopted the Pan-Canadian Trust Framework (of the DIACC) for determining the required assurance levels when identifying a citizen. However, implementation is still ongoing.

Furthermore, when integrating applications into the single sign-on used by GIA Citoyens, the project team adopted an international industry standard.³ This standard authorizes applications to verify an end user's identity based on the authentication provided by GIA Citoyens through a simplified, standardized process.

- **Current and Target Architectures**

The current and target IAM architectures are documented appropriately in the material we audited. In addition, technical aspects are duly formalized, which allows for a better understanding of the solution in place.

We consider that the various documents pertaining to the GIA Citoyens strategy are adequate.

No recommendation is necessary.

3.1.4. Risk Analysis

An IAM risk analysis determines the requirements and controls that need to be implemented to protect user identities and access to the City's assets. Specific controls are determined according to the level of confidentiality, integrity and availability of the information being accessed.

Assurance levels are established in order to define the minimum security requirements needed to identify and authenticate users, as well as the integration of new applications. These are determined in accordance with the risk level of the information being accessed. When identifying users, for example, the lowest level does not require any proof of physical identity. For the highest level, on the other hand, users must come in person and provide valid documents proving their identity.

³ OIDC: OpenID Connect is a standard managed by the OpenID Foundation. It is a single-layer authentication that verifies the identity of users.

GIA Employés

We audited the risk analysis and its action plan and noted the absence of:

- Formal adoption of IAM security standards;
- Formal adoption of assurance levels for identification, authentication and application integration;
- Mitigation measures pertaining to centralized IAM technologies (e.g., centralized access management by profile);
- Information concerning the residual risk in various situations following implementation of the proposed measures;
- Timelines with assigned responsibilities.

In the absence of an adequate risk analysis, the control mechanisms in place may not be adapted to the risk level of information assets. This means that significant IT risks may not be sufficiently mitigated (e.g., confidential or personal information being compromised).

3.1.4.A. Recommendation

We recommend that, for GIA Employés, the Direction sécurité de l'information of the Service des technologies de l'information formally establish assurance levels for the identification and authentication of users, as well as for the integration of applications into Centralized Identity and Access Management.

3.1.4.B. Recommendation

We recommend that, for GIA Employés, the Direction sécurité de l'information of the Service des technologies de l'information ensure that the risk analysis proposes mitigation measures based on the technologies used for the Centralized Identity and Access Management project, as well as on standards adopted by the City.

3.1.4.C. Recommendation

We recommend that, for GIA Employés, the Direction sécurité de l'information of the Service des technologies de l'information ensure that the mitigation measures implemented comply with the assurance levels established for identifying and authenticating users, as well as for the integration of applications into Centralized Identity and Access Management.

3.1.4.D. Recommendation

We recommend that, for GIA Employés, the Direction sécurité de l'information of the Service des technologies de l'information ensure that the action plan provides for follow-up to the implementation of the proposed mitigation measures.

3.3. Centralized Identity and Access Management

GIA Citoyens

We obtained a document listing the main security risks together with a list of generic mitigation measures that are part of good security practices used by the industry but that are not formally related to the controls implemented in the GIA Citoyens project. Moreover, our analysis of the document shows that following are missing:

- The impact of the risks identified and their likelihood of materialisation;
- The implementation status of the proposed mitigation measures;
- An action plan concerning the mitigation measures to be implemented, including a timeline and assigned responsibilities.

The project team has produced a map of the personal information associated with the DCI. While this work includes recommendations, most of them do not yet have an expected resolution date.

The STI explained to us that the impact and risk analyses have not yet been conducted due to a lack of resources. However, the team has begun work to implement security controls.

GIA Citoyens adopted the Pan-Canadian Trust Framework (of the DIACC) in establishing the assurance levels required when identifying citizens who request access to services, and the standard is currently being implemented. The GIA Citoyens team is considering aligning itself with a pan-Canadian identity, but the project is still under analysis.

In the absence of an adequate risk analysis, the control mechanisms in place may not be adapted to the risk level of information assets. This implies that the IT risks may not be adequately mitigated (e.g., compromise of confidential information).

3.1.4.E. Recommendation

We recommend that, for GIA Citoyens, the Division solutions numériques of the Service des technologies de l'information conduct a risk and impact analysis.

3.1.4.F. Recommendation

We recommend that, for GIA Citoyens, the Division solutions numériques of the Service des technologies de l'information formalize assurance levels for the identification and authentication of users as well as application integration into Centralized Identity and Access Management.

3.1.4.G. Recommendation

We recommend that, for GIA Citoyens, the Division solutions numériques of the Service des technologies de l'information ensure that the mitigation measures in place comply with the assurance level established for the identification and authentication of users as well as application integration into Centralized Identity and Access Management.

3.1.4.H. Recommendation

We recommend that, for GIA Employés, the Division solutions numériques of the Service des technologies de l'information establish an action plan to follow up the proposed mitigation measures.

3.2. User Management (Identities)

Centralized user management manages accounts, as well as roles and identities, from provisioning through to deactivation. This includes high-privilege accounts requiring stronger mechanisms to protect them against illegal actions.

GIA Employés

Based on the information collected, user management is decentralized and does not, strictly speaking, constitute an IAM system because:

- Current user management (provisioning, review, withdrawal, modification and deactivation) responds to administrative processes originating from different business units;
- The main IAM components are not integrated into a single management tool and the processes are not centralized;
- The criteria and requirements for creating, reviewing, withdrawing, modifying and deactivating the different account types are not standardized. For example:
 - Creating accounts for external users requires only their name and email address. If a contract has no deprovisioning date, the account is assigned a default lifetime of two years;
 - Account provisioning for employees follows a process, formalized by the SRH, which verifies the identity of new employees and leaves a trace in the system. When an employee leaves, his account is automatically deactivated.

Furthermore, the project team:

- Plans to implement a new directory to replace the old one which is still in production;
- Will replace the profile governance and management tool that was selected at the beginning of the project;
- Recently implemented a password vault for the management of high-privilege accounts, which is being re-evaluated.

We will not issue a new recommendation since the recommendations in section 3.1.4. already cover the areas for improvement, and the identity management tools in place will be replaced at some point.

3.3. Centralized Identity and Access Management

GIA Citoyens

- **Citizens Web Interface**

With respect to the life cycle of citizen identities, the centralized mechanisms are sufficient and standardized for the following:

- Registration and verification of user identities;
- Account deprovisioning (at the citizen's request);
- Account deactivation (temporary following a prescribed number of unsuccessful login attempts).

However, we did not find any mechanism for deprovisioning inactive accounts. This means that a citizen account is removed only at their request through a manual process.

The only high-privilege account is managed by the GIA Citoyens administrator, who is an employee. For this administrator, the team plans to adopt the high-privilege account solution that will be part of GIA Employés. Citizen accounts do not have high-privilege rights. Accounts used for applications also have restricted access.

Inappropriate management of the life cycle of accounts could result in lost, stolen or compromised data or forged identifiers.

3.2.A. Recommendation

We recommend that the Division solutions numériques of the Service des technologies de l'information implement mechanisms in GIA Citoyens to deactivate and delete inactive citizen accounts.

3.3. Authentication Management

IAM standardizes authentication methods and reduces the multitude of passwords required to access systems. This simplifies life for users and reduces the risk of unauthorized access. Moreover, IAM provides standardized authentication methods adapted to the level of risk of the information being accessed.

For example, parameters for password authentication settings must be aligned with the City's policy (e.g., minimum password length, the inclusion of uppercase and special characters, and the rejection of previously used passwords). In addition, granting access to critical assets requires the implementation of multifactor authentication (e.g., something users know (a secret) and something they possess (such as a telephone or physical access card)).

In order to detect unauthorized access attempts, every organization must have an access monitoring process. It also provides for a more effective analysis should an access incident arise.

GIA Employés

The IAM tool in place integrates two-factor authentication with an industry-recognized solution. Efforts have also been deployed to enhance password complexity. As we mentioned in section 3.1.4. of the report, risk analysis and assurance levels have not been completed. For this reason, the authentication methods in place are not in line with the risk level of the assets being accessed.

As for logging and monitoring, access logs are maintained but work is in progress to integrate them into the centralized log management tool.

We will not issue a new recommendation since the recommendations in section 3.1.4. already cover the areas for improvement, and the tool used for authentication will be replaced.

GIA Citoyens

- **Citizens Web Interface**

In order to simplify access for citizens, the authentication method implemented requires only a password with a cellphone number and email address to validate the citizen's account. There is no multifactor authentication. There are, however, mechanisms that reduce the risk of compromise, including the temporary deactivation of accounts following a fixed number of unsuccessful login attempt.

As indicated in section 3.1.4. of the report, risk analysis and assurance levels have not been completed, and authentication is not adapted to the various risk levels. Currently, certain settings in authentication method, including password complexity, do not comply with the City's logical access management standard.

- **Employees Web Interface**

Employees accessing GIA Citoyens use their GIA Employés authentication. As a result, authentication management in such cases is handled by GIA Employés.

As for logging and access monitoring, logs are saved in the DCI infrastructure and also sent to the centralized log management tool. They are properly structured and allow for searches to resolve incidents.

3.4. Access Management

IAM includes mechanisms for approving, granting, modifying, withdrawing and reviewing access privileges. These features foster compliance with security best practices, such as the least-privilege and need-to-know criteria. In this context, the assignment of high-privilege accounts also needs to be regulated and more closely monitored.

IAM also simplifies the periodic review of access rights to detect modifications in user assignment.

3.3. Centralized Identity and Access Management

GIA Employés

Based on the information collected, access management is currently decentralized rather than being managed around a central solution. Strictly speaking, it therefore does not qualify as IAM.

According to the roadmap, an access management tool has not yet been selected. There is no automated mechanism for integrating rules regarding the segregation of duties, least privilege or incompatible authorizations.

Furthermore, during meetings with the stakeholders, they confirmed that access management is under the responsibility of each business unit and based on administrative processes.

Finally, no centralized, standardized mechanisms are in place for the periodic access review.

We will not issue a new recommendation since the recommendations in section 3.1.4. already cover the areas for improvement, and a technological tool is not yet in place.

GIA Citoyens

- **Citizens Web Interface**

The system provides citizens with basic access, and further access rights are granted on an as-needs basis when additional services are requested. By default, therefore, access management complies with the principles of need-to-know and least-privilege.

- **Employees Web Interface**

To perform maintenance and support operations for the services offered to citizens, employees access the DCI environment. To obtain such access, they use the appropriate form to file a request with the Service de concertation des arrondissements. Requests can therefore be made to grant or withdraw employee access to DCI and related services. However, responsibility for periodic access review and withdrawal lies with each business unit and is not conducted systematically.

Given the absence of a process for periodic access reviews, the City faces an increased risk of inappropriate or unnecessary access to some information assets that are not in line with the employee's job responsibilities.

3.4.A. Recommendation

We recommend that the Division solutions numériques of the Service des technologies de l'information implement a process to periodically review access to GIA Citoyens.

3.5. Application Integration into Centralized Identity and Access Management

Integrating new applications into IAM reduces the number of authenticators users need and simplifies the integration of authentication into applications. The use of a formalized written procedure makes application integration more seamless and better standardized.

GIA Employés

A summary procedure is available for the integration of applications into IAM. The project team has already integrated about 125 applications, most of which use a second factor. Every integration involves the support of the security team. This procedure should be adapted to the project's new circumstances moving forward.

We will not issue a new recommendation since the recommendations in section 3.1.4. already cover the areas needing improvement.

GIA Citoyens

An examination of the process for integrating new applications into IAM shows that two teams are involved. The first manages the DCI portal, and the second, the GIA Citoyens infrastructure. During our audit, we observed that:

- The DCI form recently implemented meets operational needs and corresponds to the IAM vision. It contains the functional requirements to ensure proper integration into the DCI portal. The Division solutions numériques team manages requests;
- The integration of applications into GIA Citoyens is based in an automated process and is duly authorized by the IAM administrator.

The team managing the DCI aims to become the master source for citizen access. However, the GIA Citoyens integration form does not request any information about DCI integration. During meetings, it was confirmed that this aspect is not systematically evaluated.

Application integration is not adapted to the various risk levels. We already indicated in section 3.1.4. of the report that risk analysis and assurance levels have not yet been completed.

The impacts of this deficiency with respect to application integration on the City are:

- Lack of standardization and visibility pertaining to access rights granted to citizens by the DCI;
- Access management that is not fully centralized;
- Actions taken by citizens on applications connected only to GIA Citoyens that are not traceable.

3.5.A. Recommendation

We recommend that the Division solutions numériques of the Service des technologies de l'information ensure that applications integrated into GIA Citoyens are also integrated to the Dossier citoyen intégré and that any exception is formally justified.

4. Conclusion

The Ville de Montréal (the City) initiated two projects in response to the needs of employees and citizens for Centralized Identity and Access Management (IAM). This resulted in the implementation of two distinct solutions, one for citizens and the other for employees.

On the whole, GIA Citoyens does not present any major risk to the confidentiality, integrity and availability of data. The control mechanisms in place demonstrate sound IAM. The strategy is appropriate and takes into consideration both the current situation and the long-term vision. The access granted to citizens meets the least-privilege and need-to-know principles. Nevertheless, in our opinion, the work in progress to adopt the Pan-Canadian Trust Framework for digital identities needs to continue. This would allow the integration of standardized control mechanisms, recognized by the industry, for the protection of personal information and the security of services offered to citizens.

On the other hand, since the GIA Employés project is being relaunched, several criteria could not be evaluated. We concentrated our audit work on project governance and identified major deficiencies, such as the consistent lack of involvement of the Comité de sécurité de l'information (CSI), as well as the absence of a process owner and overall strategy. The risk analysis and proposed mitigation measures do not qualify as IAM. Currently identified controls are, in fact, decentralized, administrative mechanisms. Consequently, the technological solutions and processes in place do not ensure adequate risk management regarding the confidentiality, integrity and availability of IAM data. Nevertheless, efforts have been deployed to integrate applications into IAM and to enhance authentication security. Despite the shortcomings, those efforts have allowed users to reduce their number of passwords.

The City does not yet have a solution to centralize employee identities and access.

More specifically, here are the details according to the following evaluation criteria:

Evaluation Criterion – Governance

Concerning GIA Citoyens:

The GIA Citoyens owner process has not been formally identified and the associated role and responsibility matrices have not been finalized or formally approved.

On the whole, the management frameworks for GIA Citoyens are adequate except for those applicable to the periodic access review and account deletion, which are missing.

The GIA Citoyens strategy is properly documented and includes all the main components:

- Project scope;
- Overall strategy and business needs;
- Standards and best practices;
- Current and target architectures.

The risk analysis does not assess the impact of risk scenarios or their likelihood of materialisation. Moreover, there is no action plan for the mitigation measures to be implemented. Finally, assurance levels for identification, authentication and application integration into IAM have not been formally established.

Concerning GIA Employés:

The IAM process owner at the City has not been formally identified, and the associated role and responsibility matrices have not been documented.

The management frameworks and processes specifically used in IAM have not been completed or formalized.

The GIA Employés strategy presents a number of shortcomings:

- The scope with respect to user types has not been defined;
- The CSI and business units are not involved on a regular basis;
- The project phases and deliverables are not aligned;
- The analysis of the current context (processes and technologies) and business needs are not documented;
- Software benchmarking has not integrated business needs and the identified functions;
- IAM standards and best practices have not been formally adopted;
- Current and target architectures are missing.

The risk analysis is incomplete and the mitigation measures are not aligned with an IAM system and industry standards. Furthermore, assurance levels for the identification, authentication and application integration into IAM are not formally defined.

3.3. Centralized Identity and Access Management

Given that the project is being relaunched and that the current technological tools will be replaced, we did not evaluate other criteria initially established as within the scope of this audit. Nevertheless, we issued recommendations in section 3.1.4. that can be used to improve aspects of the criteria that were not evaluated:

- User management (identities);
- Authentication management;
- Access management;
- Integration of applications into IAM.

Evaluation Criterion – User Management (Identities)

GIA Citoyens users are properly managed apart from the lack of a mechanism for deleting accounts.

Evaluation Criterion – Authentication Management

We found that authentication management in GIA Citoyens is not yet adapted to assurance levels that establish security requirements in accordance with the degree of confidentiality of the information being accessed.

Evaluation Criterion – Access Management

Access management in GIA Citoyens is adequate. However, in the case of employees accessing citizen records, responsibility for the periodic review and withdrawal of access rights lies with each business unit and is not conducted systematically.

Evaluation Criterion – Application Integration into Centralized IAM

The application integration process for GIA Citoyens is adequate on the whole, but the teams do not systematically ensure that applications integrated into GIA Citoyens are also in the Dossier citoyen intégré (DCI) and that any exception is formally justified. In addition, application integration needs to be adapted to the assurance levels set out in section 3.1.4.

5. Appendix

5.1. Objective and Evaluation Criteria

Objective

To determine whether the Centralized Identity and Access Management (IAM) process and the related control mechanisms put in place by the Ville de Montréal (the City) ensure that they present no major risk to the confidentiality, integrity and availability of data.

Evaluation Criteria

Criterion 1: Governance

The IAM governance in place is properly documented and includes a definition of roles and responsibilities, policies, management frameworks, a strategy, and a risk analysis that establishes requirements and controls to be implemented.

Criterion 2: User Management (Identities)

Secure mechanisms for managing user identities and privileged accounts are in place. They cover the account life cycle from provisioning to deprovisioning.

Criterion 3: Authentication Management

Digital authentication mechanisms consistent with industry best practices are in place and correspond to the risk level of the information assets requiring protection.

Criterion 4: Access Management

Access management is handled in accordance with security best practices (e.g., the principle of least privilege, separation of duties and periodic revision of access).

Criterion 5: Application Integration into Centralized IAM

The integration of applications belonging to the City or third parties into IAM authentication functions follows a formally established and standardized procedure.



3.4.

Plan d'action montréalais en itinérance

Service de la diversité et de l'inclusion sociale

March 18, 2022
2021 ANNUAL REPORT
Auditor General of the Ville de Montréal

3.4. Plan d'action montréalais en itinérance

Plan d'action montréalais en itinérance

Background

Homelessness is a complex phenomenon and a major social issue. To be able to reduce or prevent it, it is imperative that various services be made available and accessible, including food and financial assistance, emergency shelter, support and referral, mental health and addiction treatment and follow-up as well as social housing with community support. In this sense, efforts have been made in recent years by the Ville de Montréal (the City) to adopt and implement various policies and action plans to address homelessness.

In June 2017, the City adopted¹ its first *Politique de développement social* « Montréal de tous les possibles » (the Policy), which focuses on people in vulnerable situations and at risk of social, economic and cultural exclusion. One of this policy's orientations concerns the fight against poverty, including homelessness, in neighbourhoods. As a result of the Policy, the 3rd *Plan d'action montréalais en itinérance (PAMI) 2018–2020* was adopted in March 2018. The goal of the PAMI is to promote the maintenance and development of the full services needed to improve living conditions and prevent homelessness.²

Purpose of the Audit

To ensure that the management associated with the implementation of the *Plan d'action montréalais en itinérance* is effective and achieves the expected benefits.

Results

There is no doubt that the City's efforts with respect to homelessness are commendable. However, given the measurement tools proposed in the PAMI, the lack of comparative data on met and unmet needs as well as the limited number of impact indicators identified in the PAMI for which we could have measured progress and indicators used in the reporting process, it is not possible to assess the extent to which the expected benefits were achieved.

Furthermore, our analysis could not confirm that the PAMI was implemented using an impartial and fair project selection process as well as structured and documented monitoring mechanisms.

¹ Resolution CG17 0279 of the agglomeration council. It should be noted that the fight against poverty is an agglomeration power.

² This is the latest plan approved at the time of our audit.

Main Findings

Indicators of Success and Impact of Actions to Combat Homelessness

- The needs that must be addressed to reduce homelessness are not explicitly presented in the indicators of success or elsewhere in the PAMI. An assessment of the ambition of the targets and the extent to which their achievement addresses the problem of homelessness as seen in the field is therefore not possible.
- It is not possible, using the indicators of success, to adequately demonstrate progress or setbacks with respect to what was initially observed or measure desired changes.

Impartiality of the Process Used to Select Projects for Financial Support

- It was not possible to demonstrate the impartiality and fairness of the process established to assess and select projects for support due to the lack of documented guidelines and analysis.

Mechanisms to Monitor the Implementation of the *Plan d'action montréalais en itinérance*

- No minutes were kept of the meetings of the follow-up committee.³ We are therefore not able to corroborate the monitoring that was done and the extent to which it controlled the situation.
- The Service de la diversité et de l'inclusion sociale, as the designated department responsible for monitoring the implementation and follow-up of the PAMI, did not develop structured and documented mechanisms to validate the actions carried out by the business units.
- There is no evidence that the final activity reports of the organizations that are financially supported were analyzed and approved.

Accountability

- The "Highlights" are the only pieces of information that are communicated annually to the authorities.
- The results presented do not always allow for an easy, or even accurate, assessment of whether or not the targets of the PAMI were met, let alone an assessment of the impact on homelessness.

In addition to these results, we made various recommendations to the business units, which are presented in the following pages. The business units concerned have had the opportunity to agree to these recommendations.

³ An internal administrative body responsible for monitoring the implementation of the PAMI, composed of representatives from participating City business units and boroughs.

Comment from Management and the Audited Department

The Service de la diversité et de l'inclusion sociale (SDIS) welcomes the findings of the audit report on the implementation of the *Plan d'action montréalais en itinérance, 2018–2020*. This opinion serves as a preliminary note prior to the development of the SDIS's detailed action plan related to the recommendations made in the audit report which covered the period from January 1, 2018, to April 30, 2021.

Over the past few years and to this day, the SDIS has been working diligently to increase its effectiveness in deploying its programs and ensuring that its processes are efficient, consistent and fair. The actions implemented to strengthen the operational capacity of the SDIS include the following:

- The implementation in 2019 of a new grant management and tracking system (the GSS). This integrated electronic platform optimizes the department's call for projects process and standardizes the procedures leading to the granting of financial support while ensuring the quality and integrity of the data. In addition, the platform provides a single place to centralize all of the documentation associated with the projects submitted by the organizations.
- The implementation by the SDIS of the *Politique montréalaise pour l'action communautaire*, adopted in 2021, in which the City commits to maintaining ethical partnership relationships with the community sector, including the dissemination of clear information on programs, eligibility and award criteria, the various forms of support, the parameters of eligible expenses, processes, calls for projects and their results, as well as the use of funds.
- The creation in 2021 of a new Division intelligence d'affaires sociales et optimisation (DIASO) for the purpose of acquiring and enhancing social data to anticipate social issues and measure the effects of municipal actions on their mitigation. The DIASO is also responsible for ensuring the optimization of the SDIS's processes, particularly at the monitoring and evaluation stages of projects and programs.

In addition to the improvements made to its activities on an ongoing basis, the SDIS is also taking steps to train all of its personnel on administrative rules and frameworks, particularly those concerning the composition of committees that analyze the calls for projects.

The SDIS is firmly committed to carrying out its organizational priorities and measuring their impact on a periodic basis. Several of the recommendations raised are already well on the way to being implemented, and all actions taken and planned will be documented in the action plan expected in response to the audit report.

3.4. Plan d'action montréalais en itinérance

List of Acronyms

City	Ville de Montréal
CIUSSS	Centre intégré universitaire de santé et de services sociaux
Committee	evaluation committee
court	municipal court of the Ville de Montréal
EC	executive committee of the Ville de Montréal
HPS	Homelessness Partnering Strategy
PAMI	<i>Plan d'action montréalais en itinérance</i>
PDQ	poste de quartier
Policy	<i>Politique de développement social "Montréal de tous les possibles"</i>
RAPSIM	Réseau d'aide aux personnes seules et itinérantes de Montréal
SDIS	Service de la diversité et de l'inclusion sociale
SH	Service de l'habitation
SPVM	Service de police de la Ville de Montréal
STM	Société de transport de Montréal

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1. Background

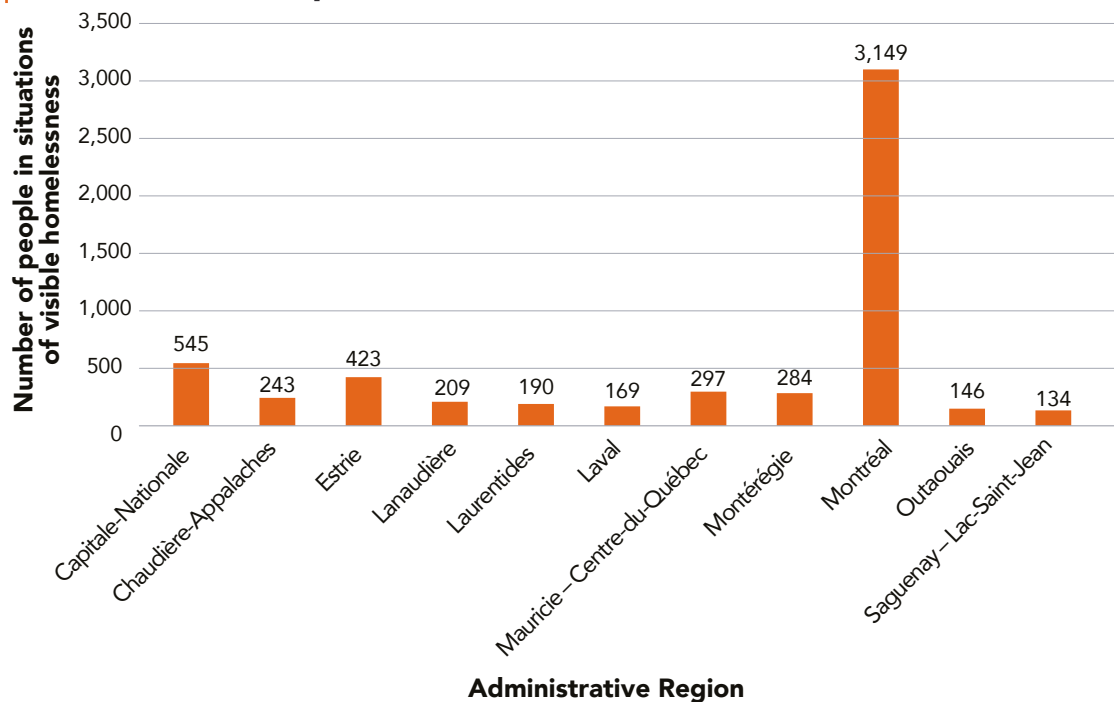
Homelessness covers a variety of realities and has many faces. It can be experienced episodically, cyclically or chronically, and the pathways that lead a person to homelessness are also very varied. They are the result of complex difficulties that sometimes begin in childhood but also reveal themselves at different stages of life. In many cases, homelessness is accompanied by mental health problems or addiction to alcohol, drugs or gambling. People may have difficulty accessing affordable housing and may be forced to stay in substandard or unsafe housing to avoid the street. They may also be forced to stay temporarily with acquaintances.⁴ In addition to men, homelessness is increasingly affecting women, the Indigenous population, immigrants, youth and seniors.

Montréal is the region with the highest number of homeless people in Québec.

In the latest count conducted in the 11 regions of Québec on April 24, 2018,⁵ the number of people in a situation of visible homelessness who live in Montréal was estimated at 3,149 out of 5,789 people, or 54% (see Figure 1).

FIGURE 1

Number of People in Situations of Visible Homelessness in Québec as of April 24, 2018



⁴ Source: Réseau d'aide aux personnes seules et itinérantes de Montréal (RAPSIM) – "L'itinérance à Montréal" and Santé et Services sociaux, Québec "L'itinérance au Québec – Cadre de référence", September 2008.

⁵ Report titled "Dénombrement des personnes en situation d'itinérance sur l'île de Montréal le 24 avril 2018", Government of Québec, Ministère de la Santé et des Services sociaux, 2019.

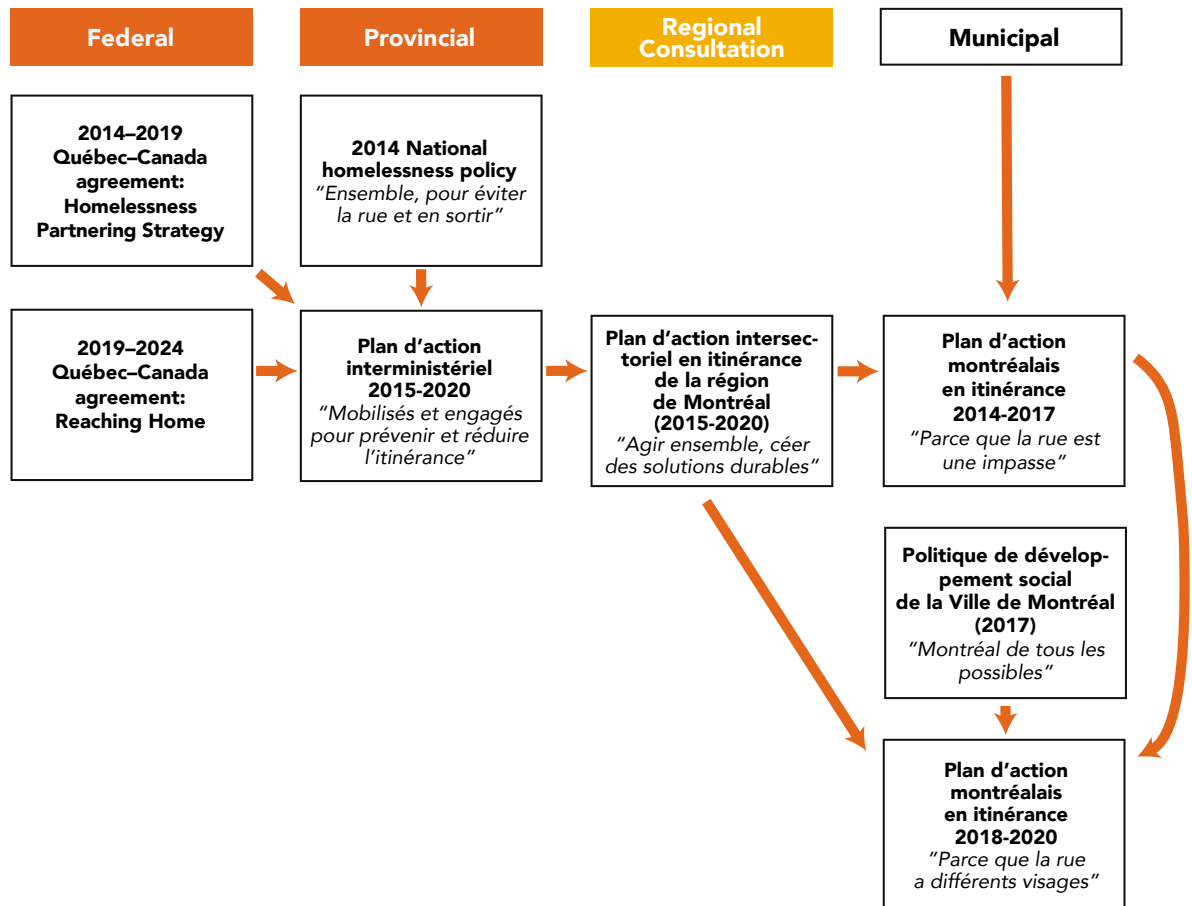
3.4. Plan d'action montréalais en itinérance

Of these, 74% were men, 23% were women, and 3% were of other gender identities. The results of the count also show the over-representation of Indigenous people and immigrants, who represented 12% and 20%, respectively, of this population.

To be able to reduce or prevent homelessness, it is imperative that a variety of services be available and accessible, including:

- food and financial aid;
- emergency accommodations;
- support and referral;
- mental health and addiction treatment and follow-up;
- social housing with community support.

Homelessness is a complex phenomenon and a major social issue. Several government agencies as well as community and institutional partners are involved in reducing homelessness. This represents an additional challenge in terms of taking into account everyone's competencies and the resulting distribution of roles and responsibilities. In such a situation, there is a need for regional consultation between the various stakeholders, who must coordinate their efforts and work in partnership in order to better respond to the issues experienced by these people in situations of homelessness or at risk of becoming homeless. In this sense, efforts have been made in recent years to adopt and implement various policies and action plans to reduce homelessness (see Figure 2).

FIGURE 2**Policies and Action Plans Developed by the Authorities Involved in the Fight Against Homelessness^[a]**

^[a] Prior to the 2014–2017 plan, the Plan d'action ciblé en itinérance 2010-2013 « Agir résolument pour contrer l'itinérance » was implemented.

Source: Figure produced by the Office of the Auditor General using information collected as part of the audit.

The federal government has developed programs over time to support projects designed to prevent and reduce homelessness at the local community level, in this case, the 2014–2019 Homelessness Partnering Strategy (HPS), followed by the program titled 2019–2024 Reaching Home: Canada's Homelessness Strategy.

The same is true for the Québec government, which has a comprehensive strategy to prevent and reduce homelessness specified in its *Politique nationale de lutte à l'itinérance* adopted in 2014 as well as a "Plan d'action interministériel 2015-2020".⁶

The City also has an important role to play in addressing homelessness—in fact, a growing role, given the powers that have been transferred to the City in recent years. With the signing of the *Réflexe Montréal* framework agreement

⁶ A new *Plan d'action interministériel 2021-2026—S'allier devant l'itinérance* was launched by the provincial government in the fall of 2021.

3.4. Plan d'action montréalais en itinérance

in 2016, the Québec government gave the City, as the metropolis of Québec, new powers and responsibilities, particularly in the areas of housing, homelessness and immigration. With respect to the fight against homelessness, the agreement concerns the Bureau de gouvernance en itinérance,⁷ which was created and whose mandate is to guide the work of the strategic committee in light of the progress of the *Plan d'action montréalais en itinérance*.

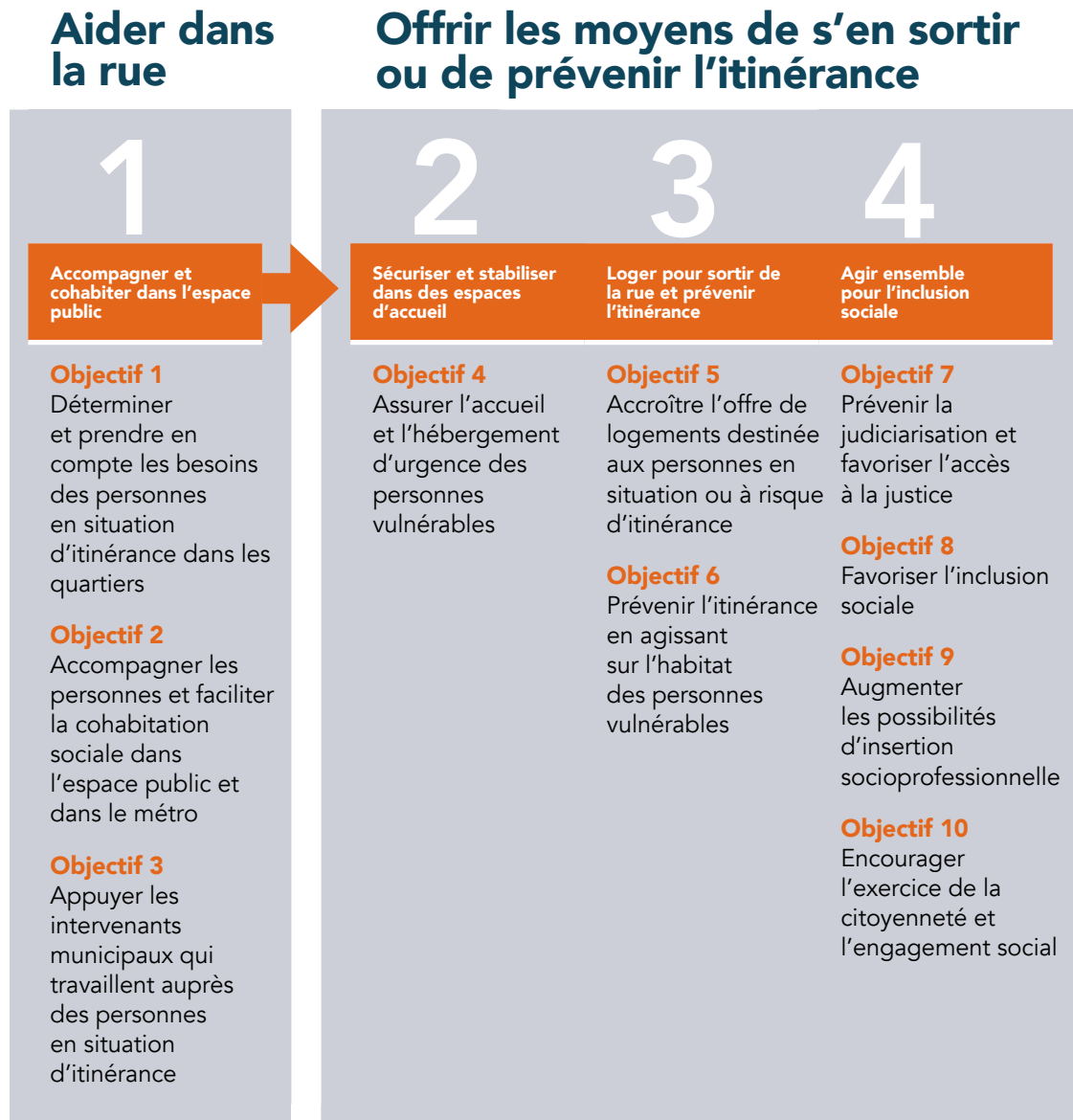
Thus, in June 2017, the City adopted⁸ its first *Politique de développement social « Montréal de tous les possibles »* (the Policy), which focuses on people in vulnerable situations and at risk of social, economic and cultural exclusion. One of this policy's orientations concerns the fight against poverty, including homelessness, in neighbourhoods.

As a result of the Policy, in March 2018, the City also adopted the *Plan d'action montréalais en itinérance* (PAMI) for 2018–2020, which followed on from the two previous plans, 2010–2013 and 2014–2017. The goal of the PAMI is to promote the maintenance and development of the full services needed to improve living conditions and prevent homelessness. Its structure is shown in Figure 3. From these 4 axes and 10 objectives, 58⁹ expected results and 80 indicators of success were derived.

⁷ Composed of the Ministère de la Santé et des Services sociaux and the mayor of Montréal.

⁸ Resolution CG17 0279 of the agglomeration council. It should be noted that the fight against poverty is an agglomeration power.

⁹ Two additional expected results were added to the PAMI, bringing the total to 60, after it was approved by the executive committee (EC) of the Ville de Montréal.

FIGURE 3**Structure of the *Plan d'action montréalais en itinérance***

Source: Service de la diversité et de l'inclusion sociale (SDIS).

In terms of monitoring bodies, both the Policy and the PAMI stipulate that the SDIS¹⁰ is the City's business unit responsible for implementing the PAMI and monitoring its implementation, in collaboration with the other City business units involved, namely the Service de l'habitation (SH), the Service de police de la Ville de Montréal (SPVM), the municipal court of the Ville de Montréal (the court),¹¹ the boroughs and its partners of the Montréal agglomeration.

¹⁰ Formerly known as the "Service de la diversité sociale et des sports".

¹¹ The court comes under the jurisdiction of the City's Service des affaires juridiques.

3.4. Plan d'action montréalais en itinérance

The follow-up committee is responsible for monitoring the implementation of the actions of the PAMI by the different business units. It is composed of representatives from the SDIS, the SH, the SPVM, the Société de transport de Montréal (STM), the court and the participating boroughs.

The SDIS disposes of a budget of close \$3 million per year to fight against homelessness. Two sources provide funding for the PAMI: an operating budget of the SDIS dedicated specifically to homelessness (approximately \$2 million per year) and a budget from the Ministère du Travail, de l'Emploi et de la Solidarité sociale (nearly \$1 million per year). 2020 was the last year of the three-year PAMI. At the end of the PAMI, the SDIS confirms that it will have injected \$8.7 million into the fight against homelessness.¹²

Homelessness is growing and transforming with social changes. According to the 2018 census, the number of people in situations of visible homelessness in Montréal is estimated to be 8% to 12% higher than it was in 2015.

The pandemic has highlighted the day-to-day survival strategies of people in situations of homelessness and has likely contributed to increases in the use of drop-in centres, soup kitchens and emergency shelters and, consequently, to the increased visibility of people in situations of homelessness. It is in this context that we felt it was appropriate to evaluate how the City had managed its third PAMI.

2. Purpose and Scope of the Audit

Under the provisions of the *Cities and Towns Act (CTA)*, we completed a performance audit mission on the *Plan d'action montréalais en itinérance*. We performed this mission in accordance with the *Canadian Standard on Assurance Engagement (CSAE) 3001*, described in the *CPA Canada Handbook – Certification*.

The objective of this audit was to ensure that the implementation of the 2018–2020 PAMI is managed effectively to achieve the expected benefits.

The role of the Auditor General of the Ville de Montréal is to provide a conclusion regarding the objectives of the audit. To do so, we collected a sufficient amount of relevant evidence on which to base our conclusion and to obtain a reasonable level of assurance. Our assessment is based on criteria we have deemed valid for the purposes of this audit. They are presented in Appendix 5.1.

The Auditor General of the Ville de Montréal applies *Canadian Standard on Quality Control (CSQC) 1* from the *CPA Canada Handbook – Certification* and, accordingly, maintains a comprehensive system of quality control, including documented policies and procedures regarding compliance with ethical requirements,

¹² These amounts are in addition to the budgets also deployed as part of the programs of the SH and the court dedicated to people in situations of homelessness as well as those of the SPVM and the boroughs. In the context of this audit, we did not seek to corroborate these budgets other than those of the SDIS.

professional standards and applicable legal and regulatory requirements. In addition, it complies with the independence and other ethical requirements of the *Code of ethics of chartered professional accountants*, which are founded on fundamental principles of integrity, professional competence and due diligence, confidentiality and professional conduct.

Our audit work covered the period from October 1, 2018, to April 30, 2021. However, for certain aspects, data from before and after this period was also taken into consideration. Our work consisted of conducting interviews with employees, reviewing various documents and conducting surveys that we deemed appropriate to gather the necessary evidence. Our work was mainly carried out between September and December 2021, but we also took into account information that was sent to us up to March 2022.

Most of the work was carried out with the SDIS.

At the end of our work, a draft audit report was presented for discussion purposes to the relevant managers of the SDIS. The final report was then sent to the management of this department for the purpose of obtaining an action plan and a timetable for the implementation of the recommendations. A copy of the final report was also sent to the Direction générale and the Direction générale adjointe – Qualité de vie, for their information.

3. Audit Results

3.1. An Action Plan That Makes it Difficult to Assess its Impact on the Homelessness Situation

The evaluation of the PAMI's results should support investment decisions and make it possible to verify the actual impacts. The indicators used to evaluate these results must make it possible to measure the difference between the situation at the time of the evaluation and the situation at the beginning of the action. For example, an indicator for a given action might seek to observe a decrease in the number of people in shelters over a given period of time. And a targeted 25% reduction could be set for this indicator.

In order to carry out this evaluation, the SDIS applied the SMART method,¹³ during the development of the PAMI, to measure the objectives through the expected results by means of 80 indicators of success. Each action was associated with one or more indicators of "success" as well as a timeline. An excerpt from the PAMI showing the actions planned for objective 7, as well as the expected results, their indicators of success and timelines, is presented in Appendix 5.2.

¹³ **SMART** is an acronym used to refer to the attributes that a goal should have. A SMART objective is one that is **specific, measurable, achievable (the SDIS uses "audacious"), realistic, time-bound** (so it has a deadline).

As part of our audit, our review of the PAMI included assessing:

- the extent to which the indicators are based on an understanding of the real needs of the homeless population and make it possible to assess the impact of actions on the situation of homelessness in Montréal;
- the adequacy of the indicators of success in relation to the expected results and actions.

Our analysis of the PAMI in relation to the 80 indicators (see Table 1, details of these findings are provided below) reveals problems in the design of the plan for a vast majority of the indicators. This will have implications for the City's ability to demonstrate real benefits from the implementation of the PAMI, as will be discussed later.

TABLE 1

Overall Picture of the Findings

General findings	Number of indicators for which the finding applies
The indicators of success are output indicators, i.e., indicators referring to the progress of operations with respect to the action such as the production of a report, or the number of people who have taken training, rather than outcome indicators measuring the actual benefit or change in the homelessness situation.	75 indicators (94%)
The needs to be met to reduce homelessness are not presented explicitly for the indicators of success.	80 indicators (100%)
The indicators of success do not make it possible to demonstrate progress or setbacks with respect to what was initially observed or to measure desired changes.	80 indicators (100%)
The link between the action to be taken and the indicator for measuring its achievement is difficult to establish.	7 indicators (9%)

While important for tracking operations, output indicators do not necessarily indicate whether or not progress is being made towards achieving outcomes. Thus, the vast majority (94%) of the indicators focus on the progress of the work (output indicator) and not on the actual benefits expected (impact indicator). For example, the indicator of success for action 2.9 is that “...*quatre projets sont réalisés pour implanter des toilettes*”. This is an output-based indicator, i.e., the operational achievement of the action, not the impact of the action on the homelessness situation in Montréal. For this action, the outcome of the PAMI was for “...*des toilettes publiques et des points d'accès à l'eau sont accessibles*”

aux personnes en situation d'itinérance dans les arrondissements où le besoin est identifié". An impact approach would have looked for improvements in the cleanliness of public spaces, for example. In addition, there is no information in the PAMI on the scope of the target, i.e., whether these 4 projects represent 5%, 10%, 50% or 90% of the identified need for public restrooms to improve the current situation. Thus, the achievement of the expected result does not indicate whether or not this contributes significantly to improving the situation.

Another example of an indicator that measures only the completion (output) of the action and not the impact (outcome) of the action is action 4.2, which is to assist with emergency planning for the homeless during the winter months. The indicators of success for this action in the PAMI include establishing a regional mobilization plan and producing an occupancy report. However, the production of the occupancy report cannot in itself be an indicator of the success of the action. In the event that the report mentions a deterioration in shelter occupancy, could the SDIS nevertheless have said that the action had been achieved as the indicator to produce a report would have been achieved? An indicator capturing the number of people who could not be accommodated in these emergency shelters would have provided a more accurate picture of the needs to be met. If the expected result had been a decrease in this number, year over year, this would have provided a better indication of the impact of the measures taken to this effect.

A third example of these shortcomings in the development of the PAMI's indicators is action 5.1, whose indicator is to develop 950 units of social and community housing for people experiencing or at risk of homelessness. While the mere fact of developing these housing units is an improvement in itself, the indicator here again focuses on the operationalization of the action from the City's perspective and not an outcome from the perspective of the homelessness situation in Montréal. Thus, an outcome indicator that focused on the decrease in the number of people waiting for housing would have been a better indicator of whether or not the situation has improved. Moreover, this indicator, in its current form, does not relate to the actual needs on the ground. What does a supply of 950 additional housing units represent? Is this enough, or even significant, considering that in 2018 the number of people in situations of visible homelessness was estimated to be approximately 3,149?

Another instance where the SDIS used an output indicator that does not assess the magnitude of the action and its impact involves action 3.3, which was to provide homelessness training to municipal and paramunicipal employees. Four indicators of success were associated with it, namely:

- *"120 employés reçoivent une formation";*
- *"150 inspecteurs de la STM reçoivent une formation";*
- *"6 activités de sensibilisation sont réalisées";* and
- *"Tous les agents des postes de quartier (PDQ) du SPVM effectuent une mise à jour de leurs connaissances sur l'itinérance".*

3.4. Plan d'action montréalais en itinérance

With the exception of the last indicator, where it is understood that this is 100% of the SPVM's neighbourhood police station officers, the other three indicators do not provide a measure of the magnitude of what it means to train 120 employees out of the total pool of all municipal employees. In addition, no link is established with the duties of these employees. Does training 120 employees who have no business dealings with the homeless really improve the situation? Yet the indicator of success would say that the action had reached the target, whereas the actual expected result for this action in the PAMI is that:

"...les employés sont mieux outillés pour répondre aux enjeux et besoins des personnes en situation d'itinérance, notamment les femmes, les travailleuses du sexe et les membres des Premières nations et Inuit".

In this case as well, the addition of an outcome indicator related to the original issues observed would have provided a better measure of the expected improvement for the targeted employees in the execution of their duties.

Finally, our analysis revealed that some indicators are not in line with the actions they seek to measure. Indeed, seven success indicators (9%) refer to the production of reports, which is not a direct assessment of the success of the actions concerned.

One example is action 3.2, which is to *"...réaliser des activités de rapprochement entre les policiers, les partenaires et les personnes en situation d'itinérance"*. Its success indicator is *"...un rapport annuel indique le nombre d'activités ou d'événements auxquels le SPVM a participé avec les partenaires en itinérance et dans lesquels il y avait la participation de personnes en situation d'itinérance"*. The indicator suggests that the target is to draft a report. However, a report may well indicate a decrease in the number of activities or events, for example, compared with the previous year, and the indicator, taken literally, will capture the success of the action, i.e., the publication of a report. If the indicator had instead measured the achievement of *"X number or an increase in the number of activities or events in which the SPVM participated"*, then it would have effectively measured the success of the action.

The same is true for action 2.5, which is *"...améliorer la référence vers les ressources d'aide"*, whereas one of the indicators of success is *"...un rapport annuel [qui] indique le nombre de références effectuées par le service de la ligne 211"*. An increase in the number of referrals made, for example, would have allowed an assessment of the impact of the action, but the fact that a report indicates the number of referrals does not indicate that the action was a success.

With so many indicators of success that focus more on the operationalization of the action than the assessment of an improvement in the homelessness situation, and with so many indicators that do not put the expected result in perspective with respect to the need, it is difficult to see how the evaluation of the implementation of the PAMI allows the City to affirm whether or not it has contributed to improving the homelessness situation in Montréal over the period covered by this plan.

3.1.A. Recommendation

We recommend that the Service de la diversité et de l'inclusion sociale develop specific and measurable indicators that are in line with the actions taken and that relate to the needs of the homeless, in order to assess the impact (outcome) of the actions taken and thus help improve homelessness in Montréal.

3.2. A Project Selection Process for the Allocation of Financial Contributions That Does not Provide Assurance of Impartiality and Fairness

Several actions of the PAMI involve supporting the projects of external organizations. For example, in 2018, the SDIS conducted a call for proposals from agencies serving people experiencing homelessness.

It should be noted that, at that time, there was no administrative framework from the City that defined the rules for the composition of the analysis committees and the process for evaluating projects to grant financial contributions. Such administrative guidance became effective in March 2020. It is titled, "*Composition du comité d'analyse et du processus d'évaluation des appels de propositions ou de projets visant à attribuer des contributions financières à des organismes à but non lucratif*".¹⁴ However, this administrative framework only applies to contributions over \$25,000.

Although the call for proposals and the establishment of an evaluation committee (the Committee) by the SDIS took place in 2018, i.e., before the administrative framework came into force in 2020, our audit work examined it from the perspective of good practices to be followed in this area, including:

- the composition of the Committee;
- the certification of the absence of conflicts or of the appearance of conflicts of interest involving committee members;
- the existence of an approved analysis grid;
- the documentation of the analysis of the proposals as well as the amounts awarded by the committee.

Project Evaluation

As a result of the single call for projects issued in early 2018 as part of the implementation of the PAMI, 60 projects were submitted by organizations. The financial assistance requested for these 60 projects totalled \$4.4 million while the budget available to the SDIS to support organizations totalled just over \$2.5 million.¹⁵ According to the operating mode described to us during

¹⁴ Administrative framework number: C-OG-DG-D-20-001, March 5, 2020.

¹⁵ This amount was not dedicated exclusively to calls for proposals.

3.4. Plan d'action montréalais en itinérance

our interviews, projects would be selected on the basis of the best score awarded following an evaluation by a committee, until the available budgets were exhausted.

The committee formed by the SDIS was composed of five people, including two professionals working within the SDIS, one person representing the SPVM and two professionals from the Centre intégré universitaire de santé et de services sociaux (CIUSSS) of the Centre-Sud de l'Île-de-Montréal.

Prior to this process, an evaluation of some projects was also conducted by borough community development advisors or a court representative. Although they were not part of the committee, their evaluations were taken into consideration.

An Excel spreadsheet was completed on site during the Committee meetings¹⁶ to record the scores given by each member as well as the scores received by the boroughs and the court. An average was then calculated for each project to determine their ranking in terms of scoring.

In this context, our audit work consisted of examining the following aspects in particular:

- the impartiality of the Committee;
- the compilation of evaluation results;
- the documentation of evaluations.

We did not obtain any evidence that the members of the Committee had signed a certification of independence. Although not required, the impartiality of a committee is important to ensure that members can carry out their responsibilities independently and objectively to ensure a fair and non-partisan evaluation of projects.

A table compiling the results was produced by the SDIS following the evaluations conducted for each project. It was confirmed to us that all of the projects were discussed during the Committee meetings. All the committee members' analyses (conducted using an evaluation grid), including those conducted by borough community development advisors or a court advisor, were shared in the form of discussions. Although there was no obligation of confidentiality in the assessments of each member, good committee practice generally suggests that the process be impartial and independent. However, it seems clear that, the way it was done, the purpose of the exercise was not to preserve the independence of each individual.

A review of the table in which the results were compiled reveals that projects classified under the PAMI's fourth axis had a score for only three of the five members of the Committee. The scores attributed by both of the SDIS representatives were missing although they confirmed their presence, without being able to corroborate it.

¹⁶ According to the information obtained, the Committee met twice, on April 18 and 19, 2018.

As part of our audit, we sought assurance that the scores assigned to the projects by the Committee members were consistent with the results reported in the results compilation table. However, as the evaluation grids filled out by the Committee members were not tracked by the SDIS, it was impossible for us to make this reconciliation.

In the same vein, we also sought to corroborate the assessments made by the community development advisors of the boroughs concerned, as well as those made by the court before those of the selection committee. First of all, we wanted to make sure that the evaluation criteria of the projects were the same as those in the evaluation grid developed by the SDIS and provided to the Committee members. Our second objective was to compare the scores given by the Committee with those entered in the results compilation table. However, we were unable to conduct a complete comparative analysis, since the SDIS was unable to provide us with all the evaluation grids completed by these representatives for the projects submitted to them for evaluation. For the grids that could be tracked and that were transmitted to us, we noted that they were not always scored.

Overall, our review of the evaluation grids reveals the following:

- Of the 15 evaluation grids completed by the boroughs or by the court that we obtained from the SDIS:
 - all corresponded to the one developed by the SDIS for the evaluation of projects by the members of the Committee;
 - the grids of 10 projects contained scores, while the other 5 only had comments, without any score being assigned;
- According to the results compilation table, for 27 of the 60 projects submitted, the name of a borough councillor or court representative for the project evaluation is indicated;
 - for 17 of these 27 projects, the compilation table shows a score in the “rounding” column, while for the other 10, no score is listed.
- For 4 other projects for which a score is assigned in the “rounding” column, however, the name of the evaluator is not indicated.

Under these circumstances, it was difficult, if not impossible, to corroborate the accuracy of the assessments made by the borough or court officials. In this respect, we feel that the process lacked structure and rigour.

Project Selection

Of the 60 projects submitted by organizations in the call for projects, 45 were finally selected for financial support by the SDIS. Based on the evaluation process, the committee assigned a score to the evaluated projects and also recommended the amount of financial support for the selected projects.

3.4. Plan d'action montréalais en itinérance

The selection of projects was to be made starting with the highest rated projects based on the committee's evaluation and so on, until the available budgets had been depleted. An analysis¹⁷ of the projects carried out by the Bureau du vérificateur général reveals that the acceptance of projects by the Committee did not respect this rule, since the 45 projects for which amounts were recommended are not those that obtained the highest scores.¹⁸ For example, for axis 1 projects, 1 project with a score of 81% was not selected, while 2 projects with scores of 78% and 69% were selected. In the case of axis 2 projects, 2 projects with scores of 82% and 79% were not selected, while 2 other projects with scores of 66% and 60% were selected. Finally, one axis 4 project was selected although it was not assigned a score.

Given the results of our analysis, we question the reasons that led to making these choices rather than respecting the selection methodology initially established. Although a grid to assist in the analysis of projects may have been provided to the members of the Committee, including the borough and court representatives, it does not contain any guidelines as to the method used to select projects. Moreover, no other documentary evidence in this sense was presented to us by the SDIS.

In our review of the successful projects, we found that in almost all cases (42 out of 45), the amounts of financial support recommended by the Committee were reduced compared with the amounts requested by the organizations. In fact, the amount of support requested by the organizations for these 45 projects totalled \$3.67 million, while the amount of support recommended for these same projects totalled \$1.63 million.¹⁹ For the 42 projects whose recommended amount of financial support was reduced by the Committee, the decrease ranged from 4% to 92%. With respect to the 92% variance, the organization requested \$400,000, and the Committee recommended \$30,000. Although the SDIS told us that the goal of the call for proposals was to support as many projects as possible within the City's budget, the comments in the evaluation table are not explicit in terms of justifying the difference between the amounts requested and the amounts recommended. Considering that the percentage decrease in recommended amounts was not the same from one project to another, these explanations would have been all the more relevant in demonstrating the transparency and impartiality of the process.

In our opinion, the operating mode surrounding the project selection process, including the certification of the independence of the Committee members, the evaluation of the projects and the determination of the amounts of support by the members of the Committee, would have benefited from being documented, according to specific parameters established before the Committee met in order to ensure the impartiality, transparency and fairness of the process put in place.

In addition to the above, we noted that the indicators of success for actions 2.4, 2.6 and 7.2 of the PAMI name specific organizations for carrying out activities. These organizations participated in the call for projects to support projects

¹⁷ Axis 3 (housing) was not targeted by the SDIS's call for projects.

¹⁸ This observation remains true whether the projects are ranked for all of the intervention axes or within individual axes.

¹⁹ The SDIS could not use all of its \$3 million yearly allocation for these projects, as a portion of this amount was also being used to complete other PAMI actions that are not related to this call for projects.

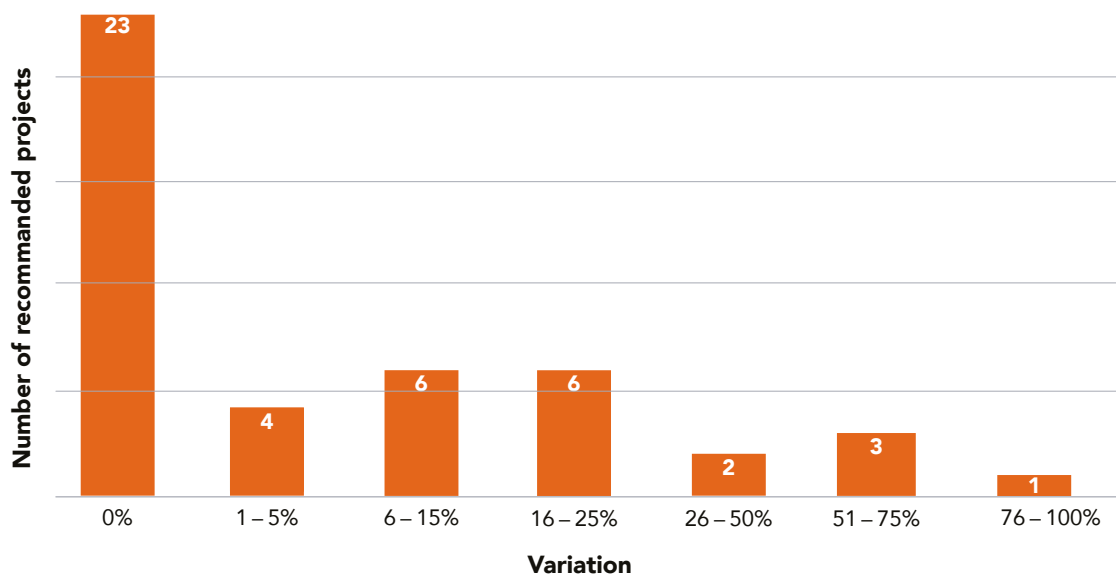
related to the objectives of the PAMI, issued by the SDIS in 2018, and their proposal was selected for support. However, the fact that these organizations are explicitly mentioned in the PAMI's targets suggests that the service required cannot be provided by other non-profit organizations. This also contributes to discrediting any subsequent call for proposals process in terms of its impartiality, since, from the outset, the PAMI, through the wording of some of the indicators, targets the organizations that will be granted financial support, regardless of the establishment of a committee of submitted projects.

Analysis by the Service de la diversité et de l'inclusion sociale of the Recommended Amounts of Support

According to the SDIS, the Committee's recommendations, including with respect to the amount to be awarded, are for information purposes only. In response to this recommendation, the SDIS conducts additional validations and analyses, such as verifying the calculation of employee salaries in agencies, ensuring a clear understanding of the nature of the requests, validating the proportion of City funding in relation to other funders and validating the SDIS's budget availability. The amounts awarded by the SDIS may therefore vary from what is requested by the organization and recommended by the Committee. As a result, the SDIS's support to organizations totals \$1.79 million rather than the total amount of \$1.63 million recommended by the Committee.²⁰ Of the 45 projects and amounts recommended by the Committee, the SDIS increased the support offered for 22 of these projects (see Figure 4). Variations between what the Committee had recommended and what the SDIS granted can range from a few percentage points to increases of more than 25% for six of the 22 revised projects (representing 27% of these projects).

FIGURE 4

Variation Between the Amount of Support Recommended by the Evaluation Committee and the Support Provided



²⁰ However, no organization was awarded more than it requested.

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While the change in the amount awarded to the organization may be justified, the SDIS was unable to provide us with documentation supporting the analyses it had performed to determine the amount of the financial contribution to be submitted for approval by the EC.

Given the lack of documentation and the fact that the SDIS's direction was to support as many projects as possible and that, in the end, an additional \$160,000 was available, we question why this money was not used to support additional projects rather than increasing support for some of the projects. We also question why support was not indexed equally for all of the 45 projects recommended by the Committee.

This situation diminishes the transparency and impartiality that should be present in an evaluation process of projects submitted involving the establishment of a committee.

3.2.A. Recommendation

We recommend that the Service de la diversité et de l'inclusion sociale follow any administrative framework in effect for the granting of financial contributions, regardless of the amount of the contribution requested, by ensuring, among other things, the independence of the selection committee and the documentation of the evaluation process, including the recommendation process, in order to ensure and demonstrate the impartiality and fairness of the process established for the selection of projects for financial support.

3.2.B. Recommendation

We recommend that the Service de la diversité et de l'inclusion sociale no longer name the organizations that can carry out the actions of the *Plan d'action montréalais en itinérance* in its indicators of success, in order to avoid compromising the impartiality and fairness of any future project evaluation and selection process.

3.2.C. Recommendation

We recommend that the Service de la diversité et de l'inclusion sociale develop clear project evaluation parameters and document the decisions and analyses of the process to select projects financially supported as part of the fight against homelessness to ensure the transparency of the process.

3.3. Mechanisms to Monitor the Implementation of the *Plan d'action montréalais en itinérance* Requiring Improvement

Follow-up of the Implementation of the *Plan d'action montréalais en itinérance*

With respect to the follow-up of the implementation of the PAMI, there is confusion as to how this responsibility is assigned. The PAMI states both that “...le SDIS assumera la mise en œuvre et le suivi de l’implantation du [PAMI]” and that “...le comité des porteurs est une instance administrative interne chargée de suivre la mise en œuvre du [PAMI]”.

In fact, it was the members of the follow-up committee, which is not composed solely of representatives of the SDIS, who monitored the implementation of the actions. Meetings of the follow-up committee were infrequent (one meeting per year from 2018 to 2020), but members also met outside of these meetings to quickly identify obstacles to implementing the PAMI actions, without the need to increase the frequency of more formal meetings with all of the members. However, no minutes of the formal meetings were taken. We are therefore not able to corroborate the monitoring that was done and the extent to which the follow-up committee controlled the situation.

With respect to the SDIS, follow-up consisted essentially in obtaining information on the actions implemented by the business units and the partners involved in the PAMI in order to compile them and report on them annually. To ensure that they adequately reflect the achievements, we wanted to examine the process established by the SDIS for this purpose. No corroboration of the information entered by the business units in the PAMI implementation tracking form is formally done by the SDIS. Only verbal exchanges between the SDIS and the business units concerned would make it possible to validate certain information and examine it more closely. For partner organizations that received funding, the SDIS requires a written report each year.

The SDIS, as the designated department responsible for monitoring the implementation and follow-up of the PAMI, has not developed structured and documented mechanisms to validate the actions carried out by the business units. In addition, there are no specific requirements and no instructions have been given to ensure that the SDIS systematically obtains the evidence to support the actions listed in the completed table. There is therefore a risk that balance sheets that do not accurately reflect the situation will be forwarded to the SDIS, which will use them to produce the accountability report provided to the authorities.

Monitoring of Projects Supported by the Service de la diversité et de l'inclusion sociale

The projects supported by the SDIS are monitored by the advisors assigned to the files of the organizations concerned. Following the acceptance of applications for financial support, a funding agreement is signed by the City and the organization for each project. These agreements set out the requirements to be met by the organizations.

When the project is completed, the SDIS advisor assigned to the file must analyze and approve the final activity report produced by the organization, prior to the payment of the last instalment of the financial support, taking into account the expected deliverables and the amounts spent.

In order to assess the project monitoring mechanisms implemented by the SDIS, we examined a sample of five projects selected as a result of the call for projects issued in 2018.

Our review consisted of substantiating the following:

- Evidence of funding agreements signed by the parties;
- Evidence of documentation of the advisor's analysis and approval of the activity report produced by the organization prior to the final payment of the financial contribution.

We noted that the organizations' funding agreements had been adequately approved (signed by the parties) and that all final activity reports produced by the organizations had been forwarded to the SDIS within the required timeframes.

With respect to the analysis of the final activity reports prepared by the organizations, it should be noted that the purpose of this exercise is to demonstrate not only that the activities were carried out, but also that the funds provided by the City were used for the intended purposes. Furthermore, in the funding agreement signed by the organizations, clause 5.3 titled "*Ajustement de la contribution financière*" states the following:

"Le responsable peut exiger la remise par l'Organisme de toute somme n'ayant pas servi à la réalisation du Projet. De plus, le Responsable pourra réduire le montant de la contribution financière si la réalisation du Projet ne requiert plus la somme maximale".

For the five projects sampled, we did not track any evidence of a documented analysis of the organization's final activity report and its approval by a SDIS advisor. In addition, there is no consistent and structured methodology surrounding the analyses performed by the various SDIS advisors of the final activity reports prepared by the organizations. Instead, each of the advisors uses their own method and do not document their analyses. The advisor's approval

is communicated by email to the organizations concerned. The final payment of the contribution is, in effect, considered to be an implicit approval by the advisor, seeing as it is the advisor who recommends payment to the organization.²¹

For the application of clause 5.3 of the funding agreement signed by the organizations, we tried to compare the balance sheet of the activities carried out that appeared in the final activity report with the activities planned according to the request for support sent to the SDIS. Moreover, we also tried to compare the estimated budget submitted to justify the amount of support requested with the actual expenses incurred to hold the activities. In the absence of a documented analysis of the final activity report by the SDIS advisors, it was not possible for us to determine on what basis the SDIS advisors approved the final activity reports for the purposes of applying clause 5.3 of the funding agreement.

In order to ensure the transparency, uniformity and fairness of the monitoring process for financially supported projects and to be able to demonstrate the analyses supporting the validations surrounding the application of clause 5.3, we would have expected the SDIS to have a formal analysis and documentation process that is then applied by its representatives. We would also have expected that the organizations' activity reports bear evidence of approval by the advisor assigned to the file in order to recommend the final financial support payment.

Furthermore, when we attempted the comparison exercise ourselves, we were able to see that the amount requested by the organization in its initial application for support versus the amount actually granted had been revised downward by the SDIS in four of the five projects making up our sample. The differences for these four projects ranged from 8% to 56%. However, the SDIS did not ask the organizations, as a result of obtaining funding, to revise the scope of deliverables expected given the new budget. Thus, it could become difficult for the SDIS at the end of the project to determine whether the City should require the reimbursement of a portion of the support without first obtaining the details of an adjusted deliverable. According to the information obtained from the SDIS, a provisional budget and an adjusted deliverable are not requested from the organization, nor have decision support guidelines been established beforehand by the SDIS.

In our opinion, this approach does not allow the SDIS advisor to make an informed decision, given the lack of adjusted comparative data (e.g., the number of hours of service or the number of activities planned and modified in the project). Furthermore, in the absence of documentation by the SDIS advisor regarding the monitoring of the activities carried out by the organization in return for the funding granted by the City, it becomes difficult to justify the adequacy and impartiality of the decisions made. In addition, since the consultant's comparison exercise is based on a budget that is not adjusted according to the amount determined by the City, it becomes very difficult to justify that

²¹ Note that the disbursement to the City's accounting system requires the approval of the department manager.

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the money was not spent as planned and then demand reimbursement. This exercise is made all the more difficult by the fact that most projects submitted by organizations have more than one source of funding.²²

We nevertheless believe that the requirement to obtain an adjusted provisional budget from the organizations, for comparison with actual expenditures and activities carried out, as well as the introduction of guidelines by the SDIS for the evaluation of the project by the advisor, would make it possible to standardize the methods used internally and to better guide and support decision-making in the event that the budgeted amounts were not all spent or that the planned actions were not all carried out.

3.3.A. Recommendation

We recommend that the Service de la diversité et de l'inclusion sociale validate the concordance of information from other business units involved in the implementation of the actions, by adopting structured and documented mechanisms to ensure the production of a balance sheet that adequately reflects achievements in relation to the actions provided for in the plan.

3.3.B. Recommendation

We recommend that, in order to ensure that a record is kept of the analyses carried out, to ensure uniformity of procedures and to better guide and support decision-making with regard to the payment of financial contributions, the Service de la diversité et de l'inclusion sociale:

- improve its process for analyzing final reports produced by the organizations by implementing documented evaluation and approval procedures;
- require them to submit an adjusted provisional budget based on the support provided if it differs from the amount requested by the organization.

²² For example, budgets from the federal government through the Homelessness Partnering Strategy (HPS), now known as Canada's Homelessness Strategy.

3.4. Reporting That Does not Fully Reflect the Results Achieved Against the Indicators of Success Provided for in the Plan

Different forms of accountability related to the implementation of the PAMI were identified (see Table 2).

TABLE 2

Forms of Accountability for the *Plan d'action montréalais en itinérance*

Form	Frequency	Recipients
Highlights	Annual ^[b]	<ul style="list-style-type: none"> • Direction générale • Elected official in charge • Mayor
Summaries	Annual ^[b]	<ul style="list-style-type: none"> • Follow-up committee • Partners^[d]
PowerPoint presentation	Annual ^[b]	
2018–2020 three-year review ^[a]	At the end of the PAMI	<ul style="list-style-type: none"> • Follow-up committee • Partners • Direction générale adjointe – Qualité de vie^[e]
Press release	April 2019 ^[c]	<ul style="list-style-type: none"> • General public

^[a] At the time of our audit, the three-year review had not yet been released. The communication strategy was to be determined.

^[b] Excluding the year 2020 due to the pandemic.

^[c] The only one at the time of our audit.

^[d] These partners are: the RAPSIM, the Mouvement pour mettre fin à l'itinérance à Montréal and the CIUSSS.

^[e] The review presented to the deputy director-general of Qualité de vie is slightly different from the three-year review. In particular, the indicators of success are presented and no score (in percentage) is awarded for the success of the actions.

In light of this information, the “Highlights” are, as of the date this report was drafted, the only information communicated annually²³ to the higher authorities at the SDIS, since the reports and presentations are for internal use with the partners and the follow-up committee. However, the information disclosed in these “Highlights” is brief and does not report on the results of all of the PAMI's indicators of success. Moreover, in these “Highlights”, the actions are not explicitly mentioned and their realization is not compared with the target that had been set (with the exception of axis 3 concerning social and community housing, where it is mentioned in 2019 that more than 60% of the target is being achieved).

²³ “Highlights” were produced for the 2018, 2019 and 2021 reviews (nothing was published in 2020 due to the pandemic).

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For example, the 2019 “Highlights” present the achievements in the following very succinct manner and provide only partial information, stating, for example, that in terms of all the training to be completed under the PAMI:

“...neuf formations ont été offertes aux employés municipaux et paramunicipaux afin de mieux les outiller pour répondre aux besoins et aux enjeux des personnes en situation d’itinérance”.

For their part, the annual reviews produced and the 2018–2020 three-year review present detailed descriptions of results for each of the actions. In addition to the description of the results, the three-year report also presents a percentage representing an evaluation of the achievement of the different actions. However, the indicators of success are not presented. Our analysis of the reviews revealed that, while the results generally document the indicators of success (whether or not the specified targets were met), this is not systematically the case.

In fact, according to the evaluation carried out on the 40 actions provided for in the three-year review, we observed that in four cases (2.4, 3.1, 4.1 and 10.1), the information disclosed did not allow us to corroborate the achievement of any of the targets (indicators of success) associated with them, and in three cases (3.1, 3.3 and 9.2), a score of 100% was awarded even though not all the targets were achieved.

For example:

- The results reported in the 2020 review and three-year review for action 2.4, which is to *“Bonifier la médiation sociale par le biais du Pôle de services en itinérance (PSI) dans le métro”*, do not confirm whether the target of doubling the number of social mediation hours (one of the indicators of success) has been achieved;
- For action 3.1, *“Embaucher un conseiller en concertation à la STM pour coordonner les efforts en matière d’intervention sociale dans le métro”*, the results of the 2020 review and the three-year review do not provide information on hiring an advisor, producing an annual report or using a survey to determine employee satisfaction. Consequently, they do not allow us to conclude that the targets specified by the indicators of success have been met. In addition, we cannot confirm the criteria used to justify a 100% success rating;
- For action 3.3, *“Offrir de la formation sur l’itinérance aux employés municipaux et paramunicipaux qui travaillent auprès des personnes en situation d’itinérance”*, the results confirm that the indicator of success *“150 inspecteurs de la STM reçoivent une formation”* could not be achieved, whereas a success rate of 100% is assigned to the action.

Although the results are not always perfectly aligned with the indicators of success, these indicators are nevertheless consistent with the expected results of the actions as described in the PAMI. In this regard, it should be noted that the PAMI specifies that the indicators of success were developed to “...fixer des objectifs atteignables qui pourront être mesurés dans un exercice de bilan annuel”. We would have expected a correspondence between accountability and the indicators of success.

Finally, we found that the PAMI reviews were not submitted to the EC, even though this decision-making body had initially approved the content. In fact, this was not originally planned. Instead, the reviews produced were presented to the follow-up committee, whose representatives are the same as those who participate in producing these same reviews. As stated in the PAMI, while the purpose of the outcome evaluation is to support investment decisions and verify actual impacts, we cannot be certain that the PAMI and accountability in its current form will have achieved this objective.

3.4.A. Recommendation

We recommend that the Service de la diversité et de l’inclusion sociale ensure that accountability reporting is based on data that allows the real impacts of the actions implemented to be evaluated according to a clear and consistent methodology, so that the reports produced accurately reflect the situation and can guide decision-making, if necessary.

3.4.B. Recommendation

We recommend that the Service de la diversité et de l’inclusion sociale improve its practices by providing full accountability for the progress of initiatives on the fight against homelessness to the authorities, so that they can take note of the results achieved through the reports produced in a timely manner.

4. Conclusion

The Ville de Montréal (the City) is the region of Québec with the largest number of people in situations of visible homelessness. Homelessness is a complex phenomenon and a challenging social issue, and it must be recognized that in order to combat it and implement appropriate assistance measures, the City's efforts must be part of the mobilization and collaboration of all the various governmental and institutional partners as well as community organizations.

In this context, in March 2018, the City adopted the *Plan d'action montréalais en itinérance* (PAMI) for 2018–2020, which followed the two previous plans, 2010–2013 and 2014–2017.

The PAMI was developed using the SMART method²⁴ to set achievable and measurable goals to assess the achievement of operational targets.

However, our review of this report provides little or no information on the needs that must be addressed to assess the impact of the actions and the effects on the reduction of homelessness in Montréal. We were not able to obtain the assurance that the implementation of the PAMI for 2018–2020 benefited from an impartial and fair project selection process and structured and documented monitoring mechanisms.

Thus, the tools used to measure the implementation of the PAMI and those used for reporting purposes do not allow us to confirm that the expected benefits were obtained.

More specifically, the major findings that we draw in relation to the evaluation criteria are as follows:

Indicators of Success and Impact of Actions to Combat Homelessness

- The needs that must be addressed to reduce homelessness are not explicitly presented, which makes it difficult to measure the effects of actions taken to reduce homelessness.

Impartiality of the Process Used to Select Projects for Financial Support

- The lack of documentation regarding the evaluation process for projects to be funded—including, among other things, the certification of the independence of the members of the evaluation committee (the Committee), the evaluation of projects and the determination of the amounts of support by the members of the Committee—does not demonstrate the impartiality, transparency and fairness of the process put in place;

²⁴ **SMART** is an acronym used to refer to the attributes that a goal should have. A SMART objective is one that is **specific, measurable, achievable (the SDIS uses "audacious"), realistic, time-bound** (so it has a deadline).

- Some of the PAMI's indicators of success specifically mention the names of organizations for the completion of activities. This contributes to discrediting any subsequent call-for-proposals process in terms of its impartiality when it is these same organizations that have been selected, following the call for projects, to continue the activities and thus respond to certain actions of the PAMI;
- While the amounts awarded to the organizations can be explained, there is no documentation at the Service de la diversité et de l'inclusion sociale (SDIS) to support the analyses carried out to determine the financial contribution awarded to each project or to support a decision to revise the scope of the amounts recommended by the selection committee.

Mechanisms to Monitor the Implementation of the Actions of the *Plan d'action montréalais en itinérance*

- There are no minutes of the formal meetings of the follow-up committee that is responsible for the implementation of the PAMI. It is therefore not possible to assess the follow-up committee's monitoring of the progress of achievement of the PAMI;
- The SDIS receives information on the progress of actions for which other business units are responsible, but it does not corroborate or validate this information;
- There is no evidence of a documented analysis of the organizations' final activity reports, nor is there evidence of approval of these by an SDIS advisor.

Accountability

- There are no annual progress reports on the implementation of the PAMI submitted to the executive committee of the Ville de Montréal (EC), even though it is the EC that approved the PAMI in the first place;
- The "Highlights" are the only information on the implementation of the PAMI that is reported annually to the jurisdictions, and they provide only a brief overview of the achievements of the four axes of the PAMI. There is no specific information related to the actions of the PAMI and the achievement of the expected results. Decision makers cannot know whether the targets set for the PAMI's actions have been met;
- The annual reviews do not explicitly state whether the indicators of success are being met according to the planned timelines.

5. Appendices

5.1. Objective and Evaluation Criteria

Objective

Ensure that the management associated with the implementation of the 2018–2020 *Plan d'action montréalais en itinérance* (PAMI) is effective and achieves the expected benefits.

Evaluation Criteria

- The indicators of success associated with the actions planned in the PAMI make it possible to measure their impact on the situation of homelessness in Montréal.
- The selection of projects to be funded follows an impartial evaluation process and is based on selection criteria that meet the objectives of the PAMI.
- Follow-up mechanisms have been planned, are being applied and are adequate to ensure the implementation of all the actions planned by the Ville de Montréal in the PAMI.
- Accountability mechanisms are in place to inform authorities of the achievement of expected benefits.

5.2. Action, Expected Result, Indicator of Success

Axe d'intervention 4

Agir ensemble pour l'inclusion sociale

OBJECTIF 7 Prévenir la judiciarisation et favoriser l'accès à la justice			
ACTIONS	RÉSULTATS ATTENDUS	INDICATEURS DE RÉUSSITE	ÉCHÉANCIER
7.1 Mettre en œuvre les décisions du comité exécutif de la Ville relativement à la judiciarisation et le profilage social et racial des personnes en situation d'itinérance dans l'espace public.	Une analyse de la réglementation actuelle à potentiel discriminatoire et l'examen des pratiques d'émission des constats d'infraction sont réalisés par les services concernés;	Le rapport de résultats l'analyse est déposé;	2018 et en continu
7.2 Renforcer les programmes de déjudiciarisation des personnes en situation d'itinérance à la Cour municipale.	Le Programme d'accompagnement justice – itinérance à la Cour (PAJIC) est intensifié afin d'y intégrer plus de personnes annuellement;	300 personnes sont intégrées annuellement selon les résultats de la Clinique Droits devant; 30 personnes sont intégrées annuellement dans le volet Autochtones selon les résultats du Centre de justice des Premiers Peuples de Montréal;	2018 et en continu
	Le Programme d'accompagnement justice – Toxicomanie (PAJTO) est consolidé par l'augmentation des partenariats avec des organismes spécialisés.	Un premier rapport indique le nombre de partenariats réalisés pour le PAJTO.	2018 et en continu

Source: 2018–2020 PAMI.



3.5.

Management of Public Roadwork – Integrated Planning and Coordination Component

March 15, 2022

2021 ANNUAL REPORT

Auditor General of the Ville de Montréal

3.5. Management of Public Roadwork–Integrated Planning and Coordination Component

Management of Public Roadwork – Integrated Planning and Coordination Component

Background

For several years, the Ville de Montréal (the City) has been known for the multitude of roadwork projects being carried out on the municipal road system, as well as the countless detours this has caused. These numerous projects are necessary to repair, optimize or modernize the City's infrastructure. Work done by the City accounts for more than 30%¹ of all the roadwork on the territory. In addition to the work carried out by the City, there is work done by external partners, including the ministère des Transports du Québec (MTQ), urban coordination network (UCN), such as Hydro-Québec, Energir and Bell, and private entrepreneurs. This requires planning and coordination of all the roadwork to minimize disruptions to the mobility of users. Two divisions of the Service des infrastructures du réseau routier (SIRR) primarily share these responsibilities. One division is responsible for planning and coordinating the City's projects prior to the start of work on the ground to prevent mobility issues. The other division performs the operational coordination of impediments on the ground to ensure accessibility and the maintenance of traffic and ensures disruptions during completion of infrastructure projects are kept to a minimum by recommending the implementation of various mitigation measures.

Purpose of the Audit

To ensure that the City has a structured approach that enables it to have a proactive view of all the roadwork that could have an impact on its road system, to minimize impediments and the impacts on its citizens.

Results

The planning and coordination processes for infrastructure projects put in place by the City are not totally effective in providing a comprehensive proactive view of all the roadwork and minimizing its impact. Roles and responsibilities are not clearly defined. There is no centralization of all the projects that could impede traffic, especially borough projects that are not all shared with the SIRR. The planning process is not carried out within appropriate timelines to enable all planned projects to be completed. Receipt of projects at different times results in the SIRR having to perform new mobility analyses. While the City has established mobility corridors to limit roadwork and impediments, boroughs have issued permits to complete work in these corridors without prior consultation with the SIRR. In short, the SIRR must improve the management of the planning and coordination processes to make them more effective and efficient, thereby ensuring the mobility of citizens and the smooth flow of traffic on its territory.

¹ Based on the number of permits issued in 2019.

Main Findings

Governance

- The roles and responsibilities of all participants in project planning and operational coordination are not clearly defined, documented and communicated.
- There is no feedback mechanism enabling the two teams responsible for coordination to exchange information regarding the implementation of mitigation measures proposed during the project planning phase.

Process for Capturing All Projects

- The planning and coordination processes fail to identify all the projects of the central departments and boroughs carried out on- or off-street that have an impact on public roads.

Process Based on a Structured Analysis

- The planning and coordination processes are based on results of mobility analyses that can be used to organize the projects prior to the start of work. When constraints are identified, mitigation measures are proposed to enable the mobility of users.
- Delays encountered throughout the implementation of the planning process leave only a very short timeframe for preparing the design of the projects and do not ensure that all planned projects will be carried out.
- There is no mechanism in place when analyzing non-integrated projects (NIP) to help identify the projects attached to a subsidy to ensure that their completion is prioritized. As a result, the City was deprived of a subsidy of almost \$11M for not complying with the requirements of the Fonds pour l'infrastructure municipale d'eau (FIMEAU) when awarding contracts to complete the work of the Service de l'eau.
- Despite the City's directive to limit work and impediments on the mobility corridors, several permits for temporary occupation of the public domain were issued by the boroughs without the SIRR being consulted.
- The process of selecting sectors/boroughs that are subject to operational coordination of impediments is not supported by a formal documented analysis.

Performance Indicators

- While there are indicators in place, they do not help monitor and measure the efficacy and performance of the roadwork planning and coordination processes.

In addition to these results, we have made various recommendations to the business units, which are presented in the following pages. These business units were given the opportunity to agree to the recommendations.

List of Acronyms

AGIR	Assistance à la gestion des interventions dans la rue
BVG	Bureau du vérificateur général
City	Ville de Montréal
COP	équipe de coordination opérationnelle
DEEU	Direction de l'épuration des eaux usées
DEP	Direction de l'eau potable
DGPP	Direction des grands projets partenaires
DI	Direction des infrastructures
DRE	Direction des réseaux d'eau
FIMEAU	Fonds pour l'infrastructure municipale d'eau
IP	standard integrated project
MTQ	ministère des Transports du Québec
NIP	non-integrated project
REM	Réseau express métropolitain
RLPP	Rosemont–La Petite-Patrie borough
SE	Service de l'eau
SIRR	Service des infrastructures du réseau routier
SUM	Service de l'urbanisme et de la mobilité
UCN	urban coordination network
VM	Ville-Marie borough

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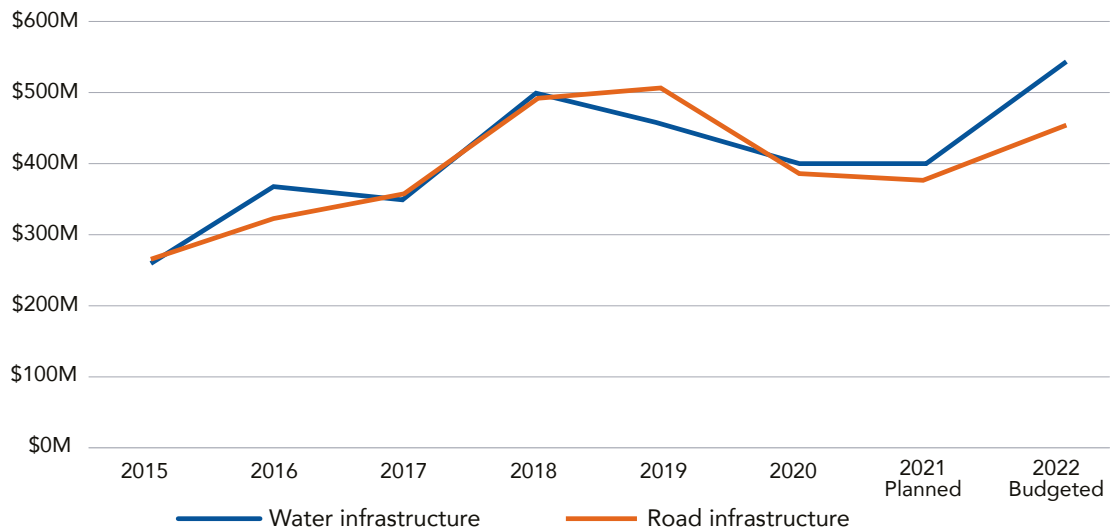
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1. Background

For several years, the Ville de Montréal (the City) has been known for the multitude of roadwork projects being carried out on its territory,² along with the many detours that this has caused. A veritable maze for citizens and drivers, this roadwork is necessary to repair assets and maintain them in good condition, minimize the risks of breakdowns, and modernize the infrastructure. As the owner of a large portfolio of arterial and local road infrastructure assets (streets/sidewalks totalling \$2.7B) and water systems (aqueducts/sewers totalling \$4.2B), the City has continued its efforts in the few years to make up for years of underinvestment (see Graph 1). Investments for the years 2015 to 2020 totalled \$4.7B.

GRAPH 1

Investments Made and Planned for Water and Road Infrastructure Between 2015 and 2022



Source: Graph produced by the City's Bureau du vérificateur général (BVG) based on data compiled during our audit.

The City also carries out structuring projects³ that are vital to the development of the metropolis, including upgrading streets (e.g., Sainte-Catherine Ouest and Peel streets) and bicycle paths (Réseau express vélo).

² Newspaper articles: "Encore un festival de cônes orange à Montréal" and "Le retour des cônes orange".

³ Project that improves the quality of life, since it meets a need expressed by the community.

3.5. Management of Public Roadwork—Integrated Planning and Coordination Component

While 30% of the work⁴ on public roads⁵ is carried out by the City, work done by external partners⁶ accounts for the other 70%, including the ministère des Transports du Québec (MTQ), the Caisse de dépôt et placement du Québec, urban coordination network (UCN)⁷ and private entrepreneurs. This work, planned or not, includes integrated⁸ and non-integrated⁹ projects. For 2021, the City planned almost 1,000 projects. As a matter of interest, more than 91,000 annual requests¹⁰ for permits to temporarily occupy the public domain were processed by the boroughs as of November 2021. These requests were for occupation of both the roadway and the sidewalks and involved the City, UCN, partner projects,¹¹ film shoots, and private projects (e.g., construction sites, window washing). While the City's projects account for a small percentage of the total, they are carried out for the most part in central neighbourhoods,¹² such as downtown.

While some major roadwork will be ending soon, such as the redevelopment of Sainte-Catherine Street and the McGill REM station, the rate of construction starts is not likely to decrease. In the coming decade (2021–2030), the City plans to invest \$9.4B¹³ in its road and water infrastructure, and large partner projects will be carried out and have a major impact on traffic, including work on the Louis-Hippolyte-La Fontaine, Ville-Marie and Viger tunnels.

Such projects require planning¹⁴ and coordination of all work being carried out on the municipal road system to minimize the impact on the mobility of users.¹⁵

Two divisions under the Service des infrastructures du réseau routier (SIRR) primarily share these responsibilities (see Appendix 5.2. for more details):

- The Division Assistance à la gestion des interventions dans la rue (AGIR) is responsible for planning and coordinating the City's roadwork projects prior to their start on the ground to prevent mobility issues;
- The équipe de coordination opérationnelle (COP) of the Division Gestion des impacts et maintien de la circulation ensures the coordination of impediments on the municipal network to enable the performance and cohabitation of the roadwork.

⁴ This percentage was calculated at the request of the Mayor during preparation of the 2021 worksite report, using the number of permits issued in 2019 on the territories for roadwork carried out by the City (16,225) and by other parties (37,317).

⁵ Streets, alleys, sidewalks, bicycle paths and curbs.

⁶ Réseau express métropolitain (REM), extension of the Blue Line, major refurbishing of the Louis-Hippolyte-La Fontaine Tunnel.

⁷ Hydro-Québec, Energir, Bell, and others.

⁸ Road project combining work by different applicants within or external to the City on the same worksite.

⁹ Projects that consist of short-term work within a program to update infrastructure (e.g., water, roads), as well as all other ad hoc work not requiring an integrated project.

¹⁰ Planned and unplanned work.

¹¹ The City has little influence on the completion schedule of partner projects.

¹² Due to the age of the infrastructure, population density and traffic.

¹³ 2021 Montréal Budget and 2021–2030 PDI.

¹⁴ In this report, planning refers to completion of roadwork on the territory and not the management of a worksite.

¹⁵ In this report, the expression "user" stands for all users of the road, including pedestrians, cyclists and drivers, as well as neighbourhood residents.

More specifically, the AGIR is responsible for planning the completion of projects, which is the process by which infrastructure work is identified, programmed, prioritized and coordinated. It is responsible for:

- Preparing yearly programming¹⁶ of the work of the central departments carried out by the Direction des infrastructures (DI) of the SIRR,¹⁷ which includes planning standard integrated projects (IP) and scheduling¹⁸ non-integrated projects (NIP) following a mobility analysis. More specifically, the yearly work programming by the AGIR includes:
 - Planning the completion of IPs based on work priorities. Integration makes it possible to group together all the needs identified by internal¹⁹ and external applicants for the same section of road to optimize the work and avoid opening the street several times, thereby reducing the inconvenience to users (e.g., rebuilding an aqueduct, including redeveloping the street);
 - Prioritizing IPs to be carried out based on criteria established within the City;
 - Scheduling NIPs, submitted by applicants in the year minus a day, based on a mobility analysis to minimize the impact on mobility (e.g., pavement repair program involving levelling and resurfacing, and aqueduct/sewer rehabilitation programs);
- Planning and coordinating integrated work with work done by the other central departments,²⁰ boroughs, UCN and other external partners, including:
 - Proposing coordination requirements or scheduling work completion;
 - Proposing mitigation measures to facilitate mobility;
- Presenting all the City's planned projects annually to the elected officials responsible for approval (programming) (see Table 1).

This does not include, however, the preparation of programming for large-scale projects,²¹ projects carried out by the Service de l'eau (SE) and those of the boroughs, which is done by the departments or boroughs responsible for the work.

¹⁶ Final list of all the integrated projects planned for completion on the ground.

¹⁷ Completion based on this order: finishing work, burying of underground lines, bicycle paths, IPs.

¹⁸ Completion of work in order (e.g., before another project or after the school year).

¹⁹ The main internal applicants are the Direction des réseaux d'eau (DRE) of the SE and the Division Gestion des actifs routiers et cyclables of the Service de l'urbanisme et de la mobilité (SUM).

²⁰ Large-scale projects and projects carried out by the SE.

²¹ Major projects of the Direction de l'urbanisme and the Direction de la mobilité of the SUM, as well as those of major project partners and of the Service des grands parcs, du Mont-Royal et des sports.

TABLE 1

Comparison of Programming of Planned Projects Within the Ville de Montréal Since 2021

Planned projects	Programming of projects and programs presented to elected officials					
	2021 prior to revision		2021 revised		2022	
	Number of projects	\$M	Number of projects	\$M	Number of projects	\$M
Integrated projects carried out by the Direction des infrastructures of the Service des infrastructures du réseau routier						
Standard projects	29	94	23	76	36	149
Large-scale projects ²²	32	130	18	98	21	167
Projects carried out by others						
Projects of the Service de l'eau and the boroughs	28	133	24	130	24	131
Total planned projects	89	357	65	304	81	447
Programs (non-integrated projects carried out by the Service des infrastructures du réseau routier)²³	2021 prior to revision \$M		2021 revised \$M		2022 \$M	
Sidewalks + bridges and tunnels	91		91		77	
Rehabilitation of aqueducts and sewers	98		93		106	
Lead service line replacement	35		35		35	
Other (e.g., bicycle paths, lighting)	42		42		41	
Total program investments	266		261		259	
Total investments in planned projects/programs	623		565		706	

Source: Table produced by the City's BVG based on data compiled during our audit.

²² Large-scale projects are projects associated with major issues for the City (excerpt from the *Cadre de gouvernance des projets et programmes de la Ville de Montréal*).

²³ Annual work aimed at upgrading assets (e.g., roadways, sewers).

For the year 2021, at the request of the elected officials, the City postponed 20 (standard/large-scale) integrated projects (33%), planned in the initial programming (61), to reduce impediments and improve traffic flow on roads, thereby giving the population a break. This roadwork consisted of major and minor work involving mostly the rebuilding and rehabilitation of aqueducts and sewers. The City's projects were the only ones targeted by this decision. The City also identified some 50 mobility corridors²⁴ that had to be kept free of impediments to facilitate traffic flow. These corridors were established to bypass major roadwork. Only emergency work, some work by developers and one-off projects were permitted.

The COP is responsible for ensuring the operational coordination of impediments by proposing mitigation measures to use on the road system to ensure harmonious cohabitation and sequencing of the work in order to resolve potential conflicts and mitigate the impact on the population. The work of the COP is concentrated mainly on key corridors and sectors,²⁵ i.e., those where several work projects converge and where impediments are liable to create conflicts. In the cases in which the COP is not involved, this coordination is done by the boroughs.

2. Purpose and Scope of the Audit

Under the provisions of the *Cities and Towns Act*, we conducted a performance audit mission on the Management of Public Roadwork–Integrated Planning and Coordination Component. We performed this mission in accordance with the *Canadian Standard on Assurance Engagement (CSAE) 3001* described in the *CPA Canada Handbook–Assurance*.

The purpose of this audit was to ensure that the City has a structured approach that enables it to have a proactive view of all the roadwork that could impact on its road system to minimize impediments and the impact on its citizens.

The role of the Auditor General of the Ville de Montréal is to provide a conclusion regarding the objectives of the audit. To do so, we collected a sufficient amount of relevant evidence on which to base our conclusion and to obtain a reasonable level of assurance. Our assessment is based on criteria we have deemed valid for the purposes of this audit. They are presented in Appendix 5.1.

The Auditor General of the Ville de Montréal applies *Canadian Standard on Quality Control (CSQC) 1* from the *CPA Canada Handbook – Assurance* and, accordingly, maintains a comprehensive system of quality control, including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory

²⁴ Arterial roads with or without planned work to bypass major roadwork as much as possible and to maintain the mobility of users (e.g., Notre-Dame Street, Sherbrooke Street, De Lorimier Avenue, René-Lévesque Boulevard).

²⁵ These sectors vary from one year to the next. However, for several years now, these sectors have been concentrated in the Ville-Marie, Le Sud-Ouest, Ahuntsic-Cartierville, Rosemont–La Petite-Patrie (RLPP) and Plateau-Mont-Royal boroughs.

3.5. Management of Public Roadwork—Integrated Planning and Coordination Component

requirements. In addition, it complies with the independence and other ethical requirements of the *Code of ethics of chartered professional accountants*, which are founded on the fundamental principles of integrity, professional competence and due diligence, confidentiality and professional conduct.

Our audit covered the period from January 1, 2019, to September 30, 2021. However, for certain aspects, data after this period was also taken into consideration. Our work was conducted primarily between the months of May 2021 and December 2021. We also took into account information that was sent to us up to March 2022. Our work consisted of conducting interviews with staff, reviewing various documents and conducting surveys that we deemed appropriate to gather the necessary evidence.

We excluded from the scope of our mission the steps involved in the operational coordination process (steps carried out by the COP) but nevertheless looked at the process used to determine the choice of sectors that the COP will be covering as part of this work to ensure that there was continuity in the planning and coordination of the roadwork on the City's territory. We also excluded the planning of roadwork carried out by external partners, information disseminated to the public about the impact caused by the work, and the process of granting municipal consents²⁶ and issuing public property occupation permits. The development of the AGIR application solution was also excluded.

Our work dealt primarily with the following business units:

- The Service des infrastructures du réseau routier (SIRR) (Direction de la gestion du portefeuille de projets, Direction des infrastructures);
- The Service de l'eau (SE) (Division stratégies et pratiques d'affaires);
- The Service de l'urbanisme et de la mobilité (SUM) (Direction de la mobilité);
- The Rosemont—La Petite-Patrie (RLPP) borough (Direction du développement du territoire et des études techniques);
- The Côte-des-Neiges—Notre-Dame-de-Grâce borough (Division des études techniques);
- Le Sud-Ouest borough (Direction des travaux publics, Division du bureau de projet, Direction de l'aménagement urbain et du patrimoine);
- The Ville-Marie borough (VM) (Direction des travaux publics, Direction de l'aménagement urbain et du patrimoine).

Upon completing our audit, we submitted a draft audit report to the managers concerned in each audited business unit for discussion purposes. The final report was forwarded to the management of each of the business units concerned

²⁶ Designates the written approval given by the City, called municipal consent with or without conditions, to allow the UCN to carry out work on the public right-of-way and to permanently occupy the public domain. This consent is recognized by the federal authorities (article 43 of the *Telecommunications Act*) and the Régie de l'énergie as being required for all work on the municipality's public domain.

to obtain action plans and timelines for implementing the recommendations. A copy of the final report was also forwarded for information purposes to the Direction générale, the deputy director-general of the Service aux citoyens, the deputy director-general of Mobilité et attractivité, and the deputy director-general of the Service de concertation des arrondissements, as well as to all borough directors not directly audited so that they could implement the recommendations where warranted.

3. Audit Results

3.1. Governance of the Project Completion Planning and Operational Coordination Processes

3.1.1. Roles and Responsibilities Not Sufficiently Defined

The fact that several players are involved in the project completion planning and operational coordination processes requires that the roles and responsibilities of each of them, including their interrelationships, be clearly defined, documented and communicated to ensure the efficient implementation of the processes.

The roles and responsibilities of the AGIR and COP teams have been documented for internal needs, but without specifying those of the other participants²⁷ involved in the processes.

Specifications and clarifications were made ad hoc, however, in meetings between the AGIR and the DI's Division de la conception des travaux. This is how, during a workshop, the roles and responsibilities of each of the teams (AGIR and Division de la conception) came to be determined for some stages of the integrated project prioritization process. While minutes were sent to participants following the meeting, these roles and responsibilities were not formally documented or shared with other participants.

Similarly, the COP, as part of an internal initiative, performed a diagnosis (end of 2019) that identified issues during work done by the various stakeholders²⁸ in traffic management and operational coordination. For example, during the coordination of projects in a sector covered by the COP, permits can be issued by the borough without prior consultation with the COP. At the time of our audit, the COP had met with the mobility squad to raise awareness about the issues identified in its diagnosis regarding roles and responsibilities. For their part, the boroughs were informed about this during the many meetings that they had with the COP as part of their work.

The COP also issued a written reminder of its responsibilities to the boroughs as part of the post-mortems that it conducted following the examination of operational coordination activities conducted during the year.

²⁷ Planning: applicants for large-scale and integrated projects, Division de la conception des travaux. Coordination: boroughs, mobility squad.

²⁸ Mobility squad, borough, Comité mobilité Montréal, Centre de gestion de la mobilité.

3.5. Management of Public Roadwork–Integrated Planning and Coordination Component

While the AGIR and the COP carried out various communication activities²⁹ regarding their roles and responsibilities, no official documentation was communicated to the stakeholders with whom they interact.

The applicants we met did not have any documentation regarding their roles and responsibilities related to the activities of these processes. There is no document describing the interrelationships between the various participants in the work planning and operational coordination processes or defining each of their responsibilities. Without complete clarity, it is difficult for applicants to know what is expected of them.

These various situations highlight the need to better define the roles and responsibilities of each participant in these processes and to ensure that they are communicated.

3.1.1.A. Recommendation

We recommend that the Service des infrastructures du réseau routier, in collaboration with the stakeholders, ensure that the roles and responsibilities of all participants involved in the project completion planning and operational coordination processes for roadwork be clearly defined, documented and communicated to facilitate their application.

3.1.2. Inadequate Exchanges of Information

As previously mentioned, the AGIR and the COP share the responsibilities involved in coordinating projects, but at different points in time. At the start of each year of completing projects on the ground, the AGIR passes on programming information to the COP, which enables the two teams to discuss the planned projects and proposed coordination measures. However, once coordination on the ground has concluded, there is no other mechanism to enable the two teams to discuss the concrete vision of the application on the ground of the measures raised by the AGIR.

The little exchange of information between the two teams means that issues raised during the work are not always shared, leading to them not being addressed, and thus possibly limiting improvements to mobility on the ground.

3.1.2.A. Recommendation

We recommend that the Service des infrastructures du réseau routier adopt a mechanism for exchanging information between the teams responsible for coordination to enable them to discuss the issues raised during the work and ensure that they are dealt with.

²⁹ Including presentation of the 2022 programming to the boroughs by the SIRR.

3.2. Process for Capturing All Projects

3.2.1. Inadequate Identification of all the City's Projects that Have an Impact on Public Roads

To produce an effective completion plan for the central departments' projects, it is important that the process capture all the projects that will be carried out on the territory³⁰ in order to integrate, coordinate and schedule them to ensure the mobility of users.

As part of its annual programming process, the AGIR, in collaboration with the applicants who have roadwork needs, receives the list of standard projects for integration, along with the NIPs. It also receives information on large-scale projects³¹ from the divisions in charge, projects carried out by the SE and certain borough projects.³² While the AGIR is not responsible for ensuring the planning of these other projects, it takes them into consideration as part of the mobility analysis to coordinate completion of the projects. Finally, the AGIR consults the Info-UCN tool to make certain to identify other projects not communicated to it that can have an impact on its programming.

In 2013, the City adopted the administrative framework titled "*Directive d'utilisation d'info-RTU*** Réseaux techniques urbains*";³³ which applies to all the City's municipal services and boroughs when planning or carrying out roadwork that could cause significant impediments to the public right-of-way. Data should be entered immediately, as soon as the information is available. Failure to do so could result in the projects that are not entered being omitted from the work planning or mobility analysis.

While all the audited boroughs said that they planned their work, none shared this planning with the AGIR. They did mention, however, that they entered it in the Info-UCN. This could explain the reasons for several reminders that the AGIR had to send to the VM borough to gain knowledge of the work projects planned in 2021 and thus be able to take them into consideration in the mobility analyses and programming. The AGIR proceeded in this fashion since the VM borough has several projects that have an impact on streets.

Although a directive regarding the Info-UCN exists, tests conducted as part of our audit based on information collected from borough plans and the COP show that some boroughs in our selection failed to enter all their work projects in the Info-UCN. For example, planned projects not found in the application include curb extensions,³⁴ a bicycle path, a pedestrian street, and safety work to be carried out near schools in the VM borough and/or the RLPP borough.

³⁰ To the extent that the City can obtain information on external partners' projects.

³¹ Major projects of the Direction de la mobilité and the Direction de l'urbanisme of the SUM, as well as major projects of partners and of the Service des grands parcs, du Mont-Royal et des sports.

³² Those assigned by the Service de l'eau artériel (based on section 85) or local.

³³ Under review during the audit.

³⁴ Ontario/Sanguinet (2021) in the VM borough and on the corner of 13th and 14th avenues/Soubiros (2022) in the RLPP borough.

3.5. Management of Public Roadwork—Integrated Planning and Coordination Component

It is not possible to enter building projects that can have an impact on streets, such as private developers' projects (e.g., barred sidewalks or street closure), into the Info-UCN application. The AGIR is only informed of these projects once the borough has issued a permit for the temporary occupation of the public domain. It is too late at that stage, since the AGIR is no longer in the planning phase, and these projects risk having an impact on other projects that were previously planned. If the AGIR had been informed sooner, i.e., during the process to obtain the building permit, the planning of some of the City's projects would have been different, since requirements could have been included when the permit was issued to ensure better mobility for users.

To improve planning in the key sector of the VM borough, the AGIR sent a letter to the borough at the end of 2020. The letter outlined certain aspects could be improved, as well as some recommendations to help with future planning, in particular the absence of a process automatically advising the AGIR immediately of steps being taken by property developers wanting to carry out a project, and the absence of key participants able to guide the AGIR on urban development projects during planning meetings. In this same letter, the AGIR reminds the borough of the importance of entering information in Info-UCN and keeping it up to date. No follow-up was done by either side, however, after the letter was sent.

In addition to the boroughs that did not communicate all their projects to the AGIR, the audit also identified other projects planned by the central departments that had an impact on streets, without the AGIR being informed. This was the case with the large-scale construction project involving the Rosemont aquatic complex, which resulted in the complete closure of a section of Bellechasse Street in 2021. Although mobility conflicts and mitigation measures were mentioned when the project was presented to the capital project and program governance committees³⁵ in 2019, the AGIR was never informed of the project before this audit. In addition, the oversight process for large-scale projects stipulates that, when a project has an impact on the public domain or represents a mobility issue, steps must be taken to inform the AGIR. Since this mechanism was put in place, the AGIR has not been contacted on any large-scale project.

Three NIPs, such as the valve chambers of the SE, were also not submitted to the AGIR for completion in 2021,³⁶ although they were part of their internal planning. Despite this oversight, the work had to be completed in 2021. The AGIR was informed of the omission of one of these projects and felt obliged to redo a mobility analysis and submit traffic requirements to enable the work to be carried out. In the case of the other two valve chamber projects, the AGIR was never informed of the work. It was the COP that discovered these two projects during its activities and had to harmonize them with the other projects in the sector.

³⁵ Since this project qualifies as large-scale based on the criteria of the *Cadre de gouvernance des projets et programmes de la Ville*, it has an obligation to follow this framework's governance process.

³⁶ On Notre-Dame Street near Georges V at the border between Montréal-Est and the Mercier–Hochelaga-Maisonnette borough and on Papineau and Iberville streets in the Plateau-Mont-Royal borough.

While these were NIPs, the AGIR needed to be aware of them to take them into consideration in mobility analyses to ensure coordination on the ground. The AGIR cannot delay their completion but will be able to adjust the completion sequence of the work that it is planning to avoid traffic issues with these projects.

While the current programming process captured a large portion of the City's projects to be completed, it does not enable the AGIR to identify all of them. This incomplete picture of projects can lead to conflicts during completion of the work and mobility issues, putting increased pressure on the COP's activities and causing discontent among users.

3.2.1.A. Recommendation

We recommend that the Service des infrastructures du réseau routier adopt a mechanism to identify all infrastructure projects planned by the central departments that could have an impact on the street to enable it to have a view of all upcoming projects and allow for better planning of the projects.

3.2.1.B. Recommendation

We recommend that the Service des infrastructures du réseau routier, in collaboration with one or several boroughs, put in place a mechanism, as part of a pilot project, to capture all work in the borough(s) in a timely manner to improve the planning of projects on the territory.

3.2.1.C. Recommendation

We recommend that the Service des infrastructures du réseau routier, in collaboration with one or several boroughs, establish a mechanism, as part of a pilot project, to identify and obtain information about private promoters' or institutional off-street roadwork ahead of start-up so that it can take this work into consideration in planning the City's projects.

3.2.1.D. Recommendation

We recommend that the Service des infrastructures du réseau routier remind all central departments and boroughs of the Info-UCN's usage guideline and put in place the monitoring mechanisms needed to ensure that complete and updated information on planned projects is entered.

3.3. Process Based on a Structured Analysis

The aim of the audit was to examine the steps in the planning and coordination processes to ensure that they are supported by mobility analyses that make it possible to harmonize the completion of work on the territory. While the audit did not cover the steps in the operational coordination process, we looked at the process that helps determine the choice of sectors that the COP will cover as part of its work, to ensure that there is continuity in the planning and coordination of roadwork on the City's territory.

3.3.1. Ineffective Process for the Yearly Programming of Projects

The yearly programming of projects is based on a process that was officially defined in 2017. The annual programming cycle begins with receipt of the list of required work from the DRE and the Division de la gestion stratégique des actifs of the SUM.

To know whether these work needs can be accepted for integration, the AGIR conducts a mobility analysis, which consists of verifying whether:

- The section where the work will take place is under a moratorium (Integration Rules³⁷ that the City adopted to avoid having to work several times on the same sections within a short period of time);
- The project does not create major mobility issues by being added to other work already under way in the sector.

These analyses draw on information obtained in the Info-UCN and on the AGIR's knowledge of projects in the analyzed sector. The results of these analyses, as well as the comments, are recorded right on the lists of needs received. This mobility analysis takes into consideration the projects of the other central departments, such as those carried out by the SE (Direction de l'épuration des eaux usées (DEEU)/Direction de l'eau potable (DEP)), those of bridges and tunnels, and projects submitted as part of large-scale project programming, including those of the SUM and of the Direction des grands projets partenaires (DGPP). The goal is to coordinate all the work and ensure mobility. However, as in the case of some standard projects, it happens that the AGIR must ask the DEEU/DEP to postpone a project because it will impede mobility. The decision is taken in collaboration with the SE to evaluate the urgency of the work and the impact of postponing it.

³⁷ These rules form a management framework that dictates integration or coordination needs based on the type of work to be carried out on the roadway (e.g., reconstruction or rehabilitation of an aqueduct).

Once the projects have been analyzed, they are entered in a document that is shared with the City's other applicants to begin integrating their needs. Once the projects are accepted, the process continues with the prioritization of the projects to be carried out. During workshops³⁸ with the applicants, all the projects are discussed to prioritize them³⁹ and retain those that will be carried out based on each applicant's budgets. The programming exercise ends when consensus is reached with all the parties, and the programming of standard projects is considered final after it has been presented to the elected officials responsible for water infrastructure, urban planning and mobility. The AGIR then passes it on to the pre-project and design teams of the Direction des infrastructures.

In tandem with the standard project programming exercise, the AGIR analyzes the mobility of the NIPs (more than 1,000 annually) submitted for completion the following year. The results of these analyses enable the AGIR to establish the list of projects that can be carried out based on the various constraints and mitigation measures that it recommends. These proposed measures involve either coordinating the work with the other projects or scheduling the work over time.

According to the AGIR, the applicants and the DI's pre-project and design teams, the programming of integrated projects must be finalized ideally two years before the start of the work to enable the various teams to complete all the prerequisite steps prior to deployment of the projects on the ground, especially the preparation of requirements for the pre-project and design phase. To ensure that they reach their goal, they adopt a timeline⁴⁰ showing the various steps to be completed quarterly (see Appendix 5.3.). Table 2 presents the interval in months between the start of programming, presentation to elected officials, and the timeline.

³⁸ Approximately four meetings a year.

³⁹ Priority projects are finishing work, burying of underground lines, bicycle paths, and IPs (priority 1 project of the DRE and priority 1 or 2 project of the SUM, among others).

⁴⁰ October 2021.

TABLE 2

Discrepancies in Month Between the Start of Programming, Presentation to Elected Officials and Timeline

Programming	Date of first meeting of applicants (start of programming)	Number of months between the first meeting of applicants and presentation to elected officials	Date of the presentation of programming to elected officials	Anticipated date for final programming based on the timeline (months)	Delay between the anticipated date and the presentation to elected officials (months)	Time between the presentation to elected officials and completion of the work on the ground (months)
2019	n/r	n/r	03.15.2018	01 to 03.2017	12	12
2020 revised	n/r	n/r	11.07.2019	01 to 03.2018	20	4
2021 Prior to post-ponement of the work	12.2019	4	04.06.2020	01 to 03.2019	13	11
2022	10.2020	7	05.12.2021	01 to 03.2020	14	10
2023	08.2021	6	Targeted period: 02.22	01 to 03.2021	11	13
2024	12.2021	n/a	n/a	01 to 03.2022	n/a	n/a

Source: Table produced by the City’s BVG based on data compiled during our audit.
 n/r: Not requested as part of our audit.
 n/a: Not applicable since the work is not completed.

While the programming exercise complied in large part with the steps of the process established in 2017, and mobility analyses were performed, our work highlighted that the operation was not optimal since it did not allow for so-called final programming to be produced 2 years before work is carried out on the ground (e.g., final programming in 2021 for completion in 2023). Part of the delay in the planning calendar is attributed to unforeseen events experienced in 2020 (pandemic) and 2021 (scientists' strike). The other part was caused by a lack of thoroughness in transmitting applicants' information, which prevented starting the programming exercise earlier to produce programming that could be final two years before completion of the work.

Some reasons that explain these delays include:

- Late submission of some inputs (e.g., bicycle path projects for 2022 were received by the AGIR at the end of November 2020 and those for 2023 at the end of September 2021);
- Delays incurred in updating some information (e.g., the DRE took a month to update the projects retained for 2023, despite the fact that the AGIR reminded them on several occasions);
- Time required to perform new mobility analyses after the projects currently being programmed were added (e.g., a project of the DRE was added in November 2020 for completion in 2022).

While each of these delays may have seemed minor, once combined they reduced the time available to prepare the pre-project prerequisites, thereby putting the completion of planned projects in jeopardy. Consequently, delays in the production of the 2022 programming resulted in the prerequisites of some projects not being produced in the time needed because of a lack of capacity, which caused 11 planned standard projects to be put on the list of over-programmed projects.⁴¹

As well, for the 2023 programming, among the 40 or so projects proposed by the DRE for which a mobility analysis was performed by the AGIR, only some 15 projects were accepted since the DRE/SUM was certain of being able to provide the necessary prerequisites for completion of the projects in time. The other non-prioritized projects were carried over to the following year. Thus the AGIR performed work/analyses that served no purpose, which is inefficient in such a process.

⁴¹ Over-programming consists of projects that will not be completed within the scheduled programming unless they replace standard planned projects that will ultimately not be completed.

3.5. Management of Public Roadwork—Integrated Planning and Coordination Component

The process used to perform a feasibility analysis of NIPs in the year preceding their completion was also inefficient. The AGIR requires that projects (more than 1,000 annually) be submitted in February to give it time to perform the mobility analysis and make recommendations. However, some applicants are late in submitting the list of their projects. For example, for the 2022 planning exercise, lead service line projects were received around the month of June 2021, and valve chamber projects in October after the AGIR sent reminders. Given the number of lead service line replacement projects and the fact that the work takes several weeks, these projects have a major impact on mobility. The sooner they are known, the better the coordination will be with the other work in the area. It is more efficient for the AGIR to receive all the lists of NIPs at the same time, as early as possible in the year, to allow for better analysis and coordination of the projects while leaving more time to prepare specifications. Receiving the NIPs at different times involves performing analyses again every time.

Consequently, despite the time invested by the stakeholders in preparing the annual programming, its actual rollout does not allow for project planning within timelines that will ensure their completion. Analyzing the reasons for delays during production is essential, therefore, to take the corrective measures required.

3.3.1.A. Recommendation

We recommend that the *Service des infrastructures du réseau routier*, in collaboration with the *Service de l'eau* and the *Service de l'urbanisme et de la mobilité*, review the critical dates of the various steps involved in the programming process and ensure that they are met to facilitate the completion of planned projects.

3.3.2. Financial Loss Incurred for Non-Compliance with Requirements Linked to a Subsidy Program

In January 2019, the governments of Canada and Québec implemented a new financial assistance program titled "*Fonds pour l'infrastructure municipale d'eau (FIMEAU)*" to help municipalities comply with new public health and environmental standards and ensure the sustainability of their infrastructure.

This program lies with the *Ministère des Affaires municipales et de l'Habitation*. The terms and conditions of this program provide for the City to receive maximum funding of \$210.96M between June 25, 2019, and October 31, 2027. To benefit from these subsidies, contracts for the completion of projects may not be awarded prior to the acceptance by both levels of government of the programming of the work planned by the SE.

During the first call for projects, 11 work programs totalling \$84M were submitted by the SE to the governments. This work, mainly the rehabilitation of sewer mains, received approval from the provincial government on May 19, 2020, and from the federal government on June 16, 2020. Nevertheless, in the case of some subsidized rehabilitation work, the City awarded contracts prior to approval

of the programming by the governments, thereby invalidating the subsidy agreements. The City was thus deprived of a \$10.6M subsidy. While this amount was returned to the City's FIMEAU program envelope and will be available for future calls for projects, the City had to finance this work from its own funds, which was not planned at the start.

In January 2021, without oversight by the DRE, subsidies amounting to \$1.4M, also intended for rehabilitation projects, would have been lost if the AGIR had not reversed its decision. The AGIR had initially refused the completion of these projects for reasons of mobility issues or a moratorium.

The AGIR said that it had not been informed of the subsidized projects when conducting mobility analyses for the projects submitted by the SE.

Consequently, while there is a control in place within the SE to catch these problems, this control kicks in after the AGIR has completed its mobility analyses and refused the work. This is not optimal, since the AGIR must perform mobility analyses again for the same projects and submit mitigation measures.

3.3.2.A. Recommendation

We recommend that the Service des infrastructures du réseau routier establish a mechanism as part of the yearly programming to identify subsidized projects, prioritize them and ensure that the program requirements are met to take advantage of the amounts planned for the program.

3.3.3. Mobility Corridors Impeded Despite Instructions Set Out by the City

As previously mentioned, the City has defined mobility corridors on its territory to limit roadwork and impediments and ensure the mobility of users. Only emergency work, some property development projects and ad hoc projects causing minor disruptions⁴² carried out by the City and the UCNs are permitted. To ensure that the boroughs responsible for issuing permits for the temporary occupation of the public domain comply with work requests on these corridors, a validation process for emergency work requests was put in place by the SIRR.

The boroughs were invited to familiarize themselves with the new process during virtual meetings in March 2021, and the SIRR sent a note to all boroughs in July 2021, asking them to mobilize their teams to apply it. As part of our audit, we found that three of the four boroughs we met mentioned that they were not aware of this process. In addition, based on statistics obtained from the COP for the boroughs that it covers, several permits issued in 2021⁴³ were for work in these corridors (see Table 3). Without knowing the reason for each of these permits, one can wonder whether they were all related to emergency work.

⁴² Work limited in space and time with no major impact on traffic or the occupation of the public domain.

⁴³ For the period from April to October, since production of the AGIR-Permis platform.

TABLE 3

Number of Permits Issued on Certain Mobility Corridors for the Main Boroughs Covered by the Équipe de Coordination Opérationnelle

Main boroughs covered by the équipe de coordination opérationnelle	Number of permits issued on certain mobility corridors (up to October 2021)
Ville-Marie	4,549
Le Sud-Ouest	580
Rosemont—La Petite-Patrie and Mercier—Hochelaga-Maisonneuve	1,076
Plateau-Mont-Royal	727 ⁴⁴
Ahuntsic-Cartierville	50
Total	6,982

Source: Table produced by the City's BVG based on data received from the COP.

In view of the elements raised, it is clear that the process for validating emergency work requests is not known or not understood by those responsible for issuing permits for the temporary occupation of the public domain. Consequently, unauthorized impediments occur on mobility corridors, hindering the mobility of users.

3.3.3.A. Recommendation

We recommend that the Service des infrastructures du réseau routier, in collaboration with the boroughs, make the validation process for emergency work requests known to those responsible for issuing temporary permits to occupy the public domain within mobility corridors and oversee its application to ensure mobility in these corridors.

3.3.4. Absence of a Structured Process to Support the Choice of Boroughs Served

While the AGIR's annual project planning process takes into consideration all the City's planned projects on the entire territory of Montréal, the COP's activities are concentrated mostly on key sectors⁴⁵ where the needs are greatest. These sectors are those identified by the AGIR based on certain criteria during the annual programming exercise, but it happens that the COP identifies other sectors through the work done by its team Gestion des impacts et maintien de la circulation. Such was the case with the Laurentien/Lachapelle sector

⁴⁴ Does not include those issued by the former permit-granting application (January to March 2021).

⁴⁵ Sector that has a high concentration of roadwork projects that involve several internal/external partners, with major mobility issues.

in the Ahuntsic-Cartierville borough where, according to the COP, there was a major concentration of work that could have an impact on the crossing between the north shore and the Island of Montréal. Thus, it is through key sectors that the COP identifies the boroughs that it will cover. In addition, it may at times provide sporadic guidance to a borough, as was the case with Saint-Laurent borough, which wanted to measure the interactions between its work and the work in the Laurentien/Lachapelle sector.

In 2021, nine of the City's 19 boroughs were supervised by the COP, either completely (100% coordination of the work carried out on the borough's territory, e.g., the Plateau-Mont-Royal borough) or partially, for projects in key sectors of the borough. In the latter case, e.g., the LaSalle borough, work supervised by the COP was limited to the key Angrignon key sector.

Although being a key sector is a selection criterion for the COP, the Saint-Léonard and Anjou boroughs, which are part of the key Jean-Talon sector identified by the AGIR, are not covered by the COP. Until very recently, only the key sector affected by the Blue Line project of the Société de transport de Montréal was covered by the COP, prior to the mobility mandate of the project being brought under the DGPP. Having lost resources with this reorganization, the COP is no longer able to cover this sector.

Currently, the choice of sectors/boroughs served and the type of coverage offered depends primarily on the COP's experience and knowledge of the environment rather than on a formal documented methodology with established criteria. Without a formal analysis, there is a risk that some key sectors will not be considered and that traffic issues will not be addressed. This is the opposite of what the City intended when it created the AGIR and COP teams.

3.3.4.A. Recommendation

We recommend that the Service des infrastructures du réseau routier adopt a method to evaluate coordination needs on the entire territory, prioritize them and ensure guidance based on their criticality for all the City's boroughs.

3.4. Absence of Performance Indicators

To know whether a process is effective, one must be able to measure it. By defining and constantly monitoring indicators, it is possible to identify the trends, limitations and strengths of a process and to implement solutions to improve it. Using a performance indicator to measure whether results have been achieved relies upon a combination of the objective, the indicator and the target.⁴⁶ These elements form the basis for constructing an adequate performance indicator.

⁴⁶ Guide sur les indicateurs – Secrétariat du Conseil du trésor – Government of Québec.
https://www.tresor.gouv.qc.ca/fileadmin/PDF/cadre_gestion/guide_indicateur.pdf

Project Completion Planning Process

The AGIR currently calculates and monitors two indicators related to the project completion planning process, i.e., the mobility index and the budget for work planned by City program. The basic elements needed to construct a performance indicator are not in place for all the indicators monitored by the AGIR.

The mobility index is an indicator that was put in place in 2020, with the goal of quantifying the mobility of each project based on defined criteria, with a view to suggesting the postponement of a series of projects included in the 2021 programming to provide a break to citizens during the pandemic. This indicator is used today to identify projects that could be postponed at the request of elected officials during the completion year.

As for the budget indicator for work planned by program, the AGIR uses it to ensure that the projects accepted in the programming do not exceed the budgets available to the applicants. While the applicants are responsible for their budgets and for deciding on the level of investment that they want to achieve, the AGIR ensures that these budgets are not exceeded.

The results of these indicators are presented to elected officials for information purposes.

Therefore, none of these indicators make it possible to evaluate the performance of the work completion planning and real benefits on the mobility of citizens as part of this work.

Operational Coordination Process

As previously stated, the COP's role is to ensure the coordination of impediments on the municipal network to enable the completion and cohabitation of the roadwork. Although the COP prepares reports with the goal of improving its coordination activities with certain boroughs, it has not developed and adopted performance indicators that enable it to measure whether these objectives have been achieved.

3.4.A. Recommendation

We recommend that the Service des infrastructures du réseau routier develop and adopt performance indicators to measure the effects of work planning and coordination on traffic flow and the mobility of citizens and make the necessary adjustments.

4. Conclusion

Overall, we concluded that the approach deployed by the Ville de Montréal (the City), through the implementation of project planning and coordination processes, is not completely effective in providing the City with a proactive view of all the roadwork that could impact its road system and allowing it to minimize the impact for users.

Each year, based on the priority work needs of the various applicants and the analysis of their impact on mobility, the Division Assistance à la gestion des interventions dans la rue (AGIR) establishes the programming of the standard integrated projects to be completed. It also coordinates the work planned by the City, boroughs and external partners and, where mobility issues are identified, suggests mitigation measures to facilitate mobility during the completion of the work. However, tests that were conducted show that the actual work does not identify all the on- and off-road projects to be carried out that will have an impact on public roads. This incomplete view of the projects fails to ensure optimal planning and coordination of roadwork prior to its completion, which could lead to a negative impact on the mobility of users.

As well, delays incurred throughout the implementation of the planning process leave only a very short timeframe to prepare the design of the projects, which does not ensure completion of all these projects. The effect is that the 2022 and 2023 scheduling of projects initially planned or proposed was postponed because the prerequisites needed for their completion could not be provided in time. This could raise some concern about the impact on the City's infrastructure of fewer projects initially considered priorities by the applicants being completed.

More specifically, below are the major findings we drew regarding the evaluation criteria:

Evaluation Criterion – Governance

Only the roles and responsibilities of the teams responsible for planning and operational coordination (COP) have been documented. Without a clear definition, it is difficult to know what is expected of all the participants involved in the process. In addition, there is no documentation describing the interrelationships between the various participants in the planning and operational coordination processes, as well as the definition of the responsibilities of each team.

There is no feedback mechanism for the two coordinating teams to discuss the field implementation of mitigation measures proposed at the time of project planning.

Evaluation Criterion–Identification of All Projects and Events for a Complete Picture of Impediments

The planning and coordination process does not identify all the projects that have an impact on public roads.

The tests performed revealed that some of the audited boroughs' projects were not entered in the Info-UCN application, even though a directive to do so exists.

Not all off-road projects are captured at the time of planning. Some projects were not identified because they were known only once permits for occupation of the public domain were issued and construction work was started. As well, one of the City's large-scale projects that had an impact on the street was not communicated to the AGIR.

Evaluation Criterion–Planning and Coordination of Roadwork Based on a Structured Analysis of the Work Involved

The planning and coordination processes rely on mobility analyses aimed at organizing projects prior to undertaking them. When constraints are identified, mitigation measures are proposed to facilitate the mobility of users.

The planning and coordination processes as currently implemented do not make it possible to produce an annual plan within the timelines to ensure the completion of all the planned projects.

There is no mechanism in place at the time that non-integrated projects are analyzed to identify those projects attached to a subsidy to prioritize their completion despite mobility constraints. The City was thus deprived of a subsidy of almost \$11M because it did not comply with the program requirements when awarding contracts for completion of the subsidized work.

Permits for the temporary occupation of the public domain were issued on mobility corridors by the boroughs despite a directive aimed at keeping these corridors free of impediments.

The process for supporting the selection of sectors/boroughs covered by the coordination work of the COP is not based on any formal documented analysis.

Evaluation Criterion–Performance Indicators

The indicators in place do not allow for adequate monitoring and measurement of the efficacy and performance of the processes for planning the completion of projects and the operational coordination of the roadwork.

5. Appendices

5.1. Objective and Evaluation Criteria

Objective

To ensure that the Ville de Montréal (the City) has a structured approach that enables it to have a proactive view of all the roadwork that could have an impact on its road system, to minimize impediments and the impact on its citizens.

Evaluation Criteria

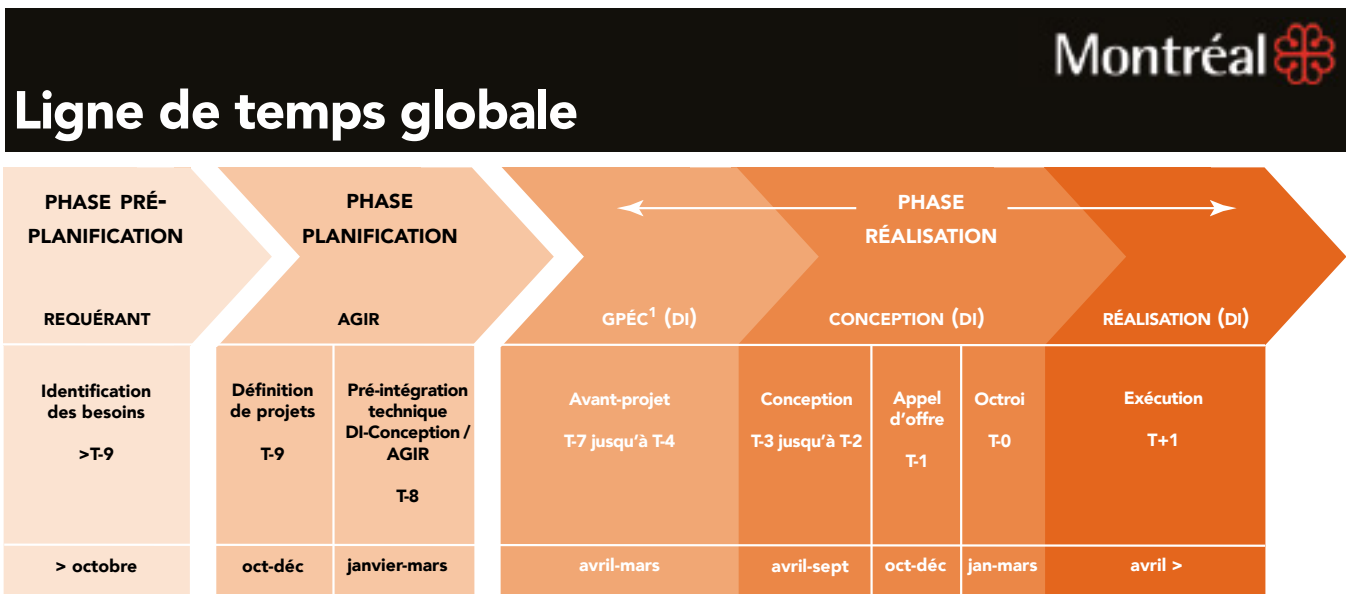
- Oversight of the planning and coordination of work on all the City's territory is clearly defined, communicated and applied to foster the efficiency of these activities.
- The work planning and coordination processes capture all the roadwork and events on the territory to provide a complete representation of the impediments.
- The work planning and coordination processes are based on a structured analysis of the work to harmonize its completion on the territory and to minimize impediments for users.
- The City has developed and adopted indicators that enable it to evaluate its performance in terms of roadwork planning and coordination to minimize the impact on mobility on its territory.

5.2. Units Responsible for Integrating and Carrying Out Projects

Applicants	Type of project	Project description
<p>Service de l'eau</p> <ul style="list-style-type: none"> • Direction des réseaux d'eau <p>Service de l'urbanisme et de la mobilité</p> <ul style="list-style-type: none"> • Gestion des actifs routiers et cyclables 	<p>Standard integrated projects</p>	<p>Combination, in a single project, of several work projects on the infrastructure of different applicants within and external to the City.</p> <p>Examples :</p> <ul style="list-style-type: none"> • Reconstruction of sewers and aqueducts; • Repairs to streets and sidewalks; • Development of bicycle paths.
	<p>Non-integrated projects</p>	<p>Projects involving only one type of work</p> <p>Example :</p> <ul style="list-style-type: none"> • Pavement repair program involving levelling and resurfacing; • Rehabilitation of aqueducts/sewers program, lead surface line connections.
<p>Internal partners (major projects)</p> <ul style="list-style-type: none"> • Direction de la mobilité • Direction de l'urbanisme • Direction des grands projets partenaires • Service des grands parcs, du Mont-Royal et des sports 	<p>Large-scale projects</p>	<p>Combination, in a single major work site, of several work projects on the infrastructure of different applicants within and external to the City by establishing a consistent overall view of sector development.</p> <p>These units are responsible for integrating their project.</p>
<p>Service de l'eau</p> <ul style="list-style-type: none"> • Direction de l'eau potable • Direction de l'épuration des eaux usées <p>Boroughs</p>	<p>Standard integrated projects</p> <ul style="list-style-type: none"> • Direction de l'eau potable <p>Boroughs Non-integrated projects</p> <ul style="list-style-type: none"> • Direction de l'épuration des eaux usées 	<p>Direction de l'eau potable/boroughs</p> <ul style="list-style-type: none"> • Combination, in a single work project, of several work projects on the infrastructure of different applicants within or external to the City. <p>Example :</p> <ul style="list-style-type: none"> • New drinking water mains (Direction de l'eau potable). <p>These units are responsible for integrating their project.</p> <p>Direction de l'épuration des eaux usées</p> <ul style="list-style-type: none"> • Project to upgrade the wastewater system. Due to its nature, integrating other work is difficult <p>Example :</p> <ul style="list-style-type: none"> • Rehabilitation of retention work or sewer mains.

	YEAR-2	YEAR-1	YEAR-0	
	Division Assistance à la gestion des interventions dans la rue (Service des infrastructures du réseau routier)		Équipe de coordination opérationnelle/ boroughs	Carrying out of the work
	<p>Plans the integration of applicants' needs to create standard integrated projects.</p> <p>Coordinates work with the other projects of internal/external partners (based on mobility analyses, suggests mitigation measures to facilitate mobility).</p> <p>Prioritize projects in the following order:</p> <ul style="list-style-type: none"> • Finishing work; • Burying of underground lines; • Bicycle path; • Standard integrated projects. 		<p>Équipe de coordination opérationnelle</p> <ul style="list-style-type: none"> • Coordinates projects in key sectors/boroughs where the needs are greatest; • Recommends mitigation measures when mobility issues arise; • Follows up on the ground. <p>Boroughs</p> <ul style="list-style-type: none"> • Coordinates what the équipe de coordination opérationnelle does not cover. 	<p>Direction des infrastructures of the Service des infrastructures du réseau routier.</p>
		<p>Draws up the list of non-integrated projects (following mobility analyses, suggests mitigation measures to establish the order of work to be completed).</p>		
				<p>Depending on the project:</p> <ul style="list-style-type: none"> • Direction de l'eau potable; • Direction de l'épuration des eaux usées; • Boroughs.

5.3. Timeline



¹ Gestion de projets et économie de la consultation.

Source: Assistance à la gestion des interventions dans la rue (AGIR).



3.6.

Managing the Quality of Geolocation Data

March 7, 2022

2021 ANNUAL REPORT

Auditor General of the Ville de Montréal

3.6. Managing the Quality of Geolocation Data

Managing the Quality of Geolocation Data

Background

Access to geolocation data, such as the exact location of a sewer line, with additional information, such as the date of its last inspection and an indication of its structural condition, is an asset for project planning and management at the Ville de Montréal (the City). In a survey conducted as part of our work, 89% of respondents said they use geolocation data recorded in the City's SIGS (Système d'information géographique et spatiale). However, this data must be of good quality, i.e., complete, accurate and up to date. The absence of such quality assurance for geolocation data could result in users turning to other data sources, leading to an inefficient approach. Worse yet, they could base their decisions on inaccurate information.

At the time of our audit, the SIGS contained 366 data layers, consisting of datasets on different themes, including water and sewer systems, the road network and bike paths, road signage, the municipal real estate inventory (e.g., buildings, lots, park benches, garbage cans), the inventory of parks and natural areas, as well as the network of electric vehicle charging stations.

Purpose of the Audit

The purpose of this audit was to ensure that the City's geolocation data is of good quality and that it is made available to all of the business units.

Results

Due to several deficiencies in the governance of the geolocation data, including with respect to the assignment of roles and responsibilities, the lack of defined minimum data quality criteria, and incomplete attributes for the geolocation data, we conclude that not all of the geolocation data made available to City employees as part of their operations and activities is of good quality. In addition, due to the lack of an inventory of all geolocation data, not all of the data is known and available to employees.

The *Directive sur la gouvernance des données de la Ville de Montréal*, in force since 2016, tends to be oriented more towards the dissemination of open data accessible on the City's website. This leaves the business units to decide how to treat the geolocation data throughout its processing cycle for dissemination to the SIGS. There is no single, formal structure for ensuring and communicating the quality of geolocation data available to the employees in the SIGS. Adjustments are necessary, including the development of an administrative framework specific to the geolocation data that defines the roles and responsibilities of the various business units involved in processing geolocation data and the quality criteria that must be met for this type of data. Finally, the SIGS needs to be cleaned up, and only the necessary layers kept.

Main Findings

Governance

- The roles and responsibilities of the various business units involved in the geolocation data processing cycle are not perfectly aligned with the *Directive sur la gouvernance des données de la Ville de Montréal*, particularly with respect to responsibility for data quality.
- The person responsible for the geolocation data layer is unknown for 60% of the layers in the SIGS making it difficult to determine its utility.
- There is no comprehensive documentation describing the process for creating a geolocation data layer, from the collection of the data to its dissemination.
- Approximately 4% of geolocation data layers contain metadata, i.e., global information that applies to all data—thereby limiting the ability to know who is responsible for the layer and how often it is updated.

Generation, Update and Dissemination Ensuring the Quality of Information

- There are no minimum quality criteria that must be met for the geolocation data, which may limit users' confidence in the data and encourage the use of parallel databases.
- The absence of a requirement to document the geolocation data processing cycle is not conducive to knowledge of all the steps leading to its dissemination and thus limits quality controls during this process.
- Regarding the geolocation data layers examined, the correspondence between the data collected by the business units responsible for the activity or asset and the data available in the SIGS is not perfect. The SIGS is therefore not an accurate representation of reality, and any decision based on the data could be wrong.
- For all of the geolocation data layers examined, not all data attributes contain values, thus limiting the usefulness of viewing such geolocation data.
- Automated scheduling of a data display update in SIGS is not performed for all observed data layers. In the case of two of the five layers examined, the updates dated back to 2012 and to 2016. Consequently, the risk that the data is not up to date is significant.

Accessibility of the Geolocation Data

- There is no catalogue available to enable all of the employees to inquire about the existence of geolocation data available to the City.

In addition to these results, we have made various recommendations to the business units, which are presented in the following pages. These business units were given the opportunity to agree to the recommendations.

List of Acronyms

BU	business unit
City	Ville de Montréal
DEPS	<i>Division du développement, exploitation et pilotage de systèmes</i>
Directive	<i>Directive sur la gouvernance des données de la Ville de Montréal</i>
MUIL	Montreal Urban Innovation Lab
PDQ	postes de quartier
Policy	<i>Politique de données ouvertes de la Ville de Montréal</i>
SCA	Service de concertation des arrondissements
SE	Service de l'eau
SIGS	Système d'information géographique et spatiale
SIM	Service de sécurité incendie de Montréal
SIRR	Service des infrastructures du réseau routier
SPVM	Service de police de la Ville de Montréal
STI	Service des technologies de l'information
SUM	Service de l'urbanisme et de la mobilité

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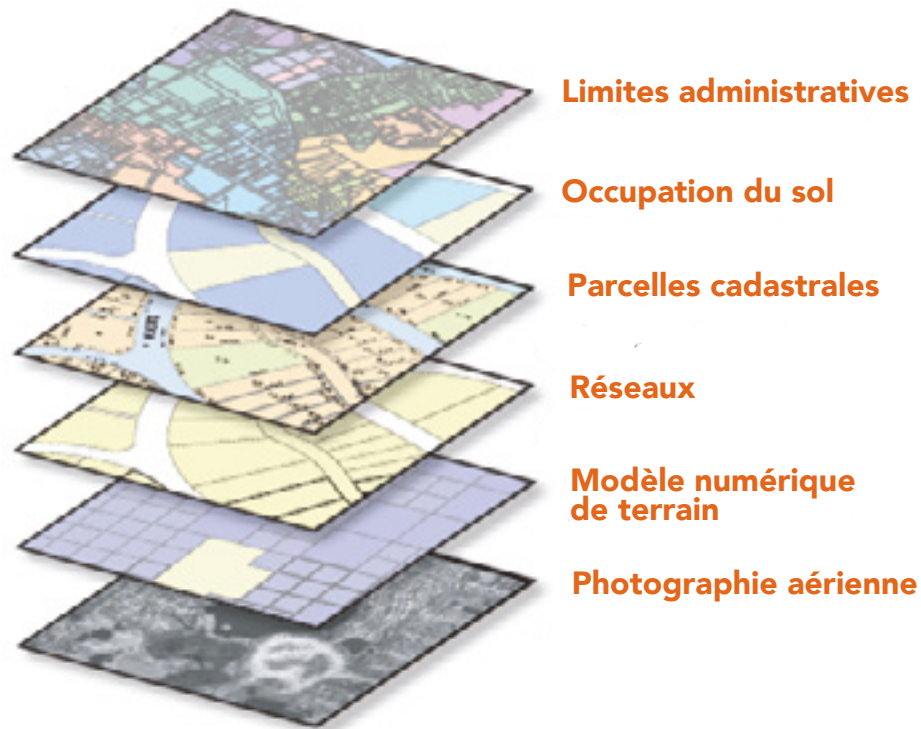
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1. Background

Geolocation is defined as a technique that determines the precise geographical location of a static or mobile object or place by referring to its spatial coordinates expressed in terms of latitude and longitude. Geolocated data can be organized, structured and stored in databases in such a way that the physical locations of objects and their descriptions can be used in a geographic information system.¹ The advantage of such a system is that it can be used to make a cartographic representation of the territory by superimposing different layers of information relative to the geolocated objects, as shown, for example, in Figure 1.

FIGURE 1

Example of Superimposed Geolocation Information Layers



Source: Géo Arch.

¹ Portail de l'information géographique du Québec.

3.6. Managing the Quality of Geolocation Data

The Ville de Montréal (the City) has been using a geomatics system called the Système d'information géographique et spatiale (SIGS) for around ten years. This system provides a cartographic representation through 366 layers² and sub-layers of thematic information concerning various sectors of activity. The geolocation data contained in the SIGS may be derived from aerial photography, GPS systems, field surveys, other functional systems of the City or the digitization of existing documents (e.g., maps). For example, it is possible to consult the SIGS for data related to:

- water and sewer systems;
- the road network, including bicycle paths;
- road signage (e.g., traffic lights, signs);
- real estate inventory (e.g., buildings, lots, park benches, garbage cans);
- the inventory of parks and natural areas;
- the network of electric vehicle charging stations.

A tool such as the SIGS can be used to improve knowledge of the City's assets (inventory and specific locations) and to support operational activities (e.g., construction planning) based on physical data and asset conditions, while protecting the infrastructure and ensuring its sustainability.

When properly documented, a layer of geolocation data provides several types of information (called attributes) related to the geolocated object. For example, the layer titled "Fire hydrants" provides the date of the last inspection of each hydrant and the expected water flow. The layer titled "Water main breakages" includes the date a given water main broke as well as the date on which the repair was made. These attributes are information that may be useful to the City's different business units to plan or manage their interventions. According to a survey of the 19 boroughs and 7 central departments³ conducted as part of this audit, 89% of respondents use the SIGS in their operations.

In order for a data item to be geolocalized, several business units will be involved at different key stages of the processing cycle, the main ones of which can be summarized as follows:

- The data item collected or produced by a central department or a borough;
- The data item digitally transformed and compiled with others to spatialize it (primarily the responsibility of the Service des technologies de l'information [STI] and the Service des infrastructures du réseau routier [SIRR]);

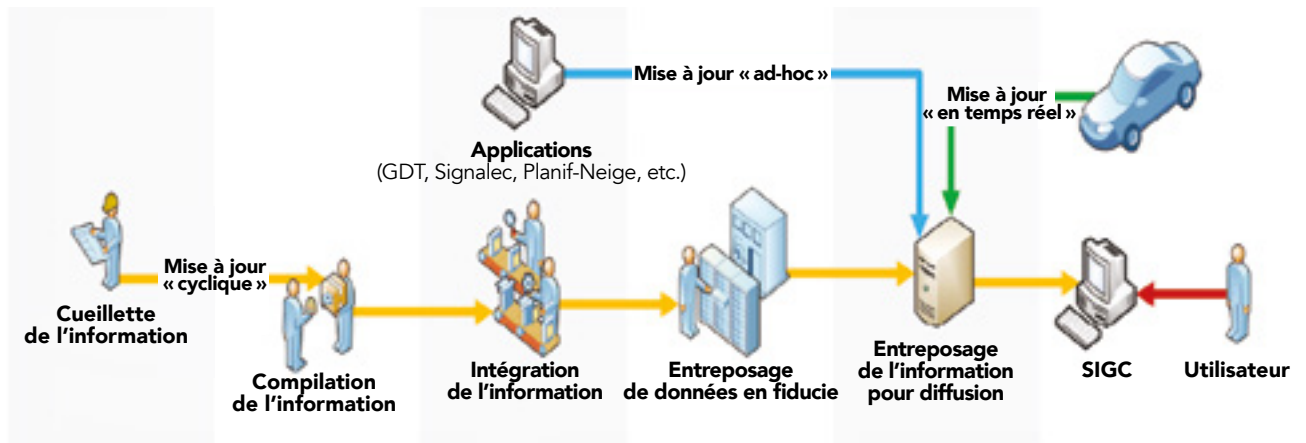
² At the time of our audit, the Service de concertation des arrondissements (SCA) provided the latest SIGS inventory, completed in November 2019, which contained a total of 366 layers of varied information.

³ 115 responses were obtained from 13 of the 19 boroughs as well as from the STI, the SIRR, the Service de l'urbanisme et de la mobilité (SUM), the Service de l'eau (SE), the Service de police de la Ville de Montréal (SPVM) and the Service de sécurité incendie de Montréal (SIM).

- Storage of data in trust at a business unit that ensures its availability in central databases;
- Data storage in a dedicated database specifically within the SIGS (the STI is responsible for maintaining the SIGS as well as for data security and integrity);
- Geolocation data consulted by users via the SIGS.

FIGURE 2

Processing Cycle of a Geolocation Data Item, from Its Collection to Its Dissemination



Source: Service de concertation des arrondissements.

In addition to the above-mentioned responsibilities, the SIRR, through its Division de la géomatique, produces a basic map of the Montréal territory (e.g., roads, buildings, parks). It is also responsible for producing the water system and road networks and keeping them up to date.

The SCA, through its Division du développement, exploitation et pilotage de systèmes (DEPS), supports users in the boroughs by identifying and prioritizing functional needs in terms of geolocation data, by following up on the development of solutions with the STI and by playing an advisory role to the boroughs that use geolocation data in their activities.

Given the use of geolocation data across the City and the breadth of information this data contains, we decided to undertake a review of how the geolocation data is managed in order to provide assurance as to the quality of the data available in the SIGS.

2. Purpose and Scope of the Audit

Under the provisions of the *Cities and Towns Act*, we conducted a value-for-money audit of the management of the quality of geolocation data. We performed this mission in accordance with the *Canadian Standard on Assurance Engagement (CSAE) 3001* described in the *CPA Canada Handbook—Assurance*.

The purpose of this audit was to ensure that the City's geolocation data is of good quality and that it is made available to all of the business units.

The role of the Auditor General of the Ville de Montréal is to provide a conclusion regarding the objectives of the audit. To do so, we collected sufficient and appropriate relevant evidence on which to base our conclusion and obtain a reasonable level of assurance. Our assessment is based on criteria we deemed valid for the purposes of this audit. These criteria are presented in Appendix 5.1.

The Auditor General of the Ville de Montréal applies the *Canadian Standard on Quality Control (CSQC) 1* of the *CPA Canada Handbook—Assurance* and, accordingly, maintains a comprehensive quality control system that includes documented policies and procedures with respect to compliance with ethical requirements, professional standards and applicable legal and regulatory requirements. The Auditor General also complies with the independence and other ethical requirements of the *Code of ethics of chartered professional accountants*, which are based on fundamental principles of integrity, professional competence and due diligence, confidentiality and professional conduct.

Our audit work covered the period from October 1, 2018, to September 30, 2020. However, for certain aspects, data from before and after this period was also taken into consideration. Our work was mainly carried out between September 2020 and May 2021. We also took into account information that was sent to us up to March 1, 2022. Our work consisted of conducting interviews with employees, reviewing various documents and conducting surveys that we deemed appropriate to gather the evidence we needed. In addition, we excluded from the scope of our mission a review of the control mechanisms in place to ensure the integrity, confidentiality and availability of data in the SIGS's environment, as this was covered in the Geomatics Systems Management mandate contained in the 2020 Annual Report. Therefore, while connections can be established between the geolocation data accessible through the SIGS and the data made available to the public by the City through the *Données ouvertes* portal, this audit covers only the processes leading to the dissemination of data in the SIGS.

Most of the work was carried out with the following business units:

- Direction générale (Montreal Urban Innovation Lab [MUIL⁴]);
- STI (Direction gestion du territoire, Direction engagements numériques, Bureau de projets TI);
- SCA (Direction programmes et systèmes);
- SIRR (Direction gestion du portefeuille de projets–Division de la géomatique);
- SE (Direction des réseaux d'eau, Direction de l'épuration des eaux usées and Direction de l'eau potable);
- SUM (Direction de la mobilité and Direction de l'urbanisme);
- The Verdun borough (Direction du développement du territoire et études techniques and Direction des travaux publics);
- The Ville-Marie borough (Direction de l'aménagement urbain and Direction des travaux publics).

At the end of our work, a draft audit report was presented for discussion to the relevant managers in the audited business unit as well as to the Direction générale. The final report was then sent to the management of each of the business units concerned and to the Direction générale to obtain action plans and timelines for the implementation of the recommendations. A copy of the final report was also sent to the deputy director-general of the Service aux citoyens and to the deputy director-general of Mobilité et attractivité as well as to the directors of the boroughs not directly concerned by our audit work, for information purposes and to enable them to implement the recommendations where the situation warrants it.

3. Audit Results

3.1. Lack of Accurate Data Governance Specific to the Geolocation Data

3.1.1. Differences in Interpretation of Roles and Responsibilities

Geolocation data is governed by the City's *Directive sur la gouvernance des données de la Ville de Montréal* (the Directive). The purpose of this Directive is to clarify the ownership of City data, define data management principles, determine the various business units' roles and responsibilities with respect to data management and formalize data governance. This applies primarily

⁴ In February 2022, the MUIL was integrated into a new business unit reporting directly to the Direction générale and known as the Service de la planification stratégique et de la performance organisationnelle.

3.6. Managing the Quality of Geolocation Data

to data for which the City owns the intellectual property, but also to data for which the City has acquired rights of use. The Directive was adopted in December 2015⁵ and took effect in 2016, in support of the *Politique de données ouvertes de la Ville de Montréal* (the Policy) which, as its name implies, focuses on opening up data and making the City's geolocation data and non-geolocated data available to the public through the *Données ouvertes* portal on the City's website.

Although provided for in the Directive, the Direction générale, responsible for data management, or its representative in this matter, i.e., the MUIL,⁶ has not appointed the stewards responsible for the acquisition and management of the dataset. At the time of our audit, the MUIL was still in the process of identifying the data coordinators, namely the individuals within a business unit who oversee the unit's data inventory, including identifying the datasets the business unit produces and the respondent for each dataset. Indeed, the MUIL had not identified the coordinators for 27% of the central departments and, among those that were identified, they were not up to date for 29% of the central departments and 47% of the boroughs. One of the reasons for the lack of coordinators or the failure to update coordinators, which is the reference point for the first step in the geolocation data processing cycle, is that there is no structured process supported by the MUIL for each business unit to designate such a resource and subsequently communicate the information to the MUIL.

In 2019, the SCA produced, for the purpose of piloting the SIGS system, a diagram titled *Les rôles dans le cycle de l'information à référence spatiale* in which both the SCA and the SIRR play key roles. However, the titles and roles of the various actors differ from those presented in the Directive. In the case of the Directive, only the Direction générale, the MUIL, the STI and the person responsible for an informational resource are explicitly named as actors in the dissemination of data to the City. However, as shown in Table 1, the notion of steward differs between the Directive and the SCA's document. In the Directive, this notion is associated with the business unit that produces the data. The business unit's role is therefore to ensure the integrity of the data and the information related to this data. In the case of the SCA, the steward is an actor that intervenes between the collection of data by a business unit and its dissemination in the SIGS by the STI. The steward accumulates information in various databases that is transferred to the SIGS's database. The distinction is important, because, in the case of the SCA, the steward is not responsible for the quality of the stored information. In their opinion, the producer of the data is responsible for providing quality assurance.

⁵ Resolution CM15 1499 of the municipal council.

⁶ In 2015, at the time the Directive was drafted, the administrative unit (an administrative unit is a subdivision of a business unit) that is today the MUIL was referred to as the Bureau de la ville intelligente et numérique.

Thus, the responsibility for data quality is not attributed to the same entity depending on what can be seen in the field and the Directive in place to govern what happens in the field.

The notions of steward and custodian of the Directive are also a source of confusion among the key business units involved in the dissemination of geolocation data. The STI's Direction de la gestion du territoire considers itself to be the steward of the data for which it is responsible. The SIRR's Division de la géomatique considers itself the owner of the data related to its mission and the custodian of the data it processes on behalf of other business units where this has been agreed, such as the SE. This division uses the term custodian in the context of data that it does not own, but manages for another business unit. However, the Directive is explicit on this point. The City delegates responsibility for data management to the Direction générale, which is the custodian of the data, while the business units are the stewards of the data and are responsible for the proper administration of the datasets entrusted to them. Under the Directive, the role of the steward is to produce and manage data and to ensure its integrity.

This confusion over roles and responsibilities can lead to different interpretations of the Directive, which, to date, has been the only administrative framework for the City's data, whether geolocalized or not. However, the simple fact that the notion of steward in one case includes the integrity of the data while, in another, it covers only the availability of the data is problematic when it comes to assigning responsibility for ensuring the quality of geolocation data.

TABLE 1

Roles and Responsibilities of the Actors in the Governance of Geolocation Data According to the *Directive sur la gouvernance des données de la Ville de Montréal* and the Service de concertation des arrondissements

Actor	Directive	Document of the Service de concertation des arrondissements
Producer	--- ^[a]	The BU ^[b] or external partner collects the information, models it and translates it into computer-readable data.
Integrator	---	The STI ^[c] and SIRR ^[d] analyze the information to improve its structure and make it usable.
Steward	The BU that is mandated to produce, manage and ensure the integrity of an information resource.	The STI ^[c] and SIRR ^[d] act as concentrators and warehouses of information from several sources and guarantee its availability.
System driver	---	The SCA ^[e] represents the interests of users by supporting them in their operations.
Disseminator	---	The STI ^[f] makes information available to consumers ^[g] via the SIGS dissemination application.
Custodian	An entity that is mandated by the City to manage its data (i.e., the Direction générale or its representative).	---
Content respondent	An individual within a steward BU who is responsible for managing a dataset and ensuring that the data is current, complete, valid and of good quality.	---
Technical respondent	An individual who is responsible for the information system or tool hosting a dataset.	---
Data coordinator	An individual who coordinates a BU's data inventory by identifying the BU's datasets and their respondents.	---
Information resource manager	The person who manages the fiduciary BU's documents, files and databases.	---

[a] No mention of this actor in the document reviewed.

[b] Business unit (central department or borough).

[c] The STI's Centre d'expertise en géomatique.

[d] The SIRR's Division de la géomatique.

[e] The SCA's Division du développement, exploitation et pilotage de systèmes.

[f] The STI's digital solution.

[g] User of the information as part of their duties to solve a problem, make a decision or accomplish a task.

3.1.1.A. Recommendation

We recommend that the Direction générale adopt a directive to guide the entire geolocation data processing cycle, in which the roles and responsibilities within the Ville de Montréal's business units are clearly defined, in collaboration with the business units concerned, or adjust the *Directive sur la gouvernance des données de la Ville de Montréal* in this sense, in order to promote a common understanding and sound data governance.

3.1.2. Lack of Accountability for the Implementation of the *Directive sur la gouvernance des données de la Ville de Montréal*

The Directive stipulates that the MUIL is the administrative unit⁷ responsible for ensuring the application of the Directive and related decisions of the Direction générale. It must also guide and control the production, management and use of data as well as the dialogue between the various stakeholders involved with the data. With such responsibilities, good governance practices would dictate that the MUIL periodically report on the progress made with respect to implementing the Directive. However, our work highlights the fact that no follow-up and accountability mechanism has been implemented to make it possible, at the very least for the Direction générale, to evaluate the extent to which the orientations of the Directive have been adequately understood and deployed within the business units and to take corrective measures if necessary. Furthermore, in the absence of such accountability, not only for the implementation of the Directive but also for the entire process of disseminating geolocation data across the City, it is difficult for the Direction générale to appreciate the growing gap between the Directive dating back to 2016, which is strongly oriented towards open data, and the work that central departments such as the SCA, SIRR and STI do in the field to ensure that City employees have access to high-quality geolocation data as part of their work.

Reportedly, efforts to publicize the Directive have been limited and it has not been fully implemented. The MUIL worked more on identifying datasets that would be used to populate the open data portal. For example, the only accountability we were able to observe was through the annual submission by the Direction générale of its budget to the Commission sur les finances et l'administration. This presentation illustrates the evolution of the number of datasets available on the City's open data portal, some of which is geolocation data.

⁷ A business unit is a central department or a borough. An administrative unit is a team within a business unit. Reporting directly to the Direction générale, the MUIL is considered an administrative unit.

3.1.2.A. Recommendation

We recommend that the Direction générale require business units, which will be responsible for ensuring the application of the directive specific to geolocation data, to put in place the necessary monitoring mechanisms to fulfil this responsibility and to report periodically to the Direction générale to enable it to assess how well this directive matches the reality in the field.

3.1.3. Lack of Documentation and Information on Geolocation Data Layers

Lack of a Protocol for Disseminating Geolocation Data

In order for data entered by a business unit to be available for consultation in the SIGS along with relevant and useful attributes, several steps are necessary and different departments must collaborate. However, the data producer, the first link in this chain, is usually not a geomatics expert, just as these experts who will intervene in the subsequent steps leading to dissemination in the SIGS are not specialists in the subject related to the data to be disseminated. There is therefore a communication issue to ensure that those who will be entering the data into the SIGS understand the needs of the data producer, who, in turn, knows what to provide so that the geomatics teams can adequately structure its information.

The steps that need to be taken to put a geolocation data layer into production in the SIGS are clear to the SCA:

- Request made to the SCA for a layer to be created by the applicant (data producer);
- Relevance of the request assessed by the SCA (usefulness of the layer);
- Layer's specifics established by the applicant and the SCA;
- Request to create the layer transmitted by the SCA to the STI;
- Technical feasibility of creating this layer from the planned data assessed by the STI;
- Layer parameterized in test mode by the STI;
- Test performed on the layer by the applicant;
- Layer commissioned by the STI.

However, no documented protocol exists detailing these steps, the criteria the SCA uses to assess the suitability of the request, those the STI uses to assess technical feasibility and the information to be provided by the applicant.

It may be useful to develop a reference document on creating a geolocation data layer in the SIGS detailing the steps, actors and requirements for creating such a layer. This document could also suggest that the applicant have a schematic process for collecting and handling the data involved.

For example, the SE's Direction des réseaux d'eau has mapped the process and produced a methodology in conjunction with the geolocation of water main breakages which details the activities to be carried out in four phases, namely, in this case:

- Data extraction;
- Data processing, analysis and preparation for geolocation;
- Geolocation;
- The creation of the data table for display in the SIGS.

However, the process stops at communication with the SIRR's Division de la géomatique to inform them of the data update so that they can validate the file format and migrate it to the SIGS with the assistance of the STI. A similar mapping was also done by the SE's Direction des réseaux d'eau for sewer inspections.

These processes could also be enhanced by the interventions and actions of the SCA, SIRR and STI to complete the data processing cycle up to dissemination in the SIGS. Documenting a complete process would allow anyone wishing to do quality control on geolocation data to follow the path of a data item from its collection to its dissemination and to ask the different business units involved for the inputs and outputs of the steps they have performed. Such quality control would contribute to improved data quality.

Metadata Defining an Entire Data Layer

Metadata in geomatics is additional information applicable to all of the data in the layer and not to each data item as is the case with the attributes. Of the 366 layers contained in the SIGS, only 16 at the time of our audit, or about 4%, contained metadata. This is because it is only in 2018 that the SCA put in place a form allowing the applicant to specify the metadata related to the layer they seek to produce. This form is used to collect the following information:

- The contact information of the data layer's resource person;
- The description of the information and the use that will be made of the data in the SIGS;
- The applicant's business field (e.g., asset management, work management, assessment roll management, environment, sports and leisure);
- The nature, origin and format of the data provided by the applicant (e.g., tabular data, geometry and attributes, image);
- The frequency at which the data is updated;
- The expected number of data users.

3.6. Managing the Quality of Geolocation Data

In the absence of specific information about a layer, the SCA is unable to identify who is responsible for the layer, how often it is updated or the format in which the information was originally obtained from the requesting business unit. In the case of geolocation data, it is important to be able to demonstrate that the data is up to date since that is a concern for users. The survey conducted as part of this audit revealed that 34% of the users consider the frequency of data updates in the SIGS to be inadequate. In addition, of the 366 layers contained in the SIGS, at the time of our audit, the people responsible for 221 (60%) of these layers were not known. This means that more than half of the layers can be qualified as orphans for which we do not know who to contact to find out whether an update of the basic data has been done recently or whether the data has evolved since the last collection. At the time of our audit, the SCA had undertaken a project to clean up the SIGS by eliminating redundant, outdated and orphaned layers.

Establishing Service Agreements to Formalize Collaborations

The SIRR's Division de la géomatique, the Division de l'intelligence d'affaires et géomatique of the STI's Direction de la gestion du territoire and the SCA's DEPS take responsibility for maintaining geolocation data layers up to date for other departments. For example, the SE and SIRR have agreed that the SIRR is responsible for establishing a geolocalized inventory of water and sewer systems as well as other water assets such as fire hydrants and valves and keeping it up to date. The STI receives data from the SIM and the SPVM for five layers⁸ and geolocates it before depositing it on a specific server on which the SIGS can read it and display the information. A similar situation also exists between the SIM and the SCA for the layers of information related to snow removal operations on emergency routes for which the SCA is responsible.

In all of these cases where a partnership exists between two departments, no formal document has been produced. From the perspective of the audited business units, the partnership operates on the basis of verbal agreements. However, in the absence of formal agreements, there is a risk that changes in leadership or priorities over time will result in service disruptions that can impact the quality of the geolocation data disseminated in the SIGS. In our opinion, formalizing this partnership with respect to the processing of geolocation data on behalf of other business units would mean:

- document the shared roles, responsibilities and commitments of the parties;
- to ensure the sustainability of the actions to be taken by both parties to ensure the reliability of the information disseminated in the SIGS;
- to provide for accountability mechanisms with respect to the responsibilities conferred in this area.

⁸ The five layers are as follows: Caserne du SIM, Territoires opérationnels de casernes SIM, Secteur administratif SIM, Postes de quartier (PDQ) SPVM, Limites des territoires de PDQ SPVM.

3.1.3.A. Recommendation

We recommend that the Direction générale mandate a business unit to develop a document explaining the steps to be taken to create a geolocation data layer, as well as the required metadata, so that the business units know what information to provide at the beginning of the layer creation process and that the layer, once created, is adequately documented to ensure the quality of the disseminated data.

3.1.3.B. Recommendation

We recommend that the Service de concertation des arrondissements continue and complete the project, on the basis of predetermined criteria, to eliminate from the Système d'information géographique et spatiale data layers that are no longer useful or have no known owners in order to offer users only relevant data layers.

3.1.3.C. Recommendation

We recommend that the Direction générale take the necessary steps to ensure that each business unit involved in a geolocation data layer documents its portion of the data processing, from collection to dissemination, to ensure consistent and recurring data processing and business continuity in the event of staff movement.

3.1.3.D. Recommendation

We recommend that the Service des infrastructures du réseau routier, the Service des technologies de l'information and the Service de concertation des arrondissements enter into written service agreements with the business units for which they are responsible for updating and disseminating information layers in the Système d'information géographique et spatiale, in order to formalize the sharing of roles, responsibilities and commitments of the parties involved and thus ensure the sustainability of the actions to be taken on both sides to obtain reliable data for this system.

3.2. Geolocation Data Whose Quality and Integrity Cannot Be Guaranteed

3.2.1. Geolocation Data with No Quality Criteria

One of the major shortcomings observed in this audit was the lack of quality criteria for the geolocation data. Through this policy, the City adheres to the principles of transparency and quality as set out by a US organization,

3.6. Managing the Quality of Geolocation Data

the Sunlight Foundation,⁹ with respect to data dissemination. The Policy lists ten of these principles including a commitment to publish:

- **comprehensive data:** datasets should be as complete as possible and reflect all that is collected on a given topic;
- **primary data:** the data should include the original information collected and any available details on how the data was collected;
- **timely data:** data made available should be published or updated in a timely manner.

Adherence to the primary data principle should ensure that, unlike what was observed, the geolocation data transformation process (i.e., the various steps the data goes through from the time it was generated to the time it can be accessed on the SIGS) is documented and that metadata is associated with a high proportion of the data layers (not just 4%).

With respect to the principle of timely data, at the time of this audit, of the 366 layers contained in the SIGS, 177 (48%) had not been updated for at least three years. If an update of a layer dating back more than three years can be explained in some cases, for example the layer which contains the orthophotographs¹⁰ of spring 2002 and which was last updated in April 2002, other cases are more difficult to justify. This is the case, for example, with the “Luminaires” layer, which was last updated in June 2016, even though, since 2016, the City has upgraded its street lighting system.

Thus, while the Policy is intended for the City’s open data, certain quality principles apply to the geolocation data. However, there are no tags for each of the layers in the SIGS that define what is acceptable to be able to consider that these principles are respected.

In a manner more applied to geomatics, the ISO 19157 standard *Geographic information — Data quality* addresses five main categories of quality criteria for geolocation data, namely:

- **completeness:** the presence or absence of a geolocation data item or of one of its attributes in a layer;
- **logical consistency:** a date must be expressed in the format YYYYMMDD, but it is entered in the format DDMMYYYY;
- **temporal quality:** a pipe cannot break before it is installed;
- **thematic accuracy:** a residential building cannot be classified as an industrial building;
- **positional accuracy:** the accepted margin of error for the position in space of the object.

⁹ This organization is working to make the civil service more transparent to citizens by sharing guides and tools to publish data that meets citizens’ needs and concerns.

¹⁰ Geometrically rectified and radiometrically equalized aerial images.

While there is no requirement for the City to adopt such quality criteria in relation to this standard, 36% of the respondents to the survey conducted as part of this audit partially or completely disagreed with the statement that there were attributes for all geolocation data in the SIGS. Such a statement is directly related to the **completeness** criterion. In the same survey, 33% of the respondents partially or completely disagreed with the statement that the geolocation data they access in the SIGS is accurate and precise. This can be an issue with the temporal quality, thematic **accuracy** or positional accuracy criterion.

The lack of specific quality criteria specific to the geolocation data and/or the lack of guidance on the minimum quality that can be found when viewing geolocation data in the SIGS could result in City employees being disinclined to use this data, not trusting it, and instead creating their own parallel databases.

3.2.1.A. Recommendation

We recommend that the Direction générale integrate into the directive governing the entire processing cycle of geolocation data quality criteria for the data that will have been defined jointly by the Montreal Urban Innovation Lab, the Service de concertation des arrondissements, the Service des infrastructures du réseau routier and the Service des technologies de l'information, in order to guarantee users of the Système d'information géographique et spatiale a minimum level of quality with respect to the geolocation data.

3.2.2. Impact of Poor Governance on the Quality of the Geolocation Data

The purpose of the audit was to assess whether the City is in possession of quality data. Concurrently, we sought to assess whether the observed shortcomings with respect to the lack of governance specific to the geolocation data might actually affect the quality of the data disseminated in the SIGS. To do this, based on a purposive sample¹¹ of five geolocation data layers presented in the SIGS, the data processing cycle was reviewed in order to understand its specific path from collection to dissemination.

The following sampled data layers were selected to represent topics of importance or current for the City:

- "Plans" (representation of the City's infrastructure according to the plans as built);
- "Bris d'aqueducs" (water main breaks);
- "Inspection d'égouts" (sewer inspections);
- "Pistes cyclables" (bicycle paths);
- "Luminaires" (lighting).

¹¹ Unlike a statistical sample, a purposive sample is based on selection criteria. As part of this audit, the layers were reviewed with regard to the relevance of the subject in relation to the services to citizens.

3.6. Managing the Quality of Geolocation Data

Each of these layers was reviewed according to the following four indicators:

- Existence of a documented process detailing the geolocation data processing cycle, related to the Policy’s primary data principle;
- Integrity of geolocation data, in line with the Completeness criteria of the Policy and ISO 19157 standard;
- Integrity of the attributes of the geolocation data, in connection with the criterion on the Completeness of the ISO 19157 standard;
- Update of the geolocation data layer, in line with the Policy’s timely data principle.

Process Detailing the Geolocation Data Processing Cycle

The objective of this indicator was to determine whether, for each geolocation data layer, there was a document explaining or schematically representing all of the data processing, from its collection to its dissemination in the SIGS. The existence of such a document promotes recurrence and consistency in the way data is handled from one update to the next. This also ensures business continuity in the event of staff movement within the business units concerned.

TABLE 2

Assessment of the Level of Process Documentation Representing the Geolocation Data Processing Cycle

Layer	Full documentation	Partial documentation	No documentation
“Plans” ^[a]		•	
“Bris d’aqueducs”		•	
“Inspection d’égouts”		•	
“Pistes cyclables”			•
“Luminaires”		•	

[a] The “Plans” layer is one of the data sub-layers related to the “Eau” asset information layer¹² in the SIGS. Our audit was thus oriented towards the review of the processing of plans relating to the construction or reconstruction of water and sewer mains only.

With the exception of the “Pistes cyclables” layer, for which no documentation was identified for the process of populating the SIGS from the applicant’s data, the other four layers have varying degrees of documentation.

¹² The water assets in the SIGS are made up of 27 sub-layers of data including “Conduites d’aqueduc et d’égouts,” “Vannes,” “Bornes d’incendie” as well as “Bris d’aqueducs” and “Inspections d’égouts.”

For the “Plans” layer, the *Directive Préparation et transmissions des plans tels que construits/Plans TQC*¹³ and a methodology for the preparation of final plans specific to water and sewer systems exist.

The first is an administrative document that informs all business units of their obligation to transmit final plans to the SIRR’s Division de la géomatique so that it can deposit them in the “Plans” layer, which is a sort of warehouse where received plans are stored, and subsequently digitize them in order to update all of the data layers in the SIGS relating to the assets impacted by the work carried out (e.g., the addition or relocation of a water main). While the final plans stored in the “Plans” layer are useful for users to view when working on the City’s water system, digitizing their content in the SIGS is critical to ensure that all layers relating to the various water assets impacted by the work can be adequately reflected in the SIGS.

The second document is more technical and describes the steps involved in making the final plans. It also assigns responsibilities to each business unit concerned. However, the written steps end with the transmission of these final plans to the SIRR’s Division de la géomatique. The documentation of the process is therefore incomplete and does not allow for a review of the entire geolocation data processing cycle as it relates to the final plans.

With respect to the “Bris d’aqueducs” layer, as mentioned earlier in this report, a process documented by the SE illustrates in some detail the processing cycle for the geolocation data collected for dissemination in the SIGS and a methodology details what needs to be done—both of which were produced in 2019. This is the “geolocation data” layer examined that has the most complete documentation. Even the validation by the SE, to ensure that the water main break data sent to the SIRR after processing has been reflected in the SIGS, is included. However, this random validation operation is not documented. It was therefore not possible for us to corroborate its existence.

Concerning the “Inspection d’égouts” layer, the situation observed is similar to that for the “Bris d’aqueducs” layer, with a schematic process produced by the SE in 2020 and a document explaining where and how to save the inspection data so that the SIGS can read the information and display it. However, unlike the “Bris d’aqueducs” layer, the process for the “Inspection d’égouts” layer does not include a validation of the data to ensure that it is adequately reflected in the SIGS. It seems this validation is nevertheless done, without the exercise being documented.

Finally, for the “Luminaires” layer, a document produced in 2016 describes what the SIGS was to display as information and what files the SIGS was to point to in order to access the data. It is more of a preparation document for the production of a new geolocation data layer than a document explaining how and how often to perform the steps required to update the data in this layer.

¹³ The expression “Plans tels que construits/plans TCQ” is now known as “Plans finaux.”

3.6. Managing the Quality of Geolocation Data

Due to the absence of any requirement to document the steps to be performed throughout the processing cycle of a geolocation data item to have it displayed in the SIGS, we noted a fairly significant disparity in the documentation of the geolocation data processing cycle for the information layers reviewed. This has the effect of limiting the assurance that the data that is to constitute a layer will always be processed in the same way and that it will be of good quality, even up to date, for its transfer to the final database to which the SIGS points for displaying the data.

Completeness of the Geolocation Data

The review of this indicator made it possible to ensure that the data available in the SIGS represented all of the data that was collected by the applicant at the beginning of the processing cycle. To carry out these tests, a corroboration was established between data randomly selected from the source files produced by the applicants—primarily from the Ville-Marie and Verdun boroughs—and the data displayed in the SIGS.

TABLE 3

Assessment of the Completeness of the Geolocation Data in a Layer Within the Système d'information géographique et spatiale

Layer	High completeness	Partial completeness	Low completeness
"Plans"		•	
"Bris d'aqueducs"	•		
"Inspection d'égouts"		•	
"Pistes cyclables"			•
"Luminaires"			•

For both "Luminaires" and "Pistes cyclables," although data is displayed in the SIGS for these layers, none of the selected sample items could be tracked in the SIGS.¹⁴ For the "Luminaires" layer, it should be noted that the data displayed in SIGS only shows high-pressure sodium lamps, whereas by March 2020, 67% of the City's 132,000 lighting fixtures had been replaced with light-emitting diode (LED) lighting systems.¹⁵ The data for these 2 layers is therefore incomplete.

¹⁴ Due to the deployment of an updated version of the SIGS, which was scheduled to occur in the spring of 2021, a moratorium was established such that new layers of information could not be added to the SIGS and changes could not be made to the SIGS without a special dispensation. According to the information obtained, the SUM did not apply for a special dispensation for this purpose. Consequently, although the SUM's database containing the information on the bicycle paths had been updated in June 2020, the SIGS was not extensively updated.

¹⁵ The lighting fixture conversion project is scheduled to end in 2023 and it is only then that the SUM will consider updating the data making up this layer.

For the “Plans” layer, it is the SIRR’s Division de la géomatique that deposits the final plans when they are received from the business units responsible for the projects. This division maintains a register of the projects under way on the City’s territory for which final plans are required. That allows it to follow up on the receipt of these plans, so that it can start processing them to update the “Plans” layer as well as all the other data layers relating to the water assets that are impacted by the work performed. However, shortcomings were observed in the follow-up of these plans to be received. For example:

- the calls for tenders for two projects in the Verdun borough were cancelled without the SIRR’s Division de la géomatique being informed, which meant that it was still waiting to receive these plans;
- the SIRR’s Division de la géomatique was waiting for the plans for a project under the responsibility of the Verdun borough, which had already transferred the plans to it;
- the SIRR’s Division de la géomatique was also waiting for plans for three projects in the Ville-Marie borough. However, it was not the borough that was responsible for these projects, but the SIRR’s Direction des infrastructures.¹⁶

Such deficiencies create delays in processing plans and result in the water asset data layers that are impacted by the work underlying the plans being out of date.

The Division de la géomatique produces the final plans for its own department, the SIRR. According to the documents obtained, in January 2021, it was behind in the production of its various final *TQC* plans in connection with work performed between 2015 and 2020. This same division must update the different layers of data according to the changes reflected on the final plans it has produced and received from the other business units. While it is able to process anywhere from 200 to 400 updates per year, it had a backlog of over 1,400 plans to update. This has a direct impact on the quality and completeness of the geolocation data in relation to the plans in the SIGS and the water assets. The survey conducted in conjunction with this audit confirms the following:

- there are delays in updating layers due to final plans not being forwarded to the SIRR’s Division de la géomatique;
- there is a certain delay in updating data after final plans have been submitted.

For the “Bris d’aqueducs” layer, all of the breakdowns selected in the Verdun borough were tracked in the SIGS and 92% of those selected in the Ville-Marie borough were also tracked. Of the layers we examined, this one had the highest level of data completeness.

¹⁶ In the case of large-scale work, for example, involving roadway resurfacing and the construction or reconstruction of water mains, the work is carried out in an integrated manner and is coordinated by the Direction des infrastructures.

3.6. Managing the Quality of Geolocation Data

In the case of the “Inspection d’égouts” layer, sewer inspection reports from 2018, 2019 and 2020 were selected. The reports of the first two years were fully tracked in the SIGS. Regarding 2020, five inspection reports were selected for the Verdun and Ville-Marie boroughs. None of these reports were tracked in the SIGS. This is an exceptional situation that the SE explains as the result of a human resources issue that occurred in 2020 and that resulted in the procedure for transferring sewer inspection reports performed by private firms not being followed. The SIRR confirms that it did not have to process any data in relation to sewer inspections conducted in 2020.

Even considering that the “Inspection d’égouts” layer contains all the data, leaving aside the year 2020, the “Plans,” “Pistes cyclables” and “Luminaires” layers are not complete with respect to the data they contain. As discussed earlier in the section on process documentation, there is no evidence that random validations are made between the data submitted by applicants and the data displayed in the SIGS. Implementing such a procedure on a regular basis would allow cases like these to be identified and corrected. SIGS users must be able to trust the data they consult without questioning whether the data is complete and up-to-date.

Completeness of the Attributes of the Geolocation Data

One of the advantages of working with geolocation data is having access to information that is complementary to the specifically observed data. However, these additional fields must contain information. The purpose of this indicator was to ensure that, regardless of the number of attributes defined per layer, information was available for each attribute and each layer.

Regarding the “Bris d’aqueducs,” “Plans” and “Luminaires” layers, we obtained from the STI an extraction of all the data in the SIGS as well as its attributes. For each attribute of these layers, the number of non-empty fields was compared with the total number of data items in the layer. For the “Pistes cyclables” layer, the extraction obtained from the STI did not contain the attributes that are found in the SIGS. Regarding the “Inspection d’égouts” layer, the STI was unable to finalize the operation after attempts lasting more than an hour, as it was significantly slowing down the system and the department did not want to jeopardize the stability of the system on a City-wide scale. A random extraction of 12 sewer inspection records that are required to be in the SIGS reveals that those from 2018 and 2019 (representing a total of 7 of the 12) contain data in the attribute fields. However, 4 of the 5 records from 2020 are missing from the SIGS and the 5th, although present in the system, has no attribute values. Given the context, only the three layers for which the extraction was complete were reviewed.

TABLE 4

Assessment of the Completeness of the Geolocation Data Attributes in a Layer Within the Système d'information géographique et spatiale

Layer	High completeness	Partial completeness	Low completeness
"Plans"		•	
"Bris d'aqueducs"		•	
"Luminaires"		•	

In the case of the "Plans" layer, the SIGS allows 30 attributes to be consulted per data item. Among these 30 attributes, 9 had no value for at least 10% of the layer's data. This represents 30% of the attributes. Among the missing attributes, there is the name of a file associated with this data item, the plan's name and the project number. It is possible that some of these attributes are not directly useful to users, which explains why there are missing values. The question then arises as to why this is an attribute that continues to be associated with this layer.

For the "Bris d'aqueducs" layer, there are only three attributes. Only one of these attributes had no value for 16% of the data (representing 33% of the attributes). According to the indicator's name, this is the reference number related to the intervention plan.

For the "Luminaires" layer, out of a total of 12 attributes, 5 had no values for at least 10% of the data, including lamp and ballast installation dates as well as ballast types. While a value was provided for the lamp type attribute in 91% of cases, in all cases the lamp type indicated was a high-pressure sodium lamp, which, as mentioned earlier, is less and less the case in the City as a large proportion of the lighting fixtures have been converted to LED technology.

Based on these observations, SIGS users do not systematically have access to all of the additional information when viewing a layer's data in the SIGS. This is consistent with the result of the survey conducted as part of this audit, whereby 26% of the respondents were in partial or full disagreement with the statement that the attributes related to the data they are viewing are complete. Ensuring that each data item in the current layers has documented attributes is a long-term endeavour that should be undertaken as the layers are updated.

Updating the Geolocation Data Layers

The last indicator assessed addressed updating the layers and, more specifically, whether there was programming for an automatic update of the geolocation data layers. This programming is related to the frequency with which the SIGS will update the reading it makes of the data in the different databases from which it obtains data. It is not about how often applicants update their own data collected in the field.

TABLE 5

Assessment of the Programming of Updates of the Geolocation Data Layers Within the Système d’information géographique et spatiale

Layer	Programmed	Not programmed
“Plans”	•	
“Bris d’aqueducs”	•	
“Inspection d’égouts”	•	
“Pistes cyclables”		•
“Luminaires”		•

For the “Plans,” “Bris d’aqueducs” and “Inspection d’égouts” layers, an update frequency is programmed (weekly for water main breakages and daily for the other two). The readings obtained show that the updates were made as programmed.

In the case of the “Pistes cyclables” and “Luminaires” layers, the update is done manually. In addition, at the time of our audit, the “Pistes cyclables” layer had not been updated since April 2012, and the “Luminaires” layer had not been updated since June 2016. This explains why one attribute still refers to high-pressure sodium lamps despite the change in technology the City made in recent years.

Based on this observation, we do not have assurance that the geolocation data is automatically updated at a given frequency to ensure that the SIGS always displays the data in the databases. However, in and of themselves, these updates are not useful if these same databases have not been updated with data representative of the current situation in the field. Thus, the frequency at which the SIGS readings are updated is not in itself a sufficient indicator of the timeliness of the geolocation data.

These findings, in conjunction with the four indicators, demonstrate that the shortcomings observed in the governance of the geolocation data have a direct impact on the quality of this data and justify a tighter supervision of the entire geolocation data processing cycle.

Some of the findings also lead to more specific recommendations in direct connection with the layers selected in this audit so that these layers’ data processing cycles may be improved to promote the dissemination of quality geolocation data.

3.2.2.A. Recommendation

We recommend that the Ville-Marie and Verdun boroughs, as well as the Service de l’eau, the Service des infrastructures du réseau routier, the Service de l’urbanisme et de la mobilité and the Service des technologies de l’information, include in their respective geolocation data processing processes a random validation step to ensure the adequacy of their dissemination in the Système d’information géographique et spatiale and document this step to ensure the data in any given layer is complete.

3.2.2.B. Recommendation

We recommend that the Service de l'urbanisme et de la mobilité take the necessary steps to update the "Luminaires" and "Pistes cyclables" layers so that users of the Système d'information géographique et spatiale have access to reliable data when they consult these layers.

3.2.2.C. Recommendation

We recommend that the Service des infrastructures du réseau routier reassess its methodology for locating the final plans needed to update water assets in the Système d'information géographique et spatiale, thereby enabling it to generate a more accurate report for tracking missing plans.

3.2.2.D. Recommendation

We recommend that the Service des infrastructures du réseau routier take the necessary steps to ensure that the backlog in the production of its final plans and their entry into the Système d'information géographique et spatiale is eliminated so that users of this system can access up-to-date information for their activities.

3.3. Lack of Knowledge of the Geolocation Data Layers Available to the Ville de Montréal

Proper and adequate use of the SIGS requires that users know what it contains so that they do not go looking for information elsewhere in parallel systems. In the survey conducted as part of this audit, 34% of the respondents said they could not find the information layers they needed in the SIGS. Among the needs expressed were knowledge of closed alleyways, the condition of the road network (condition of the pavement), signage, zoning maps in the boroughs, sewer pumping stations and interceptor structures. In addition, 4% of respondents mentioned that they are familiar with the SIGS but use other tools that contain the information they need or that are directly connected to their own databases. However, according to a compilation produced by the SCA of all of the geolocation data layers in the SIGS, as of November 2019, among the 366 layers there are a series of layers dealing with signage and more specifically layers on no-stop zones, traffic signals, sign posts and morning and evening mobility routes. Among a set of layers grouped under the heading "Découpages réglementaires," there is a layer on the borough zoning bylaw. These are just a few examples of layers of information the SIGS contains that some users may not even know exist.

However, this lack of awareness of the layers available in the SIGS may be due to the fact that users do not have access to all of the layers the SIGS contains. Indeed, according to an August 2018 STI summary containing 318 geolocation data layers, only 153 (less than half of the layers) had public access permission to allow users of the SIGS to view them in the application.

3.6. Managing the Quality of Geolocation Data

To access the other layers, requests must be made to the STI justifying the reason for the request based on the nature of the employee's operational activities. For example, the "Règlement de zonage" layer in the boroughs does not figure among the 153 layers that are accessible.

Thus, users who consult the SIGS only see the layers for which they have been given permission. It is not possible for them to see the wording of other data layers that they could access if they had the necessary permission. There is therefore a lack of an inventory or catalogue that allows everyone to know what they could potentially access, subject to being granted the necessary permission, by consulting the SIGS. However, in the Directive dating back to 2016, the STI was responsible, in collaboration with the MUIL, for developing and maintaining a consistent data architecture as well as a catalogue of available data. Such a project is reported to be under development by the STI.

In addition to the STI and the MUIL, the SCA could be involved in the development of such a catalogue, given its involvement in the management of the geolocation data layers and the work it undertook in the summer of 2020 to clean up the geolocation data layers for which there was little or no information on the data's owner or the date of the last update. If some layers were to be removed by the SCA, the STI's catalogue would need to reflect this.

The survey also highlighted that users may need data not found in any existing layer of the SIGS. For example, the SIGS contains no layer on the City sewer system's retention ponds. The existence of such a layer would allow the SE to quickly identify ponds that could take over in the event of major floods. Although such a layer on retention ponds is not available in the SIGS, it exists in digital form in the SIRR. However, it is not sent to the SIGS for dissemination. There is potential for useful information for City employees that exists and is already digitized, but the final step of dissemination has not been completed.

Without knowledge of the data layers available in the SIGS, employees may undertake internal or external steps to obtain the data they need, which is inefficient.

3.3.A. Recommendation

We recommend that the Service des technologies de l'information, in accordance with the *Directive sur la gouvernance des données de la Ville de Montréal*, and in collaboration with the Service de concertation des arrondissements and the Montreal Urban Innovation Lab, create and make available to all employees a catalogue of the geolocation data available at the Ville de Montréal and ensure that the software is updated so that all employees can refer to it to request the necessary permissions to access it.

4. Conclusion

Overall, our audit work highlights sufficient shortcomings for us to conclude that the quality of the geolocation data in the *Système d'information géographique et spatiale (SIGS)* is not fully assured. Moreover, at the time of our audit, of the 366 layers contained in the SIGS, 177 (48%) had not been updated for at least three years. The results of the survey we conducted with various business units of the Ville de Montréal (the City) also confirm this finding, with 33% of respondents being in partial or complete disagreement with the statement that the geolocation data they access in the SIGS is accurate and precise. Considering the number of layers that are not up to date, it would be appropriate to clean up the layers and keep only those that are still required for City operations.

Although there exists an administrative framework titled *Directive sur la gouvernance des données de la Ville de Montréal* (the Directive), it is clear that its implementation is geared towards the dissemination of data on the City's open data portal and that it is not adapted to the geolocation data in the SIGS. This has implications for the quality of the geolocation data, which is subject to several deficiencies in governance. Indeed, the Directive, which dates back to 2016, is not at all explicit as to the guidance that should be implemented to help ensure the quality of the geolocation data currently available to employees through the SIGS.

Based on the work performed during our audit, there is a discrepancy between the roles and responsibilities of the different business units in the field with respect to the geolocation data processing cycle and what is stipulated in this administrative framework. The very notion of who is responsible for ensuring the quality of a data item is not uniformly interpreted. In addition, certain business units, such as the *Service de concertation des arrondissements* and the *Service des infrastructures du réseau routier*, which play key cross-functional roles, are not mentioned in this administrative framework.

The Directive makes no mention of the quality criteria that apply to the data. It is necessary to refer to the *Politique de données ouvertes de la Ville de Montréal* (the Policy), which is supported by the Directive, to ensure that principles of quality and transparency are addressed.

Tests on a sample of geolocation data layers revealed concrete deficiencies in the documentation of processes, in the completeness of data and attributes and in the scheduling of updates, all of which are fundamentally linked to poor governance of the geolocation data, and undeniably have an impact on the quality of the data in the SIGS.

3.6. Managing the Quality of Geolocation Data

Finally, knowing all of the geolocation data layers available through the SIGS is neither simple nor straightforward. Users do not see the titles of the layers to which they do not have access. This leaves them in the dark about the potential the SIGS might offer for their operational activities. In addition, there is no comprehensive, up-to-date catalogue of the City's available datasets, geolocalized or otherwise.

More specifically, our major findings in relation to the evaluation criteria are as follows:

Evaluation Criterion – Governance

The roles and responsibilities defined in the Directive are not reflected in the field, as the main business units involved in managing the geolocation data have different interpretations of their respective roles and of who owns the data, who is responsible for ensuring its quality, and who is responsible for ensuring its accessibility.

There is no official documentation describing the overall process for creating a geolocation data layer, from data collection to data dissemination.

Only a very small fraction (about 4%) of the geolocation data layers contain metadata that define, for example, who is responsible for the data, how often it is updated and in what format the data is generated. It is only since 2018 that business units seeking to have a geolocation data layer created in the SIGS must fill out a form in which they identify the metadata associated with the layer.

In more than half of the cases, the people responsible for the layers are not known, making it difficult to update them since the business units responsible for compiling the geolocation data do not know whom to contact. The City is still in the process of identifying coordinators in each business unit who serve as a lever to identify and coordinate the inventory for all of the business units.

Evaluation Criterion – Generation, Update and Dissemination Ensuring the Quality of Information

There are no minimum quality criteria that must be met in the case of geolocation data. The Directive refers to the Policy, which refers to principles of transparency and quality without making them explicit at the operational level.

There is no requirement to document, for each layer, the specific process to be followed from data collection to data dissemination, even though this is a process that involves several business units, each of which possesses specific expertise.

Not all the layers evidence correspondence between the data collected in the field and the data displayed in the SIGS. Thus, the consultation of a geolocation data layer in the SIGS does not systematically and accurately reflect what

is observable in the field. Also, while certain business units claim to do random checks of the data posted in the SIGS, no documentation or demonstration of this was found.

The attributes, i.e., the additional data associated with a geolocation data item, do not all contain values, or they contain erroneous values.

The SIGS does not automatically read data at a defined frequency from the databases that store them. Some layers have not been updated since 2012 or 2016, even though the situation in the field has changed.

Evaluation Criterion – Accessibility of the Geolocation Data

There is no list of all of the City's geolocation data layers that can be made available, with or without permission. This makes it impossible for employees to know what they may have access to and how to obtain permissions to consult a layer that could be useful for their operational activities.

5. Appendix

5.1. Objective and Evaluation Criteria

Objective

To ensure that the City's geolocation data is of good quality and that it is made available to all of the business units.

Evaluation Criteria

- Geolocation data governance has been developed to enable the business units to manage activities related to the generation, maintenance and dissemination of geolocation data according to a City-wide protocol or process.
- The generation, updating and dissemination of geolocation data respect established guidelines designed to ensure the quality of the information.
- Geolocation data is accessible to all of the business units, allowing them to facilitate the management of their operations in accordance with their needs.



3.7.

Industrial Control Systems Management

Service de l'eau
Service des technologies de l'information

March 7, 2022
2021 ANNUAL REPORT
Auditor General of the Ville de Montréal

Industrial Control Systems Management

Background

The Direction de l'eau potable (DEP) of the Service de l'eau (SE) of the Ville de Montréal (the City) manages six drinking water production plants located on the territory of the Island of Montréal. Their total production capacity is close to three million cubic metres of drinking water per day, serving some two million citizens.

Each drinking water plant centrally controls its equipment through the Supervisory Control and Data Acquisition System (SCADA). Various other computer systems are also used for the planning, management, monitoring and control of this equipment.

More than ever, cities are facing emerging threats in the form of cyberattacks aimed at damaging, destroying or taking control of Industrial Control Systems (ICS), which could disrupt the supply of drinking water or render it unavailable and lead to several million dollars in random demands.

It is important to ensure that safety measures and industrial and technological controls are in place at the City to reduce the risks associated with these threats.

Purpose of the Audit

To determine whether the mechanisms put in place by the City ensure the sound management and high degree of availability of the Industrial Control Systems used by the DEP.

Results

We concluded that, in general, the City has put in place mechanisms to ensure the sound management and high degree of accessibility of the ICS and Information technology (IT) for the production of drinking water.

However, several elements require improvement, especially the management frameworks, the sufficiency of specialized industrial IT resources, and the management of information assets.

Nevertheless, given the presence of several compensating controls, these elements have no significant impact on the availability of the DEP's ICS and IT.

Main Findings

Management Framework and Governance

- The DEP's industrial controls are properly documented, but there is no systematic review. In addition, there are no formal IT management frameworks adapted to the reality of the DEP's environment. A document exists regarding the sharing of high-level roles and responsibilities, but it does not detail the roles and responsibilities of stakeholders in managing the DEP's ICS.

Sufficiency of Resources

- The DEP's automation resources are sufficient to meet demand. However, there is a lack of experienced industrial IT resources, both at the DEP and at the Service des technologies de l'information.

Logical Access Management

- There are no formal logical access management frameworks to manage the DEP's ICS.

Network Security

- A schematic representation of the technological architecture shows adequate network segmentation. Network security equipment is properly configured. Nevertheless, there are no formal management frameworks for ICS updates.

Systems Monitoring

- A technological tool is used to monitor the availability of the systems and to issue alerts to stakeholders. However, this tool does not cover all the systems. This monitoring is not subject to formal management frameworks.

Change Management

- Major changes are generally documented in a technological tool. However, there are no formal change management frameworks, and requests for changes are not systematically documented.

In addition to these results, we have made various recommendations to the business units, which are presented in the following pages. These business units were given the opportunity to agree to the recommendations.

List of Acronyms

AD	Active Directory
DEP	Direction de l'eau potable
DMZ	Demilitarized Zone
ICS	Industrial Control Systems
IDS/IPS	Intrusion detection system/Intrusion prevention system
IT	Information technology
OT	Operational technology
PI	Plant Information
RACI	Responsible, Accountable, Consulted, Informed
SCADA	Supervisory Control and Data Acquisition System
SE	Service de l'eau
STI	Service des technologies de l'information
the City	Ville de Montréal

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1. Background

Created in 2005, the Service de l'eau (SE) stems from a formal desire on the part of the Ville de Montréal (the City) to structure water management activities: production, distribution and treatment. This department includes, among other things, six drinking water production plants located on the territory of the Island of Montréal. Their total production capacity is close to three million cubic metres of drinking water per day, serving some two million citizens. The Direction de l'eau potable (DEP) of the SE is responsible for managing all its plants.

Each drinking water plant centrally controls its equipment through the Supervisory Control and Data Acquisition System (SCADA).

The 2021 budget¹ includes \$456M in investments for water infrastructure and \$274M for the operation of the SE.

The Service des technologies de l'information (STI) supports the DEP in matters related to developing, technological infrastructure and IT security.

More than ever, cities are facing emerging threats in the form of cyberattacks aimed at damaging, destroying or taking control of the Industrial Control Systems (ICS), which could disrupt the supply of drinking water or render it unavailable and lead to several million dollars in random demands.

It is important to ensure that safety measures as well as industrial and technological controls are in place at the City to reduce the risks associated with these threats.

¹ 2021–2030 TCW–Ville de Montréal.

2. Purpose and Scope of the Audit

Pursuant to the provisions of the *Cities and Towns Act*, we conducted a performance audit of the Industrial Control Systems Management used by the DEP. We carried out this mission in accordance with the *Canadian Standard on Assurance Engagement (CSAE) 3001* of the *CPA Canada Handbook – Assurance*.

The purpose of this audit was to determine whether the mechanisms put in place by the City ensure the sound management and high degree of accessibility of the ICS and Information technology (IT) used by the DEP.

The role of the Auditor General of the Ville de Montréal is to provide a conclusion regarding the purpose of the audit. To that end, we gathered sufficient and appropriate relevant evidence on which to base our conclusion and obtain a reasonable level of assurance. Our assessment is based on criteria we deemed valid for the purposes of this audit. These criteria are presented in Appendix 5.1.

The Auditor General of the Ville de Montréal applies the *Canadian Standard on Quality Control (CSQC) 1* of the *CPA Canada Handbook – Assurance* and, accordingly, maintains a comprehensive quality control system that includes documented policies and procedures with respect to compliance with ethical requirements, professional standards and applicable legal and regulatory requirements. The Auditor General also complies with the independence and other ethical requirements of the *Code of ethics of chartered professional accountants*, which are based on the fundamental principles of integrity, professional competence and due diligence, confidentiality and professional conduct.

Our audit work covered the period from May 2021 to December 2021. Our work consisted of interviewing staff, examining various documents and conducting the surveys we deemed appropriate to obtain the necessary evidence. We also took into account information that was sent to us up to March 7, 2022.

Our work focused on the following plants and systems:

- Lachine plant: Treats drinking water for the citizens of the Lachine borough;
- Charles-J.-Des Bailleurs plant: Jointly with the Atwater plant, treats drinking water for the citizens of the central and eastern boroughs of Montréal;
- Supervisory Control and Data Acquisition System (SCADA): Allows for the supervision of the SE's industrial processes, data acquisition (including measurements, alarms, level, and pressure) and remote control of the various industrial components;
- Plant information (PI)/Historian System: Allows quick access to historical, current and forecasting data from various data sources;
- CT-Logic System: Continually assesses the level of compliance of the treated drinking water with the various regulatory requirements governing the City.

These systems also include network equipment, IT servers, operating systems and databases.

At the end of our work, a draft audit report was presented for discussion to the relevant managers in the audited business units. The final report was then forwarded to the management of the business units concerned, as well as to the City's Direction Générale.

3. Audit Results

3.1. Management Frameworks and Governance

Managing the systems used by the DEP requires a vast range of expertise from, among others, Operational and Information technology (OT/IT) specialists, automation engineers, electronics technicians and operators. Most of this expertise comes from the DEP, but some is found in the STI, especially in matters dealing with computer security, the operation of IT systems, technological support, architecture, and the development of IT business solutions.

It is important, therefore, to ensure that the stakeholders involved in managing the systems have adequate documentation adapted to the reality of industrial environments.

3.1.1. Management Frameworks for the Systems of the Direction de l'eau potable

In general, the DEP's industrial controls are documented by automation engineers in the form of multiple directives, processes and procedures. However, there is no formal process for the periodic review of this documentation, and we noted that it is not systematically updated.

Updates are usually made at the time of a project, i.e., following major changes. It is possible, therefore, that some information contained in these documents does not reflect the current situation.

In addition, the STI has developed various IT management frameworks in the form of standards, directives and guides. These management frameworks are distributed on the City's Intranet and must be applied by all the City's departments.

However, we believe that some management frameworks should be specifically developed to meet the reality of the DEP's industrial environments. These management frameworks should cover the following processes:

- Logical access (applications and networks) management;
- All changes management;
- Systems monitoring;

3.7. Industrial Control Systems Management

- Information asset management;
- ICS updates management;
- Firewall configuration management.

In the absence of such management frameworks adapted to the reality of the DEP's industrial environments, the IT security and control measures included in the current management frameworks produced by the STI may be unable to address the DEP's issues. This would increase the risk of a cyberattack that could take control of the ICS and disrupt the treatment and delivery of drinking water to the population.

3.1.1.A. Recommendation

We recommend that the Direction de l'eau potable of the Service de l'eau put in place formal management frameworks for the periodic review of industrial control documentation and ensure that it is systematically updated.

3.1.1.B. Recommendation

We recommend that the Direction de l'eau potable of the Service de l'eau and the Service des technologies de l'information jointly put in place management frameworks adapted to the reality of the industrial environments of the Direction de l'eau potable regarding:

- Logical access (applications and networks) management;
- All changes management;
- Systems monitoring;
- Information asset management;
- Industrial Control System updates management;
- Firewall configuration management.

3.1.2. Roles and Responsibilities

To ensure sound governance and management of the ICS and IT used by the DEP, it is important to have formal, clear and detailed documentation regarding the roles and responsibilities of the various stakeholders involved. Such documentation could take the form of a matrix of roles and responsibilities (e.g., a RACI, "Responsible, Accountable, Consulted, and Informed") that is approved and distributed to the stakeholders, and with which they comply.

In 2019, a document regarding the high-level sharing of roles and responsibilities between the SE (including the DEP) and the STI was produced jointly by the managers of these two sectors. The table below summarizes the main elements of this sharing.

TABLE 1**High-Level Sharing of Roles and Responsibilities**

	Roadmap	Design	Operation	Supplier management
Group 1 (Operational technology assets/Industrial Control Systems)	Service de l'eau	Service de l'eau	Service de l'eau	Service de l'eau
Group 2 (Information technology assets linked to Operational technology)	Service de l'eau /Service des technologies de l'information	Service des technologies de l'information /Service de l'eau	Service de l'eau /Service des technologies de l'information	Service des technologies de l'information /Service de l'eau
Group 3 (Information technology assets /business systems)	Service des technologies de l'information	Service des technologies de l'information	Service des technologies de l'information	Service des technologies de l'information

We found that:

- Assets connected with Group 1 are those associated with the OT and ICS and fall completely under the responsibility of the SE. These assets include the SCADA, automats² and telemetry systems³;
- Assets connected with Group 2 include the IT systems used by the SE to efficiently manage its industrial environments. The design and operation of these systems are highly contextualized regarding the SE's industrial environments. These systems are partly designed, operated, supported and maintained by the SE and the STI. The assets include servers, switches, firewalls and networks;
- Assets connected with Group 3 consist of systems that are entirely managed by the STI. They include servers and applications located in the City's corporate environments. Among these are payroll processing, change management, as well as backup and email systems.

Nevertheless, this document does not provide details of how roles and responsibilities are shared between the DEP and the STI.

² Automaton: Programmable digital electronic device for controlling industrial processes using sequential processing.

³ Telemetry system: Enables data acquisition using various antennas, sensors or modems installed in several different locations.

3.7. Industrial Control Systems Management

In addition, there is no formal document (e.g., a RACI) that clearly defines the roles and responsibilities of the following key stakeholders:

- The DEP's resources that perform various **industrial controls** on the ICS (e.g., developing and implementing changes, monitoring and/or running SCADA applications);
- The resources from the DEP and/or STI that perform various **IT controls** related to the DEP's computer systems (e.g., monitoring networks and servers, managing databases, updating operation systems).

The absence of such documentation increases the risk of major activities being omitted, carried out by inappropriate stakeholders or performed inadequately. The materialization of these risks could ultimately lead to water treatment errors, undetected cyberattacks and/or disruption in the distribution of drinking water to citizens.

3.1.2.A. Recommendation

We recommend that the Direction de l'eau potable of the Service de l'eau and the Service des technologies de l'information jointly:

- Create a formal document that clearly defines in detail:
 - the sharing of roles and responsibilities between the Direction de l'eau potable and the Service des technologies de l'information;
 - the roles and responsibilities of the resources of the Direction de l'eau potable and of the Service des technologies de l'information that perform various Information technology controls related to the computer systems of the Direction de l'eau potable.
- Ensure the distribution, clear understanding and application of these roles and responsibilities by the stakeholders.

3.1.2.B. Recommendation

We recommend that the Direction de l'eau potable of the Service de l'eau:

- Formally document the roles and responsibilities of the stakeholders that perform various industrial controls on the Industrial Control Systems of the Direction de l'eau potable;
- Ensure the distribution, clear understanding and application of these roles and responsibilities by the stakeholders.

3.2. Sufficiency and Adequacy of Resources

Maintaining sufficient qualified and experienced human resources is essential to enable the DEP to achieve its objectives and ensure that the treatment of drinking water for citizens always meets the various regulatory requirements.

During our audit, we found the following:

The DEP's Automation Resources

The current resources (e.g., automation engineers, electronics technicians and operators) are sufficient to meet needs. We did not detect any significant issue based on the information we consulted.

The DEP's IT Resources

The DEP has four IT positions to manage and operate the systems (comprising, in particular, servers, applications, operating systems and databases), networks and telecommunications components under its responsibility.

We observed that two of these four positions are currently vacant. Considering that the two people who recently left the DEP occupied senior positions and that the two remaining resources are more junior, this situation has resulted in a significant loss of expertise for the DEP, as well as a considerable increase in the tasks to be accomplished by the existing resources.

In addition, the DEP resources that are responsible for the ICS and/or IT systems do not have a formal training plan. Such a plan would contribute to regularly updating and upgrading their knowledge.

STI's IT Resources

Within the STI is the Division Gestion de l'eau, which reports to the Direction Gestion du territoire. This team consists of 10 programmers/analysts (the position of division head is currently vacant but has been filled on an interim basis) and is responsible for the development and support of business solutions for the SE (e.g., scheduling application and chemical products management application). There was no significant issue observed.

The STI allocates the equivalent of one full-time resource to the SE for tasks related to computer security and another for activities related to the technological architecture. However, these are not dedicated resources with the necessary experience or expertise in OT specific to the SE's industrial environments.

During our audit, we identified the following issues:

1. Lack of resources with specific expertise related to the computer security of the DEP's industrial environments;
2. Absence of formal management frameworks specific to the DEP's industrial environments related to IT security and control (e.g., change management, logical access management, configuration of firewalls);
3. Lack of an awareness program about cybersecurity threats to industrial environments. This program should be regularly updated and distributed to the DEP's resources;
4. No evidence that the STI manages the IT security of the three groups (i.e., OT/ICS, IT linked to the OT, and business systems), as indicated in the document regarding the high-level sharing of roles and responsibilities between the SE and the STI (see Table 1 in Section 3.1.2. Roles and Responsibilities).

3.7. Industrial Control Systems Management

These issues lead us to conclude that the STI lacks sufficient qualified and experienced resources in the industrial environment field to properly support the DEP in the development and maintenance of a technological environment that meets sound security and control practices for industrial environments. Detailing the roles and responsibilities shared between the DEP and the STI, as mentioned in recommendations 3.1.2.A. and 3.1.2.B., is essential to be able to conduct a quantitative and qualitative evaluation of this lack of resources.

The lack of IT resources, both at the DEP and at the STI, could have a negative impact on the DEP's ICS and IT management and security activities. Failure to carry out these activities could lead to water treatment errors, undetected cyberattacks and/or a disruption in the distribution of drinking water to citizens.

3.2.A. Recommendation

We recommend that the Direction de l'eau potable of the Service de l'eau:

- Ensure that it has the necessary Information technology resources to effectively carry out the detailed activities provided in the sharing of roles and responsibilities between the stakeholders (see recommendations 3.1.2.A. and 3.1.2.B.);
- Implement a formal training plan for the resources of the Direction de l'eau potable responsible for the Industrial Control Systems and/or Information technology systems.

3.2.B. Recommendation

We recommend that the Service des technologies de l'information:

- Ensure that it has the necessary Information technology resources to effectively carry out the detailed activities provided in the sharing of roles and responsibilities between the stakeholders (see recommendation 3.1.2.A.);
- Develop and distribute a systematic awareness program for the Direction de l'eau potable that tracks changes in cybersecurity threats to industrial environments.

3.3. Logical Access Management

Managing logical access is of paramount importance for IT security. It ensures that only authorized persons can access an organization's systems and that this access is limited to the specific needs of these individuals.

It is important, therefore, to ensure that access to the SCADA, PI/Historian and CT-Logic systems and to the Active Directory (AD) of the industrial environments meets sound logical access management practices, including the following:

- Access should be granted only to those authorized persons whose functions require such access, especially in the case of high-level access;
- Access codes should identify each user (i.e., not be generic) to ensure accountability and access traceability;
- Security parameters should ensure the robustness of the passwords, thereby contributing to reducing the risk of access by an unauthorized person.

Based on our audit, we found the following issues:

- There are no formal management frameworks adapted to the reality of the DEP governing logical access, including the granting, deletion, modification as well as review of access and remote access. This issue was raised in Section 3.1. of this report and is the subject of recommendation 3.1.1.B.;
- Three automation engineers who are users of the PI/Historian application also have administrator rights.⁴ This dual access (i.e.; user and administrator) does not meet sound practices for the separation of duties;
- These same three engineers also have domain administrator rights on the AD of the industrial environment. Such rights should not be granted to them since they are not necessary for the performance of their functions.

These deviations from sound practices could increase the risk of unauthorized access and inappropriate use of these systems, which could have a negative impact on the proper functioning of the DEP's systems.

3.3.A. Recommendation

We recommend that the Direction de l'eau potable of the Service de l'eau ensure that management frameworks (see recommendation 3.1.1.B.) for logical access include the following:

- Granting, deleting, modifying and reviewing access, along with managing remote access;
- Security parameters of passwords for the Supervisory Control and Data Acquisition, Plant Information/Historian and CT-Logic systems, and the industrial environment's Active Directory;
- Use of nominatives accounts for access to the systems;
- Management of administrator rights to the Plant Information/Historian systems and the industrial environment's Active Directory.

⁴ Administrator rights: Access that allows a user to perform administrative functions (e.g., adding, deleting or changing the access rights of other users).

3.4. Network Safety

The DEP's networks are made up of equipment (e.g., automaton, servers, firewalls, routers, switches) linked through connections (cable, wireless, radio) and communication protocols that enable the exchange of information.

Network safety consists of implementing a process to protect this equipment's components from unauthorized intrusions, changes or inappropriate disclosure (leaks) to maintain the smooth operation of these networks.

3.4.1. Network Architecture

A schematic representation of the network architecture is provided in the form of several documents. Some of these documents were produced in 2020, and others in 2021. They are relatively up to date. They were also approved by an authorized person. However, these documents are incomplete since they do not cover industrial field equipment (e.g., receivers, sensors, valves and pumps). This situation increases the risk of an imperfect view of the architecture's components leading to errors and/or poor decisions.

In addition, we observed the following positive elements:

- The DEP's network is properly segmented through virtual networks which are isolated from the corporate network and the Internet. This segmentation follows sound network security practices;
- The firewalls, as well as the Demilitarized Zone (DMZ),⁵ are properly configured to protect the network equipment and application servers;
- The servers (i.e., SCADA, PI/ historian, CT-Logic and AD) can neither access the Internet nor be accessed from it.

3.4.1.A. Recommendation

We recommend that the Direction de l'eau potable of the Service de l'eau formally study the possibility of describing the industrial field equipment (e.g., receivers, sensors, valves and pumps) in the current documentation of the network architecture of the Direction de l'eau potable.

3.4.2. IT Asset Management

Managing information assets is an important part of IT security. The purpose is to ensure, among other things, that an organization's assets are accounted for, deployed and maintained. This enables organizations to systematically assess the state of each of these assets in relation to obsolescence, performance and updating of their systems.

⁵ DMZ: A subsystem separated from the industrial network and isolated from the Internet by a firewall.

The IT project titled “Démarche de gestion des actifs,” included in the “SE’s IT Infrastructure” program, is aimed at updating the management of the SE’s information assets. The project consists of the following five steps:

1. Inventory;
2. Assets and characteristics;
3. Criticality;
4. Templates;
5. Ranges.

The DEP currently uses the tool Maximo to help manage its IT assets. The level of criticality of these assets is classified based on a risk matrix focused primarily on the continuity of operations.

Based on our audit, we found the following:

- The IT project titled “Démarche de gestion des actifs” is under way. The step involving the inventory of assets has not yet been completed;
- There are no formal management frameworks for updating the ICS. This issue was raised in Section 3.1. of this report and is the subject of recommendation 3.1.1.B.

These gaps in the IT assets management could increase the risk of cyberattacks that, in turn, could lead to disruptions in the treatment and/or distribution of drinking water to citizens.

3.4.2.A. Recommendation

We recommend that the Direction de l’eau potable of the Service de l’eau complete the Information technology project titled “Démarche de gestion des actifs” and ensure that it is applied by the stakeholders.

3.5. Systems Monitoring

Monitoring is an IT activity that makes it possible to continually supervise an IT systems’ infrastructure. This monitoring is usually done using specialized software that enables administrators to supervise their systems and constantly measure the systems’ availability and performance, among other things.

We found that there are no formal management frameworks for monitoring the DEP’s systems. This issue was raised in Section 3.1. of this report and is the subject of recommendation 3.1.1.B.

A tool is used to monitor the availability of the systems and to issue alerts to the appropriate persons. However, this tool does not cover all the systems.

3.7. Industrial Control Systems Management

The absence of proper systems monitoring could increase the risk of outages or unauthorized intrusion attempts going undetected and corrected in a timely manner, which could affect the quality of the treatment and distribution of drinking water to the population.

3.5.A. Recommendation

We recommend that the Direction de l'eau potable of the Service de l'eau ensure that all its assets are automatically monitored.

3.6. Change Management

Managing changes to the DEP's ICS and IT is a basic element of this sector's risk control process. The objective is to ensure that any change to a production environment is recorded, evaluated, authorized, prioritized, planned, tested and implemented in a controlled way by following management frameworks that are formally documented, approved, updated and distributed and that the stakeholders comply with.

During our audit, we found the following:

- No change management frameworks exist. This issue was raised in Section 3.1. of this report and is the subject of recommendation 3.1.1.B.;
- Major changes made during projects are usually documented in Maximo (the tool used to document DEP changes). However, in the absence of formal management frameworks, it is impossible to assess the level of completeness of this documentation;
- Minor changes are not formally documented.

In addition, we conducted an efficiency test to verify to what extent the changes documented in Maximo met sound practices. To do this, we:

- Used the Maximo tool to retrieve changes (for the years 2020 and 2021) made at the Charles-J.-Des Bailleurs and Lachine plants involving applications included within our scope (e.g., SCADA, PI/Historian and CT-Logic);
- Sampled a change at the Lachine plant and two changes at the Charles-J.-Des Bailleurs plant.

After analyzing these three changes, we concluded that they failed to follow sound change management practices (e.g., absence of analysis, approval, testing, description of the solutions developed, or evidence of authorization to implement them).

Gaps in change management could increase the risk of unauthorized and undesirable changes being released, which could have major negative consequences on the integrity and availability of ICS.

Since recommendation 3.1.1.B. already covers the elements to be improved, we will not issue a new recommendation.

4. Conclusion

The Ville de Montréal (the City) has put in place mechanisms to ensure the sound management and high degree of accessibility of the Industrial Control Systems (ICS) used by the Direction de l'eau potable (DEP):

- The DEP's industrial controls are properly documented;
- The high-level sharing of roles and responsibilities between the stakeholders is documented;
- The DEP's automation resources are sufficient to meet needs;
- A schematic representation of the technological architecture shows adequate segmentation of the networks;
- Network safety equipment is properly configured;
- A technological tool is used to monitor the availability of the systems and to issue alerts to the appropriate persons;
- Major changes are usually documented in a technological tool.

However, several elements—that have no significant impact on the availability of the DEP's ICS and Information technology (IT)—require improvements. Below are the details based on specific evaluation criteria:

Evaluation criterion – Management Frameworks and Governance

The ICS management frameworks have not been systematically reviewed using a formal procedure. Furthermore, there are no formal management frameworks adapted to the reality of the DEP in terms of IT controls. Such a situation could ultimately lead to inappropriate actions and interfere with the smooth operation of the DEP's systems.

The absence of a formal document detailing the roles and responsibilities of the stakeholders in managing the DEP's systems increases the risk of major activities being omitted, carried out by inappropriate stakeholders or performed inadequately.

Evaluation criterion – Sufficiency and Adequacy of Resources

There is a lack of experienced IT resources in the industrial field at both the DEP and the Service des technologies de l'information (STI). In addition, there is no formal training plan or awareness plan to deal with cybersecurity issues in the industrial field. This could result in a negative impact on the performance of major activities related to the management and computer security of the DEP's ICS and IT.

Evaluation criterion – Logical Access Management

There are no formal frameworks related to the management of the DEP's ICS logical access. This gap increases the risk of unauthorized access and inappropriate use of these systems.

Evaluation criterion – Network Security

The documentation of the DEP's network architecture is incomplete.

There are no formal management frameworks related to updating the ICS. This increases the risk of cyberattacks.

Evaluation criterion – Systems Monitoring

The tool used for automatic monitoring does not cover all the DEP's systems. As well, no formal documentation exists to provide a framework for this monitoring. This increases the risk of outages or unauthorized intrusion attempts not being detected and corrected in a timely manner.

Evaluation criterion – Change Management

There are no formal frameworks for the management of changes to the DEP's ICS. In addition, change requests are not systematically documented. As well, the information contained in the documented changes is often incomplete or absent. These elements increase the risk of unauthorized and undesirable changes being released.

In general, the materialization of these risks could have a negative impact on the DEP's systems and, consequently, disrupt the treatment and distribution of drinking water to the citizens.

5. Appendix

5.1. Objective and Evaluation Criteria

Objective

Determine to what extent the mechanisms put in place by the Ville de Montréal ensure the sound management of the industrial and Information technology controls of the systems used by the Direction de l'eau potable (DEP). This includes in particular aspects of governance, management frameworks, security of industrial and technological environments, training, and awareness of the risks of cyberattacks.

Evaluation Criteria

1. Evaluation criterion—Management Frameworks and Governance

Management frameworks related to the Industrial Control Systems (ICS) and Information technology (IT) controls of the IT environments used by the DEP are properly documented. These documents are complete, up to date, formally approved and distributed to the stakeholders, who apply them.

The roles and responsibilities of the stakeholders involved in the ICS and IT controls of the IT environments used by the DEP are documented, complete, up to date, formally distributed to the stakeholders and applied by them.

2. Evaluation criterion—Sufficiency and Adequacy of Resources

There are sufficient and adequate resources in place to design and apply sound practices for the security of the ICS and IT used by the DEP.

The staff responsible for designing, operating, maintaining, supporting and securing the DEP's systems (industrial and technological) have a continuous training plan and are regularly made aware of the security rules that must be followed and the new threats that could affect the DEP's systems.

3.7. Industrial Control Systems Management

3. Evaluation criterion—Logical Access Management

The management of identifiers and logical access for all main ICS and IT used by the DEP follows sound practices.

4. Evaluation criterion—Network Security

The architecture and configuration of the networks used by the DEP follow sound practices regarding the security of the ICS.

5. Evaluation criterion—Systems Monitoring

The DEP's systems are subject to continual monitoring to detect various threats in a timely manner that could affect the treatment or distribution of drinking water to the population.

6. Evaluation criterion—Change Management

The process for managing changes to the DEP's systems follows sound practices and is systematically applied.



3.8.

Implementing the *Tree Policy of Montréal* – Maintenance Component

March 10, 2022

2021 ANNUAL REPORT

Auditor General of the Ville de Montréal

3.8. Implementing the *Tree Policy of Montréal*—Maintenance Component

Implementing the *Tree Policy of Montréal* – Maintenance Component

Background

By providing benefits to the ecosystem, trees contribute directly to the quality of the living environment and to fighting the effects of climate change. Adopted in 2005, the *Tree Policy of Montréal* (the Policy) of the Ville de Montréal (the City) establishes 11 actions aimed at ensuring the maintenance and development of Montréal's urban forest. At the time, costs were estimated at \$700M for an inventory of nearly 1.2 million trees (2012). For maintenance purposes, an overview of the inventory and condition of public trees was to have been established by the boroughs for their local urban forest and the Service des grands parcs, du Mont-Royal et des sports (SGPMRS) for the City as a whole. The overview was to have supported the boroughs in drawing up tree plans as a foundation for the management of public trees. It was also expected that maintenance programs would be developed in accordance with the inventory and with guidelines set out in the tree plans. All of these tools were to enable the management of public trees, including maintenance supported by quality information in a long-term perspective to ensure the maintenance and development of Montréal's urban forest now and in the future.

Purpose of the Audit

To ensure that the City has implemented actions to maintain public trees as stipulated in the *Tree Policy of Montréal*.

Results

The City has not ensured implementation of the actions to maintain public trees set out in its Policy. The boroughs and the SGPMRS do not have a full understanding of the composition and condition of the public trees under their responsibility. Tree plans and maintenance programs have not been developed, which has led to inconsistent maintenance practices that compromise the life expectancy of trees. The resource estimate required for the maintenance of public trees has not been determined, and no amounts are specifically budgeted for this activity. Finally, no follow-up to implementation of the Policy has taken place since it was adopted in 2005, which means that the City is not aware of progress made relative to the stipulated actions or of issues concerning the maintenance and development of its arboreal heritage.

Main Findings

Overall Picture of Public Trees

- The boroughs do not feel that they have a full picture of the inventory of trees under their responsibility or of the trees' condition.
- Data about tree mortality and reasons for the loss of arboreal assets are neither documented nor followed up.
- The intervention history is not systematically documented.
- Tools used by the boroughs to manage public trees are not integrated, which limits the ability of the City to maintain an overall picture of its trees.

Tree Plans and Maintenance Programs

- The tree plans required by the Policy and the resulting tree maintenance programs have not been developed by the boroughs.
- The SGPMRS does not systematically produce tree maintenance programs to follow up its projects to develop parks and public squares.
- The City has not adopted a management framework setting out maintenance standards for the City's public trees that the boroughs could have used.
- Maintenance practices are inconsistent across the City, and maintenance activities are not fully implemented.

Budget for the Maintenance of All Public Trees

- An estimate of the resources (human, material and financial) required to conduct all maintenance interventions on public trees has not been prepared.
- Specific budgets have not been allocated for public tree maintenance.
- The financial implications of planting new trees have not been estimated in advance and reflected in the maintenance budget.

Follow-up to Implementation of the Actions in the *Tree Policy of Montréal*

- No mechanism has been put in place to follow up implementation of the Policy nor has any follow-up taken place since it was adopted in 2005.
- In 2013, the Commission sur l'eau, l'environnement, le développement durable et les grands parcs recommended that the City update its Policy, but this has not yet happened.

In addition to these results, we have made various recommendations to the business units, which are presented in the following pages. The business units were given the opportunity to agree to the recommendations.

List of Acronyms

\$M	Millions of dollars
ANJ	Anjou borough
CHD	chest height diameter
City	Ville de Montréal
Commission	Commission sur l'eau, l'environnement, le développement durable et les grands parcs
GDV	Système de gestion des végétaux
Guide	<i>Guide to drafting a tree plan</i>
MN	Montréal-Nord borough
Policy	<i>Tree Policy of Montréal</i>
RDP-PAT	Rivière-des-Prairies– Pointe-aux-Trembles borough
RLPP	Rosemont–La Petite-Patrie borough
SGPMRS	Service des grands parcs, du Mont-Royal et des sports
SLA	Saint-Laurent borough
SLE	Saint-Léonard borough
SO	Le Sud-Ouest borough
VM	Ville-Marie borough

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1. Background

1.1. Trees of the Ville de Montréal

Urban Trees

Trees benefit the population through numerous contributions to the ecosystem:¹ they retain carbon dioxide, filter pollution, absorb rainwater, stabilize the ground, refresh the surrounding air, reduce heat islands, shape the landscape, improve the living environment, raise property values and generate energy savings. According to the international tree recognition program *Tree Cities of the World*, trees return three to five times their investment cost in benefits of all types for cities. These acknowledged benefits, including to human health (physical and psychological), make the arboreal heritage an important asset, especially in the context of this century's climate change challenges.²

The useful life expectancy of urban trees can be decades in length. However, urban spaces are a relatively hostile environment for the development of trees: atmospheric pollution, limited amounts of soil, contamination from de-icing salt and other substances, and damage caused by humans (e.g., while clearing snow or due to inconsiderate public behaviour). To these harmful factors must be added uncertainties associated with climate change (e.g., drought, storms and freezing rain) that impact the health and longevity of trees and increase the risk of trees causing personal injury or property damage when they fall. Finally, the threat of pest infestations and epidemics is also a risk to maintaining trees in good health. One has only to think of Dutch elm disease³ or, more recently, the ongoing fight against the emerald ash borer⁴ and poplar canker.⁵

¹ Ecosystem: the complex of a community of organisms and its environment functioning as an ecological unit.

² 2020–2030 Climate Plan: *“Increasing the number of trees in Montréal is therefore one of the most significant actions to be taken to better adapt to climate hazards.”*

³ A disease of elm trees that first appeared in the 1950s and decimated virtually the entire American elm population (35,000) in Montréal.

⁴ The ash borer first appeared in Montréal in 2011, resulting in the treatment of 163,432 ash trees and the felling of another 81,400 between 2012 and 2019 (at a cost of \$27M).

⁵ The poplar canker fungus, which is not only contagious but can be transmitted from one tree to another by wind or rain forced the City, in winter 2021, to cut down a row of poplars near the Quai de l’Horloge that were a symbolic part of the landscape in the Old Port of Montréal.

3.8. Implementing the *Tree Policy of Montréal*—Maintenance Component

Given these conditions, regular, planned human intervention is critical to maintaining and protecting urban trees in order to maximize their contribution to the ecosystem, as reflected in the *Montréal Charter of Rights and Responsibilities*:

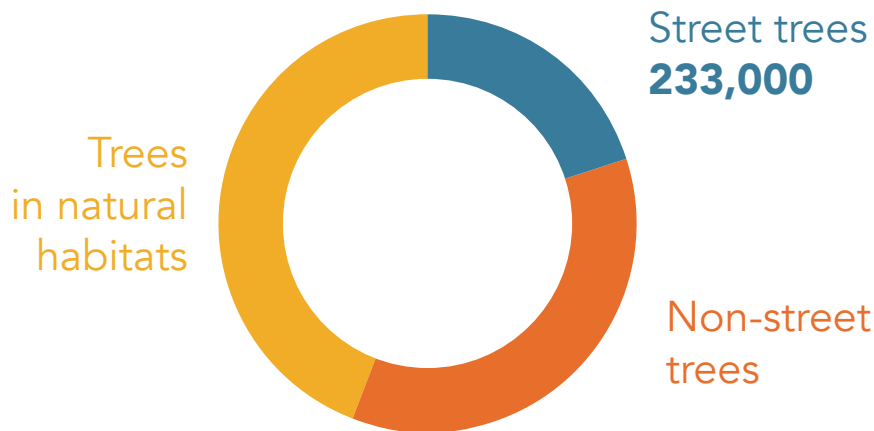
“To foster the enjoyment by citizens of their rights in matters of environment and sustainable development, Montréal is committed to [...] fostering the protection and enhancement of natural environments and the urban forest.”⁶

The Urban Forest of the Ville de Montréal

In 2012, the number of trees of all species growing on the public domain of the Ville de Montréal (the City) was estimated to be 1.2 million⁷ (see Graph 1). Public trees are those growing along public roads (street trees), in parks, public spaces and squares (non-street trees), or in natural habitats (woodlots). By contrast, private domain trees are those growing on lots belonging to citizens, industries, businesses or institutions (e.g., universities and hospitals). In addition to its value to the ecosystem, the urban forest is estimated to be worth hundreds of millions of dollars (\$M).⁸ Each new tree costs the City about \$1,100⁹ for its purchase, planting and maintenance during the first three years of life. This cost increases every year.

GRAPH 1

Distribution of Public Trees in 2012 by Location



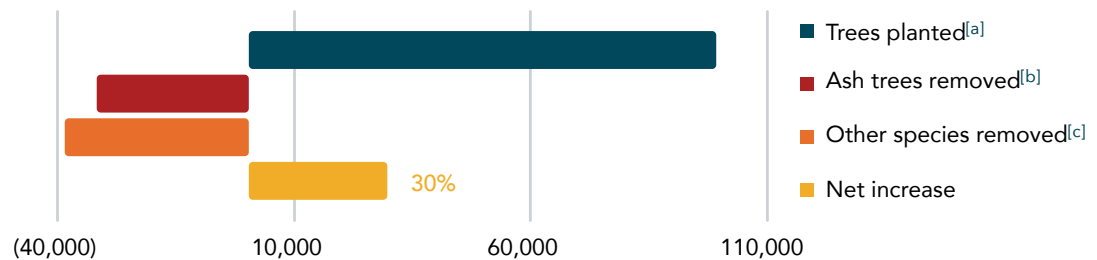
Source: Graph produced by the Bureau du vérificateur général (BVG) based on a study of the forest canopy (2012).

- ⁶ *Montréal Charter of Rights and responsibilities*, article 24. Adopted in 2005 by city council and officially in effect as of January 1, 2006, it was the result of a citizens’ consensus obtained at the Montréal Summit in 2002.
- ⁷ Based on the most recent study of the forest canopy (2012) produced by the Service des grands parcs, du Mont-Royal et des sports (SGPMRS).
- ⁸ The value of the urban forest was estimated at nearly \$700M in 2005.
- ⁹ The cost per tree is estimated by the SGPMRS based on the average amount of the contracts awarded for planting and maintenance. The cost was determined to be \$1,000/tree in 2020 and \$1,100/tree in 2021. That amount is expected to rise to \$1,656/tree in 2022.

Over the years, the City has invested in planting public trees, for instance in the context of replacing and removing ash trees and strengthening the canopy.¹⁰ According to the 2012–2020 report on the urban forest, of nearly 100,000 tree plantings compiled by the SGPMRS, 32% were lost through removing ash trees and 38% through felling trees of all other species combined. The net increase of the urban forest was therefore 30,146 public trees.

GRAPH 2

Evolution of the Urban Forest, Excluding Woodlots, between 2012 and 2020 (Number of Trees)



[a] Trees planted by the SGPMRS and the boroughs in developed areas (Programme de renforcement de la canopée, Programme de remplacement des frênes and Programmes réguliers de plantation des arrondissements).

[b] Ash trees removed.

[c] Removal of trees of all species other than ash that were declining, weakened or damaged.

Source: Portrait produced by the BVG based on the report of the Plan de la forêt urbaine – Synthèse 2020 by the SGPMRS.

Note: The 2012–2020 report on the urban forest is prepared on the basis of information available from the SGPMRS or provided by the boroughs. Some tree removals and plantings may not be included in the report.

The urban forest accumulates a growing functional value over the years as new trees grow and generate benefits over an extended period of time. It is generally estimated that it takes a newly planted tree between 20 and 30 years to recuperate the canopy lost when a mature tree is removed,¹¹ which explains the importance of efforts to maintain and protect trees.

1.2. Urban Forest Management Roles and Responsibilities

Local Urban Forestry

The boroughs are responsible for operations related to the planting and maintenance of trees on their respective territories, as well as for tree removal operations. This responsibility falls under that part of the “local road system”

¹⁰ The goal of the 2012–2021 Montréal Canopy Action Plan is to increase the canopy rate from 20% to 25% by 2025, including by planting 75,000 public trees on the City’s territory.

¹¹ Source: SGPMRS, 2012–2019 Report of the Plan de gestion de la forêt urbaine of the Ville de Montréal.

3.8. Implementing the *Tree Policy of Montréal*—Maintenance Component

for which the boroughs are responsible. Nevertheless, the delegation of authority allows the SGPMRS to also plant trees on a borough's territory. The goal is to increase the number of trees planted by the boroughs through implementation of the Montréal Canopy Action Plan. Following a three-year maintenance period included in SGPMRS planting contracts with private firms, responsibility for managing the young trees is transferred to the borough concerned.

Other central services may also plant trees as part of development projects such as road improvements. In these cases, the service is responsible for transferring the inventory of new trees to the borough concerned to ensure their maintenance.

Major Parks and Public Spaces

Developing parks and public spaces under the jurisdiction of the urban agglomeration council or city council (e.g., Parc Angrignon, Parc Maisonneuve and Parc du Mont-Royal) is the responsibility of the SGPMRS, whose mission includes protecting, restoring and enhancing natural environments, the urban forest and public spaces (4 metropolitan parks, 10 nature parks, 9 urban parks and 3 natural spaces).

Maintenance management for trees located in those areas is delegated to the boroughs. For example, tree maintenance in Angrignon, Maisonneuve and Mont-Royal parks is delegated, respectively, to Le Sud-Ouest (SO), Rosemont—La Petite-Patrie (RLPP) and Ville-Marie (VM) boroughs. However, development projects in those parks remain the responsibility of the SGPMRS.

The *Tree Policy of Montréal*

As confirmation of the importance of trees, in 2005¹² the City adopted the *Tree Policy of Montréal* (the Policy). With a specific objective to “...establish rules and practices relating to the protection, management and appropriate maintenance of the urban forest,” the Policy sets out 11 actions. A summary of the Policy is presented in Appendix 5.2. With regard to maintenance, actions 1, 2 and 5 of the Policy define specific expectations placed on the boroughs and the SGPMRS.

According to the Policy, maintaining a regularly updated inventory of trees is:

“...essential for formulating action strategies such as plans to remove dead or dangerous trees, replace trees having been felled, as well as devising maintenance programs, planning maintenance resources.”

This is the cornerstone of sound management of the City's urban forest. To this end, the boroughs (action 2), in collaboration with the SGPMRS, were to prepare within three years of the Policy's adoption, i.e., by 2008, a detailed inventory

¹² The Policy was adopted on June 28, 2005, by city council as a follow-up to the 2002 Montréal Summit.

of public trees (except for woodlots) under their jurisdiction, with a priority placed on street trees. The inventories were to be compiled on a computer platform developed by the SGPMRS.

The boroughs were also to have drawn up a tree plan (action 1) within five years following adoption of the Policy, i.e., by 2010. A tree plan is a management framework tool for all interventions related to public trees. To support the boroughs in this work, the SGPMRS was to have first produced a *Guide to drafting a tree plan* (Guide).

Finally, the boroughs and the SGPMRS were to have drawn up the following maintenance programs (action 5) for trees situated in public domains:

- Maintenance, irrigation and follow-up program for young street trees for a period of four years after planting;¹³
- Maintenance program for mature street trees to ensure their health and longevity;¹⁴
- Tree maintenance program right from the planning and design of new parks and public squares.¹⁵

2. Purpose and Scope of the Audit

Under the provisions of the *Cities and Towns Act* (CTA), we completed a performance audit mission of the optimization of resources involved in those sections of the *Tree Policy of Montréal* pertaining to the maintenance of public trees. We performed this mission in accordance with the *Canadian Standard on Assurance Engagement* (CSAE) 3001, described in the *CPA Canada Handbook – Certification*.

The purpose of the audit was to ensure that the City has implemented public tree maintenance actions set out in the Policy.

The role of the Auditor General of the Ville de Montréal is to provide a conclusion regarding the objectives of the audit. To do so, we collected a sufficient amount of relevant evidence on which to base our conclusion and to obtain a reasonable level of assurance. Our assessment is based on criteria we have deemed valid for the purposes of this audit. They are presented in Appendix 5.1.

The Auditor General of the Ville de Montréal applies *Canadian Standard on Quality Control* (CSQC) 1 from the *CPA Canada Handbook – Certification* and, accordingly, maintains a comprehensive system of quality control, including

-
- ¹³ Newly planted street trees: irrigation, maintenance of structural integrity, fertilization, monitoring of support stakes, formation pruning, etc. (the Policy, page 23).
 - ¹⁴ Mature street trees: maintenance of structural integrity, trimming, irrigation, protection against injury, etc. (the Policy, page 23).
 - ¹⁵ Book of specifications including the concept underpinning site landscape design, spatial distribution of plant volume, frequency of intervention required upon completion, etc. (the Policy, page 23).

3.8. Implementing the *Tree Policy of Montréal*—Maintenance Component

documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements. In addition, it complies with the independence and other ethical requirements of the *Code of ethics of chartered professional accountants*, which are founded on fundamental principles of integrity, professional competence and due diligence, confidentiality and professional conduct.

Our audit work covered the period from January 1, 2017, to September 30, 2021. However, for certain aspects, data from before and after this period was also taken into consideration. Our work consisted in conducting interviews with employees, reviewing various documents and conducting surveys that we deemed appropriate to gather the necessary evidence. For the most part, these took place between the months of June 2020 and November 2021. We also took into account information that was sent to us up to March 7, 2022.

The audit involved primarily the following business units:

- The Direction générale;
- The Service des affaires juridiques (Direction des affaires civiles);
- The Service des grands parcs, du Mont-Royal et des sports (SGPMRS) (Direction de la gestion des grands parcs et des milieux naturels and Direction de l'aménagement des parcs et des espaces publics);
- The Service du greffe (Division de la gestion documentaire et des archives);
- Anjou borough (ANJ) (Direction des travaux publics);
- Montréal-Nord borough (MN) (Direction des travaux publics);
- Rivière-des-Prairies–Pointe-aux-Trembles borough (RDP–PAT) (Direction du développement du territoire et études techniques and Direction des travaux publics);
- Rosemont–La Petite-Patrie borough (RLPP) (Direction des travaux publics);
- Saint-Laurent borough (SLA) (Direction des travaux publics);
- Saint-Léonard borough (SLE) (Direction des travaux publics);
- Le Sud-Ouest borough (SO) (Direction des travaux publics);
- Ville-Marie borough (VM) (Direction des travaux publics).

A survey was also conducted of the City's 11 other boroughs concerning the existence of a tree inventory, a tree plan, maintenance programs as well as the nature and extent of budgets and resources available for the maintenance of borough trees. Nine boroughs responded.

Upon completing our audit, we submitted a draft audit report to the managers concerned in each audited business unit and to the City's Direction Générale for discussion purposes. The final report was then forwarded to the management of all the business units concerned as well as to the City's Direction générale

to obtain an action plan and timelines for implementing the recommendations concerning them. A copy of the final report was also forwarded to the deputy director-general of the Service aux citoyens and to the deputy director-general of Mobilité et attractivité and, for information purposes, to the directors of boroughs not directly concerned by our audit work to enable them to implement the recommendations where the situation warrants it.

3. Audit Results

3.1. Incomplete Public Tree Inventories an Obstacle to Overall Management of the Ville de Montréal Urban Forest

Tree maintenance activities have a direct impact on the growth and health of trees. Knowledge about the composition and condition of the urban forest, and regular updating of that knowledge, is an essential foundation for the effective and efficient management of interventions to protect and develop the urban forest¹⁶ on the local (borough) and global (City) levels. Whether for planning and following up interventions (planting and maintenance), documenting interventions performed on each tree, locating threatened species for targeted interventions, or preparing portraits and analyses of the progress and condition of trees, a unified and georeferenced computerized inventory is a necessity. According to the Policy, the inventory should make it possible to determine the composition (e.g., species, location, age and size) and quality (e.g., health, replacement value, intervention history and complaints) of each borough's arboreal heritage, as well as globally for the City.

3.1.1. Available Data About Public Trees Incomplete and Out of Date

As stipulated in action 2 of the Policy, the detailed inventory of public trees (except for woodlots) was to have been completed by the boroughs in 2008 with the collaboration of the SGPMRS. A comparison of data (e.g., species, chest height diameter (CHD), and planting date) on trees listed in the borough systems and data about trees planted in recent years indicates discrepancies. While a majority of the audited boroughs were able to provide us with an inventory of public trees on their territory, physical corroboration of those trees on the ground was not possible. We therefore surveyed the audited boroughs to gain an understanding of their assessment of how complete the portrait of their urban forest actually is (see Table 1). It is clear that data in the public tree inventory is incomplete, the condition of the vast majority of trees is unknown, the intervention history is not systematically documented, and information about tree mortality and the reason for the loss of arboreal assets is neither documented nor followed up. The following subsections address in detail these aspects of the situation with respect to public trees in the audited boroughs.

¹⁶ The Policy, page 21.

TABLE 1

The Boroughs' Assessment of the Level of Completeness of Data on Public Trees¹⁷

Borough	Public tree Inventory			Data about public trees		
	Street	Non-street	Parks and spaces ^[a]	Condition	Intervention history	Tree mortality
Anjou	●	●	n/a	●	●	●
Montréal-Nord	●	●	n/a	●	●	●
Rivière-des-Prairies–Pointe-aux-Trembles	●	●	n/a	●	●	●
Rosemont–La Petite-Patrie	●	●	●	●	●	●
Saint-Laurent	●	●	n/a	●	●	●
Saint-Léonard	●	●	n/a	●	●	●
Sud-Ouest	●	●	●	●	●	●
Ville-Marie	●	●	●	●	●	●
Surveyed ^[b]	●	●	●	●	●	n/a

^[a] Trees situated in parks and spaces under the responsibility of the SGPMRS for which maintenance has been delegated to the boroughs.

^[b] Average for the nine unaudited boroughs that responded to the survey.

Source: Compilation produced by the BVG based on the boroughs' assessment of the level of completeness of data about public trees under their responsibility.

Legend:

Inventory

- Relatively complete (>90%)
- Partially complete (75%–90%)
- Partially complete (<75%)

Data: Condition, intervention history and tree mortality

- Relatively complete
- Partially complete
- Incomplete
- No data

¹⁷ With respect to a complete (100%) inventory, the term “relatively complete” is used when inventory data is deemed by the borough to be more than 90% complete and the missing data specifically pertains to recent tree plantings and removals (ongoing or recently completed) that are not yet reflected in the inventory system.

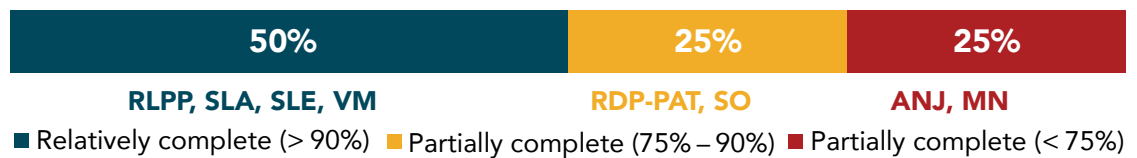
Inventory of Public Trees Incomplete

Only 50% of the audited boroughs have relatively complete knowledge about the public trees on their territory (see Graph 3), and that is only in recent years. Here are some examples:

- The RLPP borough completed a tree inventory report for street trees in 2014 and for non-street trees in 2021;
- The SLA borough began the tree inventory in 2012 and completed it in 2016;
- The SLE borough completed the inventory in 2018;
- The ANJ borough does not have an inventory of public trees on its territory other than a list of trees planted since 2020.

GRAPH 3

Tree Inventory Completeness by Borough



The three audited boroughs¹⁸ with delegated responsibility for the maintenance of public trees situated in parks or public spaces under the jurisdiction of the SGPMRS do not have a complete and current inventory (see Table 1). Given the lack of a complete inventory in each borough, the SGPMRS does not have an overall picture of public trees (excluding woodlots) located in its parks and public spaces or for the City's territory as a whole.

Moreover, recorded data about the CHD of trees in the inventory is not up to date. In most cases (the boroughs of MN, RDP-PAT, RLPP, SO and VM), for example, tree diameters were measured several years ago. Having current information about this measure is required to determine the type of care to provide in accordance with a tree's maturity.

Lack of Mechanisms to Integrate all Tree Plantings and Removals into the Public Tree Inventory

A majority of the boroughs with an inventory update it to reflect tree plantings and removals conducted by the business units responsible for their part of the urban forest and by the SGPMRS (Division forêt urbaine) as part of the Programme canopée. However, tree plantings and removals performed as part of development projects by other borough units or certain central services are not systematically communicated to the unit responsible for the urban forest for the purpose

¹⁸ The three audited boroughs are: SO for Angrignon park, RLPP for Maisonneuve park and VM for Mont-Royal park and several public spaces (e.g., Viger square).

3.8. Implementing the *Tree Policy of Montréal*—Maintenance Component

of adjusting the inventory and planning interventions accordingly. The number of plantings concerned may be considerable, depending on the projects under way. In the case of the RLPP borough, about 187 new trees are planted annually, while the number is estimated at several dozen for the VM borough and about 225 for the VM borough. The other boroughs were not able to quantify the number of plantings that go under the radar. These unrecorded tree plantings and removals amplify the incomplete nature of the inventory.

In the circumstances, a lack of understanding of the location and species of trees comprising the arboreal heritage of each borough is a problem in and of itself, since the situation:

- Compromises efforts to take responsibility for their maintenance (e.g., organizing routes for watering and pruning young trees);
- Limits analyses that can be made of the urban forest’s composition, which is essential for:
 - identifying the location and choice of species for new plantings as part of a species diversification strategy;¹⁹
 - developing proactive intervention strategies in response to infestations and epidemics.

Poorly Documented Data on the Condition of Trees

The health status of the City’s public trees is poorly understood. With the exception of the SLA borough, which reports and updates health data through cyclical inspections (in parallel with a five-year trimming schedule), the other audited boroughs do not have any mechanism to systematically evaluate and document tree health (see Graph 4). They inspect trees on an unplanned ad hoc basis, usually when processing citizen requests or following snow-loading operations to identify damaged street trees (as is the case with the VM borough) without integrating the information into the tree record.

GRAPH 4

Knowledge about the Condition of Trees



¹⁹ “A lacking diversity of species of trees can increase the risk of major infestations and epidemics,” the Policy, page 15.

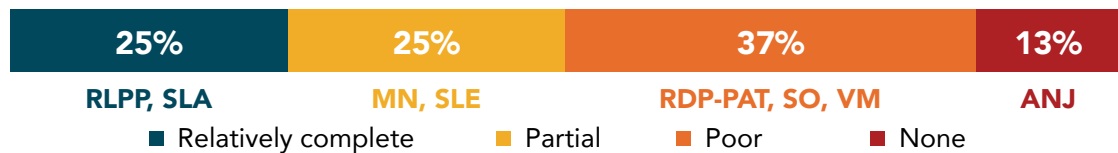
A lack of knowledge about the condition of trees makes it impossible to develop an intervention plan that takes into account the specific care needed to preserve them. It also compromises the assessment and adequate allocation of resources and limits the ability to develop an accurate picture, for instance in the context of efforts by the City to prepare an annual report on the status of all its assets,²⁰ which include street trees.

Intervention History Not Systematically Documented

Generally speaking, the intervention history is not systematically integrated into a management system. Planning and monitoring of some operations takes place in spreadsheet programs outside the management system. Only two of the audited boroughs (25%) have a relatively complete history of interventions on their public trees (see Graph 5).

GRAPH 5

Documentation of the Intervention History

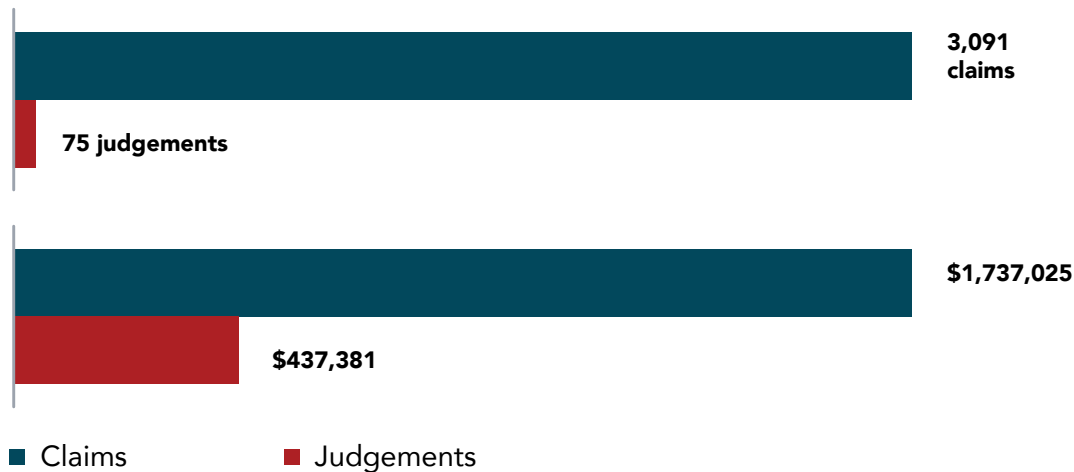


A lack of information about the intervention history limits operational planning and follow-up, and does not allow for either performance analysis (e.g., analysis of the failure of previous plantings or the tree care provided) or the identification of opportunities to optimize maintenance operations. Furthermore, it impedes the production of reports about the interventions performed and makes it impossible to demonstrate conclusively, in legal terms, what public tree inspection and maintenance measures have been implemented to prevent the risk of personal injury and property damage in the context of due diligence. In this regard, the City was obliged to spend nearly \$2.2M (from 2017 to 2021) as a result of claims and legal actions pursuant to incidents of personal injury or damage to a residence or vehicle caused by falling trees in cases where the City could not prove due diligence (see Graph 6).

²⁰ The directive *Connaissance de l'état des actifs* (C-OG-BPPI-D-18-001), which came into effect on November 30, 2018, is intended to ensure that the City has optimal knowledge of the condition and value of its assets (including street trees) in order to plan routine and periodic maintenance, as well as rehabilitation, for the purpose of maintaining an adequate level of services for citizens.

GRAPH 6

Complaints and Judgements between January 2017 and October 2021 Related to Falling Branches that Caused Personal Injury or Property Damage on the Territory of the Ville de Montréal



Source: Graph produced by the BVG based on information provided by the Service des affaires juridiques.

Note: “Claims” refers to cases processed by the City’s Bureau des réclamations, while “judgements” are cases where legal action was initiated.

Tree Mortality Undocumented and not Analyzed

Information about tree mortality and the underlying reason for the loss is not documented and followed up by the boroughs. While employees involved in managing the urban forest have tacit knowledge of maintenance deficiencies and the associated risk to tree longevity and survival, such management information and data are neither documented nor followed up.

GRAPH 7

Tree Mortality Documentation and Follow-up



In general, the SGPMRS estimates the three-year tree survival rate to be 94.6% (from 2017 to 2019) compared with a target of 95%. This portrait is based solely on plantings by the SGPMRS as part of the Programme Canopée. As a result, mortality data about the City’s public trees is incomplete and does not include reasons explaining the loss of these trees (see Graph 7).

Considering that only 30% of tree planting efforts have actually resulted in growth of the urban forest (see Graph 2), the failure to understand the root cause of a significant loss of arboreal assets represents a loss of income for the boroughs. This information would have allowed for corrective measures to be applied to current practices in order to promote tree maintenance and development. Indeed, this was the case in the VM borough, which responded to repeated injuries to trees by imposing penalties on delinquent snow-removal contractors and establishing a pilot project using a new type of bicycle rack to protect vulnerable trees.

To summarize, in contrast with expectations of the Policy, the information available from the boroughs about public trees is incomplete, not current, and even inexistent. The City therefore lacks knowledge about the composition and condition of public trees, which is an obstacle to overall management of the City's urban forest.

3.1.1.A. Recommendation

We recommend that the boroughs of Anjou, Montréal-Nord, Rivière-des-Prairies–Pointe-aux-Trembles, Rosemont–La Petite-Patrie, Saint-Léonard, Saint-Laurent, Le Sud-Ouest and Ville-Marie put in place a mechanism to ensure that tree plantings and removals conducted on their territory, as part of projects undertaken by any of the Ville de Montréal's business units, be integrated into the inventory of public trees in order to maintain a complete picture of their urban forest and to enable complete planning of maintenance interventions.

3.1.1.B. Recommendation

We recommend that the boroughs of Anjou, Montréal-Nord, Rivière-des-Prairies–Pointe-aux-Trembles, Rosemont–La Petite-Patrie, Saint-Léonard, Saint-Laurent, Le Sud-Ouest and Ville-Marie complete and maintain a full inventory of public trees under their responsibility (except for woodlots), including their condition, intervention history and cause of death, and the removal of trees, in order to have a complete picture of their urban forest and enable optimal planning and follow-up of maintenance and protective interventions.

3.1.2. Proliferation of Unintegrated Systems and Tools for Managing Public Tree Inventory and Maintenance Operations

The système corporatif de gestion des végétaux (GDV) developed by the City was launched in 1991. Since then, the system has undergone many developments, and several modules have been added. However, already by 2013, the GDV was considered obsolete due to its limited features and problems with keeping it current. For instance, it does not offer the ability to follow up maintenance lists and does not include a mobile application to update data and interventions in real time. In addition, no IT support has been available for the system since 2009.

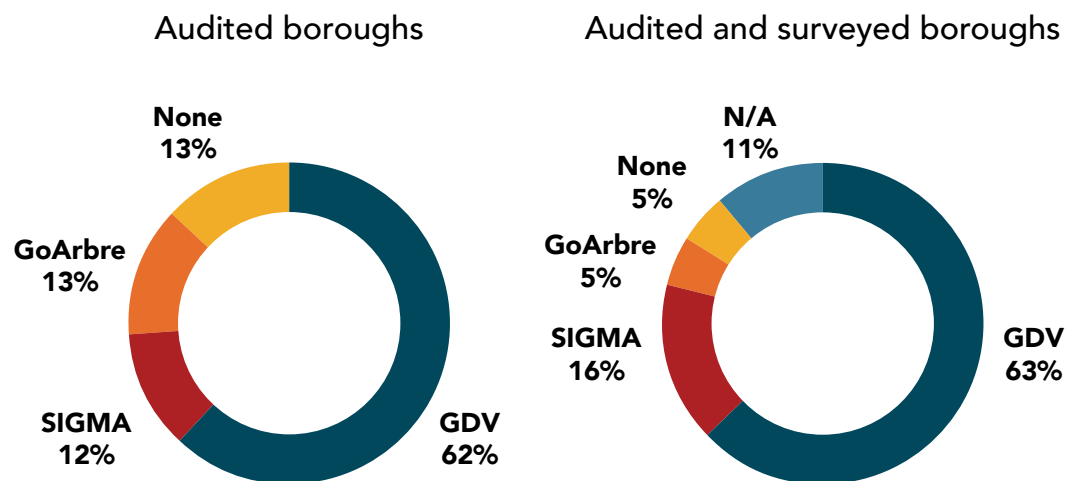
3.8. Implementing the *Tree Policy of Montréal*—Maintenance Component

These irritants led the SLA borough, which used the GDV up until 2019, to migrate to the internally developed *Système GoArbre* platform. Three of the City's other boroughs use the SIGMA system.²¹

For this reason, management of the City's inventory of public trees is spread over several unintegrated systems (see Graph 8).

GRAPH 8

Tools and Systems Used to Manage the Public Tree Inventory of the Ville de Montréal



Source: Graph produced by the BVG based on information provided by the boroughs and the SGPMRS.

According to action 2 of the Policy, the SGPMRS was responsible for developing a platform for generating an overall picture of the City's trees by 2008. At the present time, the SGPMRS does not have a unified overall picture of the composition and condition of the City's urban forest, nor can it provide complete program reports to the municipal administration without collecting and manually consolidating a large volume of data from the 19 boroughs.

Add to that the many spreadsheets used in parallel to plan and follow up maintenance operations by all the audited boroughs. Even among boroughs that use GDV, some have introduced parallel systems for specific functions. For example:

- In 2020, the RLPP borough implemented an application to follow up the watering of young trees;
- In 2021, Le SO borough implemented a commercial application (ArcGIS) for the overall management of planting and maintenance operations. The borough continues to use the GDV but only for the inventory, which is entered manually;

²¹ SIGMA is used by the boroughs of Lachine, Montréal-Nord and Outremont.

- The SGPMRS also uses the ArcGIS application to follow up tree plantings and maintenance for the first three years.

Other boroughs are following suit, with plans to implement new systems (MN and ANJ) or parallel tools (VM).

None of the tools and systems used to manage public trees (inventory and maintenance) are integrated, nor are they used optimally and globally, in part because the naming conventions used for inventory data and tree location identification are not standardized. The multitude of systems makes consolidating the picture of the City's public trees more complex. In addition to this lack of synergy, using parallel systems for the same activity (e.g., for licencing and maintenance) drives costs higher. Here are some examples of the costs faced by specific boroughs:

- RLPP: \$40,000 to implement a system for following up watering, \$15,000 in annual fees and expenses related to the involvement of internal resources;
- SO: \$10,500 to implement a system for tree life-cycle management, \$50,600 in annual fees and expenses related to the involvement of internal resources;
- SLA: development and implementation of the GoArbre system by internal borough resources.

It is clear that the City does not have a single dedicated platform for the inventory of public trees as required by action 2 of the Policy. This situation is not conducive to a long-term perspective of the entire arboreal asset (e.g., establishing common performance indicators pertaining to maintenance management and tree protection, and structuring interventions on problematic trees both locally and globally).

3.1.2.A. Recommendation

We recommend that the Direction générale entrust a business unit with responsibility for integrating all inventory information about the Ville de Montréal's public arboreal assets into a single management tool also capable of managing and documenting interventions, in order to provide a complete picture and enable overall management of the Ville de Montréal's public trees.

3.2. Lack of Tree Maintenance Standards and Programs Results in a Disparity of Practices across the Ville de Montréal

Tree maintenance activities have a direct impact on the condition of the urban forest and, therefore, on the benefits it generates, including to the ecosystem. Generally speaking, regular maintenance serves to prevent broken limbs, ensure optimal growth and prolong the life expectancy of trees in order to maximize systemic benefits. Regular maintenance also reduces the personal safety and property damage risks for citizens that otherwise result.

3.8. Implementing the *Tree Policy of Montréal*—Maintenance Component

The frequency of maintenance activities is determined by tree age (young or mature) and location (street or park). A summary description of the main maintenance activities and the consequences of failing to perform them is presented in Appendix 5.3. Benefits associated with good tree maintenance include:

- Sufficient watering of young trees to ensure growth and reduce the risk of mortality;
- Shape pruning of young trees reduces the need for subsequent trimming that can leave larger wounds on the tree and reduce life expectancy;
- Regular systematic trimming of mature trees reduces the risk of personal injury to citizens due to uncorrected structural faults leading to broken branches.

To provide a management framework for public tree interventions (e.g., planting and maintenance), the Policy prescribes that the boroughs develop tree plans that provide for maintenance programs.

3.2.1. No Tree Plans or Maintenance Programs 15 Years after the Adoption of the *Tree Policy of Montréal*

Inexistent Tree Plans and Maintenance Frameworks

According to the Policy, prior to the boroughs creating their tree plans,²² the SGPMRS was to have published a Guide to support them in developing their plan. Work on the Guide began in 2015 but was abandoned until a draft Guide was prepared in 2019, only to be suspended in December 2020. At the time of our audit, therefore, which was 10 years after the deadline, the boroughs still had no Guide for developing their tree plan.

For this reason, the City's business units have no frame of reference to underpin maintenance practices (e.g., the type of work, methodology and frequency), even though the Policy mandated the SGPMRS to establish an overall vision for public tree management.

Despite the absence of a Guide, the SLA and SLE²³ boroughs developed documents consistent with the tree plan stipulated in the Policy and based on knowledge of the urban forest and overall priorities in terms of planting, maintenance and communication. However, these are the only two cases that were brought to our attention, while the other audited boroughs do not have a similar plan.

²² The tree plan concerns firstly public tree management and provides a frame of reference for development projects and maintenance operations on the urban forest. It is also intended to increase the quantity and quality of trees in order to strengthen their environmental role, develop resilience against disruptions and maximize the many benefits to the ecosystem.

²³ The SLA borough developed an urban forest plan in 2009. In response to the Policy's actions, the plan addresses a number of concerns: maintain, protect, showcase and increase the density of the tree canopy. However, the plan has not been updated since it first appeared. The SLE borough developed a plan to manage the public arboreal heritage in June 2019. This plan specifies actions to improve and maintain the condition of the urban forest and protect young trees, including actions recommended for tree maintenance.

A comparison of the two boroughs' plans reveals differences. Regarding maintenance, for example, the SLA borough plan mentions the need to review existing tree techniques (for newly planted and growing trees), whereas the SLE borough plan addresses only certain aspects of trimming and bracing activities. If these boroughs had had access to the Guide the SGPMRS was supposed to produce, the content of their tree plans would probably have been better standardized and more complete.

The lack of a frame of reference governing management of the urban forest (tree plan) is an obstacle to a standardized vision, planning and optimal management of public trees across the City.

No Maintenance Programs

In the interests of maintaining the arboreal heritage in good condition, the Policy prescribes establishing the following maintenance programs:

- A maintenance program for newly planted street trees;
- A maintenance program for mature street trees;
- A maintenance program for new parks and public squares.

These programs have not been put in place by the audited boroughs. The SGPMRS, which undertakes development projects in parks and public spaces, does not systematically produce the maintenance programs specified in the Policy. Out of several dozen projects carried out since 2017, only three prescribe maintenance activities for newly planted trees, including a reference to a non-existent regular maintenance program of the City.

3.2.2. Disparity in Tree Maintenance Practices and Limited Implementation of Activities Critical to Good Growth

In the absence of guidelines setting out the fundamentals of effective, standardized methods for maintaining urban trees, practices in the boroughs are determined by local priorities and implemented according to the resources (human, material and financial) available. The result is a disparity in practices and limited implementation of certain maintenance activities critical to optimal growth and tree survival (e.g., watering and shape pruning).

A comparison of 14 maintenance activities verified in the boroughs (see Table 2) shows that they are not practised everywhere nor fully implemented.

TABLE 2

Number of Audited Boroughs by Level of Implementation of Public Tree Maintenance Activities

Maintenance Activity	Number of boroughs performing the maintenance activity	Number of boroughs by implementation level of the maintenance activity
Planned Maintenance		
Watering	8	4 High, 3 Partial, 1 Low
Shape pruning	7	1 High, 2 Partial, 4 Low
Saucer maintenance	8	6 High, 2 Partial
Monitoring—support stakes and straps	7	5 High, 1 Low, 1 Not available
Protection (injury)	7	2 High, 3 Partial, 2 Not available
Monitoring—pit protection	5	3 High, 1 Partial, 1 Low
Regular trimming	4	2 High, 2 Low
Systematic inspection	6	1 High, 2 Partial, 2 Low, 1 Not available
Structural maintenance	7	1 High, 3 Partial, 3 Low
Occasional Maintenance		
Occasional trimming	8	4 High, 4 Low
Bracing	7	1 High, 2 Partial, 3 Low, 1 Not available
Phytosanitary treatment	5	2 High, 3 Partial
Removal	8	5 High, 1 Partial, 1 Low, 1 Not available

Young trees

Mature trees

Mature trees

Source: Picture produced by the BVG based on information collected.

Legend: Level of maintenance activities.

■ High ■ Partial ■ Low ■ Not available

Some of the maintenance activities identified are reactive rather than preventive, which would reduce the number of urgent interventions. For example:

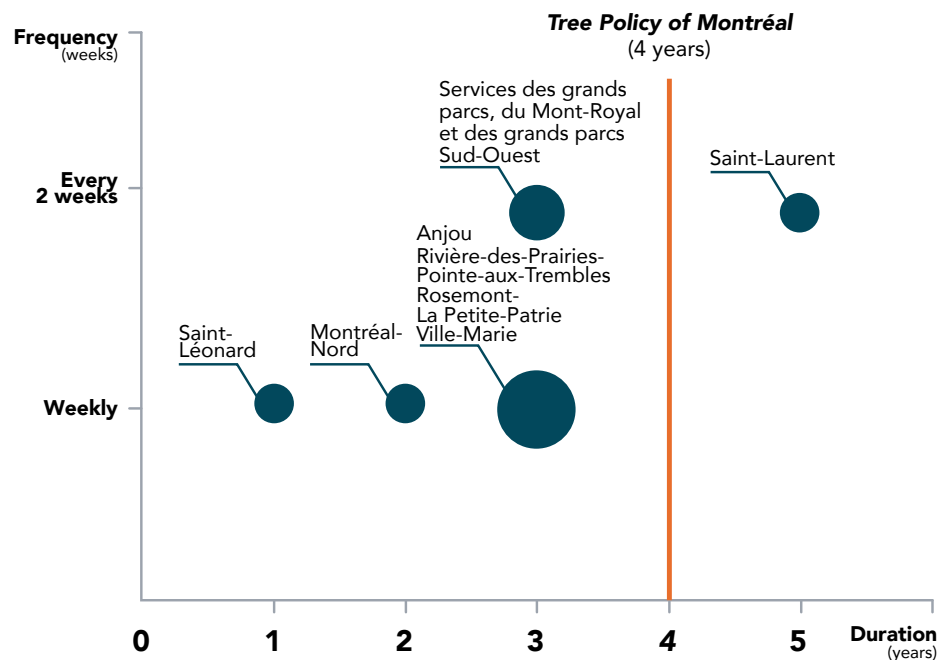
- Shape pruning, which, according to the Policy, should be performed regularly for four years following planting to correct the structure of certain trees, occurs infrequently or not at all in six of the audited boroughs (75%). The result is a greater risk of poor structural development, broken limbs, and more extensive wounds during subsequent trimming;

- Regular trimming, which should be done systematically following a five-year cycle, is practised by only four boroughs, two of which ensure full implementation. Trimming generally occurs only occasionally in the audited boroughs, depending on the urgency of the need or in response to a citizen complaint, to which some boroughs are slow in responding (ANJ, MN, RDP–PAT and RLPP);
- Systematic inspection to determine the condition of trees and inform interventions required is conducted only in the SLA borough. In the other boroughs, weakened trees may not be identified and treated;
- Watering, which is critical to the survival of young trees, is not fully implemented, resulting in a greater risk of mortality.

More specifically with respect to watering, in addition to being incompletely implemented by half the audited boroughs, there is disagreement among the boroughs concerning the period during which young trees should be watered (see Graph 9). The watering period practised by the boroughs and the SGPMRS is generally less than the four years prescribed in the Policy, which does not, however, spell out the frequency other than saying that it should be regular and as needed depending on the situation (e.g., during heatwaves, which create hydric stress on trees of all ages).

GRAPH 9

Comparison of the Duration and Frequency of Watering of Young Trees (Following Planting) for the Audited Boroughs and the Service des grands parcs, du Mont-Royal et des sports



Source: Graph produced by the BVG based on information collected.

3.8. Implementing the *Tree Policy of Montréal*—Maintenance Component

Current practices put the normal growth of young trees at risk and can result in wilting, which represents a loss of both investment and benefits to the ecosystem.

Moreover, the MN borough estimates the annual tree mortality rate to be 20% since 2015 due to the lack of a watering program that was not introduced until 2017. The estimated rate in 2021 for the same borough is 15% of young trees, primarily due to insufficient watering, especially during the periods of excessive heat in July 2021. High mortality rates were also experienced for trees planted as part of the *Un enfant, un arbre* program,²⁴ with 60% of trees planted in the public domain lost due to a lack of sufficient watering.

In short, current practices put the life expectancy of public trees at risk. Furthermore, they result in additional maintenance work due to climate incidents, premature tree removals and costs for the replacement of trees that die or are removed before they have reached maturity. In due course, this can result in the loss of ecosystem benefits from trees for the community and an increase in complaints and maintenance requests filed by citizens.

Considering the expected benefits of trees and the scale of efforts required to dispose of mature trees, appropriate and sufficient maintenance is required across the City's entire territory. This standardization of public tree maintenance inevitably necessitates the introduction of a City-wide management framework stipulating optimal maintenance practices.

3.2.A. Recommendation

We recommend that the Service des grands parcs, du Mont-Royal et des sports produce and distribute to the boroughs a *Guide to drafting a tree plan* that specifically sets standards for maintenance activities and the protection of public trees, and that it support the boroughs in their efforts to prepare and approve local plans in order to promote sustainable practices in the management of the urban forest across the Ville de Montréal.

3.2.B. Recommendation

We recommend that the boroughs of Anjou, Montréal-Nord, Rivière-des-Prairies–Pointe-aux-Trembles, Rosemont–La Petite-Patrie, Saint-Léonard, Saint-Laurent, Le Sud-Ouest and Ville-Marie, in collaboration with the Service des grands parcs, du Mont-Royal et des sports, establish tree plans in order to promote management practices for borough trees that are carefully studied, well-managed and sustainable.

²⁴ The *Un enfant, un arbre* program was established in 2013 by the Ville de Montréal. In addition to offering parents and their children a unique souvenir, this initiative by participating boroughs serves to preserve and foster a quality environment. Parents who register their child can opt for planting a tree on public or private property.

3.2.C. Recommendation

We recommend that the boroughs of Anjou, Montréal-Nord, Rivière-des-Prairies–Pointe-aux-Trembles, Rosemont–La Petite-Patrie, Saint-Léonard, Saint-Laurent, Le Sud-Ouest and Ville-Marie, in collaboration with the Service des grands parcs, du Mont-Royal et des sports, establish programs to maintain and protect the public trees under their responsibility in compliance with standards that will have been previously defined, and ensure that their implementation is followed up in order to promote optimal practices and informed decision-making when prioritizing interventions and allocating resources to maintain and develop the urban forest.

3.2.D. Recommendation

We recommend that the Service des grands parcs, du Mont-Royal et des sports establish programs for the boroughs to maintain parks and public spaces in compliance with standards that will have been previously defined in order to promote optimal practices and the development of new plantings.

3.3. Lack of Resources and Dedicated Recurring Budgets for Maintenance

Resources required to plant, develop and ensure the sustainability of the urban forest must be considered a public investment strategy because of the benefits generated. This is how the Côte-des-Neiges–Notre-Dame-de-Grâce borough mentions in its 2011 Plan de la foresterie urbaine that investing in:

“...l’entretien des arbres existants permet de préserver nos investissements antérieurs et devrait avoir priorité quant à l’ajout de nouveaux arbres si l’on ne dispose pas des ressources requises à leur entretien et leur survie.”

The number of trees targeted by maintenance programs determines the financial resources that need to be budgeted for that purpose. Not knowing either the number of public trees on a borough’s territory or the specific volume and different types of maintenance that need to be performed annually makes it difficult to establish the budget required for maintenance work.

No Estimate of Resources Required to Maintain Public Trees

At the present time, the cost for maintaining all public trees is not known. Estimates have been established for some maintenance activities (e.g., labour costs for trimming in the SLA borough), but these are limited to the number of workers required and do not take into consideration other costs related to the activity, such as equipment and rolling stock.

3.8. Implementing the *Tree Policy of Montréal*—Maintenance Component

Furthermore, additional requirements for maintaining new plantings are not systematically evaluated. The boroughs take over responsibility for the maintenance of trees planted by the SGPMRS or as part of development projects without estimating and budgeting for the additional resources required.

No Dedicated Budget Specifically for Maintaining Public Trees

The boroughs' annual planting and maintenance budgets are allocated globally for horticulture (flowers, shrubs and perennial plants) and trees. The amounts are not broken down to show the costs associated with tree maintenance. This does not allow for maintenance costs and subsequent budget estimates to be followed up based on the changing inventory and its condition. For this reason, it is to be expected that, in order to properly maintain public trees, whose numbers tend to increase, a borough will have to make choices and reduce expenses in other horticultural sectors.

Issues Around Resource Adequacy for Public Tree Management

Although the boroughs are not in a position to measure actual maintenance costs for public trees under their responsibility, they consider that the current capacity, in terms of human and financial resources, is an issue impacting tree maintenance and development. Here are two examples:

- Lack of tank trucks for watering young trees;
- Resources required to sufficiently and properly water newly planted trees and conduct cyclical trimming.

The boroughs are therefore obliged to deal with intervention needs that exceed the human and material resources available. This is reflected in the low rate of performance of overall maintenance activity as previously noted in section 3.2.2.

Efforts already approved or planned to increase the City's canopy will require additional maintenance expenditures. The context of limited resources means that operational priorities must be established to ensure adequate management of the urban forest. Maintenance costs need to be determined in advance based on the composition and condition of public trees, as well as on maintenance standards and programs. This calls for prioritizing interventions and establishing an annual budget that takes into account the evolving number and condition of trees in the urban forest in order to ensure its maintenance and development.

3.3.A. Recommendation

We recommend that the boroughs of Anjou, Montréal-Nord, Rivière-des-Prairies–Pointe-aux-Trembles, Rosemont–La Petite-Patrie, Saint-Léonard, Saint-Laurent, Le Sud-Ouest and Ville-Marie include in their budget specific allocations for the maintenance of public trees in order to ensure their maintenance and development.

3.4. No Implementation Follow-Up for the Tree Policy of Montréal

The municipal administration has primary responsibility for implementing the Policy, which requires it to put in place the necessary tools to adequately protect and manage the City's rich arboreal heritage. Although responsibility is assigned and timelines established for some Policy actions (1 and 2), the audited boroughs and the SGPMRS all report not being held accountable in that regard. In the absence of follow-up mechanisms, the City can neither evaluate overall implementation of the Policy nor take the necessary corrective measures to fulfill its engagements.

It should be emphasized that the SGPMRS participated in preparing the only policy implementation report (*Bilan de la mise en œuvre de la politique 2005-2007*), presented by the *Commission sur l'eau, l'environnement, le développement durable et les grands parcs* (the Commission). The report already underscored obvious delays in implementing Policy actions²⁵ only two years after it came into effect. The delays observed at that time were confirmed by our audit work and still hold true 16 years after adoption of the Policy. The various report recommendations (e.g., having the City set up incentive programs to support the boroughs in developing georeferenced inventories of street trees and tree maps) were not followed up by the City.

In 2013, the Commission issued recommendations to the executive committee in its report on the Montréal Canopy Action Plan project specifically aimed at updating the Policy for 2017. Following that, the executive committee mandated the SGPMRS to proceed, in collaboration with the boroughs, with updating the Policy.²⁶ Moreover, since maintenance was a key factor to the success of the planting program, an analysis of the tree maintenance management programs was to have been part of the update. None of the above have yet taken place.

Since 2020, the SGPMRS has installed a dashboard to monitor progress in achieving growth targets for the urban forest,²⁷ showing the number of plantings on the public and private domains, the survival rate of trees planted and a canopy index. This follow-up, however, does not indicate the status of implementation of Policy actions.

²⁵ Delays in implementing Policy actions include: The Guide intended to support the boroughs in drawing up their tree plan was never produced by the SGPMRS (Action 1). Only one borough had a current inventory (Action 1). Maintenance programs had not been established and maintenance practices were non-compliant (new trees were watered for an average of two years, well below the four years stipulated in the Policy, and borough interventions most often took place on an ad hoc basis or in response to citizen requests (Action 5)).

²⁶ Executive committee resolution CE13 1511 dated September 18, 2013, following up the Commission's report on the Montréal Canopy Action Plan project.

²⁷ Report on the overall increase in the urban forest based on tree plantings and removals done as part of the Programme de renforcement de la canopée et de la lutte contre l'Agrile du frêne (see Graph 2).

3.8. Implementing the *Tree Policy of Montréal*—Maintenance Component

Consequently, the City has no knowledge of the progress achieved in implementing Policy actions, nor of issues pertaining to the condition of the urban forest, a situation that is not conducive to introducing corrective actions.

Considering that between 2017 and 2020, the SGPMRS and the boroughs spent \$57.3M²⁸ on planting and removing trees of the urban forest, follow-up to Policy implementation, and more specifically activities needed to maintain the newly planted trees covered by that investment, is required.

3.4.A. Recommendation

We recommend that the Direction générale assign responsibility to someone for providing regular reports on progress in implementing the *Tree Policy of Montréal* actions in order to allow for informed decision-making in the management and development of the urban forest and in prioritizing actions in the *Tree Policy of Montréal* that are to be implemented.

²⁸ Source: The 2012–2020 SGPMRS report on the urban forest.

4. Conclusion

At the current time, the picture of the urban forest of the Ville de Montréal (the City) is neither complete nor centralized. In the absence of established standards, maintenance practices are inconsistent and incomplete for essential tree maintenance and development activities. This has an impact on the comprehensive planning of interventions and the allocation of recurring and specific resources dedicated to the management of public trees. A lack of follow-up to the implementation of actions in the *Tree Policy of Montréal* (the Policy) does not allow the City to be aware of issues pertaining to the urban forest, including those related to maintenance. For these reasons, we conclude that the City has not implemented actions in the Policy concerning the maintenance of public trees.

The City has developed various strategies²⁹ in the context of sustainable development and adapting to climate change in which the urban forest plays an important role. The Policy reflects all these priorities. Considering that only 30% of planting efforts between 2012 and 2020 actually contributed to growing the urban forest, it is even more in the general interest to ensure the protection and development of the arboreal heritage. This presupposes knowledge about the condition of all public trees, the preparation of tree plans and maintenance programs to ensure optimal overall management of interventions, and, finally, budgets dedicated specifically to the maintenance of public trees.

More specifically, the following are our major findings with respect to the evaluation criteria:

Evaluation Criterion – Preparation of Detailed Inventories of Public Trees in the Boroughs and by the Service des grands parcs, du Mont-Royal et des sports

A large proportion of the audited boroughs consider that they do not have a complete current picture of the trees under their responsibility, since:

- The inventory of public trees is incomplete and their condition is not known;
- The history of maintenance interventions on public trees is not systematically documented;
- Tree deaths and their cause are neither documented nor followed up.

The proliferation of systems to manage the inventory and maintenance of trees across the City exacerbates the dispersion of data, which is an obstacle to developing a complete picture of the urban forest and optimal overall management of the City's public trees.

²⁹ The Sustainable Montréal 2016–2020 plan, whose objective was to improve green infrastructure (increase the canopy from 20% to 25% by 2025) and reduce greenhouse gases by 80% by 2050. The actions in this plan are continued in the 2020–2030 Climate Plan, with the objective of planting 320,000 trees by the City.

Evaluation Criterion—Maintenance Standards, Tree Plans and Maintenance Programs

The tree plans and maintenance programs stipulated in the Policy had not been put in place at the time of our audit work.

Add to this a lack of standards, which makes it impossible to guide and evaluate the management of public tree maintenance.

Maintenance practices are inconsistent across the City, especially in the case of activities critical to tree maintenance and development (e.g., watering young trees).

Maintenance activities, including some that are critical to the optimal growth and survival of trees (e.g., watering, shape pruning and cyclical trimming) are, for the most part, not fully carried out.

Evaluation Criterion—Recurring Budget Allocations Dedicated to Maintenance Activities

No evaluation of the resources (human and material) required annually to ensure the maintenance of public trees is conducted by the boroughs. This is also the case for newly planted trees, which require additional resources.

Budget funds are not specifically allocated for the maintenance of public trees, but rather more generally for horticultural and arboreal planting and maintenance.

Insufficient resources for maintenance activities overall, together with an increase in planting objectives, constitutes an issue for the boroughs.

There is no specific follow-up of funds dedicated to public tree management. This situation impedes efforts to estimate and allocate the resources required annually to maintain and develop trees, in accordance with the progress and condition of the inventory, and to prioritize interventions in the context of limited resources.

Evaluation Criterion—Follow-up to the Implementation of Actions in the *Tree Policy of Montréal*

Since it was adopted in 2005, no follow-up has been done by the City to evaluate implementation of the actions set out in the Policy. Only the *Commission sur l'eau, l'environnement, le développement durable et les grands parcs* produced a 2005–2007 report on the Policy, which indicated a delay in implementation of the prescribed actions. The various recommendations in that report were not followed up. Furthermore, in 2013 the Commission recommended an update to the Policy and an analysis of maintenance programs, which has still not been done.

The City has no knowledge about the fulfillment of engagements contained in the Policy, for instance with respect to maintenance, or of the condition of the urban forest and issues pertaining to its maintenance and development.

5. Appendices

5.1. Objective and Evaluation Criteria

Objective

To ensure that the Ville de Montréal (the City) has implemented the actions to maintain public trees as set out in the *Tree Policy of Montréal* (the Policy).

Evaluation Criteria

- The boroughs and the Service des grands parcs, du Mont-Royal et des sports have developed, in accordance with the Policy, a detailed inventory of public trees under their responsibility, excluding woodlots.
- Tree plans and maintenance programs have been developed in accordance with the Policy, based on standards established across the City.
- Recurring budget allocations are dedicated to tree maintenance activities.
- Actions stipulated in the Policy concerning the maintenance of public trees are followed up.

5.2. Summary of the *Tree Policy of Montréal*

Vision

Grant trees their rightful place at the heart of Montréal’s cityscape, making the City a greener, more pleasant, healthier place to live.

Objectives

- Develop and provide the tools necessary for defining a long-term vision.
- Establish rules and practices relating to the protection, management and appropriate maintenance of the urban forest, while supporting applied research in the field.
- Increase the number of trees planted based on the principle of planting the right tree in the right location with a view to augmenting the island’s arboreal reserve.
- Step up information, publication and awareness initiatives with a view to involving everyone—citizens, municipal employees, institutional and association partners, large land owners, etc.—in the effort to protect Montréal’s arboreal heritage.

Actions

Action 2: Each Montréal borough shall complete a detailed inventory of public trees under borough jurisdiction, woodlots excluded.

Action 1: Each Montréal borough shall draw up, in conjunction with the Service des grands parcs du Mont-Royal et des sports, a **Tree Plan**, which shall give rise (within 5 years) to the following programs:

- Planting program (new and replacement plantings);
- **Maintenance program (trimming, fertilization and phytosanitary treatment);**
- Communications program (awareness and education).

Action 5: The Ville de Montréal and the boroughs shall draw up maintenance programs for trees situated in the public domain with a view to maintaining Montréal’s arboreal heritage in good health, including the following:

- **Maintenance program for newly planted street trees;**
- **Maintenance program for mature street trees;**
- **Maintenance program for new parks and public squares.**

5.2. Summary of the *Tree Policy of Montréal* (continued)

- Action 3:** The City and the boroughs shall conduct new planting operations pursuant to various pre-established criteria with a view to ensuring the sustainability of the island's arboreal heritage.
- Action 4:** The Ville de Montréal and the boroughs shall seek above all to preserve and protect the island's arboreal heritage. When faced with the issue of felling trees, the City and the boroughs shall favour alternate solutions such as the relocation of the trees, or effecting changes to a development project in conjunction with the developer. As felling may be unavoidable in certain instances, internal rules shall be drawn up to provide for the proper supervision of felling operations and planting of an equivalent number of trees.
- Action 6:** The boroughs shall, if they have not already done so, adopt or amend urban planning rules relating to the felling of private trees.
- Action 7:** The boroughs shall institute measures to protect trees during construction work.
- Action 8:** The boroughs shall incorporate into their urban planning regulations the provisions set out in the supplement to the Master Plan.
- Action 9:** The Ville de Montréal shall draw up a municipal program designed to recognize and protect the island's noteworthy trees.
- Action 10:** The Ville de Montréal shall pursue development of its program of applied research into safeguarding and enhancement of Montréal's arboreal heritage.
- Action 11:** The Ville de Montréal shall increase information and awareness activities with a view to securing the commitment of everyone to the cause of the development and protection of the island's arboreal heritage.

Source: Figure produced by the Bureau du vérificateur général based on information available in the *Tree Policy of Montréal*.

5.3. Summary Description of the Main Activities for Maintaining Trees and the Consequences of Failing to Perform Them

	Maintenance Activity Description	Consequence if not Performed
	Planned Maintenance	
Young trees	Watering: Frequent watering and sufficient irrigation, especially in a tree's first years of life, are critical to healthy development.	Hydric stress and poor tree health. Failure or limited ability of young trees to continue normal growth, resulting in death or withering and the need for replacement.
	Shape pruning: Required during the first five years and should begin at the time of planting; intended to enhance the tree's natural shape and ensure good branch location.	<ul style="list-style-type: none"> • Poor structural development, making the tree fragile. • Increased risk of broken branches. • Risk of larger wounds during later trimming.
	Saucer maintenance: Intended to maintain water at the foot of the tree to ensure access by the roots, keep the roots clear and prevent weeds from invading.	<ul style="list-style-type: none"> • Water prevented from reaching the roots. • More weeds creating competition for the available water.
	Monitoring—stakes and straps: A stake can be useful for supporting a tree for up to two years following planting to ensure straight growth and prevent vandalism.	Not removing the support creates a risk of injury or possibly strangulation by the strap or the stake itself.
Immature trees	Protection (injury): Put in place to protect against damage from mowing and other tools.	<ul style="list-style-type: none"> • Injury to the tree that can lead to withering. • Reduced life expectancy.
	Monitoring—pit protection: Grate to protect the pit, ensure that the tree is well anchored and provide the tree with access to water and minerals. Protective grates need to be monitored for adjustment or removal as the tree grows.	If the grate is not adjusted or removed, there is a risk of injury or possible strangulation at the base of the trunk.
Mature trees	Regular trimming: Removing branches serves several purposes: sanitation, raising the crown, access to light, rebalancing the dripline, structural reorganization and clearing. A systematic approach serves to optimize the use of resources by organizing trimming in an overall, structured manner.	<ul style="list-style-type: none"> • Increased risk of personal injury and property damage. • Structural problems leading to branches breaking or the tree falling.
	Systematic inspection: Regular, systematic visits to identify issues as they develop in order to provide treatment in a timely manner as required.	<ul style="list-style-type: none"> • Uncorrected structural problems. • Pests and severe disease. • Increased maintenance costs (curative rather than preventive interventions).

5.3. Summary Description of the Main Activities for Maintaining Trees and the Consequences of Failing to Perform Them (continued)

Maintenance Activity Description	Consequence if not Performed
Occasional Maintenance	
<p>Occasional trimming: To rectify a specific problem (e.g., clear branches from a roof, road signs or a lighting cone).</p>	<p>The situation could potentially become unsafe.</p>
<p>Bracing: Support system for a tree showing signs of injury or to save a weakened branch still in good health.</p>	<ul style="list-style-type: none"> • Safety risk to citizens and property. • The condition of the tree could worsen leading to premature trimming or removal.
<p>Phytosanitary treatment: Antiparasitic treatments to prevent, eliminate or mitigate diseases affecting trees and to protect against pests.</p>	<ul style="list-style-type: none"> • Tree mortality. • Complaints by citizens: various inconveniences (e.g., sticky patches on cars, leaf colouration, leaves falling prematurely). • Pest infestation.
<p>Removal: Required when a tree is dead, severely withered, infested or suffering from a disease at an advanced and irreversible stage or showing major structural deficiency, thus making it susceptible to branches breaking or the tree falling.</p>	<ul style="list-style-type: none"> • Risk to property assets and infrastructure. • Risk to citizen safety.

Mature trees

Source: Table produced by the Bureau du vérificateur général based on maintenance practices current around the City.



4.

Logical Penetration Tests

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4. Logical Penetration Tests

4. Logical Penetration Tests

4.1. Background

Several Ville de Montréal (the City) business units and some organizations controlled by the City have systems through which critical and confidential information passes.

To have effective security measures to adequately protect information systems against cyberattacks, the industry strongly recommends that logical penetration tests be used to test the strength of controls applied in various computer environments. According to information security experts, testing information systems' resistance to internal or external penetration attempts is a key issue.

Logical penetration tests simulate real attacks on technology infrastructures. To this end, they implement, in a controlled and secure replications of malicious steps taken by hackers to break into systems and networks, either from the Internet or internally, in order to better detect potential flaws in information systems, networks or software and strengthen information security. Unlike hacker penetration attempts, logical penetration tests are legal because the target entities provide their consent before testing is started. Specialists generally use the same tools and techniques as hackers do. The difference is that they do not damage information systems, make them unavailable, or alter the information handled by them and do not steal confidential information. The attacked systems' integrity, confidentiality and availability are maintained during tests.

4. Logical Penetration Tests

There are two main types of logical penetration tests:

- **External logical penetration tests:** they reveal whether a hacker could use the Internet to compromise the security of information systems to:
 - obtain confidential or privileged information;
 - alter the information handled by these systems;
 - make information systems unavailable.

- **Internal logical penetration tests:** they can determine whether a person could use the internal system with his usual access rights to compromise the security of the information systems and perform the same three actions defined for external tests. Internal testing is also used to access and test information systems that are invisible from the Internet.

4.2. Purpose and Scope of the Logical Penetration Tests

We performed one logical penetration testing missions tests throughout 2021. The main objective of this engagement was to test the security of IT environments considered critical in order to qualify their resistance to certain levels of attacks.

For obvious security reasons, in this annual report we cannot disclose the details of the targeted systems and the results of our logical penetration tests. Moreover, the business unit concerned would have implemented appropriate action plans to address any deficiencies we would have noted and recommendations we would have made.



5.

Accountability

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5.1.

**Accountability of the legal
persons having received
a subsidy of at least
\$100,000 from
the Ville de Montréal**

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5.1. Accountability of the legal persons having received a subsidy of at least \$100,000 from the Ville de Montréal

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5.1. Accountability of the legal persons having received a subsidy of at least \$100,000 from the Ville de Montréal

5.1.1. Legislative Framework Applicable to Legal Persons Having Received a Subsidy of at Least \$100,000

5.1.1.1. Background

In accordance with Section 107.9 of the *Cities and Towns Act* (CTA), “Any legal person receiving an annual subsidy of at least \$100,000 is required to have its financial statements audited.” This legal person’s auditor must provide the Auditor General with a copy of its annual financial statements, its report on these statements as well as any other report summarizing the auditor’s observations and recommendations to the board of directors or corporate officers of this legal person.

This auditor must also, when requested by the Auditor General, provide the latter with any document that relates to the audit work and its results, while also providing all information that the Auditor General considers necessary with regard to this audit work and its results. If the Auditor General considers that the information, explanations or documents obtained from the auditor are insufficient, he can arrange for any additional audit that he views as necessary.

In December 2013, the city council of the Ville de Montréal (the “City”) also adopted resolution CM13 1157, which requires, amongst other things, that legal persons that received a subsidy of at least \$100,000 file an annual report each year and that the officers make themselves available to city council for a plenary session, if required, pursuant to the *Règlement sur la procédure d’assemblée et les règles de régie interne du conseil municipal*.

Moreover, on August 27, 2021, a set of letters identifying the legal persons that received subsidies adding up to at least \$100,000 in 2020 was provided by the Direction générale to the business units concerned, asking them to provide it, as well as the Auditor General, with a copy of the audited financial statements of these legal persons.

5.1. Accountability of the legal persons having received a subsidy of at least \$100,000 from the Ville de Montréal

5.1.1.2. Purpose and Scope

The purpose of this accountability was to ensure that the legal persons that had received subsidies totalling at least \$100,000 in 2020 complied with Section 107.9 of the CTA and to determine whether additional work was needed.

Thus, as a first step, we extracted all transactions included in the City's account titled "Contributions aux organismes" at December 31, 2020, to reconcile the amount reported in the 2020 financial statements with the amounts charged to the City's books. In addition, we reconciled the amounts identified for the legal persons included in the letters forwarded by the Direction générale on August 27, 2021, with the total contributions as per the City's 2020 financial statements. We also reconciled our differences, where applicable, with the list produced by the Direction générale.

Since we had not received all of the audited financial statements of the legal persons that had received subsidies of at least \$100,000 from the City, we sent letters to the business units responsible for following up with them, on October 15, 2021, as reminder.

Finally, as stipulated in Section 107.9 of the CTA, we selected more than 30 entities for the purpose of having their auditor provide any other report summarizing its findings and recommendations to the board of directors or corporate officers of the legal person. We analyzed the reports received to determine whether they contained any major deficiencies. Regarding the entities selected, no further verification was deemed necessary to follow up the documents that were provided.

5.1.1.3. Audit Results

For the year ended December 31, 2020, the City recorded a total of \$180.3 million in subsidies to various legal persons. Of this amount, \$149.4 million (83%) concerned 283 legal persons that had received subsidies totalling at least \$100,000, which were subject to the requirements of Section 107.9 of the CTA and resolution CM13 1157 adopted by city council.

We stopped our follow-up on December 23, 2021. On that date, the Bureau du vérificateur général had received the 2020 audited financial statements of 278 (98.23%) of the 283 entities concerned by this requirement of the CTA, for a total of \$148.8 million. It should be noted that a vast majority of the agreements include a clause specifying that the financial statements must be filed within 90 days of the entity's fiscal year end.

As at December 23, 2021, all of the entities that had received a subsidy of at least \$100,000 had submitted a copy of their 2020 financial statements. However, the following 5 entities did not meet the requirements of the contribution agreement signed by the parties since they did not provide audited financial statements.

TABLE 1**List of Non-Compliant Entities**

Entity	Non-compliant	Amount received
Service du développement économique		
Fondation du Startup de Montréal	Audited financial statements not received	\$137,147
Service de la diversité et inclusion sociale		
La Porte Ouverte Montréal	Review engagement	\$161,300
Arrondissement de Côte-des-Neiges–Notre-Dame-de-Grâce		
Jeunesse Benny	Audited financial statements not received	\$129,365
Cyclo-Nord Sud	Notice to readers	\$101,535
Arrondissement de Mercier–Hochelaga-Maisonneuve		
Centre des Jeunes Boyce-Viau ¹	Review engagement	\$135,680
Total		\$665,027

5.1.1.4. Review of Auditor Files for the Selected Entities

For the six entities selected, following the review of the auditors' files as well as the information, explanations and documents obtained, no further verification was deemed necessary. The entities in our sample are presented in Table 2.

TABLE 2**List of Entities Making Up Our Sample**

Entity	Year-end	Amount received
Musée d'archéologie et d'histoire de Montréal, Pointe-à-Callière	December 31, 2020	\$9,645,600
Centre de services scolaire de la Pointe-de-l'île	June 30, 2020	\$5,085,800
Institut de l'électrification des transports intelligents	December 31, 2020	\$2,990,000
Celsius Mtl	December 31, 2020	\$1,685,881
Société de verdissement du Montréal métropolitain	December 31, 2020	\$1,484,080
TOHU	August 31, 2020	\$1,192,339
Total		\$22,083,700

¹ This entity was identified as non-compliant for a second time, the first being in 2018.

5.1. Accountability of the legal persons having received a subsidy of at least \$100,000 from the Ville de Montréal

5.1.1.5. Follow-Up on Recommendations

In the course of our 2019 work, we identified a few elements needing improvement.

Letters to the Business Units

Most of the agreements signed by the entities include a clause requiring audited financial statements to be filed within 90 days of their fiscal year end. However, the letters to the business units responsible for following up with the legal persons concerned were sent by the Direction générale late, i.e., on October 23, 2020. For the 2020 fiscal year, the mailing date was moved up to August 27, 2021, and the Direction générale expects to send the letters even earlier in 2022. The letters following up 2021 contributions were sent on March 28, 2022. We therefore consider this recommendation to be resolved to our satisfaction.

List of Legal Persons Produced by the Direction générale

In 2019, we found that the list produced by the Direction générale was not exhaustive given that it did not take into consideration all accounting entries in the City's "Contributions aux organismes" account. Furthermore, the Direction générale did not reconcile those amounts with the balance on the books to ensure that the list was complete.

For 2020, the Direction générale, in collaboration with the Service des finances, reviewed the mechanisms in place to ensure the completeness of both the amounts paid and the list of legal persons that received these subsidies. It thereby protects itself against any oversights when sending letters to the business units, allowing them to follow up with the legal persons regarding the application of the provisions of Section 107.9 of the CTA and of resolution CM13 1157. For this reason, we consider this recommendation to be resolved to our satisfaction.

5.1.1.6. Detailed Table – Legal Compliance of Organizations Having Received a Subsidy of at Least \$100,000 in 2020

Organization	Amount received in 2020	Compliant
Prévention du Crime Ahuntsic-Cartierville	\$228,575	×
Solidarité Ahuntsic	\$225,510	×
Loisirs de l'Acadie Montréal	\$206,258	×
Service des Loisirs Sts-Martyrs-Canadiens de Montréal	\$194,652	×
Loisirs Sophie-Barat	\$166,188	×
TOTAL Ahuntsic-Cartierville borough	\$1,021,183	5
Loisirs Sportifs Côte-des-Neiges – Notre-Dame-de-Grâce	\$1,256,861	×
Société Environnementale Côte-des-Neiges	\$534,042	×
Prévention Côte-des-Neiges Notre-Dame-De-Grace	\$352,801	×
Corporation de Développement Communautaire de Côte-des-Neiges	\$276,634	×
Comité Jeunesse de Notre-Dame-de-Grâce	\$245,082	×
Centre Communautaire de Loisir de la Côte-des-Neiges	\$215,347	×
Jeunesse Benny	\$129,365	
Maison des Jeunes Côte-des-Neiges Inc.	\$114,389	×
Cyclo Nord Sud	\$101,535	
TOTAL Côte-des-Neiges – Notre-Dame-de-Grâce borough	\$3,226,055	7
Association Centre-Ville Lachine Inc.	\$184,000	×
TOTAL Lachine borough	\$184,000	1
Héritage Laurentien	\$358,683	×
Centre Culturel et Communautaire Henri-Lemieux	\$326,900	×
Société de La Salle Jean-Grimaldi	\$105,952	×
TOTAL LaSalle borough	\$791,535	3
Société de Développement Commercial Hochelaga-Maisonneuve	\$859,044	×
L'Anonyme U.I.M.	\$673,473	×
CCSE Maisonneuve	\$593,996	×

5.1. Accountability of the legal persons having received a subsidy of at least \$100,000 from the Ville de Montréal

Organization	Amount received in 2020	Compliant
L'Antre-Jeunes de Mercier-Est	\$295,374	×
Service des Loisirs Ste-Claire	\$252,697	×
Hockey Québec – Région de Montréal	\$234,000	×
Centre Communautaire Hochelaga (C.C.H.)	\$190,325	×
Association des commerçants Hochelaga-Tétreaultville	\$154,500	×
Service des Loisirs St-Justin Inc.	\$153,843	×
Mercier-Ouest Quartier en Santé	\$153,735	×
Service des Loisirs St-Fabien	\$149,136	×
La Maison des Jeunes Magi de Mercier-Ouest Inc.	\$141,522	×
Centre des Jeunes Boyce-Viau	\$135,680	
Association Régionale de Soccer Concordia Inc.	\$125,940	×
GCC La Violence!	\$122,556	×
Service des Loisirs St-Clément	\$115,465	×
Club Aquatique de l'Est de Montréal	\$112,716	×
TOTAL Mercier–Hochelaga-Maisonneuve borough	\$4,464,002	16
Corporation de Développement Économique Montréal-Nord	\$461,276	×
Table de Quartier de Montréal-Nord	\$344,478	×
Un Itinéraire pour Tous	\$271,597	×
Éconord	\$239,170	×
Entre Parents de Montréal-Nord	\$117,675	×
TOTAL Montréal-Nord borough	\$1,434,196	5
Société de Développement Commercial Laurier Ouest - Outremont	\$188,101	×
Corporation du Collège Bois-de-Boulogne	\$146,480	×
TOTAL Outremont borough	\$334,581	2
Centre du Plateau	\$295,909	×
Relance des Loisirs Tout 9 Inc.	\$263,220	×
Association Récréative Milton-Parc	\$173,150	×
TOTAL Plateau-Mont-Royal borough	\$732,279	3

Organization	Amount received in 2020	Compliant
Société Ressources-Loisirs de Pointe-Aux-Trembles	\$1,091,943	×
Équipe R.D.P.	\$273,156	×
Loisir Communautaire le Relais du Bout	\$224,572	×
Maison des Jeunes de Pointe-Aux-Trembles	\$220,605	×
Éco de la Pointe-Aux-Prairies	\$220,454	×
TOTAL Rivière-des-Prairies – Pointe-aux-Trembles borough	\$2,030,730	5
Nature-Action Québec Inc.	\$408,700	×
Loisirs Récréatifs et Communautaires de Rosemont	\$349,318	×
Les Loisirs du Centre Père-Marquette Inc.	\$327,363	×
Service des Loisirs Angus-Bourbonnière	\$270,058	×
Y'a Quelqu'un l'Aut'Bord du Mur Inc.	\$181,917	×
Centre d'Écologie Urbaine de Montréal	\$137,822	×
Carrefour Communautaire de Rosemont, L'Entre-Gens Inc. (Centre Communautaire Petite-Côte)	\$121,559	×
TOTAL Rosemont – La Petite-Patrie borough	\$1,796,736	7
Développement Économique Saint-Laurent	\$1,036,400	×
VertCité	\$269,168	×
Accueils au Cœur de l'Enfance	\$125,035	×
Le Musée des Maîtres et Artisans du Québec	\$108,792	×
TOTAL Saint-Laurent borough	\$1,539,395	4
Gestion Multisports Saint-Léonard	\$133,086	×
TOTAL Saint-Léonard borough	\$133,086	1
Centre de Loisirs Monseigneur Pigeon	\$426,588	×
Centre Récréatif Culturel et Sportif St-Zotique Inc.	\$278,163	×
Centre Sportif de la Petite-Bourgogne	\$263,624	×
Prévention Sud-Ouest	\$251,664	×
Village de Noël de Montréal	\$163,151	×
Coalition Petite Bourgogne Quartier en Santé	\$137,711	×
Club Aquatique du Sud-Ouest (C.A.S.O.)	\$126,520	×
Loisirs & Culture Sud-Ouest	\$110,769	×
TOTAL Sud-Ouest borough	\$1,758,190	8

5.1. Accountability of the legal persons having received a subsidy of at least \$100,000 from the Ville de Montréal

Organization	Amount received in 2020	Compliant
Société de Développement Commercial Wellington	\$883,632	×
TOTAL Verdun borough	\$883,632	1
Société de Développement Commercial Destination Centre-Ville	\$5,418,911	×
Société de Développement Commercial du Vieux-Montréal-Quartier Historique	\$2,698,335	×
Société de Développement Commercial du Village	\$1,327,683	×
Association Sportive et Communautaire du Centre-Sud Inc.	\$953,668	×
Société de Développement du Quartier Latin	\$795,303	×
Expérience Centre-Ville	\$700,000	×
Corporation du Centre Jean-Claude Malépart	\$289,832	×
Go jeunesse	\$235,326	×
Sentier Urbain	\$231,848	×
Mu	\$198,080	×
Association les Chemins du Soleil	\$138,391	×
Centre Récréatif Poupart Inc.	\$119,940	×
TOTAL Ville-Marie borough	\$13,107,318	12
Le Patro le Prévost	\$686,191	×
Centre de Loisirs Communautaires Lajeunesse Inc.	\$414,429	×
Ville en Vert	\$189,247	×
La Grande Porte	\$177,231	×
Loisirs Communautaires Saint-Michel	\$175,488	×
L'Organisation des Jeunes de Parc-Extension Inc. (Peyo)	\$165,105	×
Espace Multisoleil	\$131,804	×
Corporation de Gestion des Loisirs du Parc	\$119,848	×
TOTAL Villeray – St-Michel – Parc-Extension borough	\$2,059,343	8
Société du Musée D'Archéologie et d'Histoire de Montréal Pointe-À-Callière	\$9,645,600	×
Partenariat du Quartier des Spectacles	\$4,801,988	×
TOHU	\$1,192,339	×
Festival Montréal en Lumière Inc.	\$600,000	×

Organization	Amount received in 2020	Compliant
Festival Juste pour Rire	\$600,000	×
Le Festival International de Jazz de Montréal Inc.	\$600,000	×
Fierté Montréal	\$565,000	×
Montréal en Histoire	\$454,599	×
Festival Transamériques	\$404,097	×
Centre des Arts de la Pauline-Julien	\$360,000	×
MAI (Montréal, Arts Interculturels)	\$354,850	×
Les Francofolies de Montréal Inc.	\$325,000	×
Musée des Hospitalières Hôtel-Dieu de Montréal	\$234,664	×
Culture Montréal	\$224,000	×
Nuit Blanche à Montréal Inc	\$200,000	×
Vitrine Culturelle de Montréal	\$200,000	×
Festival du Nouveau Cinéma de Montréal	\$183,329	×
Bureau du Cinéma et de la Télévision du Québec	\$162,000	×
Fondation Québec Cinéma	\$152,882	×
Société du Château Dufresne	\$149,794	×
Société des Musées de Montréal	\$147,000	×
Montréal en fêtes	\$135,000	×
Festival Mode & Design Montréal	\$135,000	×
Fondation Héritage Montréal	\$128,000	×
Les Productions Nuits d'Afrique Inc.	\$121,842	×
Association pour la Création et la Recherche Électro-Acoustiques du Québec (Acreq)	\$120,556	×
Vélo Québec Événements	\$120,000	×
L'Auguste Théâtre	\$119,000	×
Compagnie de Théâtre le Carrousel	\$115,374	×
L'École de Cirque de Verdun	\$107,230	×
Comité de la Fête Nationale de la Saint-Jean Inc.	\$105,000	×
Terres en Vues, Société pour la Diffusion de la Culture Autochtone	\$103,500	×
Festival Fantasia	\$100,000	×
Concours Musical International de Montréal	\$100,000	×
TOTAL Service de la culture	\$23,067,644	34

5.1. Accountability of the legal persons having received a subsidy of at least \$100,000 from the Ville de Montréal

Organization	Amount received in 2020	Compliant
PME MTL Centre-Ville	\$7,668,424	×
PME MTL Centre-Est	\$6,120,018	×
PME MTL Centre-Ouest	\$4,191,535	×
PME MTL Grand Sud-Ouest	\$4,069,942	×
PME MTL Est-de-L'Île	\$3,760,218	×
PME MTL West-Island	\$3,385,263	×
Institut de l'Électricification des Transports Intelligents (Jalon)	\$2,990,000	×
Société du Patrimoine Angus	\$2,354,815	×
Concertation Régionale de Montréal	\$1,950,000	×
Centraide du Grand Montréal	\$1,762,000	×
Société de Développement de l'Avenue du Mont-Royal	\$1,483,302	×
Office des Congrès et du Tourisme du Grand Montréal	\$1,340,000	×
Société de Développement Commercial du Boulevard St-Laurent	\$1,228,623	×
Société de Développement Commercial District Central	\$1,091,899	×
SDC de la Plaza Saint-Hubert	\$1,062,356	×
Intitut Neomed	\$1,000,000	×
C2.MTL	\$650,000	×
Société de Développement Commercial les Quartiers Du Canal	\$647,616	×
École des Entrepreneurs du Québec	\$636,200	×
SDC de la Promenade Masson	\$609,372	×
SDC Promenade Fleury	\$568,048	×
SDC Pignons Rue Saint-Denis	\$520,576	×
Bonjour Startup Montréal	\$515,000	×
Conseil Québécois du Commerce de Détail	\$491,170	×
Société de Développement Commercial de la Rue Jean-Talon à Saint-Léonard	\$407,835	×
Société de Développement Commercial Expérience Côte-des-Neiges	\$404,014	×
SDC Plaza Monk	\$387,953	×

Organization	Amount received in 2020	Compliant
Chambre du Commerce du Montréal Métropolitain	\$355,000	×
Société de Développement Commercial Petite Italie-Marché Jean-Talon-Montréal	\$350,979	×
Le Panier Bleu	\$315,000	×
Institut de Recherche en Biologie Végétale de Montréal	\$309,909	×
Société du Quartier de l'Innovation de Montréal	\$300,000	×
Université Concordia	\$290,800	×
Société de Développement Commercial la Zone Décarie Nord	\$253,345	×
École de Créativité la Factory	\$250,000	×
Printemps Numérique	\$250,000	×
S.A.T. Société des Arts Technologiques	\$250,000	×
Société de Développement Commercial Quartier Fleury Ouest	\$238,674	×
Expo Entrepreneurs	\$225,000	×
Alliance des Manufacturiers et des Exportateurs du Canada	\$200,000	×
Microcrédit Montréal	\$200,000	×
Conseil des Industries Durables	\$198,000	×
Société de Développement Commercial Laurier Ouest Plateau-Mont-Royal	\$192,563	×
Esplanade Montréal	\$175,000	×
Mouvement Québécois de la Qualité	\$165,900	×
Association des sociétés de développement commercial de Montréal	\$160,000	×
Architecture Sans Frontières Québec	\$150,000	×
Regroupement des Producteurs Multimédia	\$150,000	×
Fondation du Startup de Montréal	\$137,147	
Csmo-Esac	\$135,000	×
Institut International d'études Administratives de Montréal Inc.	\$130,000	×
Montréal – Métropole en Santé	\$130,000	×
Conseil d'Économie Sociale de l'Île-de-Montréal	\$126,000	×
La Pépinière Espaces Collectifs	\$123,389	×

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Organization	Amount received in 2020	Compliant
Réseau de la Coopération du Travail du Québec, Coopérative de Solidarité	\$121,216	×
Communautique	\$112,355	×
Jeune Chambre de Commerce de Montréal	\$110,000	×
Building owners and managers' association of Montreal (Boma Québec)	\$100,000	×
Conseil des Industries Bioalimentaires de l'Île-de-Montréal	\$100,000	×
TOTAL Service du développement économique	\$57,601,455	58
Celsius Mtl (Solon)	\$1,685,881	×
La Cantine pour Tous	\$841,297	×
La Fabrique des Mobilités Québec	\$586,800	×
Collectif Récolte	\$545,000	×
Montréal International	\$510,000	×
Maison de l'Innovation Sociale	\$338,000	×
Nord Ouvert Inc.	\$285,000	×
L'Institution Royale pour l'Avancement des Sciences	\$250,000	×
Conseil Régional de l'Environnement de Montréal	\$163,813	×
Laboratoire sur l'Agriculture Urbaine	\$160,450	×
Maison du Développement Durable	\$150,000	×
La Société Canadienne de la Croix-Rouge	\$100,235	×
TOTAL Direction générale	\$5,616,476	12
Altergo	\$856,300	×
Centre de Prévention de la Radicalisation Menant à la Violence	\$600,000	×
Les YMCA du Québec	\$551,286	×
Jeunesse au Soleil	\$548,730	×
Comité des Organismes Sociaux de Saint-Laurent	\$533,835	×
La Mission Bon Accueil	\$455,539	×
Intégration Jeunesse du Québec Inc.	\$420,000	×
Société de Développement Social	\$355,231	×
Club des Petits Déjeuners du Canada	\$350,000	×
Mission Old Brewery	\$346,213	×

Organization	Amount received in 2020	Compliant
Carrefour d'Alimentation et de Partage St-Barnabé Inc.	\$335,884	×
Institut Pacifique	\$318,203	×
Sports Montréal Inc.	\$305,464	×
Dépôt Alimentaire NDG	\$287,659	×
Concertation Ville Émard Côte St-Paul	\$279,274	×
Projets Autochtones du Québec	\$273,808	×
Conseil Local Intervenants Communautaires Bordeaux-Cartierville (C.L.I.C.)	\$266,248	×
Concertation Saint-Léonard	\$230,800	×
Carrefour de Ressources en Interculturel	\$227,131	×
Rue Action Prévention Jeunesse	\$221,789	×
Réseau Réussite Montréal	\$221,707	×
Moisson Montréal Inc.	\$217,000	×
Regroupement des Magasins-Partage de l'Île de Montréal	\$213,800	×
Accueil Bonneau Inc.	\$209,040	×
CDC Solidarités Villeray	\$197,941	×
Foyer pour Femmes Autochtones de Montréal	\$189,210	×
Centre International pour la Prévention de la Criminalité	\$186,875	×
Action Jeunesse de l'Ouest-de-l'Île	\$186,525	×
Projet Ado Communautaire en Travail de Rue	\$185,032	×
Table de Quartier Hochelaga-Maisonneuve	\$181,648	×
Mission Exeko	\$176,026	×
Vivre Saint-Michel en Santé	\$173,545	×
Concert'Action Lachine	\$172,852	×
Maison des Jeunes de Lasalle	\$168,559	×
Entre-Maisons Ahuntsic	\$167,710	×
La Porte Ouverte Montréal	\$161,300	
Autisme Montréal	\$160,950	×
Cafétéria Communautaire Multicaf	\$160,911	×

5.1. Accountability of the legal persons having received a subsidy of at least \$100,000 from the Ville de Montréal

Organization	Amount received in 2020	Compliant
Comité de Revitalisation Urbaine Intégrée du Quartier Saint-Pierre	\$158,818	×
Maison Du Père	\$158,000	×
Rue des Femmes de Montréal (La)	\$157,960	×
Association d'Entraide le Chaînon Inc.	\$156,320	×
Fourchette de l'Espoir	\$153,882	×
Corporation de Développement Communautaire (CDC) Centre-Sud	\$148,778	×
Fondation de la Visite	\$146,649	×
La Musique aux Enfants	\$145,620	×
Centre de Promotion Communautaire le Phare Inc.	\$140,098	×
Mouvement pour Mettre Fin à l'itinérance à Montréal	\$140,000	×
Solidarité Mercier-Est	\$130,764	×
Mères avec Pouvoir (MAP) Montréal	\$121,207	×
Conseil Communautaire Notre-Dame-de-Grâce Inc.	\$119,328	×
Nourri-Source – Montréal	\$118,973	×
Plein Milieu	\$118,171	×
Répit Providence, Maison Hochelaga-Maisonneuve	\$114,624	×
Service d'Aide Communautaire Anjou Inc.	\$114,575	×
Y a des femmes de Montréal	\$114,332	×
Coup de Pouce Jeunesse de Montréal-Nord	\$114,040	×
Association des Locataires de Villaray	\$111,365	×
Collectif Jeunesse de Saint-Léonard	\$110,414	×
Centre Humanitaire d'Organisation de Ressources et de Références d'Anjou	\$108,692	×
Forum Jeunesse de Saint-Michel	\$107,989	×
Centre d'Éducation et d'Action des Femmes de Montréal Inc.	\$106,320	×
Centre des Jeunes l'Escale de Montréal-Nord Inc.	\$104,500	×
Cari St-Laurent	\$103,960	×
Centre Intégré Universitaire Santé et Services Sociaux Centre-Sud-de-l'Île-de-Montréal	\$101,600	×
Ensemble pour le respect de la Diversité	\$100,966	×

Organization	Amount received in 2020	Compliant
Table de Concertation-Jeunesse Bordeaux-Cartierville	\$100,958	×
Centre Interligne Inc.	\$100,000	×
Fusion Jeunesse	\$100,000	×
Jeunes Musiciens du Monde	\$100,000	×
TOTAL Service de la diversité et inclusion sociale	\$15,022,927	69
Fondation Espace pour La Vie	\$250,000	×
TOTAL Espace pour la vie	\$250,000	1
Centre de services scolaire de la Pointe-de-l'Île	\$5,526,775	×
Tennis Canada-Stade Jarry	\$1,745,417	×
La Société de Verdissement du Montréal Métropolitain (Soverdi)	\$1,484,080	×
Centre de la Montagne	\$397,350	×
Excellence Sportive de l'Île de Montréal	\$325,000	×
Événements GPCQM	\$238,338	×
Triathlon International de Montréal	\$160,824	×
Défi Sportif Altergo	\$125,000	×
Le Club Gymnix Inc.	\$114,231	×
TOTAL Service des grands parcs, du Mont-Royal et des sports	\$10,117,015	9
Unité de Travail pour l'Implantation de Logement Étudiant (Utile Papineau)	\$808,349	×
La Fondation du Refuge pour Femmes Chez Doris Inc.	\$471,633	×
Les Habitations du Trentenaire de la Shapem	\$309,519	×
TOTAL Service de l'habitation	\$1,589,502	3
Regroupement des Éco-Quartiers	\$103,074	×
TOTAL Service de l'eau	\$103,074	1
Fonds Ville-Marie	\$300,000	×
Université du Québec à Montréal	\$126,000	×
Vélo Québec Association	\$100,000	×
TOTAL Service de l'urbanisme et de la mobilité	\$526,000	3
TOTAL	\$149,390,354	278
	283	278
	100%	98.23%



5.2.

Implementation of the Auditor General's Recommendations

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5.2. Implementation of the Auditor General's Recommendations

The percentage of recommendations made by the Bureau du vérificateur général (BVG) that were implemented as a result of the action plans submitted by the business units being completed is an essential indicator used to ensure that the central departments and boroughs are correcting the situations observed during our audits.

The measures taken in 2020 by the Direction générale through the Comptroller General of the Ville de Montréal (the City) were continued in 2021. Coordinators for each business unit were trained. At the request of the Comptroller General, we also met with all the business unit coordinators in spring 2021 to inform them of their role and of the BVG's expectations for considering that an action plan has been implemented in its entirety. The coordinator exercises quality control to ensure that the response provided by the person responsible for implementing the recommendation is complete and aligned with the action plan and that sufficient supporting documentation is attached to substantiate the business units' response.

In addition, in 2021, we continued to improve certain practices related to follow-up on implementation of the recommendations by the business units. We undertook a process to confirm with the business units the validity of the recommendations and action plans still to be completed whose implementation date had expired at least 5 years earlier.

As part of the follow-up on the implementation of the BVG's recommendations, the results of this annual report were compiled on December 31, 2021,¹ and cover all of 2021.

5.2.1. Follow-Up on Implementation of the Recommendations of the Bureau du vérificateur général – Results

Overall follow-up on implementation of the recommendations

The action plans proposed by business units to meet the BVG's recommendations reflect 331 recommendations in recent years whose implementation date for the action plans expired on January 1, 2021, and which remained unresolved by the business units. In addition, 134 recommendations should have been implemented in 2021. This represents a total of 465 recommendations that should have been implemented no later than December 31, 2021 (see Figure 1).

The analysis performed on December 31, 2021, shows that the business units considered 313 recommendations to have been implemented during the entire year, including 6 recommendations whose action plans expired after 2021. This leaves

¹ Given that this is the first year that the BVG has followed up on the implementation of the recommendations at December 31, no comparison can be made with earlier years.

5.2. Implementation of the Auditor General's Recommendations

158 recommendations that should have been implemented in 2021 but remain unresolved, the business units maintaining a "to be implemented," "in progress" or "delayed" status for them.

As shown in Figure 1, the coordinators only examined responses to 166 (53.0%) of the 313 recommendations for which the business units considered having implemented their action plans. The implementation of only one action plan among these 166 was still considered unsatisfactory by a coordinator at December 31, 2021. The status of this recommendation reverted to "in progress." As proof that the year 2021 was a transition year for the coordinators, of the 147 recommendations for which implementation of the action plans was not examined by the coordinators, 128 (87.1%) were considered implemented by the business units in the first 6 months of 2021, i.e., prior to the training of the coordinators.

Taking into consideration this transition period, during the first 6 months of 2021, we continued to analyze the action plans completed by the business units that had not been examined by a coordinator. We confirmed the resolved status of 98 of these 128 recommendations (76.6%). These recommendations whose resolved status was confirmed despite the absence of an examination by the coordinators represent 44.1% of all the recommendations that we considered fully implemented in 2021.

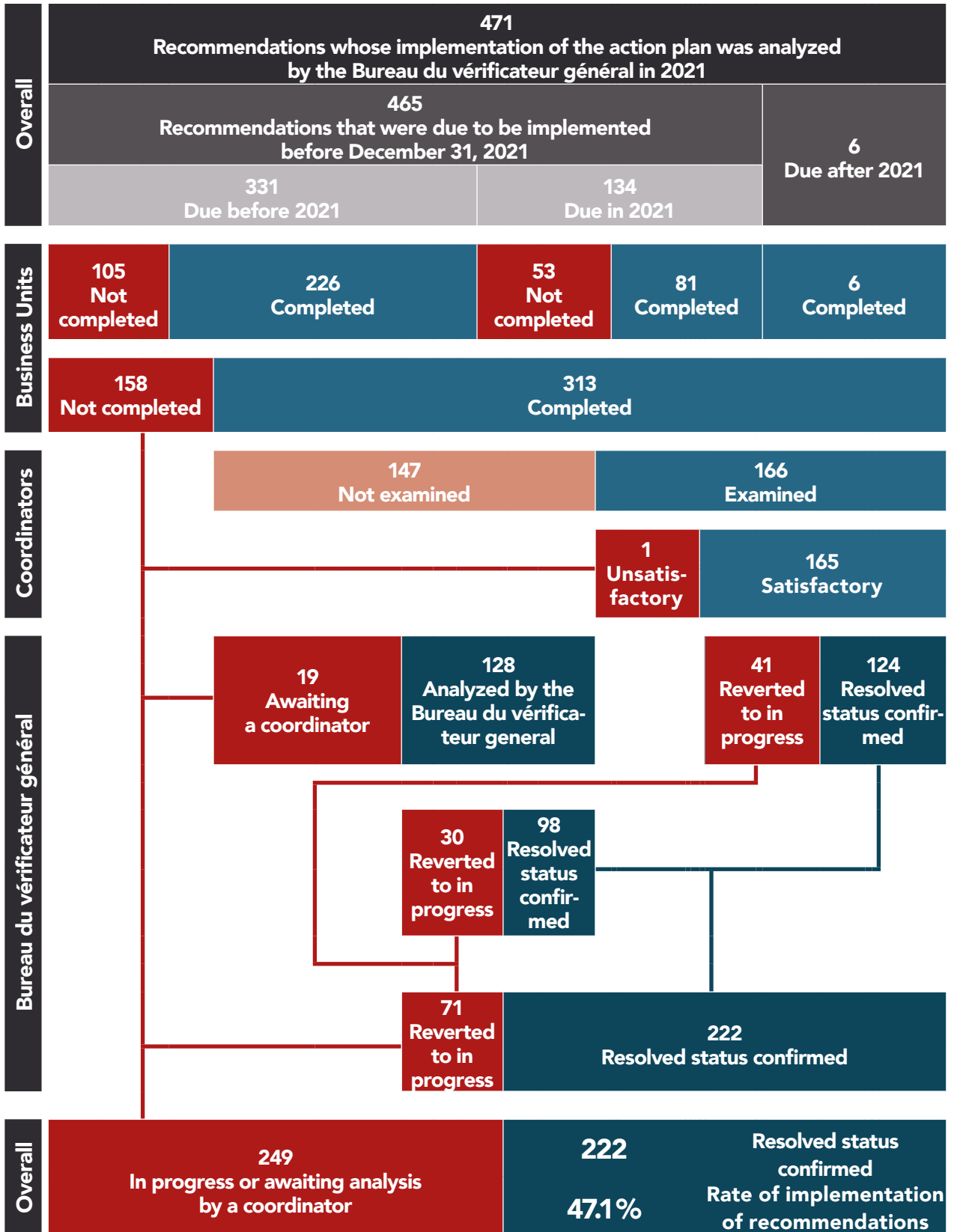
In general, for the year 2021, the results of the follow-up of implementation of the recommendations are, as follows:

- We confirmed that **222 recommendations** were implemented, for an overall rate of **47.1%** of the 471 recommendations considered;
- We also reinstated **71 recommendations**, either because the action plans had not been fully implemented or because the documentation provided by the business unit was not complete enough to show that the recommendation had been implemented;
- We analyzed the implementation of **128 recommendations** out of the 147 considered as resolved by the business units but not examined by the coordinators;
- The business units failed to fully implement **158 recommendations** that had action plan implementation dates of 2021 or earlier;
- The business units still must implement **249 recommendations²** out of the 471 that is, because the business units had not fully implemented the action plans, the coordinators had not examined the work done by the business units at December 31, 2021, or we reverted their status to "in progress."

² Two of these recommendations reinstated as in progress were not late at December 31, 2021, since the business units considered them resolved prior to the date of implementation.

FIGURE 1

Rate of implementation of recommendations for 2021

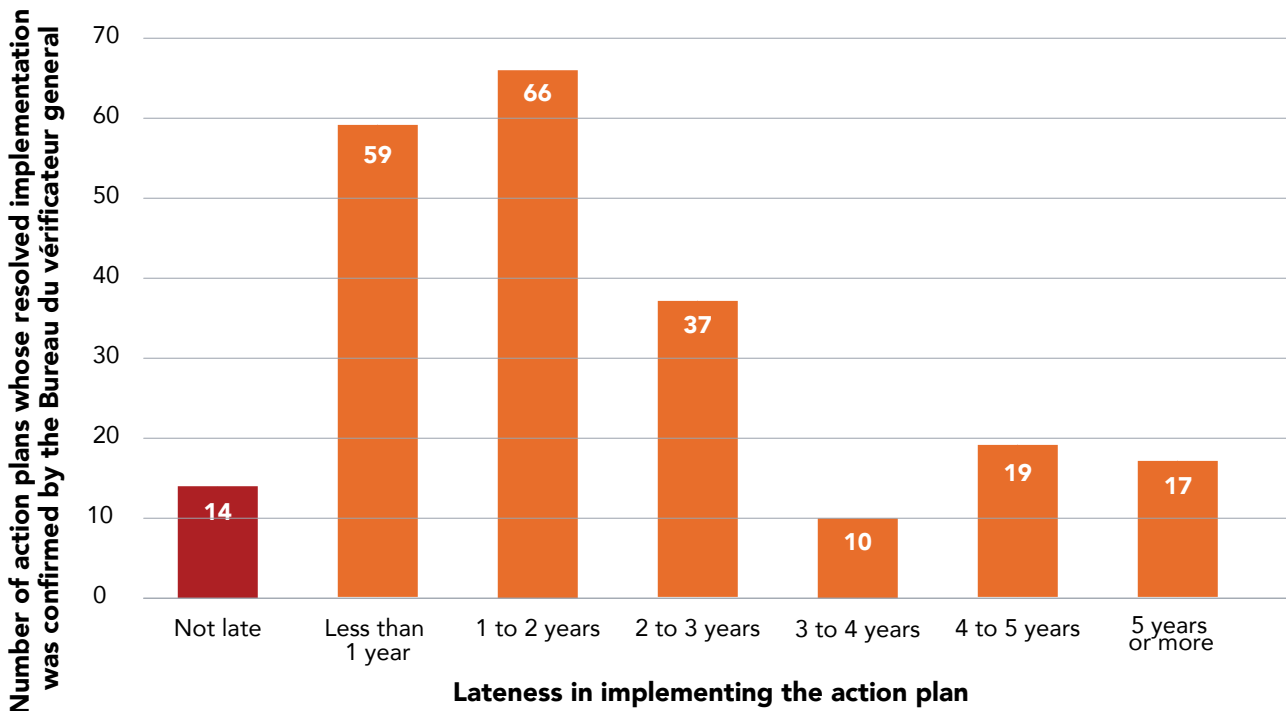


Majority of Resolved Recommendations Late

In the case of the 222 recommendations whose implementation in 2021 was confirmed, the action plans of only 14 of these (6.3%) had been completed prior to the implementation date planned by the business units (see Figure 2). This means that 93.7% of these 222 recommendations were implemented late, 67.1% more than one year late and 7.7% with 5 or more years late.

FIGURE 2

Breakdown of the lateness of recommendations implemented in 2021 relative to the implementation date planned by the business units to carry out their action plans



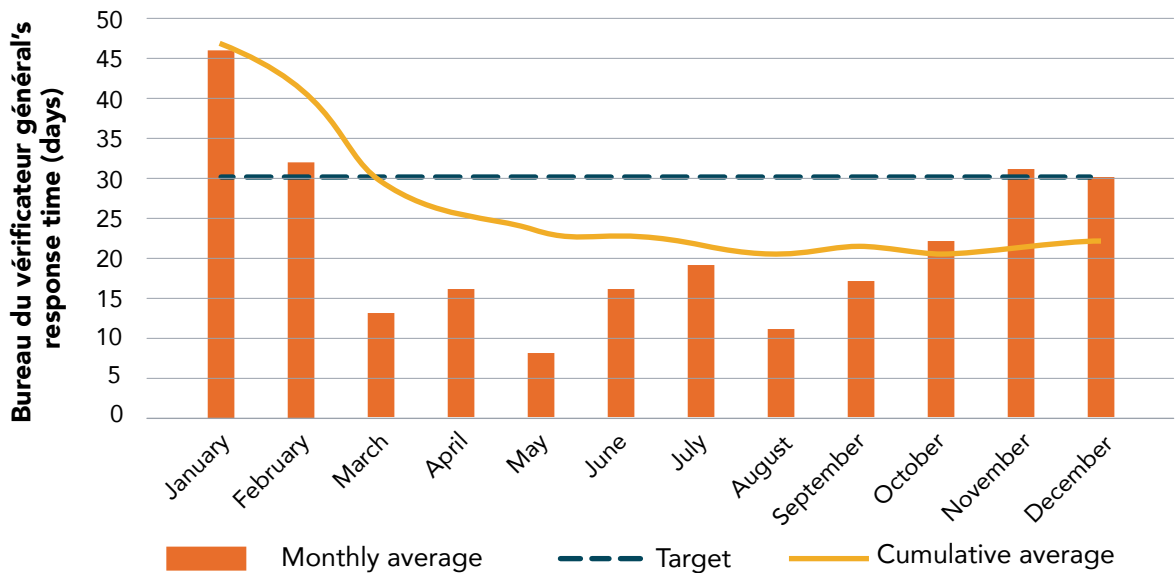
Response Time of the Bureau du vérificateur général in Confirming Implementation of a Recommendation

Since 2021, we set ourselves a target of 30 days (on average) following the satisfactory examination of the situation by the coordinator to analyze the business units' progress in implementing recommendations. For the year 2021, given that we analyzed recommendations that had not been examined by the coordinators, the indicator was calculated between the coordinator's response time and that of the BVG in cases where the coordinator was involved, or between the business units' final response time and that of the BVG in cases where the coordinator was not involved.

As shown in Figure 3, after the month of January, when our response time was longer than planned, the situation was quickly corrected and, from the month of March 2021 to the end of 2021, we maintained an average response time under the 30-day target, for an overall average response time of 22 days for 2021.

FIGURE 3

Average response time (in days) of the Bureau du vérificateur général's analysis of the business units' responses to implementing recommendations



5.2.2. Recommendations Generally Implemented Late

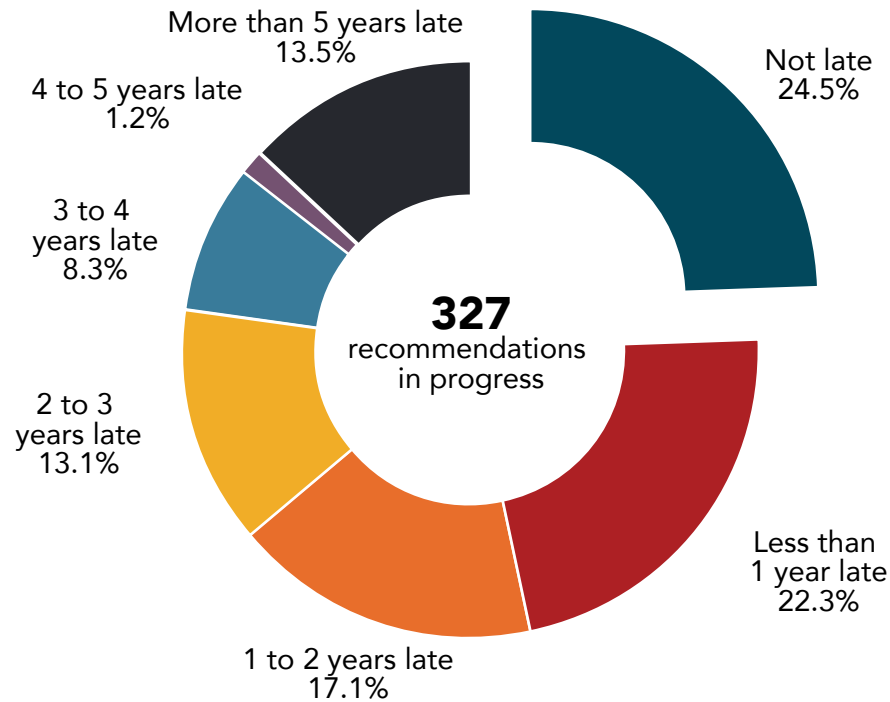
At December 31, 2021, the City's business units still had 327 recommendations to implement for all the audit reports that we have produced in recent years. Of this number, slightly less than one out of four recommendations, i.e., 80 out of 327 (24.5%),³ were not overdue according to the implementation date scheduled by the business units in their action plans (see Figure 4).

At the other end of the spectrum, there were 44 recommendations, i.e., 13.5%, that were still in progress even though the implementation date scheduled by the business unit was at least 5 years earlier. These recommendations had been made to the business units in audit reports dating from 2009 to 2015.

³ The 247 recommendations that were late are included in the 249 recommendations that we reverted to in progress during 2021, taking into consideration that 2 of these recommendations were not late.

FIGURE 4

Breakdown of recommendations in progress based on their lateness relative to the implementation date scheduled in the action plan



In November 2021, we began requesting that all business units review the relevance of their action plans whose completion was at least 5 years overdue relative to the scheduled implementation date.⁴ The objective was for each business unit to inform us whether the recommendation was still relevant and, if so, whether the action plan needed to be updated.

Table 1 presents the responses obtained from the business units involved in this process. In almost 87% of the action plans targeted (39 out of 45), the business units reported that the situation observed at the time of the audit was still relevant in 2022. Furthermore, only 1 was considered no longer appropriate by its business unit. Faced with this finding, we question the business units' commitment to implementing the action plans related to these recommendations.

In 2022, we will conduct the same exercise, this time involving recommendations whose implementation of the action plan is less than 5 years overdue.

⁴ At November 1, 2021, when we began this process with the business units, there were 45 action plans whose implementation had not been completed that were at least 5 years overdue.

TABLE 1

Responses obtained from the business units regarding analyses of the situation and relevance of action plans still in progress whose implementation is at least 5 years overdue

Analysis of the current situation vs. the situation at the time of the audit	Analysis of the relevance of the action plan submitted at the time of the audit report
<p>39 situations are still current and require implementation of an action plan by business unit.</p>	<p>22 action plans submitted at the time of the audit are still valid and must be implemented.</p> <p>16 action plans do not have a designate individual responsible for implementing the recommendations.</p> <p>1 action plan is no longer appropriate, and the business unit has submitted a new one.</p>
<p>5 situations are different, and the findings of our audit are no longer current.</p>	<p>A request has been made by the business units involved to close the recommendations associated with these situations.</p>
<p>1 situation was not analyzed by a business unit (Ahuntsic-Cartierville borough).</p>	<p>Does not apply.</p>

5.2.3. Conclusion

In 2021, the business units resolved less than half of the recommendations whose action plans had an implementation date during the year or were already overdue at January 1, 2021.

The vast majority of the recommendations that we considered resolved were past the implementation date scheduled by their business unit in its action plans. Of the 222 recommendations that we confirmed had been fully implemented in 2021, only 14 were completed within the timelines established by their business units.

Everything points to this situation continuing in the next few years, given that, of the 327 recommendations still in progress at December 31, 2021, three-quarters were already overdue for implementation. Among these recommendations, those that are the longest overdue, i.e., 5 years or more, are for the most part deemed still relevant by the business units.

Finally, we consider that the measures taken at the end of 2020 and the start of 2021, especially the examination by the business unit's coordinator of the responses of the persons responsible for the recommendations, have not been sufficiently implemented to be successful. In fact, during 2021, the coordinators examined the business units' responses for only 166 of the 313 recommendations that the business units considered resolved.

When the audit reports were received, all the business units committed to implementing action plans, within a timeline that they established, to meet the recommendations made in the BVG's reports. In addition, all the action plans of the central departments are reviewed by the Direction générale before being sent to the BVG.

Faced with these findings, we recommend that the Direction générale adopt indicators to follow up the business units' commitments regarding our recommendations and remind the coordinators of their role in examining the business units' responses.



6.

Management Reports

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6.1.

Overview of the Bureau du vérificateur général

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6.1. Overview of the Bureau du vérificateur général

This chapter presents the highlights of the results obtained for the year 2021 regarding the performance of the Auditor General's (AG) mandate and the utilization of resources for this purpose. More specifically, we present different indicators so the reader can appreciate the performance of the Bureau du vérificateur général (BVG).

The indicators presented are:

- The financial results;
- The number of audit reports issued;
- Human resources:
 - Current and future staff portrait;
 - Use of time;
 - Staff turnover rate;
 - Absenteeism rate;
 - Average number of hours and cost of training;
 - Equal access to employment;
- Professional service contracts;
- Professional inspection;
- Accountability regarding allegations;
- Accountability regarding requests for access to information;
- Technology infrastructure;
- Outreach.

6.1.1. Financial Results

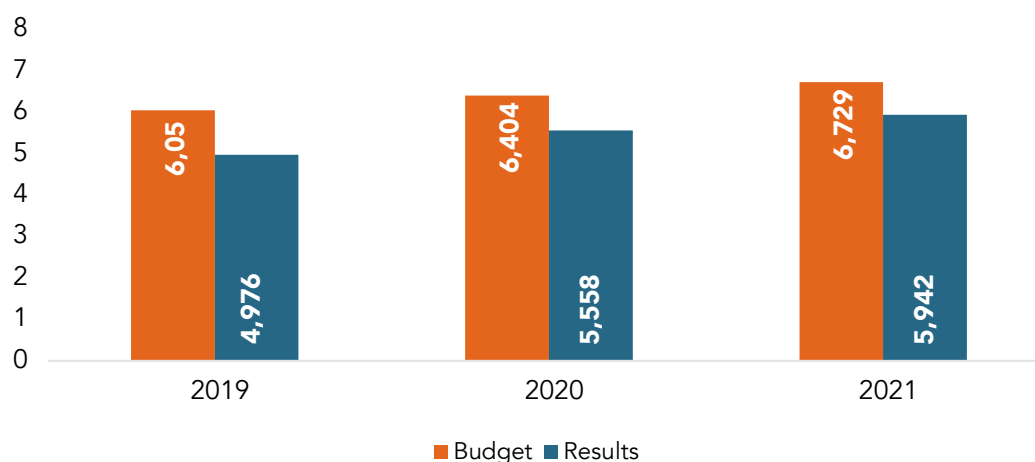
For the year 2021, the BVG's operating expenses amounted to \$5.9 million, compared with the budget of \$6.7 million. This favourable variance is essentially explained by personnel movements, i.e., positions that remained vacant and were filled during the year 2021, employee sick leaves, and the retirement of 2 resources. However, in the second half of 2021, we filled 3 positions with external resources, namely 2 financial audit (financial and administration processes) assistant auditor

6.1. Overview of the Bureau du vérificateur général

positions and one audit performance and compliance consultant. In addition, in June 2021, an employee of the BVG was promoted to senior auditor with financial audit responsibility. The following figure illustrates the BVG's financial results for the past 3 years.

FIGURE 1

Budget and Financial Results (in millions of dollars)



In accordance with the provisions of section 108.2.1 of the *Cities and Towns Act* (the CTA), the AG accounts for the year ended December 31, 2021, were audited by an independent auditor mandated by the Ville de Montréal (the City). The report of the independent auditor is presented in Appendix 7.2.

6.1.2. Number of Audit Reports Issued

Next table details the number of reports issued over the past few years for audits of the financial statements, regulatory compliance, as well as a performance and compliance audit and IT.

TABLE 1

Number of Audit and Accountability Reports Produced from 2019 to 2021

Reference Annual report	Financial statements	Performance and compliance audit	Information technology audit	Total number of audit reports	Accountability
2019	9	6	4	19	2
2020	9	7	5	21	2
2021	9	5	4	18	2

6.1.3. Human Resources

The BVG is recognized for the quality of its work and the diversity of its skills and experience. This is a major asset in providing elected officials and citizens with an objective and independent view of how well public funds are managed. The BVG has more than 30 qualified professionals, including accountants, an engineer and business management and IT specialists. The BVG's employees hold a variety of certifications, such as public accounting (CPA), financial auditing (CPA auditor), internal auditing (CIA), information systems auditing (CISA and CISSP) and engineering (Eng.).

The BVG's philosophy is, on the one hand, to have an internal core of experienced professionals who, collectively, have expertise in the City's various spheres of professional activities related to the financial and performance audits (including the information technology audit), as well as to the statutory and regulatory compliance audit. On the other hand, we enlist qualified external resources to meet our specific needs for highly specialized expertise or to spread the workload inherent in the peak period related to audits of the financial statements of the City and the organizations for which the AG considers it appropriate to continue work, and sometimes to provide temporary coverage for leaves or vacancies.

6.1.3.1. Workforce Trends and Status

The number of employees as of December 31, 2021, was 33, compared with 29 at the same point in 2020. During the year, 2 employees left the BVG to retire. Internally, 1 person was promoted to the position of DAG responsible for performance and compliance audits. In addition, 6 new resources joined the BVG: two resources joined the performance and compliance audit team, 1 person joined the IT audit team and 3 persons joined the Financial audit, financial processes and administration.

The following table illustrates the BVG's workforce status by branch and by authorized and filled position as of December 31, 2021.

TABLE 2

Workforce Status as of December 31, 2021

Branch	Positions		
	Authorized	Filled	To be filled
Bureau of the Auditor General	5	4	1
Financial audit, financial processes and administration	16	14	2
Performance and compliance audit	11	9	2
Information technology audit	6	6	0
Total	38	33	5

6.1. Overview of the Bureau du vérificateur général

Following implementation of the strategic plan, the BVG's organizational structure was reviewed over the past three years. As a result, certain senior positions were converted into more junior positions in order to train new resources and thereby build a qualified workforce for the future at the BVG.

TABLE 3

Staffing Changes in 2021

Department	Positions as of December 31, 2020	Positions created	Transfer	Position abolished	Positions as of December 31, 2021
Bureau of the Auditor General	4	1	0	0	5
Financial audit, financial processes and administration	14	2	0	0	16
Performance and Compliance Audit	11	1	0	(1)	11
Information Technology Audit	6	0	0	0	6
Total	35	4	0	1	38

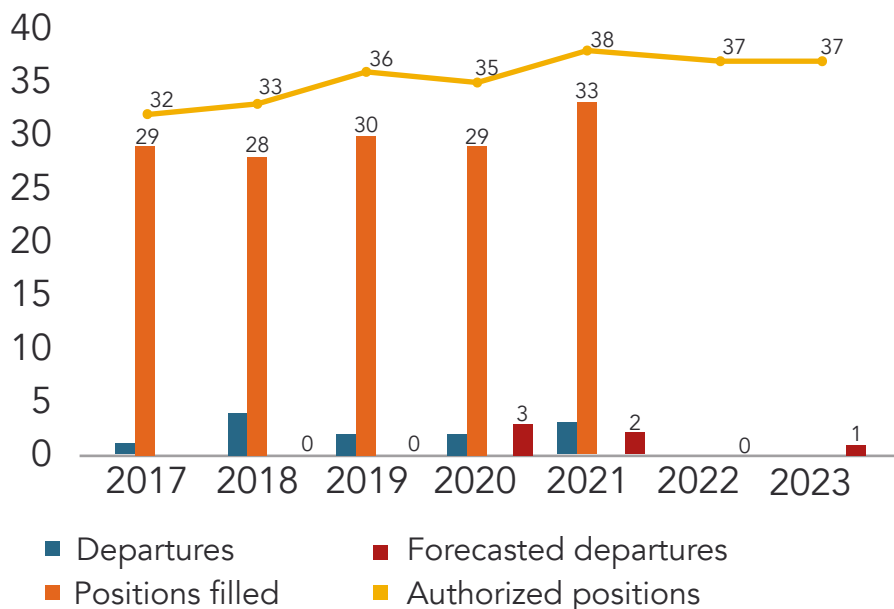
At the end of 2021, there were 5 vacant positions, compared with 6 the previous year.

Nonetheless, the efforts undertaken in recent years to attract new qualified resources continue to pay off. Although the vacancy situation remained about the same as in 2020 (6 vacant positions), most of the vacancies were for newly created positions. At the time this report was drafted, 4 of the 5 positions had already been filled, namely:

- 1 audit advisor position in the audit performance and compliance branch;
- 1 assistant auditor position in the financial audit branch;
- 1 assistant auditor position in the financial processes audit branch;
- 1 communications officer position in the AG branch.

These hires have allowed us to put in place a succession plan to compensate for the retirement of some of the BVG's most experienced resources or to meet specific needs.

The following figure illustrating the evolution and forecast of the BVG's workforce from 2017 to 2023 shows the importance of having put in place a succession plan over the past 3 years to prepare for training and ensure that expertise is maintained within the BVG. The renewal of resources ensures a certain stability for the next few years and we will continue our efforts to maintain that stability.

FIGURE 2**Evolution and Forecasting of the Workforce from 2017 to 2023**

6.1.3.2. Use of time

The following figures show the distribution of total hours and hours worked by BVG employees for the last three years.

FIGURE 3

Breakdown of Total Hours

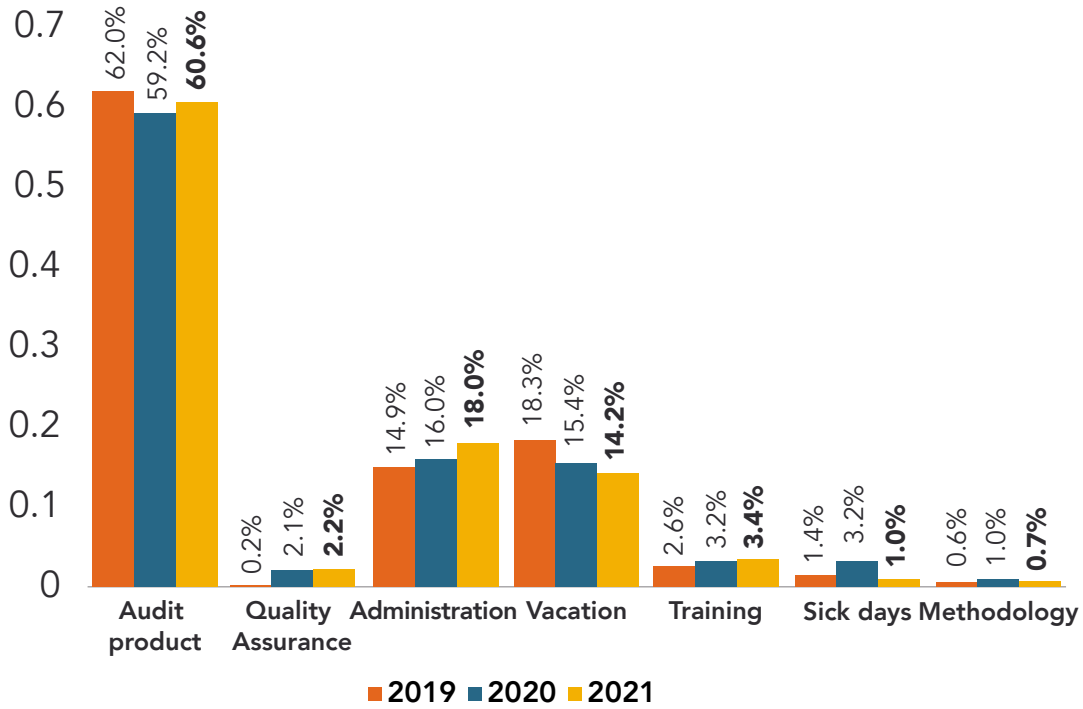
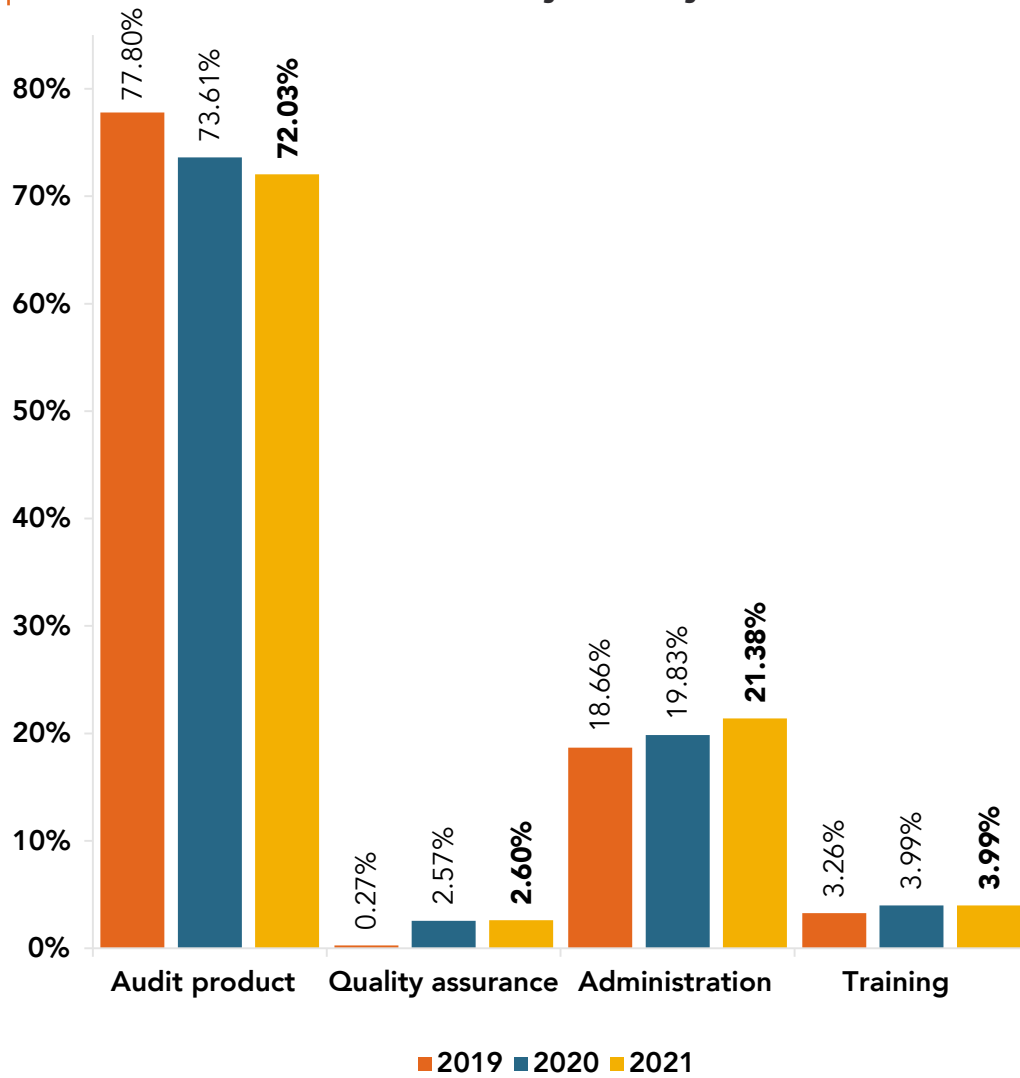


FIGURE 4

Breakdown of Hours Worked, by Activity



Audit product: includes auditing the financial statements as well as compliance, value-for-money and information technology audit.

Quality assurance: includes the time devoted to quality control of audit engagements, both during the engagement and after the fact, which control is exercised pursuant to the standards in force.

Administration: includes general administration, meetings, financial management, human resource management, goods and services acquisition, IT support and secretarial tasks.

The results shown in the previous figure indicate a slight increase of 1.55% between 2020 and 2021 in the work hours spent on administrative activities. For the last 2 years, the pandemic has contributed to an increase in administrative duties. The counterpart is reflected at the level of hours at the level of audit products.

Other indicators related to use of time and employee turnover are presented in the following tables.

6.1.3.3. Staff Turnover Rate

TABLE 4

Staff Turnover Rate (including retirement)

	2019	2020	2021
Turnover rate (including retirement)	6.9%	13.6%	9.7%

The calculation of the employee turnover rate includes retirements, resignations and transfers to other City departments and boroughs. As previously mentioned, there were 2 retirements in 2021.

A special thank you goes out to 2 employees who left the BVG for a well-deserved retirement after 31 and 32 years of service.

TABLE 5

Staff Turnover Rate (excluding retirement)

	2019	2020	2021
Turnover rate (excluding retirement)	6.9%	0.0%	3.2%

6.1.3.4. Absenteeism Rate

TABLE 6

Absenteeism Rate

	2019	2020	2021
Absenteeism rate	1.4%	3.2%	0.9%

The absenteeism rate decreased by 2.3% between 2020 and 2021, due mainly to long-term and short-term sick leaves.

6.1.3.5. Number of Hours and Cost of Training

TABLE 7

Number of Hours and Cost of Training

	2019	2020	2021
Average hours of training per employee	47	58	61
Training cost to payroll ratio	3.5%	4.0%	3.7%

Resource training is a priority for the BVG, and it is one of our objectives in our 2019-2023 strategic plan. As a result, the average number of hours spent on training increased from 58 to 61. The ratio of training costs to payroll, in accordance with the *Act to promote workforce skills development and recognition*, is down 0.3%. The decrease is due in part to a change in the operating method of the *Ordre des comptables professionnels agréés du Québec* and the fact that it was not possible to register by December 31, 2021, given that some courses were not available before that date. Had it not been for this change, the rate would have increased, given the hiring of new resources during the past year. The target set for the City as a whole is 1%.

6.1.3.6. Equal Access to Employment

Like the City, the BVG pays special attention to questions of equal access to employment. The breakdown of the representation of target groups in the *Act respecting equal access to employment in public bodies*, as of December 31 of the past 3 years, is presented in the following table.

TABLE 8

Representation of Target Groups

Target group	2019	2020	2021
Men	40%	38%	30%
Women	60%	62%	70%

Target group	2019	2020	2021
Aboriginal peoples	0.0%	0.0%	0.0%
Visible minorities	3.33%	3.45%	12.12%
Ethnic minorities	3.33%	6.90%	9.09%
Total	6.66%	10.35%	21.21%

Female representation on our staff has been growing for the past 2 years. We count more than 23 women on our staff of 33 employees, compared with 18 on the same date in 2020. The percentage of visible and ethnic minorities increased 10.9%. More than 50% of new hirings last year were from the target group, which considerably exceeds the goal of 33% set by the City.

6.1.4. Professional Service Contracts

Professional fees are the second-largest expense after the amounts spent on BVG salaries and benefits. We call on professionals to meet specific labour needs during the peak financial statement period or to temporarily fill resource gaps related to various leaves of absence or vacancies and to use highly specialized experts in areas related to our audit topics or for administrative purposes. Finally, since the BVG is administratively independent of the City, contracts were also awarded to support our infrastructure. As of December 31, 2021, a total of \$621,386 had

6.1. Overview of the Bureau du vérificateur général

been spent on professional fees (compared with \$429,359 in 2020) (see the breakdown in the following table).

The CTA (CQLR, c. C-19) authorizes the AG to conclude contracts for the purpose of acquiring goods or providing services. Consequently, because of her particular role, her mission, and the nature of her duties, the AG maintains independence in relation to contracting processes. However, the AG has a desire to be subject to the legislative and regulatory standards applicable to the City in the area of contract management, subject to exceptions, which must nevertheless be justified, if the need arises.

TABLE 9

Professional Fees

Directions	2019	2020	2021
Financial Audit	27.5%	25.7%	23.9%
Financial processes audit	-	22.8%	31.4%
Performance and Compliance Audit	19.3%	11.6%	17.0%
Information Technology Audit	22.4%	10.4%	13.1%
Administrative	30.8%	29.6%	14.6%

6.1.5. Professional Inspection

The BVG is subject to a cyclical professional inspection by the Ordre des comptables professionnels agréés du Québec (OCPAQ) in accordance with the *Regulation respecting the professional inspection committee of the Ordre des comptables professionnels agréés du Québec* and the general surveillance program developed by the committee pursuant to section 12 of the Regulation and approved by the board of directors of the OCPAQ. The last professional inspection was conducted in September 2019.

The professional inspection wore on the documentation of our quality control system, on reports of our last cyclical inspections, and on issues related to the practice of the profession in the areas of financial, compliance and performance audits. The inspection committee concluded that the BVG fulfilled the requirements of the professional inspection program in all material aspects.

The BVG carries out cyclical professional inspections conducted by peers every three years as set out in its quality assurance manual.

6.1.6. Accountability – Allegations

Allegations can be submitted to the BVG through the website, by email, by mail, by telephone or in person. It should be noted that the BVG has an email box that was created specifically for this purpose; it is highly secure because it is hosted by a messaging service outside the City.

Allegations are processed according to priority criteria, such as the nature of the claim and the degree of risk involved. A well-documented and highly secure file is created for every allegation.

All other allegations that we receive undergo a preliminary evaluation to determine whether an investigation should be initiated, based on the nature of the claim, the probative value of the information provided and the risks involved. However, a preliminary evaluation is not conducted if the subject of the allegation does not fall within the AG's purview or if the allegation is not substantial enough to warrant further investigation. Depending on the circumstances, such matters may be transferred to another City entity or closed without any further action being taken.

If an investigation is warranted, it will be conducted in accordance with recognized investigative and forensic accounting practices. Once the investigation is completed, a report may be produced and sent to the municipal administration. In cases where there is evidence of criminal wrongdoing, our findings are reported to the competent authorities.

The following table shows the distribution by category of allegations received.

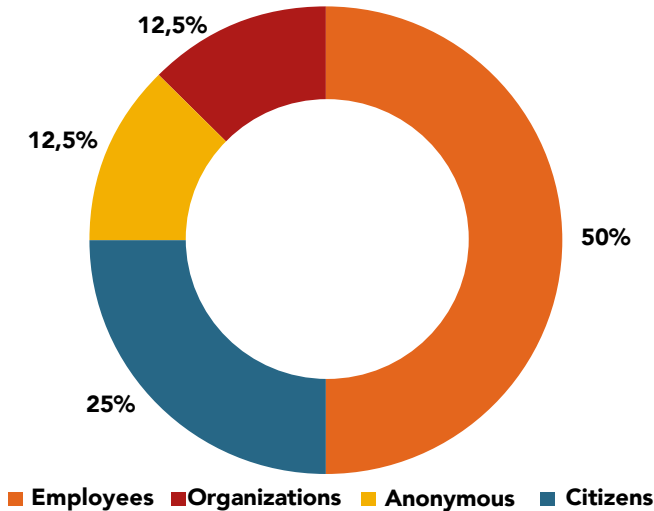
TABLE 10**Number of Allegations**

	Number of Allegations	
	2020	2021
Inadmissible allegations		
Outside the jurisdiction of the Bureau du vérificateur général	5	5
Dispute with the Ville de Montréal	0	1
Insufficient information	1	0
Subtotal	6	6
Admissible allegations		
Added to the bank of potential mandates	2	0
Included in work in progress	0	1
Subtotal	2	1
Total	8	7

The following figure shows the sources of the allegations received.

FIGURE 5

Overview of Allegations Received in 2021 by Source

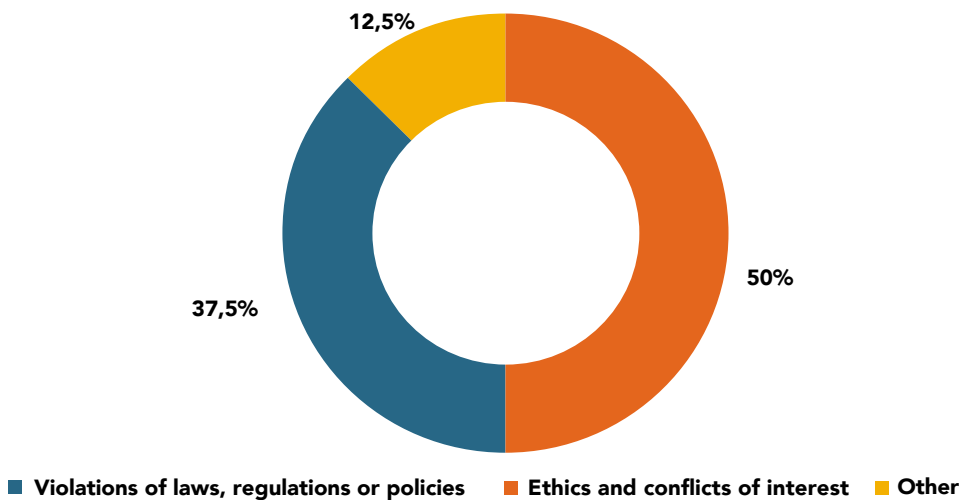


It is important to remember that we guarantee confidentiality to whistleblowers who agree to reveal their identity and that the *Public Protector Act* protects the confidentiality of whistleblowers. Furthermore, the provisions of section 107.16 of the CTA ensure that the AG cannot be forced to make a statement about information she obtained in the performance of her duties or to produce a document containing such information. This Act is supplemented by the provisions of section 41 of the *Access to Information Act*.

The following figure groups the allegations received by category of alleged wrongdoing.

FIGURE 6

Overview of Allegations Received in 2021 by Category



6.1.7. Accountability – Requests for Access to information

In accordance with section 107.6.1 of the CTA (CQLR c. C-19), the AG performs the duties conferred on the person in charge of access to documents or the protection of privacy with regard to the documents the chief auditor prepares in performing his duties or with regard to the documents he keeps for the purposes of carrying out his mandate, provided the latter documents are not also kept by a body subject to the Act.

During the course of 2021, we have not received any access to information request for which the information or documents could be held by a public body subject to the *Act respecting Access to documents held by public bodies and the Protection of personal information* (CQLR c. A-2.1) and not by the AG.

6.1.8. Technological Infrastructure

The BVG has separate servers from the City. For several years, the BVG has had an infrastructure that enables all its employees to work remotely. In addition, we make sure every year that this network is secure. For this reason, as was the case last year, we were able to pursue all our work despite the health measures in effect, with all of the BVG's employees working remotely in complete safety.

6.1.9. Promotion

Several members of the BVG participate in various working groups, committees and boards of directors of organizations associated with our profession. This gives them an opportunity to be key actors in the advancement of our profession and be on the lookout for changes that will impact our work in the future. We are actively involved in providing comments on exposure drafts issued by the Public Sector Accounting Board (PSAB).

TABLE 11

Promotion Activities

	Body	Member
Annie Cédillotte, <i>Principal Auditor – Financial Audit and Administration</i>	Ordre des CPA du Québec	<ul style="list-style-type: none"> • Technical Working Group – Certification
Mélanie Normandin, <i>Principal Auditor – Financial Audit and Administration</i>	Ordre des CPA du Québec	<ul style="list-style-type: none"> • Technical Working Group – Pension Plan
France Lessard, <i>Assistant Auditor General – Financial Audit and Administration</i>	Ordre des CPA du Québec	<ul style="list-style-type: none"> • Sectoral Working Group – Municipal Administration • Technical Working Group – Accounting in the Public Sector
Kim Tardif, <i>Officer in charge of Quality Assurance and Professional Practices</i>	Ordre des CPA du Québec	<ul style="list-style-type: none"> • Technical Working Group – Certification Reports • Technical Working Group – Accounting in the Public Sector
Michèle Galipeau, <i>Auditor General</i>	Canadian Audit and Accountability Foundation	<ul style="list-style-type: none"> • Board of Directors • Governance Committee • National Capacity Building Committee
	CPA Canada	<ul style="list-style-type: none"> • Public Sector Accounting Board (PSAB)
	Association des vérificateurs généraux municipaux du Québec	<ul style="list-style-type: none"> • Board of Directors

We encourage our employees to pursue these activities, which promote not only the Bureau, but also the profession of municipal legislative auditor.



6.2.

Follow-up – 2019–2023 Strategic Plan

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6.2. Follow-up – 2019–2023 Strategic Plan

6.2.1. Introduction

The year 2021 represents the 3rd year in the implementation of our strategic plan, which defines the objectives guiding our actions over the next 5 years.

The *2019–2023 Strategic Plan* is structured around the following 3 main orientations:

1. Increasing the added value of the interventions;
2. Implementing innovative practices to ensure the quality of the work;
3. Ensuring the continuity of the team's qualifications.

For each orientation, we set objectives along with indicators and targets to be met.

6.2.2. Accountability

We continued our audit and administrative work to enable us to attain the objectives and meet the targets we had set for 2021. A follow-up of the solutions retained by the management committee with the members of the working committees comprised of employees of the Bureau du vérificateur général (BVG) was conducted by the deputy auditors general.

6.2.2.1. Orientation 1 – Increasing the added value of the interventions

In order to increase the added value of our interventions, we had set 12 objectives to be attained over the course of the 2019–2023 period. Table 2 shows the results by objective set for the first orientation. Actions that were completed in previous years were removed from our detailed follow-up.

6.2. Follow-up – 2019–2023 Strategic Plan

Objective	Indicator	Target	Result	Cible		
				Met	Not met	N/A
1.1 Improve the performance audit selection process.	1. Implementation of a new risk matrix.	2019	Deployment in March 2019	√		
	2. Update of the risk matrix.	Annually from 2020	Update completed in December 2021	√		
	3. Improvement of the monitoring practice.	2019	Completed in 2019	√		
1.2 Conduct value-added performance audits.	1. Number of performance audit mandates focused on issues or services that directly affect citizens and the quality of services they receive.	At least one mandate per year	3 reports published in 2021	√		
	2. Number of performance audit mandates with a sustainable development dimension.	At least one mandate per year	2 reports published in 2021	√		
	3. Number of performance audit mandates focusing on information technology.	At least two mandates per year	3 reports published in 2021	√		
	4. Number of performance audit mandates focused on cybersecurity.	At least one mandate per year	1 report published in 2021	√		
	5. Number of performance audit mandates addressing major legal and regulatory compliance issues.	At least one mandate per year	No report published in 2021		√	
1.3 Conduct audits of the bodies referred to in section 107.7(3).	1. Development of an intervention strategy.	2019	Report tabled in December 2019	√		
	2. Implementation of the strategy.	2020	1 report published in 2021	√		
1.4 Conduct audits of the bodies that received subsidies from the City of Montréal.	1. Development of an intervention strategy.	2019	Report tabled in December 2019	√		
	2. Implementation of the strategy.	2019	Completed in 2021	√		
1.5 Maintain our presence in financial auditing.	1. Review of our financial audit intervention strategy.	Once a year	Review completed in May 2021	√		

Objective	Indicator	Target	Result	Cible		
				Met	Not met	N/A
1.6 Foster an increase in the rate of implementation of our recommendations.	1. Production of management charts to help reflect on the current approach to following up on the recommendations.	2019	Management charts were produced in the fall of 2018	√		
	2. Assessment of the relevance of the current approach to following up on the recommendations.	2020	Reports tabled in November 2021		√	
	3. Assessment of the degree of implementation of the new approach to following up on the recommendations.	2021 and subsequent years*	Under way			√
1.7 Put processes in place to comply with the Access to Information Act.	1. Addition of information to the website and application form.	2019	Completed in 2019	√		
	2. Drafting of the guidelines and procedures.	2019	Guidelines and procedures drafted in 2019	√		
	3. Implementation of follow-up mechanisms to meet the deadline required by law.	2019	Follow-up procedures deployed in 2019	√		
1.8 Make it easier for elected officials and other stakeholders to understand our role.	1. Drafting of documents explaining the delineation between the mission of the Bureau du vérificateur général and the interventions of the Bureau de l'inspecteur général, the Bureau du contrôleur général, the Ombudsman and the City's organizational performance group.	2019	Report tabled in 2019	√		
	2. Redesign of the website of the Bureau du vérificateur général.	2019	Redesign completed in March 2021		√	

* The target for "2021 and subsequent years" implies a 2023 deadline.

ORIENTATION 1 – INCREASING THE ADDED VALUE OF THE INTERVENTIONS					
Objective 1.1 – Improve the performance audit selection process					
INDICATOR 2 – Update of the risk matrix					
	2019	2020	2021	2022	2023
Targets	No target	Annual Update	Annual Update	Annual	Annual
Results	N/A	completed in December 2020 Target met	completed in December 2021 Target met		

The risk matrix was updated in December 2021 to reflect any changes in the administrative, normative and legislative environment of the City of Montréal (the City) and the bodies we can audit.

ORIENTATION 1 – INCREASING THE ADDED VALUE OF THE INTERVENTIONS					
Objective 1.2 – Conduct value-added performance audits					
INDICATOR 1 – Number of performance audit mandates focused on issues or services that directly affect citizens and the quality of services they receive					
	2019	2020	2021	2022	2023
Targets	1 report	1 report	1 report	1 report	1 report
Results	1 report Target met	2 reports Target met	3 reports Target met		

In 2021, we conducted 3 mandates to this effect: a 1st on *Implementing the Tree Policy – Maintenance Component*, a 2nd on the *Montréal Action Plan on Homelessness* and a 3rd on the *Management of Public Roadwork – Integrated Planning and Coordination Component*.

ORIENTATION 1 – INCREASING THE ADDED VALUE OF THE INTERVENTIONS					
Objective 1.2 – Conduct value-added performance audits					
INDICATOR 2 – Number of performance audit mandates with a sustainable development dimension					
	2019	2020	2021	2022	2023
Targets	1 report	1 report	1 report	1 report	1 report
Results	2 reports Target met	3 reports Target met	2 reports Target met		

In 2021, we conducted 2 mandates to this effect: a 1st on the *Implementing the Tree Policy – Maintenance Component* and a 2nd on the *Montréal Action Plan on Homelessness*.

ORIENTATION 1 – INCREASING THE ADDED VALUE OF THE INTERVENTIONS					
Objective 1.2 – Conduct value-added performance audits					
INDICATOR 3 – Number of performance audit mandates focusing on information technology					
	2019	2020	2021	2022	2023
Targets	2 reports	2 reports	2 reports	2 reports	2 reports
Results	3 reports	3 reports	3 reports		
	Target met	Target met	Target met		

Three audit mandates were carried out involving information technology, namely *Management of the Information Technology Used to Work Remotely*, *Centralized Identity and Access Management* and *Management of Industrial Control Systems*.

ORIENTATION 1 – INCREASING THE ADDED VALUE OF THE INTERVENTIONS					
Objective 1.2 – Conduct value-added performance audits					
INDICATOR 4 – Number of performance audit mandates focused on cybersecurity					
	2019	2020	2021	2022	2023
Targets	1 report	1 report	1 report	1 report	1 report
Results	1 report	2 reports	1 report		
	Target met	Target met	Target met		

In 2021, we performed one *Logical Penetration Tests* mandate.

ORIENTATION 1 – INCREASING THE ADDED VALUE OF THE INTERVENTIONS					
Objective 1.2 – Conduct value-added performance audits					
INDICATOR 5 – Number of performance audit mandates addressing major legal and regulatory compliance issues					
	2019	2020	2021	2022	2023
Targets	1 report	1 report	1 report	1 report	1 report
Results	1 report	1 report	No report		
	Target met	Target met	Target not met		

ORIENTATION 1 – INCREASING THE ADDED VALUE OF THE INTERVENTIONS					
Objective 1.3 – Conduct audits of the bodies referred to in section 107.7(3) of the <i>Cities and Towns Act</i>					
INDICATOR 2 – Implementation of the intervention strategy					
	2019	2020	2021	2022	2023
Targets	No target	Deployment of the intervention strategy	Deployment of the intervention strategy	Deployment of the intervention strategy	Deployment of the intervention strategy
Results	N/A	1 report	1 report		
		Target met	Target met		

6.2. Follow-up – 2019–2023 Strategic Plan

In 2021, we continued to deploy the intervention strategy that was proposed by the working committee in 2019. Thus, we conducted 1 mandate on the *Gestion des subventions et des prêts par PME MTL*.

ORIENTATION 1 – INCREASING THE ADDED VALUE OF THE INTERVENTIONS					
Objective 1.4 – Conduct audits of the bodies that received subsidies from the City of Montréal					
INDICATOR 2 – Implementation of the intervention strategy					
	2019	2020	2021	2022	2023
Targets	Deployment of the intervention strategy	Deployment of the intervention strategy	Deployment of the intervention strategy	Deployment of the intervention strategy	Deployment of the intervention strategy
Results	Completed Target met	Completed Target met	Completed Target met		

In 2019, we adopted an intervention strategy to address accountability of the bodies referred to in section 107.9 of the *Cities and Towns Act*, i.e., those that received subsidies of at least \$100,000 from the City. We thus broadened the scope of our work to select bodies for which we conduct a review of the auditor's file, based on certain criteria such as the amounts given and the nature of the projects for which subsidies were granted.

With respect to the audit, our mandate covered the management of grants and loans by PME MTL. The results of our work are presented in chapters 2. (audit) and 5.1. (reporting) of this annual report.

ORIENTATION 1 – INCREASING THE ADDED VALUE OF THE INTERVENTIONS					
Objective 1.5 – Maintain our presence in financial auditing					
INDICATOR 1 – Review of our financial audit intervention strategy					
	2019	2020	2021	2022	2023
Targets	Annual review of the intervention strategy	Annual review of the intervention strategy	Annual review of the intervention strategy	Annual review of the intervention strategy	Annual review of the intervention strategy
Results	Review completed in May 2019 Target met	Review completed in May 2020 Target met	Review completed in May 2021 Target met		

We maintained our presence with the same strategy we deemed appropriate following the passage of Bill 155 in 2018.

ORIENTATION 1 – INCREASING THE ADDED VALUE OF THE INTERVENTIONS					
Objective 1.6 – Foster an increase in the rate of implementation of our recommendations					
INDICATOR 2 – Assessment of the relevance of the current approach to following up on the recommendations					
	2019	2020	2021	2022	2023
Targets	No target	Tabling of a report to the management committee	No target	No target	No target
Results	N/A	Under way Target not met	Reports tabled in November 2021		

The tabling of 2 reports to the management committee on the working committee's findings and recommendations regarding the evaluation of the relevance of our current approach to the follow-up of the recommendations was made in November 2021. The 1st report covers the elements to be communicated in this regard to the business units while the 2nd report proposes a new way of presenting the results in our annual report.

ORIENTATION 1 – INCREASING THE ADDED VALUE OF THE INTERVENTIONS					
Objective 1.6 – Foster an increase in the rate of implementation of our recommendations					
INDICATOR 3 – Assessment of the degree of implementation of the new approach to following up on the recommendations					
	2019	2020	2021	2022	2023
Targets	No target	No target	Implementa- tion of the new approach	Implementa- tion of the new approach	Implemen- tation of the new approach
Results	N/A	N/A	Under way		

We began implementing the new approach to following up on recommendations in 2021. Indicators are now followed up monthly by the BVG, along with the timelines established with the business units for recommendations that are late or that expired more than 5 years ago. New tools have also been developed to facilitate the implementation of our recommendations.

ORIENTATION 1 – INCREASING THE ADDED VALUE OF THE INTERVENTIONS					
Objective 1.8 – Make it easier for elected officials and other stakeholders to understand our role					
INDICATOR 2 – Redesign of the website of the Bureau du vérificateur général					
	2019	2020	2021	2022	2023
Targets	Redesign of the website	No target	No target	No target	No target
Results	Website redesign under way Target not met	Website redesign under way	Website redesign completed in March 2021		

The pandemic has slowed down the pace of the work, the redesign of the website and the development of a new brand image was finalized in March 2021.

6.2.2.2. Orientation 2 – Implementing innovative practices to ensure the quality of the work

Four objectives had been identified to enable the BVG to put in place innovative practices to ensure the quality of our work in the strategic plan. The results by objective for orientation 2 are presented below. Actions that were completed in previous years were removed from our detailed follow-up.

Objective	Indicator	Target	Result	Target		
				Met	Not met	N/A
2.1 Maintain the quality of our work.	1. Proportion of the work evaluated that meets the assurance standards.	100%	100%	√		
	2. Canadian assurance standards watch.	Ongoing	Completed in 2021	√		
	3. Update of the Quality Assurance Manual	Once a year	Completed in September 2021	√		
2.2 Integrate compliance with laws, regulations and frameworks into performance audit engagements.	1. Percentage of performance audit engagements addressing legal and regulatory compliance.	100%	100%	√		
2.3 Systematically integrate assessment of risks of irregularities and fraud into the performance audit engagements.	1. Proportion of audit engagements performed that include an assessment of the risks of irregularities and fraud.	100%	100%	√		
2.4 Provide innovative technology and software tools to maintain performant audit practices and foster a paperless work environment.	1. Review of the processes of the Bureau du vérificateur général for which technology and software tools have been updated or implemented.	Once a year	Completed in 2021	√		
	2. Review of the paperless environment strategy.	2019	100% of audit files are electronic since 2019	√		
	3. Implementation of the indicators.	2020 and subsequent years*	Under way		√	

* The target for "2020 and subsequent years" implies a 2023 deadline.

ORIENTATION 2 – IMPLEMENTING INNOVATIVE PRACTICES TO ENSURE THE QUALITY OF THE WORK					
Objective 2.1 – Maintain the quality of our work					
INDICATOR 1 – Proportion of the work evaluated that meets the assurance standards					
	2019	2020	2021	2022	2023
Targets	100%	100%	100%	100%	100%
Results	100%	100%	100%		
	Target met	Target met	Target met		

We have maintained the quality of our work by ensuring throughout 2021 that we met the applicable assurance standards and by keeping a constant watch on these standards.

ORIENTATION 2 – IMPLEMENTING INNOVATIVE PRACTICES TO ENSURE THE QUALITY OF THE WORK					
Objective 2.1 – Maintain the quality of our work					
INDICATOR 2 – Canadian assurance standards watch					
	2019	2020	2021	2022	2023
Targets	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing
Results	Completed	Completed	Completed		
	Target met	Target met	Target met		

In 2021, several members of the BVG continued to participate in working groups, committees and boards of directors of organizations associated with our profession. Our outreach activities are presented in more detail in Chapter 6.1. (status of the Bureau du vérificateur général) of this report.

ORIENTATION 2 – IMPLEMENTING INNOVATIVE PRACTICES TO ENSURE THE QUALITY OF THE WORK					
Objective 2.1 – Maintain the quality of our work					
INDICATOR 3 – Update of the Quality Assurance Manual					
	2019	2020	2021	2022	2023
Targets	Annually	Annually	Annually	Annually	Annually
Results	Completed in January 2019	Completed in February 2020	Completed in September 2021		
	Target met	Target met	Target met		

ORIENTATION 2 – IMPLEMENTING INNOVATIVE PRACTICES TO ENSURE THE QUALITY OF THE WORK					
Objective 2.2 – Integrate compliance with laws, regulations and frameworks into performance audit engagements					
INDICATOR 1 – Percentage of performance audit engagements addressing legal and regulatory compliance					
	2019	2020	2021	2022	2023
Targets	100%	100%	100%	100%	100%
Results	100%	100%	100%		
	Target met	Target met	Target met		

For each mandate completed in 2021, we always made sure to include these elements.

ORIENTATION 2 – IMPLEMENTING INNOVATIVE PRACTICES TO ENSURE THE QUALITY OF THE WORK					
Objective 2.3 – Systematically integrate assessment of risks of irregularities and fraud into the performance audit engagements					
INDICATOR 1 – Proportion of the audit engagements performed that include an assessment of the risks of irregularities and fraud					
	2019	2020	2021	2022	2023
Targets	100%	100%	100%	100%	100%
Results	100%	100%	100%		
	Target met	Target met	Target met		

For each mandate completed in 2021, we always made sure to include these elements.

ORIENTATION 2 – IMPLEMENTING INNOVATIVE PRACTICES TO ENSURE THE QUALITY OF THE WORK					
Objective 2.4 – Provide innovative technology and software tools to maintain performant audit practices and foster a paperless work environment					
INDICATOR 1 – Review of the processes of the Bureau du vérificateur général for which technology and software tools have been updated or implemented					
	2019	2020	2021	2022	2023
Targets	Annually	Annually	Annually	Annually	Annually
Results	Completed	Completed	Completed		
	Target met	Target met	Target met		

ORIENTATION 2 – IMPLEMENTING INNOVATIVE PRACTICES TO ENSURE THE QUALITY OF THE WORK					
Objective 2.4 – Provide innovative technology and software tools to maintain performant audit practices and foster a paperless work environment					
INDICATOR 3 – Implementation of the indicators					
	2019	2020	2021	2022	2023
Targets	No target	Tabling of a report to the management committee	Implementation of new indicators	Implementation of new indicators	Implementation of new indicators
Results	N/A	Under way Target not met	Under way		

Two new indicators, continual monitoring of technology and yearly assessment of the lifecycle of equipment, were defined and presented to the management committee in January 2022. Implementation of these new indicators will begin in 2022.

6.2.2.3. Orientation 3–Ensuring the continuity of the team’s qualifications

To ensure the continuity of the team’s qualifications, we had identified 3 objectives. The detailed results by objective for orientation 3 are presented below. Actions that were completed in previous years were removed from our detailed follow-up.

Objective	Indicator	Target	Result	Target		
				Met	Not met	N/A
3.1 Attract and retain the best resources to fully carry out the mission of the Bureau du vérificateur général and ensure the continuity of its expertise.	1. Development of a talent attraction and retention strategy.	2019	Report tabled in December 2019	√		
	2. Implementation of indicators.	2020	Completed in 2021		√	
3.2 Promote and support the development of the staff’s expertise based on the needs of the Bureau du vérificateur général.	1. Establishment of an expertise development path for each employee.	2020	Under way		√	
	2. Provision of a minimum number of days of training per employee.	6 days per year	8.7 days	√		
3.3 Achieve and maintain a high level of staff engagement.	1. Development of a skills assessment, succession planning, coaching and mentoring program.	2019	Completed in November 2021		√	
	2. Implementation of the skills assessment, succession planning, coaching and mentoring program.	2020	Completed in November 2021		√	

ORIENTATION 3 – ENSURING THE CONTINUITY OF THE TEAM'S QUALIFICATIONS

Objective 3.1 – Attract and retain the best resources to fully carry out the mission of the Bureau du vérificateur général and ensure the continuity of its expertise

INDICATOR 2 – Implementation of indicators

	2019	2020	2021	2022	2023
Targets	No target	Tabling of a report to the management committee	No target	No target	No target
Results	N/A	Under way Target not met	Completed		

In 2021, indicators were approved by the management committee, thus enabling the preparation of a personalized skills development plan for each employee. In 2021, we also created a profile for the BVG on the professional social network LinkedIn to increase our visibility and to attract potential applicants.

ORIENTATION 3 – ENSURING THE CONTINUITY OF THE TEAM'S QUALIFICATIONS

Objective 3.2 – Promote and support the development of the staff's expertise based on the needs of the Bureau du vérificateur général

INDICATOR 1 – Establishment of an expertise development path for each employee

	2019	2020	2021	2022	2023
Targets	No target	Tabling of a report to the management committee	No target	No target	No target
Results	N/A	Under way Target not met	Under way		

In 2021, the management committee approved a template to establish the background and expertise of employees. Subsequently, a personalized skills development plan was prepared and approved for each employee. The aim of the BVG is to develop a career plan for each employee in 2022.

ORIENTATION 3 – ENSURING THE CONTINUITY OF THE TEAM'S QUALIFICATIONS

Objective 3.2 – Promote and support the development of the staff's expertise based on the needs of the Bureau du vérificateur général

INDICATOR 2 – Provision of a minimum number of days of training per employee

	2019	2020	2021	2022	2023
Targets	6 days	6 days	6 days	6 days	6 days
Results	6.7 days Target met	8.3 days Target met	8.7 days Target met		

6.2. Follow-up – 2019–2023 Strategic Plan

We continue to promote training for members of the BVG.

ORIENTATION 3 – ENSURING THE CONTINUITY OF THE TEAM'S QUALIFICATIONS					
Objective 3.3 – Achieve and maintain a high level of staff engagement					
INDICATOR 1 – Development of a skills assessment, succession planning, coaching and mentoring program					
	2019	2020	2021	2022	2023
Targets	Tabling of the program to the management committee	No target	No target	No target	No target
Results	Under way Target not met	Under way	Completed in November 2021		

In 2021, the annual evaluation grid served as a basis for producing a personalized skills development plan for each employee highlighting elements to work on to enable the employee to acquire the desired skills. A strategy for new hires was also implemented whereby a mentor (more experienced employee) is assigned to each new employee to ease their integration into the team.

ORIENTATION 3 – ENSURING THE CONTINUITY OF THE TEAM'S QUALIFICATIONS					
Objective 3.3 – Achieve and maintain a high level of staff engagement					
INDICATOR 2 – Implementation of the skills assessment, succession planning, coaching and mentoring program					
	2019	2020	2021	2022	2023
Targets	No target	Deployment of the program	No target	No target	No target
Results	N/A	Under way Target not met	Completed		

All employees received their first annual evaluation in 2021. This helped identify the training needs of each employee and ensure succession management.



7.

Appendices

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7.1.

Excerpts from *the Cities and Towns Act*

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Auditor General of the Ville de Montréal

7.1. Excerpts from the *Cities and Towns Act*

7.1. Excerpts from the *Cities and Towns Act*

IV.1. — *Chief auditor*

2001, c. 25, s. 15.

a. — *Appointment*

2018, c. 8, s. 33.

- 107.1.** The council of every municipality having 100,000 inhabitants or more shall have an officer called the chief auditor who is a member of the Ordre des comptables professionnels agréés du Québec.
- 2001, c. 25, s. 15; 2018, c. 8, s. 34.
- 107.2.** The chief auditor shall, by a resolution approved by a two-thirds majority of the votes of the members of the council, be appointed for a single term of seven years.
- 2001, c. 25, s. 15; 2018, c. 8, s. 35.
- 107.2.1** The chief auditor shall perform his duties of office exclusively and on a full-time basis. However, he may participate in educational activities, in particular as an instructor, or professional activities within associations of auditors, educational or research institutions, committees within his professional order, or the Association des vérificateurs généraux municipaux du Québec.
- 2018, c. 8, s. 36.

107.3. In no case may the following persons act as chief auditor:

- 1° a member of the council of the municipality and, where applicable, of a borough council;
- 2° the associate of a member mentioned in subparagraph 1;
- 3° a person who, personally or through an associate, has any direct or indirect interest in a contract with the municipality, a legal person referred to in subparagraph 2 of the first paragraph of section 107.7 or a body referred to in subparagraph 3 of that paragraph;
- 4° a person who, in the four years preceding his appointment, was a member of a council, or an employee or officer, of the municipality, unless the person was an employee under the direction of the chief auditor during all or part of those years.

The chief auditor shall disclose in every report produced any situation that could cause a conflict between the chief auditor's personal interest and duties of office.

2001, c. 25, s. 15; 2018, c. 8, s. 37.

107.4. If the chief auditor is unable to act, or if the office of chief auditor is vacant, the council shall:

- 1° not later than at the sitting following the inability to act or the vacancy, designate a person qualified to replace the chief auditor, for a period of not more than 180 days;
- 2° not later than at the sitting following the inability or the vacancy, or not later than at the sitting following the expiry of the period fixed under paragraph 1, appoint a new chief auditor in accordance with section 107.2.

2001, c. 25, s. 15.

b. — Operating expenses**2018, c. 8, s. 38.**

107.5. The budget of the municipality shall include an appropriation to provide for payment of a sum to the chief auditor to cover the expenses relating to the exercise of the chief auditor's duties.

Subject to the third paragraph, the appropriation must be equal to or greater than the sum of A + B + C where:

1° A is \$500,000;

2° B is the product obtained by multiplying 0.13% by the portion of the appropriations provided for in the budget for operating expenses that is equal to or greater than \$345,000,000 but less than \$510,000,000; and

3° C is the product obtained by multiplying 0.11% by the portion of the appropriations provided for in the budget for operating expenses that is equal to or greater than \$510,000,000.

Where the budget of the municipality provides for appropriations for operating expenses related to the operation of a system of production, transmission or distribution of electric power, 50% only of those appropriations shall be taken into account in establishing the total of the appropriations referred to in the second paragraph.

2001, c. 25, s. 15; 2001, c. 68, s. 5; 2018, c. 8, s. 39.

c. — Mandate

2018, c. 8, s. 40.

- 107.6.** The chief auditor is responsible for the application of the municipality's policies and standards relating to the management of the human, material and financial resources assigned to auditing.

2001, c. 25, s. 15.

- 107.6.1.** Despite section 8 of the Act respecting Access to documents held by public bodies and the Protection of personal information (chapter A-2.1), the chief auditor shall perform the duties conferred by that Act on the person in charge of access to documents or the protection of personal information with regard to the documents the chief auditor prepares in performing his duties or with regard to the documents he keeps for the purposes of his mandate, provided the latter documents are not also kept by a body subject to that Act.

The chief auditor shall transmit without delay to the person in charge of access to documents or the protection of personal information within a concerned body any application he receives concerning documents that are also kept by the body.

2018, c. 8, s. 41.

107.7.

The chief auditor shall audit the accounts and affairs:

- 1° of the municipality;
- 2° of every legal person
 - a) that is part of the reporting entity defined in the municipality's financial statements;
 - b) of which the municipality or a mandatary of the municipality appoints more than 50% of the members of the board of directors; or
 - c) of which the municipality or a mandatary of the municipality holds more than 50% of the outstanding voting shares or units;
- 3° of any body referred to in the first paragraph of section 573.3.5, provided
 - a) in the case of a body referred to in subparagraph 1 of the first paragraph of that section, it is the mandatary or agent of the municipality;
 - b) under subparagraph 2 of the first paragraph of that section, the majority of the members of its board of directors are members of the council of, or are appointed by, the municipality;
 - c) its budget is adopted or approved by the municipality;
 - d) in the case of a body referred to in subparagraph 4 of the first paragraph of that section, it receives part or all of its financing from the municipality; or
 - e) or in the case of a body designated under subparagraph 5 of the first paragraph of that section, it has its principal place of business in the territory of the municipality.

If, under this section, section 108.2.0.1, article 966.2.1 of the Municipal Code of Québec (chapter C-27.1) or section 86 of the Act respecting the Commission municipale (chapter C-35), a mandate to audit certain aspects of the accounts and affairs of a body referred to in section 573.3.5 is entrusted to more than one auditor, the audit of those aspects must be conducted exclusively by the following designated auditor:

- 1° the chief auditor of the municipality with the largest population;
- 2° if no chief auditor of a municipality is concerned, the Commission municipale du Québec;
- 3° if neither a chief auditor of a municipality nor the Commission is concerned, the external auditor of the municipality with the largest population

2001, c. 25, s. 15; 2010, c. 18, s. 20; 2018, c. 8, s. 42.

107.8. The audit of the affairs and accounts of the municipality and of any legal person or body referred to in subparagraph 2 or 3 of the first paragraph of section 107.7 includes, to the extent considered appropriate by the chief auditor, financial auditing, auditing for compliance of their operations with the Acts, regulations, policies and directives, and auditing for value-for-money.

The audit must not call into question the merits of the policies and objectives of the municipality or legal persons or bodies referred to in subparagraph 2 or 3 of the first paragraph of section 107.7.

The chief auditor in the performance of his duties is authorized:

1° to examine any document concerning the affairs and accounts relating to the objects of the audit;

2° to require from any employee of the municipality or any legal person or body referred to in subparagraph 2 or 3 of the first paragraph of section 107.7 all information, reports and explanations the chief auditor considers necessary.

2001, c. 25, s. 15; 2001, c. 68, s. 6; 2018, c. 8, s. 43.

107.9. Any legal person receiving an annual subsidy from the municipality of at least \$100,000 is required to have its financial statements audited..

The auditor of a legal person not referred to in paragraph 2 of section 107.7 that receives an annual subsidy from the municipality of at least \$100,000 shall transmit to the chief auditor a copy of:

1° the annual financial statements of the legal person;

2° the auditor's report on the statements;

3° any other report summarizing the auditor's findings and recommendations to the board of directors or the officers of the legal person.

That auditor shall also, on the request of the chief auditor:

1° place at the disposal of the chief auditor any document relating to the auditor's audit and its results;

2° provide all information and explanations the chief auditor considers necessary concerning the auditor's audit and its results.

Where the chief auditor considers that the information, explanations and documents provided by an auditor under the second paragraph are insufficient, the chief auditor may conduct such additional audit as he considers necessary.

2001, c. 25, s. 15.

- 107.10.** The chief auditor may conduct an audit of the accounts or documents of any person or body having received financial assistance from the municipality or from a legal person or body referred to in subparagraph 2 or 3 of the first paragraph of section 107.7 to verify the use made of such assistance.

The municipality and the person or body having received the financial assistance are required to furnish to or place at the disposal of the chief auditor any accounts and documents that the chief auditor considers relevant to the performance of the chief auditor's duties.

The chief auditor is authorized to require from any officer or employee of the municipality or from any person or body having received financial assistance any information, reports and explanations the chief auditor considers necessary to the performance of the chief auditor's duties.

2001, c. 25, s. 15; 2018, c. 8, s. 44.

- 107.11.** The chief auditor may conduct an audit of the pension plan or pension fund of a pension committee of a municipality or a legal person referred to in paragraph 2 of section 107.7 where the committee requests the chief auditor to do so with the approval of the council.

2001, c. 25, s. 15.

- 107.12.** The chief auditor shall, every time the council so requests, investigate and report on any matter within the competence of the chief auditor. In no case, however, may the investigation take precedence over the primary responsibilities of the chief auditor.

2001, c. 25, s. 15.

d. — Reporting

2018, c. 8, s. 45.

107.13. Not later than 31 August each year, the chief auditor shall transmit a report presenting the results of the audit for the fiscal year ended on 31 December to the mayor of the municipality, or to the legal person or body, that was audited.

A report on the audit of a legal person or body shall also be transmitted to the mayor of a municipality related to the legal person or body under subparagraph 2 or 3 of the first paragraph of section 107.7, subparagraph 4 or 5 of the first paragraph of section 85 of the Act respecting the Commission municipale (chapter C-35), or subparagraph 2 or 3 of the first paragraph of article 966.2 of the Municipal Code of Québec (chapter C-27.1).

Where applicable, the report must also indicate any fact or irregularity concerning, in particular:

- 1° control of revenue including assessment and collection;
- 2° control of expenditure, including authorization, and compliance with appropriations
- 3° control of assets and liabilities including related authorizations;
- 4° accounting for operations and related statements;
- 5° control and safeguard of property owned or administered;
- 6° acquisition and utilization of resources without sufficient regard to economy or efficiency;
- 7° implementation of satisfactory procedures to measure and report effectiveness in cases where it is reasonable to do so.

The chief auditor may also, at any time, transmit to the mayor of a municipality or to a legal person or body a report presenting his findings and recommendations. Such a report concerning a person or body must also be transmitted to the mayor of a municipality related to the person or body under the provisions mentioned in the second paragraph.

The mayor of a municipality shall file any report he receives under this section at the first regular sitting of the council following receipt of the report.

2001, c. 25, s. 15; 2010, c.18, s. 21; 2018, c. 8, s. 46.

107.14. *(Repealed).*

2001, c. 25, s. 15; 2006, c. 31, s. 16; 2010, c. 18, s. 22; 2017, c. 13, s. 50; 2018, c. 8, s. 47

107.15. *(Repealed).*

2001, c. 25, s. 15; 2018, c. 8, s. 47.

e. — Immunity

2018, c. 8, s. 48.

107.16. Notwithstanding any general law or special Act, neither the chief auditor nor the employees under the chief auditor's direction or the professionals under contract may be compelled to give testimony relating to any information obtained in the performance of their duties or to produce any document containing such information.

Neither the chief auditor nor the employees under the chief auditor's direction may be prosecuted by reason of any act they have done or failed to do in good faith in the performance of their duties.

No civil action may be instituted by reason of the publication of a report of the chief auditor prepared under this Act or of the publication in good faith of an extract or summary of such a report.

Except on a question of jurisdiction, no application for judicial review under the Code of Civil Procedure (chapter C-25.01) may be exercised nor any injunction granted against the chief auditor, the employees under the chief auditor's direction or the professionals under contract acting in their official capacity.

A judge of the Court of Appeal, on an application, may summarily annul any proceeding instituted or decision rendered contrary to the provisions of the first paragraph.

2001, c. 25, s. 15; I.N. 2016-01-01 (NCCP).

107.17. The council may establish an audit committee and determine its composition and powers.

Despite the first paragraph, in the case of the urban agglomeration of Montréal, the council must establish an audit committee composed of not more than 10 members appointed on the proposal of the mayor of the central municipality. Two of the committee members must be council members representing the reconstituted municipalities. Those two members shall take part in deliberations and votes of the committee on any matter related to an urban agglomeration power.

In addition to the other powers that may be entrusted to it, the committee established in the case of the urban agglomeration of Montréal shall submit opinions to the urban agglomeration council on the requests, findings and recommendations of the chief auditor concerning the urban agglomeration. It shall also inform the chief auditor of the interests and concerns of the urban agglomeration council with respect to the audit of the accounts and affairs of the central municipality. On an invitation by the committee, the chief auditor or a person designated by the chief auditor may attend a sitting and take part in deliberations.

2001, c. 25, s. 15; 2008, c. 19, s. 11; 2009, c. 26, s. 19.

V. — External auditor

2001, c. 25, s. 16.

108. The council shall appoint an external auditor for not less than three nor more than five fiscal years. At the end of the term, the external auditor shall remain in office until replaced or reappointed.

In the case of a municipality with a population of at least 10,000 but less than 100,000 inhabitants, the council may appoint two external auditors. In such a case, the council shall entrust one auditor with the audit mandates under section 108.2 and the other with the audit mandate under section 108.2.0.1.

Every external auditor must be a member of the Ordre des comptables professionnels agréés du Québec.

When carrying out their value-for-money audit mandate and despite any general law or special Act, neither an external auditor nor the employees under the external auditor's direction or the professionals under contract may be compelled to give testimony relating to any information obtained in the performance of their duties or to produce any document containing such information. A judge of the Court of Appeal may, on an application, summarily annul any proceeding instituted or decision rendered contrary to this paragraph.

Neither an external auditor nor the employees under the external auditor's direction may be prosecuted for any act they have done or failed to do in good faith in the performance of the duties related to their value-for-money audit mandate.

No civil action may be instituted for the publication of a report of an external auditor prepared under this Act in connection with a value-for-money audit mandate or the publication in good faith of an extract or summary of such a report.

Except on a question of jurisdiction, no application for judicial review under the Code of Civil Procedure (chapter C-25.01) may be exercised nor any injunction granted against an external auditor, the employees under the external auditor's direction or the professionals under contract when the external auditor, employees or professionals are acting in their official capacity in connection with their value-for-money audit mandate.

R. S. 1964, c. 193, s. 104; 1975, c. 66, s. 11; 1984, c. 38, s. 11; 1995, c. 34, s. 12; 1996, c. 27, s. 12; 1999, c. 43, s. 13; 2001, c. 25, s. 17; 2003, c. 19, s. 110, s. 250; 2005, c. 28, s. 196; 2009, c. 26, s. 109; 2016, c. 17, s. 8; 2018, c. 8, s. 49.

108.1. If the office of the external auditor becomes vacant before the expiry of his term, the council shall fill the vacancy as soon as possible.

1984, c. 38, s. 11; 2001, c. 25, s. 18; 2003, c. 19, s. 111.

108.2. The external auditor of a municipality having less than 100,000 inhabitants, or the external auditor designated by the council where two external auditors have been appointed, shall audit, for the fiscal year for which he was appointed:

- 1° the financial statements of the municipality and of any legal person referred to in subparagraph 4 of the first paragraph of section 85 of the Act respecting the Commission municipale (chapter C-35) that is related to the municipality in the manner provided for in that subparagraph;
- 2° the effective aggregate taxation rate to verify its compliance with Division III of Chapter XVIII.1 of the Act respecting municipal taxation (chapter F-2.1);
- 3° any document determined by the Minister of Municipal Affairs, Regions and Land Occupancy by a regulation published in *the Gazette officielle du Québec*.

1984, c. 38, s. 11; 1996, c. 2, s. 209; 1999, c. 43, s. 13; 2001, c. 25, s. 19; 2003, c. 19, s. 250; 2005, c. 28, s. 196; 2006, c. 31, s. 17; 2009, c. 26, s. 109; 2017, c. 13, s. 51; 2018, c. 8, s. 50.

108.2.0.1. In addition to his mandate under section 108.2, the external auditor of a municipality having at least 10,000 but less than 100,000 inhabitants, or the designated auditor, as applicable, shall conduct, to the extent he considers appropriate, a value-for-money audit of the municipality and of any legal person or any body referred to in subparagraph 4 or 5 of the first paragraph of section 85 of the Act respecting the Commission municipale ([chapter C-35](#)) that is related to the municipality in the manner provided for in that subparagraph.

Such an audit must be completed once every two years.

The auditor shall report to the council on his audit.

If, under this section, section 107.7, article 966.2.1 of the Municipal Code of Québec ([chapter C-27.1](#)) or section 86 of the Act respecting the Commission municipale, a mandate to audit certain aspects of the accounts and affairs of a body referred to in the first paragraph of section 573.3.5 is entrusted to more than one auditor, the audit of those aspects must be conducted exclusively by the following designated auditor:

- 1° the chief auditor of the municipality with the largest population;
- 2° if no chief auditor of a municipality is concerned, the Commission municipale du Québec; or
- 3° if neither a chief auditor of a municipality nor the Commission is concerned, the external auditor of the municipality with the largest population.

2018, c. 8, s. 51.

108.2.0.2. A municipality referred to in section 108.2.0.1 may, by by-law, entrust to the Commission municipale du Québec the audit mandate provided for in that section. An authenticated copy of the by-law must be transmitted to the Commission without delay.

A by-law made under the first paragraph applies from the fiscal year following that of its coming into force, provided it comes into force before 1 September; if it does not, the by-law applies from the second fiscal year following that of its coming into force. Section 108.2.0.1 ceases to apply to the municipality's external auditor as of that fiscal year.

Despite the third paragraph of section 86 of the Act respecting the Commission municipale (chapter C-35), the audit mandate entrusted to the Commission by a by-law adopted under this section must be carried out once every two years.

The by-law may not be repealed.

2018, c. 8, s. 51.

108.2.1. The external auditor of a municipality having 100,000 inhabitants or more shall audit, for the fiscal year for which he was appointed:

1° the accounts and affairs of the chief auditor;

2° the financial statements of the municipality and of any legal person referred to in subparagraph 2 of the first paragraph of section 107.7;

3° the effective aggregate taxation rate to verify its compliance with Division III of Chapter XVIII.1 of the Act respecting municipal taxation (chapter F-2.1); and

4° any document determined by the Minister of Municipal Affairs, Regions and Land Occupancy by a regulation published in the *Gazette officielle du Québec*.

2001, c. 25, s. 20; 2001, c. 68, s. 7; 2003, c. 19, s. 250; 2005, c. 28, s. 196; 2009, c. 26, s. 109; 2017, c. 13, s. 52; 2018, c. 8, s. 52.

108.2.2. An audit conducted by an external auditor must not call into question the merits of the policies and objectives of the municipality or of a person or body whose accounts and affairs are being audited.

2018, c. 8, s. 53.

108.3. Each year, not later than on the date determined by the municipal council, the external auditor shall transmit any report for the preceding fiscal year that was made under section 108.2, 108.2.0.1 or 108.2.1 to the treasurer of the municipality concerned or to the legal person or body concerned.

Any report on the audit of a legal person or a body must also be transmitted to the mayor of a municipality related to the legal person or body under subparagraph 2 or 3 of the first paragraph of section 107.7 or under subparagraph 4 or 5 of the first paragraph of section 85 of the Act respecting the Commission municipale ([chapter C-35](#)).

Any report made under section 108.2.0.1 on the value-for-money audit of a municipality having at least 10,000 but less than 100,000 inhabitants must also be transmitted to the Commission municipale du Québec not later than 30 September following the last fiscal year to which the report pertains. The Commission shall publish the report on its website.

The treasurer of a municipality shall file any report he receives under this section at the first regular sitting of the council following receipt of the report.

1984, c. 38, s. 11; 2001, c. 25, s. 21; 2010, c. 18, s. 23; 2017, c. 13, s. 53; 2018, c. 8, s. 54.

108.4. The council may require any other audit it considers necessary, and require a report.

However, a council may not ask the external auditor for audits that fall under the mandate assigned to the Commission municipale du Québec under the Act respecting the Commission municipale ([chapter C-35](#)).

1984, c. 38, s. 11; 2018, c. 8, s. 55.

108.4.1. The external auditor shall have access to the books, accounts, securities, documents and vouchers and may require the employees of the municipality to furnish any information and explanations necessary for the performance of the external auditor's mandate.

2001, c. 25, s. 22.

108.4.2. The chief auditor shall place at the disposal of the external auditor all books, statements and other documents prepared or used by the chief auditor during the audit conducted under section 107.7 and that the external auditor considers necessary to carry out his mandate.

2001, c. 25, s. 22; 2005, c. 28, s. 49.

- 108.5.** In no case may the following persons act as external auditor of the municipality;
- 1° a member of the council of the municipality and, where applicable, of a borough council;
 - 2° an officer or an employee of the municipality;
 - 3° the associate of a person mentioned in paragraph 1 or 2;
 - 4° a person who, during the fiscal year for which the audit is carried out, has, directly or indirectly, personally or through his associate, any participation, interest or commission in or under a contract with the municipality or in respect of such a contract, or who derives any benefit from the contract, unless his connection with the contract arises from the practice of his profession.

1984, c. 38, s. 11; 1996, c. 2, s. 209; 1999, c. 40, s. 51; 2001, c. 25, s. 23.

- 108.6.** The external auditor may be an individual or a partnership. The external auditor may entrust his employees with his work but his responsibility is then the same as if he had performed all the work personally.

1984, c. 38, s. 11; 1999, c. 40, s. 51; 2001, c. 25, s. 24.

VII. — Director general

- 113.** The director general is the chief officer of the municipality.

The director general has authority over all the other officers and employees of the municipality, except the chief auditor, who reports directly to the council. With respect to an officer or employee whose duties are prescribed by law, the authority of the director general is exercised only within the framework of his duties as the administrator of human, material and financial resources of the municipality and may in no case hinder the carrying out of duties that are prescribed by law.

The director general may suspend an officer or employee from his duties. He shall immediately make a report of the suspension to the council. The council shall decide the case of the suspended officer or employee, after inquiry.

R. S. 1964, c. 193, s. 109; 1968, c. 55, s. 5; 1983, c. 57, s. 50; 2001, c. 25, s. 27.



7.2.

**Report of the
Independent Auditor**

2021 ANNUAL REPORT
Auditor General of the Ville de Montréal

7.2. Report of the Independent Auditor

Accounts statement of the
Bureau du vérificateur général of the
Ville de Montréal

Year ended December 31, 2021

7.2. Report of the Independent Auditor



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Independent Auditor's Report

To the Mayor,
the Chairman and Members of the Executive Committee,
the Members of the Municipal Council of the Ville de Montréal, and
the Members of the Agglomeration Council of the Ville de Montréal

Opinion

We have audited the accounts statement of the Bureau du vérificateur général of the Ville de Montréal (the "Bureau du vérificateur général") for the year ended December 31, 2021, and the note to the statement, including a summary of significant accounting policies (collectively referred to as the "statement").

In our opinion, the accompanying statement for the year ended December 31, 2021, is prepared, in all material respects, in accordance with the basis of accounting described in Note 1 to the statement.

Basis for Opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards ("Canadian GAAS"). Our responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of the Statement* section of our report. We are independent of the Ville de Montréal in accordance with the ethical requirements that are relevant to our audit of the statement in Canada, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Emphasis of Matter – Basis of Accounting

We draw attention to Note 1 to the statement, which describes the basis of accounting. The statement is prepared to assist the Bureau du vérificateur général to meet the requirements of the section 108.2.1 of the *Cities and Towns Act*. As a result, the statement may not be suitable for another purpose. Our opinion is not modified in respect of this matter.

Responsibilities of Management for the Statement

Management of the Bureau du vérificateur général is responsible for the preparation of the statement in accordance with the basis of accounting described in Note 1, and for such internal control as management determines is necessary to enable the preparation of a statement that is free from material misstatement, whether due to fraud or error.

Auditor's Responsibilities for the Audit of the Statement

Our objectives are to obtain reasonable assurance about whether the statement is free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian GAAS will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of this statement.

7.2. Report of the Independent Auditor

As part of an audit in accordance with Canadian GAAS, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the statement, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Bureau du vérificateur général's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates, if any, and related disclosures made by management.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Deloitte LLP

April 13, 2022

¹ CPA auditor, CA, public accountancy permit No. A116207

Bureau du vérificateur général of the Ville de Montréal**Accounts statement**

Year ended December 31, 2021

(In thousands of dollars)

	2021⁽¹⁾	2021	2020
	Budget	Actual	Actual
	\$	\$	\$
Compensation of personnel	5,340	5,119	4,935
Professional, technical and administrative services	1,283	704	547
Other operating expenses	106	118	76
Total	6,729	5,941	5,558

⁽¹⁾ Approved budget, as modified, presented in the accounting system of the Ville de Montréal for the Bureau du vérificateur général and adopted by the municipal council and the agglomeration council of the Ville de Montréal.

Bureau du vérificateur général of the Ville de Montréal

Note to the accounts statement

December 31, 2021

1. Accounting policy

This accounts statement of the Bureau du vérificateur général was prepared in accordance with the recognition and measurement principles of Canadian public sector accounting standards, according to the same accounting policies described in Note 2 to the consolidated financial statements of the Ville de Montréal for the year ended December 31, 2021, with the exception that fixed assets are not capitalized and amortization that would result from them is not considered.

