



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

For the Year Ended December 31, 2015

4.9

**Management of
Construction and
Renovation Work
on Ville de Montréal
Buildings**



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List of Acronyms

BMF	bibliothèque Marc-Favreau	PAF	project approval file
CGP	Cadre de gouvernance des projets et des programmes de gestion d'actifs municipaux	RAC	Programme de rénovation, d'agrandissement et de construction de bibliothèques
FTP	Functional and technical program	RLPP	Rosemont–La Petite-Patrie
MELS	ministère de l'Éducation, du Loisir et du Sport	SC	Service de la culture
MHM	Mercier–Hochelaga-Maisonneuve	SGPI	Service de la gestion et de la planification immobilière
NPO	non-profit organization	SIM	Service de sécurité incendie de Montréal

4.9. Management of Construction and Renovation Work on Ville de Montréal Buildings

1. Background

In order to fulfil its mission, the Ville de Montréal (the City) has a large building inventory that meets the needs of both the citizens of Montréal and municipal employees.

The City's needs, which essentially depend on how its population and operations evolve, can be satisfied by various means, particularly through investments in building renovations and in municipal infrastructure construction intended to improve the service offer in terms of sports facilities, recreational and cultural activities, public safety and administrative services.

These real estate development investments can target several types of facilities: sports and recreation centres, libraries, administrative offices, municipal shops or even fire stations.

Construction and renovation projects concerning City buildings require considerable investments, averaging \$220 million per year.¹ These projects are subject to municipal frameworks and policies and directives concerning the acquisition of various services and the management of external contractual services. The completion of these projects also involves several stakeholders: the boroughs, the central departments and external professionals. Depending on the context, these different stakeholders may act in various roles—as client, project owner, internal provider of expert services or external supplier—depending on the expertise required (architect, plan and specification design professional, work supervision professional or building contractor).

Regardless of the scope or complexity of the construction or renovation projects, the coordination of all of these stakeholders must be based on best project management practices in order to ensure that the work is done in keeping with the terms of reference for which it was approved by the authorities in terms of costs, timeframe and quality expectations.

¹ In keeping with the 2013–2015 and 2014–2016 three-year capital expenditures plans adopted by the Ville de Montréal council and borough councils.

2. Purpose and Scope of the Audit

The purpose of this audit was to ensure that the applicable management frameworks are applied by the business units for the construction and renovation work done on the City's buildings and that the processes used by the business units for acquiring external services and managing the work provide for coordination, follow-up and accountability mechanisms that respect the management frameworks and best practices.

Our audit concerned a selection of four projects that were completed in 2014 or early in 2015 and which initially were valued at greater than \$5 million. The following projects were covered by the audit:

- Valleycrest pool project, undertaken by the Pierrefonds-Roxboro borough;
- Annie-Pelletier pool project, undertaken by the Mercier–Hochelaga-Maisonneuve (MHM) borough;
- Bibliothèque Marc-Favreau (BMF) project (Rosemont–La Petite-Patrie (RLPP) borough), undertaken by the Service de la gestion et de la planification immobilière (SGPI);
- Caserne 32 project, undertaken by the SGPI for the Service de sécurité incendie de Montréal (SIM).

Our work entailed interviewing managers and employees, examining various documents and conducting the tests we considered appropriate in order to obtain convincing evidence.

3. Main Findings

Our audit allowed us to identify areas where improvements should be made. Our principal findings are:

With respect to management frameworks:

- The *Cadre de gouvernance des projets et des programmes de gestion d'actifs municipaux (CGP)* [TRANSLATION] *Governance Framework for Municipal Asset Management Projects and Programs*, principally concerning large-scale projects, was not applied completely in the case of two projects that were subject to it;
- There was no management framework for managing projects that do not meet CGP criteria, even though their scope, their relative importance for the business units and their complexity were significant;
- None of the projects audited had a project approval file (PAF) that complied with good project management practices;

- A *functional and technical program (FTP)* providing the specifications required to meet the client's needs had not been prepared for two of the projects audited.

With respect to project governance and management:

- Shortcomings with respect to the governance and the assignment of qualified resources:
 - For all of the projects audited, a governance structure specifying the roles and responsibilities of the stakeholders involved was not clearly established;
 - A *project manager*, responsible for the overall coordination of the project, was not designated for two of the four projects audited;
 - One of the individuals assigned to serve as a project manager (one project) did not have the qualifications required to ensure sound management;
 - The individuals designated as responsible for one of the projects audited did not have the expertise needed to undertake building projects;
- Shortcomings in terms of project follow-up and monitoring:
 - For two of the projects audited, follow-up of the work was not thorough enough to ensure compliance with the plans and specifications;
 - For three of the projects audited, the cost estimate did not reflect the nature or the specifics of the projects or did not cover all of the project needs;
 - For all of the projects audited, the construction timeline was not available or not sufficiently up-to-date to ensure adequate follow-up of the project.

With respect to accountability mechanisms:

- None of the business units audited made it a practice to produce closing balance sheets;
- None of the business units audited had a formal accountability process for its real estate construction project.

4. Audit Results

4.1. General Information

4.1.A. Background and Findings

The process that leads to a construction or renovation project, initiated in keeping with the expression of needs by the client and leading up to the performance of work, can be long and complex, particularly for large-scale projects. The implementation of these projects must adhere to the following fundamental sound management principles:

- respect the management applicable framework mechanisms within the City by using the decision-making processes and supporting documentation;
- use best project management practices to complete projects;

- optimize the contribution of all of the internal and external resources in order to maximize the efficient use of public funds.

Our audit sought to determine whether the projects delivered by the business units adhered to these principles.

4.1.1. Management Frameworks for Building Construction and Renovation Projects

4.1.1.A. Background and Findings

First, with respect to management frameworks, several City policies apply to building construction and renovation projects, namely:

- the *Cadre de gouvernance des projets et des programmes de gestion d'actifs municipaux (CGP)* [TRANSLATION] *Governance Framework for Municipal Asset Management Projects and Programs*;²
- the *Politique de développement durable pour les édifices de la Ville de Montréal* [TRANSLATION] *Sustainable Development Policy for Ville de Montréal Buildings*,³
- the *Politique de gestion contractuelle* [TRANSLATION] *Contract Management Policy*.⁴

For this reason, our audit entailed validating the application of these management frameworks by the business units responsible for the following construction and renovation projects:

² The *Cadre de gouvernance des projets et des programmes de gestion d'actifs municipaux* [TRANSLATION] *Governance Framework for Municipal Asset Management Projects and Programs* was adopted by the executive committee on April 19, 2010, City council on April 22, 2010, and the urban agglomeration council on April 22, 2010.

³ The *Politique de développement durable pour les édifices de la Ville de Montréal* [TRANSLATION] *Sustainable Development Policy for Ville de Montréal Buildings* was adopted by the executive committee on June 9, 2009.

⁴ The *Politique de gestion contractuelle* [TRANSLATION] *Contract Management Policy* was adopted by City council on June 17, 2013, and the urban agglomeration council on June 20, 2013.

Table 1 – Sample of Projects Audited^[a]

Project name	Business unit (client)	Business unit (project delivery)	Project cost estimate ^[a]	Expected delivery year
Valleycrest pool	Pierrefonds-Roxboro Borough	Pierrefonds-Roxboro Borough	\$5.2M	2014
Annie-Pelletier pool	Mercier–Hochelaga-Maisonneuve Borough	Mercier–Hochelaga-Maisonneuve Borough	\$12.0M	2014
Bibliothèque Marc-Favreau	Rosemont–La Petite-Patrie Borough	SGPI and Rosemont–La Petite-Patrie Borough	\$12.5M	2013
Caserne 32	Service de la sécurité incendies de Montréal	SGPI	\$5.7M	2013

^[a] Scope of the project based on the initial budget presented for project approval by the authorities.

The CGP, implemented by the City in 2010, is intended to harmonize practices concerning the delivery of projects and the implementation of programs, in keeping with municipal policies and guidelines. This framework applies to all of the City's business units (departments, boroughs and para-municipal organizations) and covers so-called large-scale projects: those worth \$10 million and more, complex projects or projects that involve high levels of risk.

Based on the information obtained through discussion and the consultation of project files, our audit indicates that the Annie-Pelletier pool project and the BMF project did not respect the CGP even though they were subject to it by virtue of their scope. This element will be raised in the sections concerning the two projects. We are of the opinion that the Direction générale should take the necessary measures to ensure that this management framework is respected by all of the City's business units whose projects are subject to it.

Moreover, we noted that the City has no standardized and uniform framework for the governance and management of projects worth less than \$10 million, such as the construction of the Valleycrest pool and Caserne 32. The business units that undertake smaller construction projects have unofficially developed practices, tools and work methods of their own. However, it appears that, in addition to being different from one business unit to another and even from one project to another within a single business unit, as in the case of the projects undertaken by the Service de la gestion et de la planification immobilière (SGPI), current approaches are not systematically aligned with good practices (e.g., a well-established governance structure) and do not always comply with the management

frameworks in effect, undermining sound project management and multiplying the resources and efforts the City must dedicate to the projects.

It would therefore be advantageous for the City, for the benefit of the central departments and the boroughs, to implement a management framework for smaller construction and renovation projects as well, in order to give the municipal stakeholders a first-rate tool including the best management practices in this field.

Moreover, the business units' construction projects are also subject to the *Politique de développement durable pour les édifices de la Ville de Montréal [TRANSLATION] Sustainable Development Policy for Ville de Montréal Buildings*. This policy is specifically intended to ensure that the design, construction, renovation, demolition and operation of municipal buildings are undertaken in such a manner as to reduce the environmental impacts and the overall cost of buildings and help achieve the environmental targets established by the City. Specifically, in keeping with this policy, all new constructions of more than 500 m² must obtain LEED® certification.⁵

Finally, the *Politique de gestion contractuelle [TRANSLATION] Contract Management Policy* is intended, among other things, to ensure the efficiency and completeness of the supply and contract-awarding processes in keeping with the law and the principles of sound management.

Compliance with these two policies will be discussed in the sections provided for this purpose for each of the four projects audited.

4.1.1.B. Recommendation

We recommend that the Direction générale implement appropriate measures to ensure that the *Cadre de gouvernance des projets et des programmes de gestion d'actifs municipaux [TRANSLATION] Governance Framework for Municipal Asset Management Projects and Programs* is respected by all of the business units for the projects that are subject to it.

⁵ LEED® certification is an international standard for the design, construction and operation of high-performance, sustainable buildings. There are four levels of building certification (certified, silver, gold or platinum), based on evaluation criteria that include energy efficiency, water consumption efficiency, heating efficiency, use of local materials and re-use of material surpluses.

4.1.1.C. Recommendation

We recommend that the Direction générale implement a governance framework for all projects considered significant that do not meet the criteria of the *Cadre de gouvernance des projets et des programmes de gestion d'actifs municipaux* [TRANSLATION] *Governance Framework for Municipal Asset Management Projects and Programs* in order to ensure the sound management of all City building projects.

Business unit's response:

[TRANSLATION] The Direction générale agrees with the two preceding recommendations.

A first step was taken when the organizational structure of the SGPI was changed.

The second step involved starting to implement a project management culture by setting up a dedicated team in March 2016.

At the end of the process, the administration will examine the possibility of grouping together all real estate management activities under the SGPI; this will facilitate the implementation and respect of standardized management mechanisms that include best practices. (Planned completion: March 2017)

4.1.2. Good Project Management Practices

4.1.2.A. Background and Findings

In order to implement the CGP, the Bureau des projets et programmes d'immobilisations,⁶ which reports to the City's Direction générale, developed an approval and coordination process for large-scale projects that describes the general stages of projects as well as the principal activities and deliverables for each stage of a project. Table 2 summarizes the activities and principal deliverables for each of the stages in this procedure.

⁶ Formerly the *Bureau principal de gestion de projets*.

Table 2 – Stages in the Large-Scale Project Management Procedure^[a]

Project stage	Principal activities	Deliverables
Project start-up (incubation)	<ul style="list-style-type: none"> Project definition; Evaluation of the performance options. 	<ul style="list-style-type: none"> Project approval file, which specifically presents: <ul style="list-style-type: none"> preliminary definition of the project: goals, objectives and expected benefits; deliverables and preliminary timeline; the financial aspects of the project; the estimated risks, opportunities, hypotheses and constraints; project team structure and governance; Summary cost estimate; Decision-making file: awarding of contracts for professional services, real estate transactions, etc.
Project planning (feasibility)	<ul style="list-style-type: none"> Feasibility studies; Functional and technical program (FTP); Preliminary draft; Definitive draft; Project planning. 	<ul style="list-style-type: none"> Updated project approval file; Project plan (obligatory deliverables at the transition point): it defines the approach taken to complete, supervise, master and conclude the project; Functional and technical program; Preliminary plans and specifications; Cost estimate (preliminary); Decision-making file: agreements and protocols, borrowing regulation, public consultation, etc.
Project execution (completion)	<ul style="list-style-type: none"> Plans and specifications; Performance of the work; Accountability. 	<ul style="list-style-type: none"> Updated project approval file; Preliminary and definitive plans and specifications; Cost estimate (detailed); Organization of the work site; Decision-making file: awarding of contracts for professional services and contractors, etc.; Provisional and final acceptance of the project.
Project closeout	<ul style="list-style-type: none"> Acceptance of structures; Project closeout; Final accountability. 	<ul style="list-style-type: none"> Delivery of the work in keeping with the agreements; Compliance verification; Transfer of the structure to the users and those responsible for operations and maintenance, including the commissioning and the as-built plans; Closing balance sheet for the project.

^[a] Source: Bureau principal de gestion de projets de la Ville, extract from the document: *Synthèse des activités et livrables, selon les phases, pour les projets d'envergure [TRANSLATION] Summary of activities and deliverables, by project stage, for large-scale projects.*

As in the case of the CGP, good practices mean that certain documents, presented in Table 3, are essential in order to ensure sound management and appropriate accountability for a project, regardless of the project size.

Table 3 – Essential Documents

Project document	Definition	Purpose
Project approval file	Document issued by the project owner that confirms the existence of the project, defines the content and states the objectives and expectations.	<ul style="list-style-type: none"> Allows all of the stakeholders to agree on the principal aspects of the project; Supports the decision-making process throughout the project life cycle; Presents the governance structure for the project.
Functional and technical program	Document that presents the characteristics of the building in functional, operational and technical terms needed to satisfy the client's objectives.	<ul style="list-style-type: none"> Enables plans and specifications to be prepared by professionals (architects and engineers) in keeping with the client's needs.
Cost estimate	Presents the cost projections for the project.	<ul style="list-style-type: none"> Used to plan and track the project budget; Used to evaluate the tenders proposed for the project.
Project structure	Project organization chart defining the roles and responsibilities of all stakeholders.	<ul style="list-style-type: none"> Specifies the division of roles and responsibilities among the stakeholders; Determines the communication and decision-making channels.
Accountability	Mechanism for reporting throughout the project.	<ul style="list-style-type: none"> Required for reporting on the use of resources and the achievement of the objectives set in terms of quality, cost and deadlines.

Although these deliverables are necessary for sound project management, our audit indicated that there are major shortcomings for all of the projects audited. We observed that:

- The project management process is not standard from one business unit to the next and even within a business unit responsible for several projects (SGPI);
- Project documentation (e.g., the project approval file (PAF), the FTP and the governance structure) was incomplete, or even non-existent.

Observations and recommendations in this respect will be discussed in detail for each of the projects in the next sections of this report.

4.2. Project 1 – Valleycrest Pool

4.2.A. Background and Findings

Up to 2011, the aquatic activities service offer for the territory of the Pierrefonds-Roxboro borough was ensured solely by non-profit organizations (NPOs) in facilities that did not belong to the borough. The borough's territory included six outdoor swimming pools belonging to community associations that used public funds to operate these pools. Although several of these facilities were outdated, they could not benefit from the City's equipment upgrading program since the City did not own them.

In order to identify the borough's future infrastructure needs for cultural, sports and recreational activities, the Pierrefonds-Roxboro City council awarded a contract for \$58,671 to a group of firms of architecture and engineering professionals on November 7, 2011, to study the ageing and upgrading of the six pools on its territory and to assess their potential given their current status.

Based on this study, the borough's Direction de la culture, des sports, des loisirs et du développement social (DCSLDS) prepared a development plan not to upgrade the existing facilities, but rather to build three new outdoor pools over the next five years. The borough council decided to completely rebuild the Valleycrest pool based on its location near a park belonging to the borough, its geographic situation and its impact on the services offered to citizens.

In July 2012, the DCSLDS sent a letter of intent to the NPO that operated the Valleycrest pool informing it that the current site of the Valleycrest pool had been selected for the construction of a new aquatic complex on the condition that the site, the facilities and the immovable property be transferred to the City. On November 7, 2012, the general assembly of the NPO in question adopted a resolution to transfer its property, without any monetary consideration, for the construction of a new aquatic complex.

In exchange for this transfer, the Pierrefonds-Roxboro borough was to demolish the existing facilities and build an outdoor aquatic complex within 24 months of the date on which the borough accepted the site, September 3, 2013. According to the decision-making file for awarding the contract to build the pool and the building, the initial deadline for the completion of the project confirmed that the work would start in September 2013 and end in May 2014. The borough council expected delivery of the pool for the start of the 2014 summer season.

Our audit covered the decision-making process, the management frameworks and the project management practices used for the Valleycrest pool project, including the mechanisms for following up and monitoring quality, costs and the project timelines.

4.2.1. Project Management Framework

4.2.1.A. Background and Findings

The Valleycrest pool construction project was estimated at \$5.2 million, including the production of the preliminary FTP, the cost of the professional services for plans and specifications, work site supervision and the construction of the pool and building. Because the value was less than \$10 million, this project did not come under the CGP.

At the borough level, the matter of the project management framework was formally discussed with those in charge of the project. Based on our understanding, there was no formally documented management framework specific to the borough and specific to this type of project. Given the absence of a formal governance and project management framework, the borough followed the usual decision-making process supporting municipal infrastructure real estate projects (e.g., rebuilding roads, developing parks, building urban furniture) as well as the City rules and directives in effect that apply with respect to awarding contracts.

As a result, we noted that the basic document supporting the decisions made by the elected representatives for this project was the decision-making file. When we consulted the decision-making files, we were not able to identify all of the elements that usually make up a PAF, specifically those concerning governance. We are of the opinion that a PAF should have been produced in keeping with good practices, so that the project stakeholders and the authorities could have a detailed overview of the principal issues and aspects, such as the scope, the governance structure, the deliverables and the resources required to ensure successful completion of the project.

Moreover, our audit also focused on the process used to award the contracts and analyze the proposals and the documentation submitted for the decision-making process used for the Valleycrest pool project. In our opinion, these elements complied with the applicable rules and frameworks for the following contracts:

- the contract for the study on the ageing and upgrading of the six pools;
- the contract covering the production of the preliminary FTP;
- the contract for professional services (including architecture, engineering and supervision of the work).

The contract for professional services (including architecture, engineering and supervision of the work) was comprised of three parts⁷ according to the call for tenders documents. With respect to Part A, the firm of professionals was to produce, among other things, a final FTP based on the preliminary FTP for the project.

According to the information provided in the call for tenders document, the final FTP was supposed to recommend final choices with respect to geometry, implementation, architecture and materials and to be presented to the Comité consultatif d'urbanisme and the Comité d'architecture before being approved by the borough council.

Upon examining the documentation provided, we noted the existence of certain deliverables set out in the contract, such as the cost estimate and the timeframe. However, although it was one of the requirements of the mandate, the final FTP was not produced by the firm. Yet, the FTP is one of the essential elements of the planning stage for a project. The absence of such a document increases the risk that the plans and specifications will be incomplete, leading to requests for changes or additions during construction. We are of the opinion that the borough should have made sure that it obtained a final FTP before allowing the professional to go forward with preparing the plans and specifications.

4.2.1.B. Recommendation

We recommend that the Pierrefonds-Roxboro borough, in keeping with good project management practices, systematically produce a project approval file for every building project so as to ensure that all the project parameters are defined, enabling the council to make an informed decision.

Business unit's response:

[TRANSLATION] A (PAF) will be submitted to the council members in a plenary session for any real estate project worth more than \$1 million. This file will include a detailed presentation of the project, the production schedule, the estimated risks and constraints, the governance framework and the project team structure.

*The cost estimate will be handled in a confidential manner, and the individuals present will be reminded that this information is not to be transmitted to external stakeholders.
(Planned completion: immediate)*

⁷ Part A: Program for the preliminary project for an outdoor pool and adjacent buildings and validation of the project data. Part B: Preparation of the definitive file, preparation of the call for tenders, validation of the costs and preparation of the plans and specifications issued for construction purposes. Part C: Supervision of the work.

4.2.1.C. Recommendation

We recommend that the Pierrefonds-Roxboro borough make sure that it formally obtains all of the goods and deliverables expected from the contractors so as to ensure that the project is completed in an efficient manner and in keeping with the identified needs.

Business unit's response:

[TRANSLATION] The borough will make sure that the list of deliverables is included in call for tenders documents. (Planned completion: immediate)

4.2.2. Project Governance

4.2.2.A. Background and Findings

With respect to governance, one of the key elements for the success of a construction project is a team of experts from all of the fields involved, with an experienced project manager to oversee the coordination of the stages for performing the work and to monitor the work, the timeline and the budget.

Therefore, it is expected that the roles and responsibilities of the stakeholders would have been determined and made official before the project start-up phase. Yet, based on the information obtained from the individuals we interviewed, no formal structure was set up to ensure the governance of the Valleycrest pool project.

Nevertheless, stakeholders from the borough were involved in the project, including:

- the manager of the Division des sports, loisirs et installations, appointed to serve as the project manager and responsible for representing the users' needs;
- the manager of the Division ingénierie et infrastructure, involved throughout the project, specifically for aspects pertaining to preparing administrative documents for the call for tenders and approving the progressive payments during construction;
- the manager of the Section ingénierie, hired by the borough part way through the project, during the construction phase, who supported the project manager for the validation of certain technical aspects of the project.

Consequently, the management of the Valleycrest pool project depended on the experience of the individuals assigned to the project. This project management context presented major shortcomings:

- No formal governance structure was established, such as an organization chart for the project specifying the roles and responsibilities in keeping with each individual's field of expertise;
- The project manager did not have the expertise in project management or in the construction of such complex and specialized municipal infrastructures as an aquatic facility needed to ensure the success of the project;
- The division of roles and responsibilities between the project manager and the manager of the Section de l'ingénierie was not clearly established;
- The manager of the Division ingénierie et infrastructure did not have a direct and clearly defined role or responsibilities in this project despite being involved at all stages of the project.

We are of the opinion that, in order to ensure the sound management of its projects, the Pierrefonds-Roxboro borough should implement a formal project management structure and clarify the roles and responsibilities of the individuals involved. It is equally important for these stakeholders to have the skills and project management experience that are essential if they are to adequately fulfil their responsibilities and ensure successful completion of the project. This is all the more important since the borough plans to build other aquatic facilities.

4.2.2.B. Recommendation

We recommend that the Pierrefonds-Roxboro borough make sure that a project management structure is implemented and that the roles and responsibilities are formally defined for projects.

Business unit's response:

[TRANSLATION] The borough has taken the necessary steps to obtain a resource that will implement a project management structure. Process to fill the position of real estate manager under way. (Planned completion: June 2016)

4.2.2.C. Recommendation

We recommend that the Pierrefonds-Roxboro borough make sure that the individuals assigned to project management have the experience and expertise required to ensure the success of the project.

Business unit's response:

[TRANSLATION] Temporary internal resources will be hired to manage major projects. In the case of outsourced project management mandates, the borough will make sure that the candidates submitted by the firm retained are qualified to fulfil the contract. (Planned completion: immediate)

4.2.3. Project Follow-Up and Monitoring Mechanisms

4.2.3.A. Background and Findings

Regardless of the scope of an undertaking, project management is a crucial activity focused on three main components: the products or deliverables, the timeframe and the costs. Mechanisms must be implemented to follow up on and monitor these elements in order to make sure that the expected quality and quantity of work are achieved within the timelines and the budget allocated for the project.

To this end, our audit mainly examined the implementation of such mechanisms and tools so as to ensure the successful completion of the project.

4.2.3.1. Monitoring Project Delivery

4.2.3.1.A. Background and Findings

The borough assigned the professional responsible for supervising the work site to monitor execution of the project. He was responsible for making sure that the construction work done by the contractor complied with the plans and specifications and was of the quality expected.

Monitoring the progress of the project was also the responsibility of the internal team set up by the borough and made up of the project manager, the manager of the Division ingénierie et infrastructure and the manager of the Division des sports, loisirs et installations. However, their roles and responsibilities were not clearly defined. The potential consequences may be reflected in the acceptance of non-compliant deliverables and incomplete plans and specifications that could result in additions or modifications, causing delays.

In keeping with good project management practices, the implementation of project planning, coordination, and monitoring processes and mechanisms is essential in order to ensure that the project runs smoothly, particularly for the construction of a complex infrastructure.

Moreover, the Valleycrest pool project was not subject to the *Politique de développement durable pour les édifices de la Ville de Montréal [TRANSLATION] Sustainable Development Policy for Ville de Montréal Buildings*, which states that any construction should aim for LEED® certification, since the area of the building was less than 500 m².

4.2.3.2. Monitoring the Timeline

4.2.3.2.A. Background and Findings

The timeline is the focal point of project management, integrating all the project stages. It must be managed by a project manager, who can determine the progress of the project and, on an ongoing basis, assess the activities to be completed so as to be able to take the actions required to achieve the work within the original budget and timeframe.

In the case of the Valleycrest pool project, the detailed timeline for the construction work was presented by the contractor to the borough representatives and the professionals during the first meeting on the work site. Following this, during each work site meeting, the contractor was to update it and inform the borough representatives and the professionals about the progress of the work relative to the established timeline. The delivery date for the pool, as set out in the call for tenders documents, was scheduled for May 9, 2014.

The timeline was to be monitored by a work site supervisor designated by the firm of professionals. Moreover, the internal borough team was responsible for monitoring progress using progressive payments and during work site meetings.

Nevertheless, we were informed that, although it was expected that the timeline would be systematically updated by the contractor for the purpose of monitoring the work, this did not happen. Consequently, when the contractor informed the borough of a delay in the work, the borough had no up-to-date timeline and could not assess the impact on the expected delivery date.

An examination of the work site meeting minutes, with respect to the timeline, enabled us to make the observations presented in Table 4:

Table 4 – Construction Timeline – Valleycrest Pool

Timeline	Dates
Order to start work	September 6, 2013
Expected end date of work provided in the call for tenders	May 9, 2014
End date of work planned by contractor	May 12, 2014
Actual end date of work	June 26, 2014
Delay	45 days

It was only during the 27th work site meeting, on April 1, 2014, that the end date of the work, originally scheduled for May 12, 2014, was postponed to June 26, 2014, by the contractor. In our opinion, the contractor was very tardy when he reported a delay of more than a month relative to the timeline just a few days before the scheduled delivery date for the building. Moreover, during another special meeting concerning the timeline, held on May 29, 2014, the contractor attempted to postpone the delivery date for the building a second time. Nevertheless, since the borough had made a public commitment to deliver the pool for the summer season, the June 26, 2014, delivery date was maintained.

Postponing the pool delivery date was not without consequence since the contractor had to extend his work schedule, which resulted in acceleration fees of \$103,928.

According to the contractor, integrating requests for changes and potential weather conditions contributed to the postponement of the initial delivery date and resulted in acceleration fees for the borough. To the best of our knowledge, neither the firm of professionals nor the borough questioned the contractor's responsibility for these delays.

In addition to the contractor's failure to systematically update the timeline, in our opinion, the monitoring work done by the firm of professionals responsible for supervising the work site entailed shortcomings preventing it from identifying delays and evaluating the impact on the expected delivery date for the pool.

We are of the opinion that this situation needs to be corrected for future construction projects to keep the stakeholders informed about the progress of the work so that they may assess the progress of the work on an ongoing basis and take the necessary measures to ensure that the work is completed on time.

4.2.3.2.B. Recommendation

We recommend that the Pierrefonds-Roxboro borough make sure that the timelines for future projects are systematically updated to ensure adequate monitoring of the progress of the work so that the actions required can be taken to ensure that the work is completed on time.

Business unit's response:

[TRANSLATION] The real estate manager will systematically follow up on projects in co-operation with the project manager. The borough will acquire adequate tools, including the computer applications needed to follow up on projects. (Planned completion: June 2016)

4.2.3.3. Cost Estimates and Budget Monitoring

4.2.3.3.A. Background and Findings

Another factor that contributes to the success of a project is staying on budget, which first requires a detailed and precise breakdown of the costs for all of the elements needed for the project.

In the case of the Valleycrest pool project, two cost estimates were prepared, one during the production of the preliminary FTP and a second based on the plans and specifications. This second estimate, produced by the firm of professionals, indicated a price of \$4,723,136 for the construction work and served as a reference estimate for evaluating the tenders received.

At the end of the call for tenders process, the tenders were opened, on August 22, 2013. As indicated in Table 5, a comparison of the reference estimate for the construction costs (\$4,293,760) and the tender accepted (\$5,214,452) for the construction contractor's services reveals a difference of \$920,693 (21.44%).

**Table 5 – Comparison of the Estimate of the Construction Costs
for the Valleycrest Pool and the Tender Retained**

Cost category	Reference estimate (construction – July 2013) \$	Tender retained (August 2013) \$	Difference	
			\$	%
Construction cost^[a]				
Work site organization	211,388	527,871	316,483	150%
Civil	485,000	396,738	-88,262	-18%
Landscaping	62,050	109,266	47,216	76%
Structure	730,233	1,047,831	317,599	43%
Architecture	1,101,721	1,370,288	278,567	25%
Mechanics	780,000	682,875	-97,125	-12%
Electricity	225,000	337,300	112,300	50%
Other	139,125	53,123	-86,002	-62%
Taxes	559,244	679,160	119,916	
Sub-total	4,293,760	5,214,452	920,693	21.44%
Construction contingencies	429,376	—		
Total construction cost	4,723,136	5,214,452		

^[a] Includes the general conditions – administration and profits.

At the request of the borough, the professional firm presented a report analyzing this difference (21.44%) on August 27, 2013, which essentially covered the following elements:

- For the *Work site organization* category (difference of \$316,483, or 150%), the firm attributed the major portion of the difference to hypothetical considerations, namely the contractor's expectations with respect to winter conditions and probable changes that could affect the duration of work on the site;
- According to the firm, the difference of \$317,599 (43%) for the *Structure* category could have been caused by the fact that the geotechnical report was issued during the call for tenders period, indicating larger quantities for fill and excavation work than the quantities estimated;
- The difference in the cost (\$278,567, or 25%) for the *Architecture* category, the firm attributed to the proximity of the call for tenders period to the construction holiday period which, possibly, could have meant that the contractor could not obtain the price for the architectural elements and therefore provided a wide margin.

All in all, the analysis of the differences presented by the firm leads us to believe that the contractor gave himself a rather significant operating margin for the project.

In our opinion, the firm did not fully document the differences, and the reasons offered seem, for the most part, both simplistic and based on purely hypothetical considerations. Yet, the guide⁸ concerning content and presentation aspects of decision-making files, published by the City in 2011, recommends that any difference of more than 10% between the tender submitted by the contractor and the last estimate prepared be rigorously explained. Considering the magnitude of the difference (21.44%), the borough should have provided a more in-depth and tangible explanation and should also have considered rejecting the tender. This should, moreover, have been officially recommended by the firm. The fact that professional fees generally represent a percentage (%) of the construction costs, thereby further increasing the difference in the global cost of the project, should also be taken into consideration.

The decision-making file for awarding the contract to the lowest bidder, to which the firm's analysis report was appended, explicitly indicated that the tender retained was 21.44% greater than the reference estimate. It is therefore with full knowledge of the facts that the borough council approved the awarding of the construction contract.

Moreover, it can be seen that, although the estimate prepared by the firm of professionals provided an amount for construction contingencies, the call for tenders documents did not. In fact, according to the information obtained, during the initial planning of the Valleycrest pool project, the borough had made no provision for contingency costs.

However, during construction, adjustments had to be made to the initial construction plan in order to take into account certain contingencies and modifications to the project. These adjustments generated additional costs, in addition to the work acceleration costs mentioned earlier, which were required to meet the deadline for opening the pool. Thus, based on the information obtained, the comparison of the amount of the tender retained for the construction work and the actual cost of the construction work is as follows:

⁸ Guide entitled *Documentation relative aux dossiers décisionnels soumis aux instances centrales* [TRANSLATION] *Documentation concerning the decision-making files submitted to the central authorities.*

**Table 6 – Comparison of the Budget to the Actual
Construction Cost of the Valleycrest Pool**

Cost category	Tender retained (August 2013) \$	Actual cost of the project (progressive payments – October 2015) \$	Difference	
			\$	%
Construction cost	5,214,452	5,215,710	1,258	
Construction contingencies	0	307,272	0	
Total construction cost	5,214,452	5,522,982	308,530	5.9%

All in all, the construction work on the Valleycrest pool cost more than \$5.5 million, exceeding the estimate by 5.9% (\$308,530) as a result of contingencies that were not included in the authorized expenses. This voluntary omission on the part of the borough resulted in additional delays, since any modification or addition had to be authorized by the borough council. We are of the opinion that, in keeping with good management practices, the borough should have provided for contingent charges for this project.

In terms of project cost monitoring mechanisms, progressive payments were produced by the firm assigned to supervise the work site as the work was completed by the contractor. That firm validated the costs billed by the contractor and recommended their payment. Following that, the payments were approved by the manager of public works and the manager of the Division ingénierie et infrastructure.

4.2.3.3.B. Recommendation

We recommend that the Pierrefonds-Roxboro borough rigorously explain any difference of more than 10% between the lowest compliant tender and the last estimate produced in the decision-making file in order to enable the borough council to make an informed decision with respect to awarding the contract.

Business unit's response:

[TRANSLATION] When a contract is awarded for any real estate project, rigorous explanations will be provided in the decision-making summaries for any difference of more than 10% between the lowest compliant tender and the last estimate prepared before the tenders were opened.

These explanations will be based on an analysis prepared by the borough's professionals or the consultant assigned to the file.

*This will enable the council to make an informed decision when awarding contracts.
(Planned completion: immediate)*

4.2.3.3.C. Recommendation

We recommend that the Pierrefonds-Roxboro borough make sure that it provides contingency fees in the project estimates so that the project stakeholders have the necessary budgets to deal with all situations that are unexpected but necessary for the completion of the project.

Business unit's response:

[TRANSLATION] The practice of not including contingency fees in the call for tenders documents for contracts based on a lump sum was abandoned after the Valleycrest pool project.

It is now common practice to indicate contingency fees based on the complexity of the project and its inherent risks. (Planned completion: completed)

4.2.3.4. Project Closeout and Accountability

4.2.3.4.A. Background and Findings

The project closeout phase is necessary for taking stock of the project and reporting on the achievement of project objectives and the manner in which the funds and resources allocated to the project were managed. The closing balance sheet also serves to identify shortcomings in the management of the project so that the necessary measures can be taken to avoid repeating them in future projects.

In the case of the Valleycrest pool project, the individuals we interviewed, specifically the project manager, informed us that, apart from the informal monitoring of project progress by the stakeholders involved and their supervisors, no formal accountability mechanisms were established to report to borough management or the elected representatives for the project. Moreover, this element is not part of the existing approach.

Given the absence of a formal accountability process or a project closing balance sheet, neither the managers nor management had benchmarks and indicators they could use to evaluate project management practices and the achievement of objectives.

We are of the opinion that it would be in the interests of the borough to implement the practice of producing a closing balance sheet so as to ensure formal accountability for future projects sanctioned by the authorities. Moreover, considering all of the weaknesses noted with respect

to the management of the Valleycrest pool project, a project report is required to identify the shortcomings identified during the project so as to promote better management of the borough's future building projects.

4.2.3.4.B. Recommendation

We recommend that the Pierrefonds-Roxboro borough submit accountability reports on building construction and renovation projects to council, in keeping with an established threshold, so as to inform council of the extent to which the objectives have been achieved in terms of the principal project management elements.

Business unit's response:

[TRANSLATION] The borough already makes sure that each of the expenses for its projects is backed by a delegated decision (yellow GDD). The borough will prepare an accountability document for elected officials so as to inform them of the degree to which the objectives have been achieved. (Planned completion: June 2016)

4.3. Project 2 – Annie-Pelletier Pool

4.3.A. Background and Findings

Between 2006 and 2009, the Mercier–Hochelaga-Maisonneuve (MHM) borough council discussed a project to build a recreational sports complex in Mercier-Est, in Parc Clément-Jetté, in order to serve the existing and future population anticipated as a result of the *Faubourg Contrecoeur* housing development. The complex was to include the Clément-Jetté arena (which existed at the time), an indoor pool, a double gymnasium and community facilities. The borough council expected the Ministère de l'Éducation, du Loisir et du Sport (MELS) to take part since it has a subsidy program⁹ for this type of project.

Considering the scope of the investment required to build the recreational sports centre, estimated at \$23.2 million, the borough limited its project to building an indoor pool, at an estimated cost of \$12 million.

In order to finance its project, the MHM borough council solicited the central City council for a contribution of \$2 million for the project and the MELS for a subsidy through its support program for sports and recreational facilities. Nevertheless, the borough did not receive support from either the central City, which refused its request, or the MELS subsidy program.

⁹ *Programme de soutien aux installations sportives et récréatives* – phase 2 of the MELS's Fonds de développement du sport et de l'activité physique.

Therefore, on October 4, 2011, the MHM borough resolved that the indoor pool project would be funded entirely through its own financial resources.

Based on the decision-making files concerning the contract for building the pool and the work site supervision contract, the borough council expected the work to start in August 2012 and end at the beginning of September 2013. According to the architectural description, the new pool project would entail building a new two-storey building that would house the aquatic facilities (a pool, a play pool and an indoor beach), locker rooms, technical rooms, a reception area and circulation space. At the end of the project, the expenses authorized by the borough council for this project were close to \$14 million.

Our audit covered the decision-making process, the management frameworks and the project management practices used to complete the Annie-Pelletier pool project, including the mechanisms for monitoring and controlling quality, costs, and the project timeframe.

4.3.1. Project Management Framework

4.3.1.A. Background and Findings

As indicated in Section 4.1.1, on account of both its scope and its complexity, the Annie-Pelletier pool project was subject to the CGP.

Nevertheless, we noted that responsibility for the entire project was assumed by borough stakeholders who either had no knowledge of the City's CGP and the decision-making process supporting it or believed erroneously that this framework applied solely to projects managed by the City's central departments. As a result, the Annie-Pelletier pool project was managed solely in keeping with current practices concerning budget authorizations and the City's general policies and management frameworks such as the *Politique de gestion contractuelle* [TRANSLATION] *Contract Management Policy*. We are, however, of the opinion that this project should also have been managed in keeping with the CGP.

Moreover, an examination of the history of the project, from 2006, when the council first considered building a recreational sports complex, until 2011, when it resolved to build an indoor pool, revealed that the documentation supporting the decision was not complete. In fact, since no PAF was prepared at the planning stage, the progress of the project was fragmented through several decision-making files and no document presented all of the elements that usually make up a PAF.

We are of the opinion that a DAP should have been produced in keeping with good practices, so that the project stakeholders and the authorities could have a detailed overview of the issues and principal aspects, such as the scope, the governance structure, the deliverables and the resources required to ensure successful project completion.

Moreover, contrary to good practices, during the planning stage of the project, preparing an FTP was not a common practice, according to the project manager. Yet, the absence of an FTP could have an impact on the completeness and accuracy of the plans and specifications as well as on the smooth flow of the construction work. Moreover, considering the absence of an FTP for the Annie-Pelletier pool project, certain items that are important for the functionality of the pool were not included in the construction plans and specifications (elements that will be raised in Section 4.3.3.1 *Monitoring Project Delivery*).

Finally, in order to evaluate compliance with the frameworks concerning the acquisition of external professional services, we examined the decision-making process and files for awarding the three principal contracts for the project, as presented in Table 7, namely:

- the professional architecture and engineering services contract;
- the construction contractor services contract;
- the contract for supervision of the construction site;

Table 7 – Analysis of the Decision-Making Files for Authorizing the Awarding of Contracts for the Annie-Pelletier Pool Project

Number of tenders	Value of the tender retained (taxes included)	Comments
Professional architecture and engineering services		
<ul style="list-style-type: none"> · 9 tenders · 5 tenders did not comply 	Consortium of professionals \$712,031	<ul style="list-style-type: none"> · No analysis provided in the decision-making file; · No mention of non-compliant tenders in the decision-making file.
Services provided by construction contractors (1st call for tenders)		
<ul style="list-style-type: none"> · 7 tenders · No compliant tender 	Cancellation of the call for tenders	<ul style="list-style-type: none"> · Cancellation of the call for tenders as a result of anomalies in the tenders, some of which pertained to ambiguities in the administrative clauses of the call for tenders documents; · Additional costs of \$19,070 assumed by the borough for correcting call for tenders documents, whereas the professionals were responsible for preparing them.
Services provided by construction contractors (2nd call for tenders)		
<ul style="list-style-type: none"> · 3 tenders · The lowest tender was judged non-compliant 	Construction contractor \$12,873,530	<ul style="list-style-type: none"> · The decision-making file recommends authorizing a total expense of \$15,448,236, including \$2,574,706 for contingencies and accessory fees; · No mention of non-compliant tenders in the decision-making file; · No mention of a tender analysis report.
Supervision of the construction site		
<ul style="list-style-type: none"> · 1 tender received 	Site supervisor \$170,738	<ul style="list-style-type: none"> · The decision-making file recommends authorizing a total expense of \$196,348.56, including \$25,610.68 for contingencies; · An additional adjustment of \$58,767.68 as a result of the delay in construction (142 days).

Thus, the decision-making files concerning the three principal contracts for the project, in the amount of \$13,756,299 (without adjustments), present major shortcomings in terms of documentation:

- No mention was made of the non-compliance of some of the tenders received in the decision-making file concerning the contract for professional architecture and engineering services;
- The decision-making file for awarding the professional services contract mentions that the committee set up to analyze the tenders recommended awarding the contract to the firm selected. The borough council may incorrectly think that the tenders were analyzed by this committee, whereas this was done by the internal project manager;

- The decision-making summary concerning the awarding of the construction contract is not explicit with respect to the reasons for which the lowest tender received was not compliant. This non-compliance was validated by the borough's legal department; however, we obtained no evidence of this. The tenders were analyzed by the project manager whereas the Consortium had a mandate to do so, in addition to producing the call for tenders documents for the services of a construction contractor, analyzing the tenders and making the necessary recommendations. We were unable to obtain an analysis report;
- There was a single bidder during the call for tenders for the supervision of the work site, with no questions about awarding the contract, namely whether the borough obtained a fair price.

We are of the opinion that the decision-making files for awarding the contracts should explicitly present all of the information needed by the authorities to make an informed decision, in keeping with the principles of sound management provided in the City's contractual management policy.

4.3.1.B. Recommendation

We recommend that the Mercier–Hochelaga-Maisonneuve borough make sure that projects that meet the criteria for the *Cadre de gouvernance des projets et des programmes de gestion d'actifs municipaux [TRANSLATION] Governance Framework for Municipal Asset Management Projects and Programs* are undertaken in keeping with that framework.

4.3.1.C. Recommendation

We recommend that the Mercier–Hochelaga-Maisonneuve borough, in keeping with good management practices, systematically produce a project approval file for every building construction and renovation project so as to ensure that all the project parameters are defined, enabling the council to make an informed decision.

4.3.1.D. Recommendation

We recommend that the Mercier–Hochelaga-Maisonneuve borough integrate the preparation of a *functional and technical program* during the planning of building construction and renovation projects.

4.3.1.E. Recommendation

We recommend that the Mercier–Hochelaga-Maisonneuve borough make sure that the decision-making files for contracts explicitly present all of the information needed by the council to make a decision.

Business unit's response:

Auditor general's comments:

The Bureau du vérificateur général had not received the action plan requested from the borough as of April 7, 2016.

4.3.2. Project Governance

4.3.2.A. Background and Findings

With respect to governance, one of the key elements for the success of a construction project is a team of experts from all of the fields involved, with an experienced project manager to oversee the coordination of the stages for performing the work and to monitor the work, the timeline and the budget.

Therefore, it is expected, particularly in the case of a large project, that the roles and responsibilities of the stakeholders would have been determined and made official before the start-up phase. In the case of the Annie-Pelletier pool project, we identified serious shortcomings in this respect.

First, no formal governance structure was established to identify the project stakeholders and define their roles and responsibilities. Moreover, the borough did not set up any multidisciplinary team for the Annie-Pelletier pool project. In fact, the responsibility for the entire project was assumed by a single person, a real estate manager who was named project manager. According to the information obtained, this individual was occasionally supported by the borough's technical agents and interns, whose responsibilities were adjusted as the project progressed. Finally, we noted that no project steering committee had been formally established to ensure project governance.

Thus, no formal team was set up to ensure the implementation of the project. As a result, the project manager played a central role since he had complete control over the project, without any accountability obligation to any committee.

4.3.2.B. Recommendation

We recommend that, when undertaking a large project, the Mercier–Hochelaga-Maisonneuve borough establish a project governance structure that clearly defines roles and responsibilities.

Business unit's response:

Auditor general's comments:

The Bureau du vérificateur général had not received the action plan requested from the borough as of April 7, 2016.

4.3.3. Project Follow-Up and Monitoring Mechanisms

4.3.3.A. Background and Findings

Regardless of the scope of an undertaking, project management is a crucial activity focused on three main components: the products or deliverables, the timeline and the costs. Mechanisms must be implemented to follow up on and monitor these elements in order to make sure that the expected quality and quantity of work are achieved within the timelines and the budget allocated for the project.

4.3.3.1. Monitoring Project Delivery

4.3.3.1.A. Background and Findings

In order to ensure the project was monitored, after issuing a call for tenders, the borough retained the services of a professional to supervise the work site on a permanent basis for the duration of the project. This individual was mandated to ensure overall management of the execution of all of the work, the coordination of the stakeholders (e.g., quality control laboratory) and the planning of provisional and definitive inspections.

Moreover, the work was also supposed to be supervised by the Consortium of architecture and engineering professionals. In this respect, the minutes of the start-up meeting state that, in keeping with the authority conferred upon to them by the contract, the professionals were responsible for validating the compliance of the work.¹⁰ Their mandate, according to the specifications and for the part concerning the construction, also included coordination of the

¹⁰ The minutes of the start-up meeting state: *[TRANSLATION]* "Within the context of the authority conferred upon them by the contract, the professionals validate the compliance of the work. If the contractor acts otherwise, he does so at his risk and shall assume all of the fees resulting from such a situation."

stakeholders, technical assistance during construction and recommendations with respect to the provisional and final acceptance of the work.

Thus, both the professionals and the work site supervisor, who supervised the work on a daily basis, were responsible for monitoring construction of the Annie-Pelletier pool. It should be noted that all of the stakeholders, including the borough project manager, reviewed the progress of the work on a weekly basis during the work site meetings.

Yet, despite these project monitoring mechanisms, we identified significant shortcomings in the management of the project on the part of both the external professionals, who were responsible for designing and monitoring the work, and the borough project manager, who was responsible for making sure the project ran smoothly.

- The omission of certain elements from the plans and specifications issued for construction purposes, although they were expected and provided for in the borough's needs program (e.g., the construction of a patio on the locker room roof), and major additions to reinforce the performance of the mechanical and electrical systems;
- The fortuitous discovery, near the end of the construction, that the slope connecting the deep end and the shallow end of the pool was non-compliant (with respect to the standards governing public pools), which resulted in significant delays and costs;
- A large number of shortcomings observed during the inspection visit for the delivery of the building resulting in the provisional acceptance by the borough being only partial—it did not concern all of the work due to the magnitude of the shortcomings.

In short, the project was a difficult one, and together, the problems identified had a significant impact on both the project costs and its timelines. Indeed, the inspection performed on March 12, 2014 by the professional for the provisional delivery (March 21) of the building by the contractor generated a significant number of shortcomings that the builder had to correct. Moreover, we were informed that the SGPI¹¹ reported significant deficiencies concerning the mechanical facilities.

We feel that monitoring of the performance of the work, which was the responsibility of the work site supervisor and the professionals, should have been more thorough so as to ensure the quality of the project was as expected.

¹¹ Division de l'expertise technique et assurance qualité immobilière of the SGPI.

4.3.3.1.B. Recommendation

We recommend that the Mercier–Hochelaga-Maisonneuve borough implement the mechanisms needed to ensure that the project is completed in keeping with the requirements stipulated in the reference documents.

Business unit's response:

Auditor general's comments:

The Bureau du vérificateur général had not received the action plan requested from the borough as of April 7, 2016.

4.3.3.2. Monitoring the Timeline

4.3.3.2.A. Background and Findings

The timeline is the focal point of project management, integrating all the project stages. It must be managed by a project manager, who can determine the progress of the project and, on an ongoing basis, assess the activities to be completed so as to be able to take the actions required to complete the work within the original budget and timeframe.

In the case of the Annie-Pelletier pool project, it is the contractor who provided the detailed construction schedule. He was responsible for informing the borough, at each work site meeting, of the progress of the work relative to the timeline established and for presenting an updated version of the timeframe in the event of changes. The scheduled delivery date for the pool was October 12, 2013. According to the order to start work, construction was to start on August 6, 2012, and end 432 days later, on October 12, 2013.

Both the professional and the work site supervisor were responsible for monitoring the construction timeline produced by the contractor. An examination of the work site meeting minutes, with respect to the timeline, enabled us to make the observations presented in Table 8:

Table 8 – Construction Timeline – Annie-Pelletier Pool

Timeline	Dates
Order to start work	August 6, 2012
Expected end date of work provided in the call for tenders	October 12, 2013
End date of work revised by contractor	November 21, 2013
Actual end date of work (provisional acceptance)	March 21, 2014
Inauguration of the pool	April 26, 2014
Delay	142 days

Given the lack of up-to-date timeline, we examined the minutes of the work site meetings so as to identify the elements concerning the follow-up of the timeline. During this examination, we noted that the contractor had extended the timeframe several times.

Thus, during the work site meeting of February 6, 2013, the delivery of the pool was postponed to October 18. Following this, the delivery of the pool was postponed a second time to November 21, 2013, as a result of the delay caused by a construction strike.

Following that, on November 14, 2012, the non-compliance of the slope of the pool (connecting the deep end to the shallow end) with public pool standards was noted. This design error, discovered fortuitously by the project manager, resulted in a significant delay of three weeks with respect to the timeline.

Let us also consider the possible impact on the timeline of the time needed to process the numerous requests for changes, particularly the addition of certain elements omitted by the designer in the plans issued for construction purposes (e.g., a rooftop patio on the locker room).

We feel that the management and follow-up of the construction of the indoor pool, both in terms of quality and respecting the timeline, entailed significant shortcomings. These observations require improvements in the borough's approach in order to ensure better follow-up of future projects.

4.3.3.2.B. Recommendation

We recommend that the Mercier–Hochelaga-Maisonneuve borough implement the measures needed to ensure that it can monitor and follow the timelines prepared for its projects.

Business unit's response:

Auditor general's comments:

The Bureau du vérificateur général had not received the action plan requested from the borough as of April 7, 2016.

4.3.3.3. Cost Estimates and Budget Monitoring

4.3.3.3.A. Background and Findings

Another factor that contributes to the success of a project is staying on budget, which first requires a detailed and precise breakdown of the costs for all of the elements needed for the project.

In the case of the Annie-Pelletier pool project, two construction cost estimates were prepared, the first of which was prepared during the feasibility study in February 2011. The second estimate, prepared by the Consortium of professional firms (August 29, 2013) based on the plans and specifications, including the portion concerning the construction work, was evaluated at \$10,658,401 and was used as a reference estimate for the analysis of the tenders received for the construction work.

At the end of the call for tenders process, the decision-making summary for the contract for the construction services indicated a difference between the reference estimate for the construction cost (\$10,658,401) and the lowest compliant tender (\$11,196,808). Since the difference of \$538,407 (5.1%) was less than 10%, the tender obtained for the construction of the pool was deemed acceptable.¹²

The mechanisms for following up on construction costs included progressive statements prepared by the firm of professionals as the work done by the contractor progressed; following that, the contractor's invoices were authorized by the project manager. We were also informed that all of the decisions were approved by the manager of the borough's Division des ressources financières, matérielles et informationnelles.

¹² In keeping with a guide published in 2001 and entitled *Documentation relative aux dossiers décisionnels soumis aux instances centrales* [TRANSLATION] *Documentation concerning the decision-making files submitted to the central authorities*, section 6 "Éléments de contenu et de présentation des dossiers décisionnels – guide spécifique : octroyer un contrat" [TRANSLATION] *Content and presentation of decision-making files – specific guide: awarding a contract*, any difference of more than 10% between the contractor's tender and the last estimate prepared must be rigorously explained.

We observed that the documentation for some of these progressive statements was incomplete (e.g., the payment certificate or the contractor's invoice was missing) and that, in two cases, despite the large amounts involved (\$1,572,331 and \$704,902), no documentation was provided to justify payments made to the contractor. We feel that these documents should be included with the progressive statements to ensure that the payments to the supplier are justified and documented.

Finally, because the borough is currently in litigation with the contractor with respect to this project, the overall cost of completing the project has not yet been determined. Therefore, we were unable to determine whether the budget established for this project was respected.

4.3.3.3.B. Recommendation

We recommend that the Mercier–Hochelaga-Maisonneuve borough make sure that all of the documents that should accompany progressive statements are provided before making a payment.

Business unit's response:

Auditor general's comments:

The Bureau du vérificateur général had not received the action plan requested from the borough as of April 7, 2016.

4.3.3.4. Project Closeout and Accountability

4.3.3.4.A. Background and Findings

The project closeout phase is necessary for taking stock of the project and reporting on the achievement of project objectives and the manner in which the funds and resources allocated to the project were managed. The closing balance sheet also serves to identify shortcomings in the management of the project so that the necessary measures can be taken to avoid repeating them in future projects.

The stakeholders informed us that, to date, no formal accountability report has been produced for the Annie-Pelletier pool project. We are of the opinion that, although the borough is in litigation with the builder concerning this project, a report should be prepared outlining the problems encountered during the work and the degree to which the objectives were achieved.

4.3.3.4.B. Recommendation

We recommend that the Mercier–Hochelaga-Maisonneuve borough submit accountability reports on building construction and renovation projects to council, so as to inform the latter about the extent to which the objectives are achieved in terms of the principal project management elements.

Business unit's response:

Auditor general's comments:

The Bureau du vérificateur général had not received the action plan requested from the borough as of April 7, 2016.

4.4. Project 3 – Bibliothèque Marc-Favreau

4.4.A. Background and Findings

Following the *Diagnostic des bibliothèques municipales de l'île de Montréal [TRANSLATION] Diagnosis of municipal libraries on the île de Montréal* report, published in July 2005, the City prepared a plan to upgrade its network of libraries throughout the boroughs over a 10-year period. According to this plan, the Rosemont–La Petite-Patrie (RLPP) borough, which had the worst diagnosis for library resources, was at the top of the priorities for service improvement.¹³

The potential development of the former Rosemont municipal workshops in 2006 gave the RLPP borough an opportunity to build a new library which was to be called the bibliothèque Marc-Favreau (BMF). This project, initially estimated at \$12.5 million, was announced in December 2007.¹⁴ It was to cover 3,000 m² and open at the end of 2009.

During that year, the City's executive committee confirmed the implementation of the *Programme de rénovation, d'agrandissement et de construction de bibliothèques (RAC)*. This program was implemented as part of a financial support agreement¹⁵ signed with the *Ministère de la Culture, des Communications et de la Condition féminine (MCCCFQ)* that includes an obligation to hold a regulated architectural competition calling on the services of architecture professionals for Architectural design and LEED® projects, using the concept of *libraries for the 21st century*.¹⁶ It should be noted that the projects supported by the RAC

¹³ Improvement in terms of service outlets, surface area, scope of the collections, etc.

¹⁴ Budget presented in the decision-making file for approval by the executive committee (December 2007).

¹⁵ Agreement on the cultural development of Montréal.

¹⁶ The concept of the *library of the 21st century* involves the use of new information technologies in the design and development of a library.

program receive funding from three sources: 40% from the Ministère de la culture, des Communications et de la Condition féminine, 40% from the City and 20% from the borough.

From the time it was approved in December 2007 until the start of construction in 2012, the project involved various units of the City, the RLPP borough, the SGPI¹⁷ and the Service de la Culture (SC). Construction work on the BMF took place from May 2012 to August 2013 and the library was inaugurated in December 2013.

Our audit covered the decision-making process, the management frameworks and the project management practices used to complete the BMF project, including the mechanisms for monitoring and controlling quality, costs, and the project timeline.

4.4.1. Project Management Framework

4.4.1.A. Background and Findings

As indicated in Section 4.1.1, the CGP was not applied in the case of the BMF project, although it was subject to that framework, since it came into effect in 2010. We feel that the borough must execute its large-scale projects in keeping with the CGP.

As of its very nature, the administrative process¹⁸ set out in the SC is not as exhaustive as the CGP, its purpose being to specify the financing approval process for library projects through the RAC program. In this respect, our audit confirmed that the first City library project undertaken under the RAC program, namely the BMF, followed the financing approval process and respected the requirements of the RAC program in terms of architectural design and LEED® construction.

The planning and implementation of the BMF project involved personnel from the borough, the SGPI and the SC, with responsibilities evolving over the course of the project. The structure implemented involved sharing responsibilities as follows:

- The borough was responsible for approving and planning the project;
- The SGPI was responsible for undertaking and completing the project;
- The SC was responsible for overseeing the eligibility of the project for the RAC program.

¹⁷ The Service de la gestion et de la planification immobilière, formerly the Direction des stratégies et transactions immobilières.

¹⁸ *Processus administratif et décisionnel pour la construction de bibliothèques : méthodologie pour les suivis budgétaires [TRANSLATION] Administrative and decision-making process for the construction of libraries: methodology for budget monitoring*, December 2008, revised in August 2009.

In 2008, the borough produced a preliminary program¹⁹ for the project, which, according to the individuals we interviewed, served as a PAF. When we consulted this preliminary program, we were not able to identify all of the elements that usually make up a PAF, specifically those concerning governance and the financial aspects of the project.

We are of the opinion that a PAF should have been produced in keeping with good practices, so that the project stakeholders and the authorities could have a detailed overview of the issues and principal aspects, such as the scope, the governance structure, the deliverables and the resources required to ensure successful completion of the project.

Moreover, our audit also focused on the process for awarding contracts used by the BMF project, and we noted that the usual decision-making process was followed. The call for tenders documents were produced for all of the project stages, from the architecture competition, following which the winner was given a mandate to prepare plans and specifications and supervise the work, up to the time the construction contract was awarded. Thus, all of the authorizations were obtained for the awarding of the professional services and construction contracts.

4.4.1.B. Recommendation

We recommend that the Rosemont–La Petite-Patrie borough make sure that the projects that meet the criteria of the *Cadre de gouvernance des projets et des programmes de gestion d'actifs municipaux [TRANSLATION] Governance Framework for Municipal Asset Management Projects and Programs* are undertaken in keeping with that framework.

Business unit's response:

[TRANSLATION] The RLPP borough will make sure that future large-scale projects meet CGP criteria. (Planned completion: March 2016)

4.4.1.C. Recommendation

We recommend that the Rosemont–La Petite-Patrie borough, in keeping with good project management practices, systematically produce a project approval file for every real property project so as to ensure that all the project parameters are defined, enabling the council to make an informed decision.

¹⁹ The *Preliminary program* presents the objectives of the future library, including in terms of its general characteristics, its functional elements, lay-out and design.

Business unit's response:

[TRANSLATION] The RLPP borough will produce a PAF for future large-scale real estate projects. (Planned completion: March 2016)

4.4.2. Project Governance

4.4.2.A. Background and Findings

With respect to governance, one of the key elements for the success of a construction project is a team of experts from all of the fields involved, with an experienced project manager to oversee the coordination of the stages for performing the work and to monitor the work, the timeline and the budget.

Therefore, it is expected, particularly in the case of a large project, that the roles and responsibilities of the stakeholders would have been determined and made official before the project start-up phase. In the case of the BMF project, we identified serious shortcomings in these two areas:

- A project manager was not designated for the entire duration of the project;
- Each of the business units involved designated a manager for a part of the project, without anyone being actually answerable or accountable for all of the work. This resulted in silo management and a lack of consistency;
- The three employees assigned to this project by the borough (a manager from the Division des sports et des loisirs, a manager from the Division des ressources financières et matérielles and a planning adviser) had neither expertise nor experience in project management;
- The project was handled in an empirical manner and, given the lack of project management skills, the borough stakeholders learned how to undertake a specialized project of this scope on the fly as the project progressed;
- The division of roles and responsibilities among the partners lacked clarity or was simply not defined. It was only at the construction stage that the borough realized the scope of its involvement in the implementation of the library. It had not realized that it was responsible for the interior facilities, believing that, by giving the SGPI a mandate to build the BMF, the latter would deliver a complete and functional (turnkey) library;
- After the borough came to this realization, in August 2012, a project manager was hired to take charge of the activities under its responsibility, namely acquiring and coordinating the installation of equipment and facilities, coordinating tasks leading to the inauguration of the library and starting up operations. The project manager feels that the scope and diversity of the specialties and tasks for which the borough was responsible deserved more support on the part of the SC, which had library expertise;

- Personnel turnover was another constraint raised by the individuals we interviewed from both the borough and the SGPI. For instance, one of the two borough division managers involved in the project, who was responsible for the project at the time, terminated his employment before the new project manager was hired, and the other followed suit shortly thereafter. Responsibility for the project at the SGPI also changed hands several times during the course of the project. This occurred in a context in which the governance system was not clearly defined and had repercussions on project continuity.

All of these deficiencies are the result of shortcomings that are generally encountered when a PAF is not prepared at the project planning stage specifically implementing a project governance structure and defining the roles and responsibilities of the stakeholders. The shortcomings noted entail the risk that both human and financial resources will not be allocated in an optimal manner, that budgets will be exceeded and that the objectives will not be achieved (e.g., the needs of the project expressed in terms of functional, design or library parameters).

Knowing that this type of project is not a common undertaking for the boroughs and considering the recurrence of library projects in the City's upgrade plan, we are of the opinion that the SC, together with the SGPI, should play a sustained leadership role and support the boroughs in the planning and implementation of future library projects. They could make the most of the expertise developed through library projects completed or in progress as part of the RAC program, developing technical benchmarks and business practices that could benefit future projects.

4.4.2.B. Recommendation

We recommend that the Rosemont–La Petite-Patrie borough, in keeping with good project management practices, systematically designate a project manager to be responsible for planning, implementing and following up on real property projects.

Business unit's response:

[TRANSLATION] The RLPP borough will systematically designate a project manager for future large-scale projects. (Planned completion: March 2016)

4.4.2.C. Recommendation

We recommend that, when undertaking projects, the Rosemont–La Petite-Patrie borough clearly establish a governance structure, specifying the roles and responsibilities of all the stakeholders involved.

Business unit's response:

[TRANSLATION] A RACI (Responsible, Approves, Collaborates and is Informed) project charter will be prepared for all future large-scale projects so as to standardize the roles and responsibilities of all of the project stakeholders. (Planned completion: March 2016)

4.4.2.D. Recommendation

We recommend that the Service de la culture, in co-operation with the Service de la gestion et de la planification immobilière, provide sustained support to the boroughs for future library building and renovation projects.

Business units' responses:

SERVICE DE LA CULTURE

[TRANSLATION] Addition of personnel: On February 29, 2016, the Directeur Général authorized the addition of human resources for both the SC and the SGPI. The SC will be able to count on three additional individuals and the SGPI on four. With a total of 18 people (7 at the SC and 11 at the SGPI), we will have the personnel we need to adequately support the boroughs in their projects from start to finish. (Planned completion: June 2016)

Revise and clarify the roles and responsibilities of the partners in collaboration with the SGPI by signing a "Project Charter" with the boroughs concerned. With respect to the general governance of the program, we will implement an "RAC program management plan." For each project, this plan will identify the main deliverables as well as the maximum duration of each of the project's principal steps. (Planned completion: May-June 2016)

Develop, update and clarify the standards or tools used during the concept and preliminary project development stages as well as during the planning of services and spaces. (Planned completion: September 2016)

SERVICE DE LA GESTION ET DE LA PLANIFICATION IMMOBILIÈRE

[TRANSLATION] Preparation and adoption by the Direction générale of a RAC defining the best project management practices, the stakeholders and the roles and responsibilities of each. This plan will focus on determining the principal parameters and deliverables, which will be monitored throughout the duration of the projects covered by the program. It will ensure follow-up of the various projects and allow comparisons between them, making it possible to integrate the lessons learned into each new project or stage.

Following the adoption of the management plan, a governance structure adapted to take into consideration the context and the needs of the stakeholders will be implemented. This structure will consist of a steering committee that includes the

managers representing the party requesting the project (SC), the boroughs and the SGPI, which will monitor the program and be involved at key moments during the project. (Planned completion: June 2016)

4.4.3. Project Follow-Up and Monitoring Mechanisms

4.4.3.A. Background and Findings

Regardless of the scope of an undertaking, project management is a crucial activity focused on three main components: the products or deliverables, the timeline and the costs. Mechanisms must be implemented to follow up on and monitor these elements in order to make sure that the expected quality and quantity of work are achieved within the timelines and the budget allocated for the project.

4.4.3.1. Monitoring Project Delivery

4.4.3.1.A. Background and Findings

The SGPI assigned the professional (the design architect) responsible for supervising the work site to monitor the execution of the project. He was responsible for making sure that the construction work done by the contractor complied with the plans and specifications and that the timeline was respected.

Moreover, the City's laboratory was involved in critical steps of the construction work (e.g., during the waterproofing of the foundations) and was responsible for quality control and evaluating the compliance of the materials used by the contractor.

The library project was to obtain LEED® certification, in keeping with the City's sustainable development policy and the requirements of the RAC program. A mechanism to ensure certification was achieved was implemented at the start of the project. In November 2015, the BMF obtained LEED® Silver certification.

4.4.3.2. Monitoring the Timeline

4.4.3.2.A. Background and Findings

The timeline is the focal point of project management, integrating all the project stages. It must be managed by a project manager, who can determine the progress of the project and, on an ongoing basis, assess the activities to be completed so as to be able to take the actions required to complete the work within the original budget and timeframe.

In the case of the BMF project, follow-up of the construction timeline was to be ensured by the work site supervisor based on the work schedule, the most recent version of which prepared by the contractor dated back to the start of the work (May 20, 2012), with an expected duration of 14 months. Moreover, the SGPI, which was mandated by the borough to execute the project, appointed a contract manager who was specifically responsible for following up on the work timeline on a weekly basis.

Table 9 presents a comparison of the planned and actual end dates of the work.

**Table 9 – Construction Timeline
for the Bibliothèque Marc-Favreau**

Timeline	Dates
Order to start work	April 2012
End date for the work provided in the timeframe ^[a]	June 2013
Actual end date of work	August 2013
Delay	2 months

^[a] According to the call for tenders documents.

There were shortcomings with respect to monitoring the construction timeline. In fact, the contractor only informed the borough about a delay in the project four months before the end date, without providing any explanations or revised timelines. According to the information obtained, despite the insistence of the architect and the SGPI's contract manager during work site meetings, the contractor refused to provide an updated schedule. It appears that no stakeholder had any leverage to persuade the contractor to do so.

As a consequence of the contractor's refusal to provide an up-to-date schedule of the work, the borough was not able to evaluate the impact of the delay on the delivery of the building to allow it to adequately re-organize the work remaining to be done after the construction work. Moreover, the stakeholders we interviewed also said that, under the circumstances, it was more difficult for the SGPI to coordinate quality control of the work or the timing of other specialties, since it did not know when the work in question would be done by the contractor. We are of the opinion that this situation must be corrected for future construction projects handled by the SGPI so as to allow all project stakeholders to be informed about actions that are in progress or have been completed and thereby ensure that the project is completed on time.

4.4.3.2.B. Recommendation

We recommend that the Rosemont–La Petite-Patrie borough, together with the Service de la gestion et de la planification immobilière, take measures to obtain up-to-date project timelines so that they can ensure follow-up and take the actions required to ensure that projects are completed on time.

Business units' responses:

ROSEMONT–LA PETITE-PATRIE BOROUGH

[TRANSLATION] Article 5.1.5.3 of the “Cahier des clauses administratives spéciales” of the specifications clearly indicates that the contractor must provide an updated timeline every 30 days or at the manager’s request.

In the case of the next large-scale project, the RLPP borough will make sure that the SGPI takes the necessary steps to obtain up-to-date timelines. (Planned completion: March 2016)

SERVICE DE LA GESTION ET DE LA PLANIFICATION IMMOBILIÈRE

[TRANSLATION] Based on a standard timeline developed for managing RAC projects, develop and implement a timeline monitoring mechanism covering the entire life cycle of a project, measuring the various impacts (quality and implementation) and illustrating the progress made on each project activity. (Planned completion: December 2016)

4.4.3.3. Cost Estimates and Budget Monitoring

4.4.3.3.A. Background and Findings

Another factor that contributes to the success of a project is staying on budget, which first requires a detailed and precise breakdown of the costs for all of the elements needed for the project.

In the case of the BMF, a first overall estimate of the cost of the project (\$12.5 million) was prepared in the start-up phase to be approved by the authorities.

In keeping with good practices, this budget estimate was subsequently revised during various stages in the project design. Based on the FTP and at various times during the preparation of the plans and specifications, estimates were produced by a firm specializing in cost estimates. A final estimate of the construction costs, produced by the firm of architects before the call for tenders was issued, was used to analyze the tenders received. Table 10 presents the last two construction cost estimates and the lowest tender retained.

**Table 10 – Evolution of Construction Cost Estimates
for the Bibliothèque Marc-Favreau and Tender Retained**

Date	Description	Construction cost (with taxes and contingencies) \$ ^[a]
February 2011	Specialized firm – 100% in keeping with plans and specifications	9,930,208
June 2011	Professional – 100% in keeping with plans and specifications	10,805,772
September 2011	Construction contractor – Tender retained	11,570,814

^[a] Source: *Évolution des coûts estimatifs des travaux de construction en cours de conception [TRANSLATION] Evolution of the construction cost estimates during the design phase*, SGPI, adjusted in keeping with contingencies and applicable taxes.

According to the decision-making file for the contract to be awarded to the construction contractor, there was a difference of approximately 7% (\$765,042) between the last estimate (\$10,805,772) and the lowest compliant tender (\$11,570,814). Since the difference was less than 10%, the tender obtained for the construction of the BMF library was deemed acceptable.

Moreover, we also looked at the overall budget for the project which, in addition to the construction cost, included professional fees, contingency fees, incidental expenses and the cost of the equipment and initial collections. The evolution of the overall budget for the project including contingencies, incidental expenses and taxes, is provided below:

**Table 11 – Evolution of the Overall Budget Estimate^[a] and Actual Cost^[e]
for the Bibliothèque Marc-Favreau Project**

Budget estimate	Approval dates	Overall cost (with taxes and contingencies) \$
Initial budget (FTP) – Approval of the project by the executive committee ^[b]	December 2007	12,500,000
Revised budget (plans and specifications) – Increase authorized by the executive committee ^[c]	May 2010	17,063,676
Revised budget – Increase for the cost of the work ^[d]	March 2012	19,432,673
Actual overall cost of the project ^[e]	2014	19,254,161

^[a] Source: *Evolution of the budget from 2009 to 2014*, produced by the SGPI.

^[b] The budget based on the FTP (\$7.5 million for construction and fees and \$5 million for the initial collection).

^[c] The revised budget, based on the plans and specifications (\$12.06 million for construction and fees).

^[d] The revised budget, after awarding the contract.

^[e] Source: Unofficial calculation of the cost of the project by the RLPP borough.

The difference between the budget authorized in 2010 (\$17,063,676) and the adjusted estimate prepared in 2012 (\$19,432,673) that took into account changes in the construction cost and their impact on the other components of the overall cost (fees, contingencies and incidental expenses) required an increase in the overall envelope for the project of more than \$2 million. The decision-making summary produced to this end justified this considerable difference, specifically as a result of the overheated construction market, the inflation rate and the subsequent modifications made to the project.

Yet, according to the stakeholders we interviewed (SGPI), this difference was caused by the fact that, given the lack of a reference to a similar project within the City, the estimates were based on *standard* construction projects and did not reflect the requirements of the RAC program for Architectural design and LEED® characteristics. We are of the opinion that the estimates produced by the specialized cost estimation firms should be more representative of the nature of the project. Considering the size of the investment, any variation (%) with respect to the estimated cost has significant impacts. Therefore, it would be pertinent for the SGPI and the borough to identify the factors that had an impact on the cost of the project in order to be able to estimate the cost of future library projects in a more pragmatic manner.

Moreover, with respect to monitoring project costs, our audit revealed that this was done by the borough and the SGPI for their respective parts.

4.4.3.3.B. Recommendation

We recommend that the Rosemont–La Petite-Patrie borough, together with the Service de la gestion et de la planification immobilière, take measures to ensure that construction project cost estimates reflect the nature and the characteristics of the projects before being presented to the council.

Business units' responses:

ROSEMONT–LA PETITE-PATRIE BOROUGH

[TRANSLATION] The RLPP borough will make sure that the cost estimates for large-scale projects reflect the nature and characteristics of the projects before they are presented to the borough council. (Planned completion: March 2016)

SERVICE DE LA GESTION ET DE LA PLANIFICATION IMMOBILIÈRE

[TRANSLATION] Although the SGPI has developed expertise in the evaluation and monitoring of costs, it will hire an internal resource in quantity surveying to compile data concerning projects and provide support to the professional when projects are undertaken. As needed, the SGPI will also call on external resources to cover the project's special characteristics. (Planned completion: December 2016)

4.4.3.4. Project Closeout and Accountability

4.4.3.4.A. Background and Findings

The project closeout phase is necessary for taking stock of the project and reporting on the achievement of project objectives and the manner in which the funds and resources allocated to the project were managed. The closing balance sheet also serves to identify shortcomings in the management of the project so that the necessary measures can be taken to avoid repeating them in future projects.

In the case of the BMF project, we learned of a post-mortem meeting involving the borough and SGPI stakeholders that gave them an opportunity to discuss the main weaknesses in the project. However, there was no follow-up to this meeting.

Given the absence of a clearly defined governance structure, the responsibility for accountability was not defined either. As a result, no report on the BMF project was submitted to management and no project closing balance sheet was produced. Both the SGPI and borough stakeholders stated that these elements were not part of their practices.

We are of the opinion that producing project closing elements should be included in the practices so as to ensure accountability for future projects. Moreover, considering all of the shortcomings noted with respect to the management of the BMF project, a project report is necessary.

4.4.3.4.B. Recommendation

We recommend that the Rosemont–La Petite-Patrie borough submit accountability reports on building construction and renovation projects to council so as to inform the latter about the extent to which the objectives are achieved in terms of the principal project management elements.

Business unit's response:

[TRANSLATION] The SGPI is responsible for undertaking and completing the project. It hires all of the external professionals and is responsible for paying them. We are of the opinion that the SGPI should produce the accountability report.

For our future large-scale projects, we will submit accountability reports to the borough council. (Planned completion: March 2016)

4.5. Project 4 – Caserne 32

4.5.A. Background and Findings

In its Schéma de couverture de risques en sécurité incendie 2009-2013 [TRANSLATION] 2009–2013 fire risk coverage plan (coverage plan), adopted by the Montréal agglomeration in December 2008, the Service de sécurité incendie de Montréal (SIM) provided various measures intended to maximize fire protection on the territory of the agglomeration. These measures specifically included the construction of Caserne 32 in the Rivière-des-Prairies–Pointe-aux-Trembles borough in order to reduce response time and ensure adequate fire protection in this sector of the City.

This project, which the SIM estimated would cost approximately \$5.7 million in 2009, involved close cooperation between the SIM and various units of the SGPI, the principal stakeholder responsible for the project. In fact, the SIM assigned this project to the SGPI, which was supposed to propose a location for the construction of the future Caserne 32 and build it. This new fire station had to satisfy certain requirements (e.g., the functional organization of the space for the firemen and equipment) that remained to be determined by the SIM, in keeping with the location (property) that would first be approved. The project, from the design to the provisional delivery of the building by the builder, took place from October 2012 to November 2013. Caserne 32 was put into service in February 2014.

Our audit covered the decision-making process, the management frameworks and the project management practices used for the Caserne 32 project, including the mechanisms for monitoring and controlling quality, costs, and the project timeline.

4.5.1. Project Management Framework

4.5.1.A. Background and Findings

The Caserne 32 project was not subject to the CGP since it was a medium-sized project, based on the fact that its budget (\$5.7 million) was less than \$10 million.

Despite the absence of a project management framework for a project of this size, it was expected that good project management practices would be applied by the SGPI, which was assigned to complete the project. In keeping with these good practices, a PAF must be prepared and approved by the authorities during the start-up phase of a project.

In the case of the Caserne 32 project, the individuals we interviewed said that the project, for which the SIM was responsible, was justified through the adoption of the coverage plan in

2008. Nevertheless, we noted that the information it contained did not include all of the elements expected of a PAF since only the need for building a new fire station in the eastern sector of the island that was to be functional for 2013 was briefly mentioned.

We are of the opinion that a PAF should have been produced by the SIM, in cooperation with the SGPI, so that the project stakeholders and the authorities could have a detailed overview of the issues and principal aspects, such as the scope, the governance structure, the deliverables and the resources required to ensure successful completion of the project.

It should also be noted that, although completion of the project was delegated to the SGPI, the SIM played an active role, including in determining the criteria for the location of the site²⁰ to be acquired and the functional parameters required for the future fire station.

4.5.1.B. Recommendation

We recommend that the Service de sécurité incendie de Montréal, in cooperation with the Service de la gestion et de la planification immobilière, make sure that a project approval file is systematically produced for every building construction and renovation project, in keeping with good management practices.

Business units' responses:

SERVICE DE SÉCURITÉ INCENDIE DE MONTRÉAL

[TRANSLATION] The SIM will collaborate on the preparation of the PAFs prepared by the SGPI. (Planned completion: immediate)

SERVICE DE LA GESTION ET DE LA PLANIFICATION IMMOBILIÈRE

[TRANSLATION] The SGPI will prepare a PAF for all of the large-scale building construction and renovation projects, worth more than \$10 million, as of the project start-up phase, in keeping with administrative framework C-OG-DG-P-14-001. (Planned completion: immediate)

4.5.2. Project Governance

4.5.2.A. Background and Findings

With respect to governance, one of the key elements for the success of a construction project is a team of experts from all of the fields involved, with an experienced project manager to

²⁰ The site to be acquired for building Caserne 32 had to meet the requirements of a maximum response time to ensure adequate protection of the citizens, based on the numerous housing developments undertaken in the sector of the Rivière-des-Prairies–Pointe-aux-Trembles (RDP–PAT) borough.

oversee the coordination of the stages for performing the work and to monitor the work, the timeline and the budget. Therefore, it is expected that the roles and responsibilities of the stakeholders would have been determined and made official before the project start-up phase.

In the case of the Caserne 32 project, our audit revealed that no document was produced outlining the roles and responsibilities of the individuals assigned to the project or the deliverables for which they were responsible.

According to the information obtained, the SIM representatives involved in this project were the section manager responsible for real estate resources and an architecture technical agent, who was assisted by other colleagues. On the SGPI side, under the supervision of an SGPI section manager responsible for the project, a real estate manager was involved in the planning, design and construction activities, along with a senior technical agent designated to supervise the work site.

The SIM stakeholders informed us that there is a virtually permanent structure for fire station construction and renovation projects and that the responsibilities remain the same from one project to another, with only the stakeholders changing. The SGPI officials we interviewed stated that each stakeholder from their department involved in a project is aware of her or his mandate (responsibilities), which is defined in the job description.

In our opinion, this definition of responsibilities is not sufficient to ensure good governance of a project. The governance structure for the Caserne 32 project should have been clearly established in order to officially define the roles, responsibilities and deliverables for which the various stakeholders were responsible and to establish the interdependence among them. Otherwise, there is a risk that the decision-making, the regular follow-up of the project and the coordination of the stages will not be handled in a manner that would ensure that the project objectives in terms of time, costs and quality will be achieved.

4.5.2.B. Recommendation

We recommend that the Service de sécurité incendie de Montréal, in cooperation with the Service de la gestion et de la planification immobilière, make sure that a project governance structure is clearly established and defines the roles, responsibilities and deliverables of the various stakeholders involved for building construction and renovation projects.

Business units' responses:

SERVICE DE SÉCURITÉ INCENDIE DE MONTRÉAL

[TRANSLATION] The SIM will make sure that the governance framework is defined for its building construction and renovation projects. (Planned completion: July 2016)

SERVICE DE LA GESTION ET DE LA PLANIFICATION IMMOBILIÈRE

[TRANSLATION] A governance framework defining the roles, responsibilities and deliverables for which the various stakeholders are responsible will be systematically defined for all building construction and renovation projects, as of the project start-up phase. (Planned completion: June 2016)

4.5.3. Project Follow-Up and Monitoring Mechanisms

4.5.3.A. Background and Findings

Regardless of the scope of an undertaking, project management is a crucial activity focused on three main components: the products or deliverables, the timeline and the costs. Mechanisms must be implemented to follow up on and monitor these elements in order to make sure that the expected quality and quantity of work are achieved within the timelines and the budget allocated for the project.

4.5.3.1. Monitoring Project Delivery

4.5.3.1.A. Background and Findings

Following the call for tenders process for the design-construction phase of the Caserne 32 project, a mandate was given to an external firm for architecture services for the design and construction phases.

The team of SGPI professionals was to supervise the firm during the project. For this purpose, follow-up mechanisms were implemented involving both the SGPI and the SIM. Quality control of the work also required the involvement of the City's laboratory, which performed compliance tests on the materials used by the contractor.

Moreover, as provided in the call for tenders documents, an amount corresponding to 10% of the value of the work was held back by the City as a guarantee for the work.

A special deduction will only be paid once confirmation of LEED® certification has been obtained by the City, which, at the time of writing this report, had not yet been achieved.

4.5.3.2. Monitoring the Timeline

4.5.3.2.A. Background and Findings

The timeline is the focal point of project management, integrating all the project stages. It must be managed by a project manager, who can determine the progress of the project and, on an ongoing basis, assess the activities to be completed so as to be able to take the actions required to complete the work within the original budget and timeframe.

The decision-making summary concerning the awarding of the contract for the design and construction of Caserne 32 indicated that the fire station was to be operational no later than December 2013. Any additional delay would result in a failure to meet the timeframe for planning the implementation of the coverage plan. According to the timeline presented in the decision-making summary, the design and construction work was to be done from November 2012 to December 2013, which did not allow for any delays to build up during the course of the project.

The work site supervisor was responsible for following up on the construction work timeline, based on the work schedule, the most recent version of which, produced by the contractor in April 2012, indicated provisional receipt of the building on November 27, 2013.

Table 12 – Construction Timeframe for Caserne 32

Timeline	Date
Order to start work	November 2012
End date for the work provided in the work schedule ^[a]	November 2013
Actual end date of work	February 2014
Delay	3 months

^[a] In keeping with the call for tenders documents.

Yet during our audit, we were informed that the project had been delayed by approximately three months, since the provisional receipt of the building only took place on February 21, 2014. In a letter addressed to the SGPI, the contractor explained that the delay was caused by the additional time required by Hydro-Québec and the Commission des services électriques de Montréal to complete the underground wiring of the fire station. According to the information obtained, this work was beyond the contractor's control.

It should be noted, moreover, that the start of the construction work was delayed by two months as a result of the time it took the City to issue a construction permit to the firm. We

consider it quite unacceptable that a time lag was caused by administrative delays that could have been avoided with better planning.

It should be noted that no up-to-date work schedule was produced by the firm after the version presented in April 2012. As a result, the SGPI was not able to adequately monitor the progress of the work or take the necessary measures to reduce the impact of the delays on the project which, moreover, had an impact on achieving the objectives provided in the coverage plan.

4.5.3.2.B. Recommendation

We recommend that the Service de la gestion et de la planification immobilière make sure that it has an up-to-date timeline for the work so as to be able to monitor the extent to which the project timeline is followed and alleviate the consequences of delays.

Business unit's response:

[TRANSLATION] Develop and implement a timeline monitoring mechanism covering the entire life cycle of a project, measuring the various impacts (quality and implementation) and illustrating the progress made on each project activity. The SGPI will develop and use a model timeline that will serve to accelerate, better evaluate and standardize RAC program project management processes during the implementation phase.

*Also, for all projects under its responsibility, the SGPI will insist on the production of a project schedule in keeping with the general administrative clauses, the special administrative clauses and the letter ordering the start of the work. **(Planned completion: December 2016)***

4.5.3.3. Cost Estimates and Budget Monitoring

4.5.3.3.A. Background and Findings

Another factor that contributes to the success of a project is staying on budget, which first requires a detailed and precise breakdown of the costs for all of the elements needed for the project.

For the Caserne 32 project, a preliminary estimate was prepared in the project statement provided in the SIM's coverage plan. The cost was estimated at \$5,046,000 in 2008, based on the known value of the last fire station built²¹ by the SGPI, in 2006.

²¹ Caserne 52 was built in 2006.

A second cost estimate was then prepared by a construction economist from an external firm, based on the FTP in December 2011, before the call for tenders was issued in June 2012. According to the report provided by that firm, the estimate (\$5,485,882) took all of the project needs into account.²² Following this, the SGPI made adjustments to the last estimate, evaluating the project at \$5,935,568. The evolution of the project budget is summarized in Table 13.

Table 13 – Evolution of the Design-Construction Budget for the Caserne 32 Project and Real Cost of the Project

Budget estimate	Date	Overall cost (with taxes and contingencies) \$
Initial budget – Coverage plan ^[a]	2008	5,046,000
Revised budget – Estimate from the external firm (FTP) ^[b]	December 2011	5,485,882
Modified budget – SGPI	September 2012	5,935,568
Tender retained – Design-construction	October 2012	6,590,454
Actual cost of the project – Design-construction	September 2014	6,302,644

^[a] The initial budget provided in the coverage plan.

^[b] The estimated budget prepared by the external firm, based on the PFT.

Thus, the difference presented in the decision-making summary for the design-construction contract between the adjusted amount (\$5,935,568) and the lowest compliant tender (\$6,590,454) was 11.03%. We noted, however, that the decision-making file did not clearly present an analysis and justification of this difference (11.03%).

We are of the opinion that, in order to enable the authorities to be able to make an informed decision with respect to awarding the contract, the SGPI should have included a detailed analysis and explanation of this difference.

Moreover, we are of the opinion that the SGPI should also have provided the estimate actually produced by the external firm (\$5,485,882) since, if it had been compared with the lowest compliant tender, the difference would have been 20.13%, which could have compromised the possibility of completing the project within the timeframe provided in the coverage plan.

²² The estimate prepared by the external firm specifically took into account the overhead costs, administrative fees/profits, indexing for construction done in 2012–2013, design and construction contingencies, as well as the costs incurred for obtaining LEED® Gold certification and taxes.

During our audit, we raised the importance of the difference between the estimates prepared before the contract was awarded and the value of the tender retained (data provided in the preceding table). The SGPI stakeholders said that the overall budget for the Caserne 32 project was based on an approximate reference of \$1.5 million per garage door, to which were added inflation since 2006 and the estimated value of the technological improvements and the specific needs of the project. The stakeholders agree that this reference is not representative of the actual cost for building a fire station in 2014, since technology and design characteristics have evolved since the last fire station was built, in 2006. We are of the opinion that the cost estimates prepared by the SGPI should reflect the characteristics of the project and the market conditions so as to ensure that an appropriate budget is prepared for the project and the authorities can make an informed decision.

With respect to monitoring the project costs, progressive payments were made as the work was completed. Moreover, all of the change orders submitted by the contractor, as a result of unexpected work site conditions or requests from the client, were approved by the architect, the engineer, the contractor, the SGPI contract manager and his supervisor. In addition to the follow-up done by the SGPI, the SIM also followed up on payments in order to ensure that the project stayed on budget.

Based on the progressive statements, the actual cost (design-construction) of the project was \$6,302,644, which was less than the amount tendered, since only 33% of the amount allocated for contingencies was used.

4.5.3.3.B. Recommendation

We recommend that the Service de la gestion et de la planification immobilière make sure that the differences presented in the decision-making files for awarding contracts, based on the last estimate made, are justified so as to enable the authorities to make informed decisions.

Business unit's response:

[TRANSLATION] For any file presenting a difference between the lowest compliant tender and the last estimate prepared, the SGPI will include a detailed analysis in the decision-making file, with a clear breakdown justifying the differences. (Planned completion: immediate)

4.5.3.3.C. Recommendation

We recommend that the Service de la gestion et de la planification immobilière make sure that all of the cost estimates for construction projects reflect the nature and characteristics of the projects so that Service de sécurité incendie de Montréal can plan an appropriate budget for the project and the authorities can make an informed decision.

Business unit's response:

*[TRANSLATION] Although the SGPI has developed expertise in the evaluation and monitoring of costs, it will hire an **internal resource in quantity surveying** to compile data concerning projects and provide support to the professional when projects are undertaken. As needed, the SGPI will also call on external resources to cover the project's specific characteristics. (Planned completion: December 2016)*

4.5.3.4. Project Closeout and Accountability

4.5.3.4.A. Background and Findings

The project closeout phase is necessary for taking stock of the project and reporting on the achievement of project objectives and the manner in which the funds and resources allocated to the project were managed. The closing balance sheet also serves to identify shortcomings in the management of the project so that the necessary measures can be taken to avoid repeating them in future projects.

We noted that, for the Caserne 32 project, no accountability report was planned by the individuals responsible for the project within either the SGPI or the SIM. Accountability was handled instead by the technical agents, the section manager and the SGPI division manager responsible for the projects. This accountability used an informal, verbal approach to keep the stakeholders informed about the progress of the project.

At the end of the Caserne 32 project, no accountability report or closing balance sheet was prepared. The SGPI stakeholders assigned to the project explained that this was because LEED® certification had not yet been obtained. Steps have been taken to obtain LEED® certification since February 2014, the date on which the fire station was delivered. Almost two years have gone by since the end of the work and no accountability report or closing balance sheet has been produced. The project *momentum* has been lost and there is a risk that other fire station construction projects will not benefit from the experience of this project.

Both the value and the recurrence of projects within the SGPI make the production of such closing balance sheets essential. The SGPI's project management process must implement project accountability mechanisms.

4.5.3.4.B. Recommendation

We recommend that the Service de la gestion et de la planification immobilière submit project accountability reports on building construction and renovation projects to the Service de sécurité incendie de Montréal, so as to inform the latter of the extent to which the objectives are achieved in terms of the principal project management elements.

Business unit's response:

*[TRANSLATION] The next major reorganization of the SGPI provides for the establishment of a **project office**, which will define and implement project follow-up and monitoring mechanisms, specifically including project accountability. (Planned completion: December 2016)*

4.5.3.4.C. Recommendation

We recommend that the Service de sécurité incendie de Montréal submit accountability reports on building construction and renovation projects to council, so as to inform the latter of the extent to which the objectives are achieved in terms of the principal project management elements.

Business unit's response:

*[TRANSLATION] The SIM, in cooperation with the SGPI, will submit an **accountability report** to the council, in keeping with the project follow-up and monitoring mechanisms that will be implemented by the project office. (Planned completion: January 2017)*

5. Conclusion

Sound project management is a process intended to organize the progress of operations to ensure the objectives are achieved within the allocated time limits and budget. Our audit has revealed serious shortcomings in building construction and renovation project management practices that require particular attention on the part of those responsible for the business units audited and City management.

At the outset, we noted that, although the City has adopted a governance framework for managing large-scale projects, it is not systematically applied to the projects that are subject to it. Furthermore, there is no governance framework for smaller-scale projects. As a result, the work methods used by the business units are not homogeneous and are not systematically aligned with good project management practices.

Moreover, the project governance structure, which officially defines the roles and responsibilities of the stakeholders, is generally lacking, which creates confusion and inefficiency. In fact, a project manager was not systematically designated to ensure continuity and overall monitoring of a project and, when one was designated, that person was not necessarily qualified to ensure sound project management. It should also be noted that the boroughs that opted to manage their projects independently did not have the competencies required to ensure sound management. Yet, considering the scope of the projects relative to the boroughs' budget capacities, the risk is all the greater.

On the topic of project follow-up and monitoring, shortcomings were noted in terms of respecting the expected quality of the work and the timelines and budget allocated for the project. We first noted that the client's expectations were, for certain projects, incompletely or imprecisely specified, which resulted in a design that did not reflect all of its needs. In addition, the follow-up of the work was not thorough enough to make sure that it complied with the plans and specifications. Moreover, the cost estimates, which are used to prepare budgets and obtain authorizations for expenditures, do not systematically reflect the nature and characteristics of the projects. Finally, construction timelines were not always available or not sufficiently up to date to ensure adequate follow-up of the project.

In conclusion, we noted the generalized absence of any formal accountability for the building projects audited. This good practice, which also serves to provide a history and improve future projects, was not implemented by any of the business units audited.

All in all, the multiple shortcomings concerning the building construction project management practices of the business units audited lead to the risk that both human and financial resources may not be allocated in an optimal manner, that the budgets will be overrun and that the objectives will not be achieved. Considering the scope of the City's investments in building construction and renovation projects and as a result of our findings, actions must be taken by all of the stakeholders to ensure sound management of future projects.